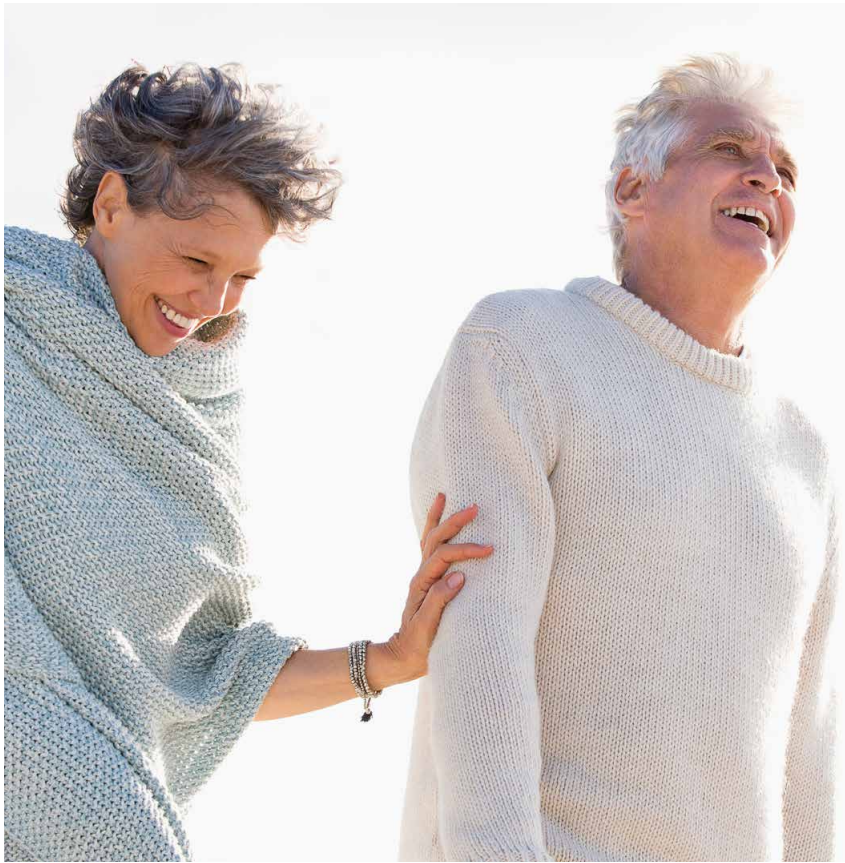




WHITEPAPER

# Tech as a solution to the silver tsunami





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## Foreword

One of the major challenges of our time is an ageing population. Fantastic progress in research and health care has made it possible for us to live longer than ever and we are seeing a steady rise in life expectancy across Europe. However, old age brings with it other issues to tackle. Chronic illnesses such as cancer, diabetes, stroke, dementia and heart disease are escalating, putting great pressure on health care systems in Europe. Adding to that pressure is the declining ratio between the working age population and the elderly population. Fewer and fewer people of working age have to care for a growing group of seniors, sometimes called a “silver tsunami”.

We are convinced that technology has an important, or perhaps more precisely, a crucial role to play in addressing the societal challenges that we all are facing. Technology enabled care has the capacity to provide cost-effective solutions at a time when demands on health and social care are continuing to increase. A broad implementation of technology enabled care is of

great importance to sustain and develop health and social care in the future.

Digital solutions for health and care have the capacity to increase the well-being of citizens throughout Europe and profoundly change the way that health and care services are delivered to patients. New technology will enable us to put users and their needs at the centre of the solution. New technology can empower care recipients and allow them to continue living at home and simultaneously feel secure.

Our vision at Careium is to help seniors live a better and fuller life, and in doing so we believe that we are also part of the solution. These societal challenges are too great for anyone to face alone, we must all come together. Collaborations between the public sector, the private sector and other stakeholders can result in innovation and measures that are beneficial for both the individual and society.

# 1. Societal changes are creating global challenges

Europe's health and care systems are facing serious challenges in the years to come. An ageing population, increasing chronic care requirements, rises in public spending and a scarcity of home-care workers are leading to shifting healthcare needs and intensifying pressure on our health systems.

## A growing population that is living longer

Demographic changes are visible throughout the world. The population is growing and we are living longer. In the EU, the proportion of the population aged 65 years and over is increasing in every member state. For the EU as a whole, the proportion increased by 2.4 percentage points over a period of ten years (2007-2017). During the same period, the proportion of the population aged 15 and below decreased slightly by 0.3 percentage points. In 2017 people aged 65 and above accounted for 19.4 per cent of the population in the EU. That is projected

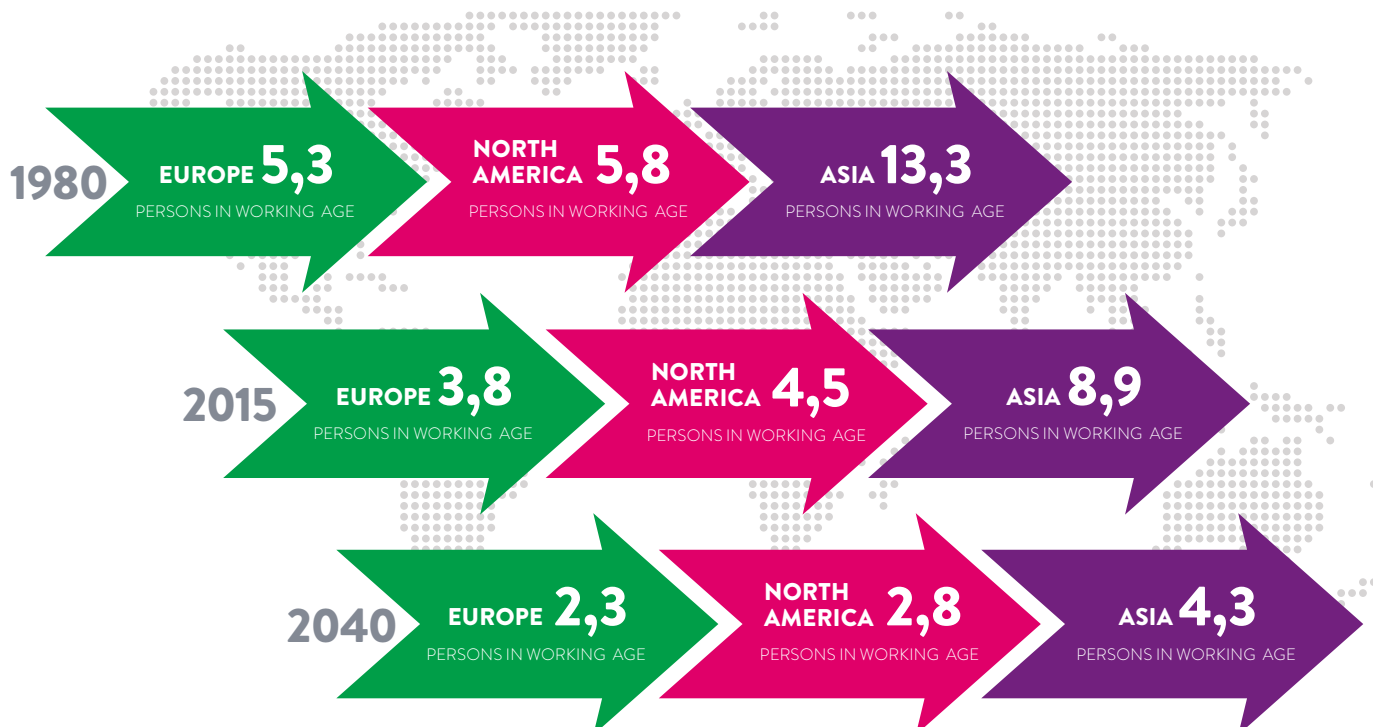
to increase to 27 per cent by 2040. As a result of the population movement between age groups, the old-age dependency ratio in the EU is projected to rise from 29.9 per cent in 2017 to 46.4 per cent by 2040.<sup>1</sup>

## Increased demand for long-term and chronic care

In addition, costly chronic care (the four main types of chronic illnesses are cardiovascular diseases, cancer, chronic respiratory diseases and diabetes<sup>2</sup>) is increasing throughout Europe. Self assessment studies show that one third of adults in EU member states report having a chronic disease or health problem. Almost one-quarter of the adult population are restricted in their daily lives because of a health problem. Estimates show that improved care for chronic diseases could reduce avoidable admissions and over 37 million bed days across EU countries.<sup>3</sup> Demand for long-term care is expected to rise due

## DECLINING OLD-AGE SUPPORT RATIO WORLDWIDE

In Europe there will be 2,3 persons in working age per senior in 2040, compared to 3,8 in 2015 and 5,3 in 1980. Fewer and fewer people in working age have to care for a growing group of seniors, some call this growing group a “silver tsunami”.



<sup>1</sup> [https://ec.europa.eu/eurostat/statistics-explained/index.php/Population\\_structure\\_and\\_ageing](https://ec.europa.eu/eurostat/statistics-explained/index.php/Population_structure_and_ageing)

<sup>2</sup> Connected Care in Europe, Bergh Insight, 2017

<sup>3</sup> [https://www.oecd-ilibrary.org/docserver/health\\_glance\\_eur-2018-en.pdf?expires=1547148840&id=id&accname=guest&checksum=03CDF502533FAF218BCB390B1227C857](https://www.oecd-ilibrary.org/docserver/health_glance_eur-2018-en.pdf?expires=1547148840&id=id&accname=guest&checksum=03CDF502533FAF218BCB390B1227C857)



to ageing populations and the increasing prevalence of long-term conditions such as dementia. However, the availability and affordability of long-term care services varies dramatically between European countries. Public spending on long-term care ranges from more than 4 per cent of GDP in the Netherlands to less than half a percent of GDP in countries such as Latvia and Poland.<sup>4</sup>

### **Rise in public spending**

Public spending on health and long-term care is steadily rising in EU member states and the trend is expected to continue. In 2017, health spending<sup>5</sup> accounted for 9.6 per cent of GDP in the EU as a whole, an increase of 0.8 per cent from 2008. Projections based on a number of assumptions of public spending are regularly carried out by the Ageing Working Group of the Economic Policy Committee (AWG). The main outcome of the 2018 projection is an increase in public spending on health of 0.9 percentage points of GDP in the EU by 2070. An ageing population means that health care requirements will increase in the future, along with an increasing demand for long-term care. Predicted higher demand

for long-term care has led the OECD and the European Commission to expect spending on long-term care to grow faster than spending on health care.<sup>6</sup>

### **Scarcity of home-care workers**

The availability of home-care workers is another potential challenge for Europe. Home-care is a labour-intensive sector and as the ratio between the working age population and the elderly population changes, there is a risk that there will not be enough qualified staff available. This challenge is also applicable to informal care providers such as relatives. Increasing mobility, urbanisation and the growing participation of women in the labour market is also producing a scarcity among informal care providers.<sup>7</sup>

### **Different views of what constitutes an informal care providers**

The perception of what an informal carer is differs from country to country. This means that identifying informal care providers can be a challenge, with cultural differ-

<sup>4</sup> <http://www.oecd.org/els/health-systems/long-term-care.htm>

<sup>5</sup> Expenditure on health measures the final consumption of health goods and services, as defined in the System of Health Accounts (OECD, Eurostat and WHO, 2017). This refers to current spending on medical services and goods, public health and prevention programmes, and administration irrespective of the type of financing arrangement.

<sup>6</sup> [https://ec.europa.eu/health/sites/health/files/state/docs/2018\\_healthatglance\\_rep\\_en.pdf](https://ec.europa.eu/health/sites/health/files/state/docs/2018_healthatglance_rep_en.pdf)

<sup>7</sup> [http://www.euro.who.int/...data/assets/pdf\\_file/0008/181799/e96757.pdf](http://www.euro.who.int/...data/assets/pdf_file/0008/181799/e96757.pdf)

ences leading to carers not necessarily self-identifying as care providers. For them, their 'helping' activities are a normal part of life and their duties to their family. Normative and cultural expectations in relation to caring and gender roles determine what people think of as informal care. How informal care is understood in the national context influences care assessments and whether the presence of an informal carer is taken into account when allocating formal services.

When it comes to the percentage of the population which provides informal care at least once a week as a proportion of the total population aged 18 or above, the variation between European countries is noteworthy. From Romania, with less than ten per cent, to Greece, where over 30 per cent self-report as informal care providers. The system in the Czech Republic has relied on residential care, which might partly explain the low numbers of informal carers. Sweden has a formalised long-term-care system, and it is therefore no surprise that it is at the lower end of the scale. Germany is situated at the other end of the scale at a rate at around 22 per cent. Informal care is a cornerstone in the long-term-care system in Germany.<sup>9</sup>

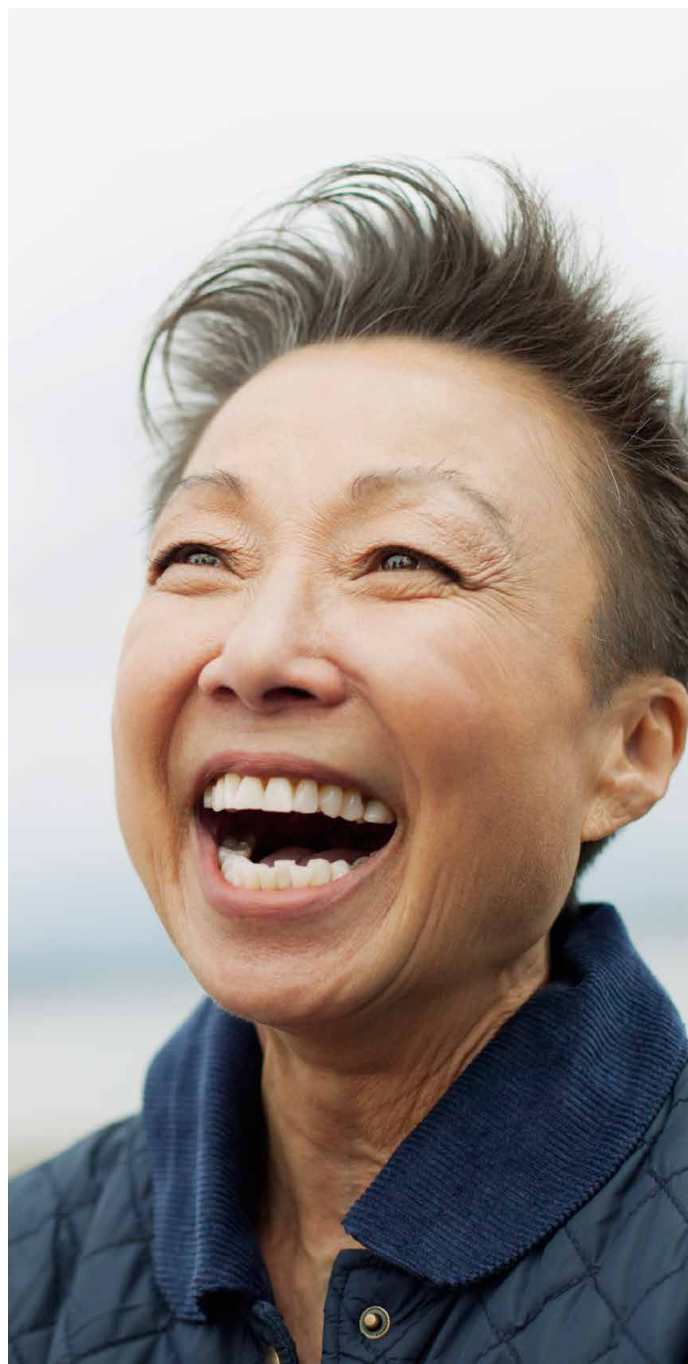
Italy is an example of a country with a strong tradition of family care. The majority of informal care for older generations within the family has traditionally been provided by women. However, between 1970 and 2014, the average rate of women's participation in the work force has increased from 25 per cent to 40 per cent. Whilst this is still one of the lowest participation rates in the OECD,<sup>10</sup> Italy has yet to accommodate for this growing equilibrium in the workforce and the subsequent increasing demand for social care.

## Fear of loss of human contact

A survey carried out by Careium showed that seniors have a major interest in technology, and that social media and chat apps are becoming increasingly popular, with many seniors positive towards digitalisation of health care and trust solutions for smart homes. However, new technology and digitalisation are not altogether positive in the eyes of European seniors. They perceive a number of uncertainties involved in the digitalisation of the healthcare sector. The reduction in human contact is by far the greatest concern among seniors, 65 per cent are worried about it. 41 per cent are concerned that it may lead to poorer quality healthcare. Far fewer, 16 per cent, are concerned about taking greater responsibility for their own healthcare, or that the new

technology is complex, 12 per cent. Neither are seniors particularly concerned about companies collecting data about their digital behaviour, 18 per cent.

These concerns must of course be taken seriously and addressed properly.



<sup>8</sup><https://ec.europa.eu/social/BlobServlet?docId=19681&langId=en>

<sup>9</sup><https://ec.europa.eu/social/BlobServlet?docId=19681&langId=en>

<sup>10</sup><http://www.cpa.org.uk/information/reviews/CPA-International-Case-Study-10-Carers-leave-in-Italy.pdf>



## 2. Different conditions in different European countries

The design of health care systems varies across Europe and arrangements for the elderly population are different in different countries. The structure of public health services is primarily set by the constitutional situation in each country, for example, whether the power and responsibilities of government are centralised or decentralised. The extent to which certain parts of the public health system are seen as lying within the scope of government also affects the health care system.

In Sweden, for example, municipalities are self-governing and responsible for provision of services such as nursing homes for the elderly and the mentally ill, as well as environmental health services. In the Netherlands, public health is deemed to be a shared responsibility between central and local governments. In Italy, local health authorities provide public health services related to health

protection and promotion. In Germany, the dominant form of public health service is local public health centres. Public health reporting, managing health promotion activities and the provision of prevention activities for vulnerable groups are their areas of responsibility.<sup>11</sup>

Countries such as Sweden and the Netherlands, with established formal arrangements for the elderly and the dependent population, allocated more than one quarter of all health spending to long-term care in 2016. In many Southern and Central European countries, which have more informal arrangements, expenditure on formal long-term care services accounts for a much smaller share of total spending.<sup>12</sup> However, as scarcity applies to both formal and informal care providers, public spending is also likely to rise in those countries with more informal arrangements.

<sup>11</sup> [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0009/383544/hp-series-50-eng.pdf?ua=1](http://www.euro.who.int/__data/assets/pdf_file/0009/383544/hp-series-50-eng.pdf?ua=1)

<sup>12</sup> [https://ec.europa.eu/health/sites/health/files/state/docs/2018\\_healthatglance\\_rep\\_en.pdf](https://ec.europa.eu/health/sites/health/files/state/docs/2018_healthatglance_rep_en.pdf)



### 3. Smart technology for seniors can help our society

The latest projections from the European Commission predict that public spending on long-term care is going to grow faster over the coming decades than corresponding spending on health care. The European Commission underlines the importance of finding more innovative and effective ways to respond to health care and long-term care needs.<sup>13</sup>

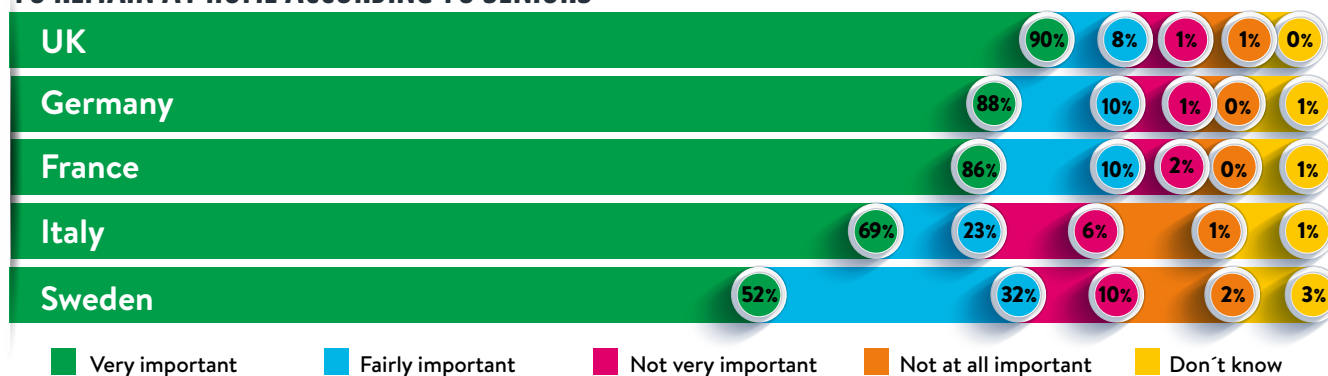
To be able to meet the increasing and changing needs effectively and with quality, the care system needs to be more efficient and patient-centred. Across Europe there are different possibilities for access to care, but new technology can enable seniors to obtain the same opportunities for care and safety irrespective of the country in which they live.

Research shows that there are several benefits associated with implementing technology enabled care. For example, the technology can make it easier to:

- Better coordinate and integrate different elements of care by improving communication and the sharing of information between professionals and with patients
- Support self-management through tools to provide feedback or check adherence to treatment
- Improve clinicians' decision-making and the quality of care through decision support systems
- Improve access to health care services for people with multimorbidity in rural and deprived areas<sup>14</sup>

Putting the advantages of technology enabled care together with the fact that large amounts of public spending goes into the health care sector, it is not hard to see that there is a potential for huge benefits for society. Below we present a few cases showing how technology solutions have enhanced the quality of care and life for care recipients across Europe.

#### HOWEVER IT IS VERY/FAIRLY IMPORTANT TO BE ABLE TO REMAIN AT HOME ACCORDING TO SENIORS



<sup>13</sup> [https://ec.europa.eu/health/sites/health/files/state/docs/2018\\_healthatglance\\_rep\\_en.pdf](https://ec.europa.eu/health/sites/health/files/state/docs/2018_healthatglance_rep_en.pdf)

<sup>14</sup> [http://www.euro.who.int/\\_data/assets/pdf\\_file/0007/337588/PB\\_25.pdf?ua=1](http://www.euro.who.int/_data/assets/pdf_file/0007/337588/PB_25.pdf?ua=1)

<sup>15</sup> [http://www.icare4eu.org/pdf/TeleRehabilitation\\_programme\\_Case%20Report.pdf](http://www.icare4eu.org/pdf/TeleRehabilitation_programme_Case%20Report.pdf)

# DIFFERENT CASES

## CASE: TELEREHABILITATION IN CYPRUS

An innovative approach to providing integrated care for people with multimorbidity in Cyprus is the TeleRehabilitation programme. It is a home-based rehabilitation service that applies advanced telemedicine to intensive care unit patients after they are discharged from hospital. These patients usually have multiple chronic conditions and need cardio-respiratory rehabilitation after being discharged.

Some patients living in remote areas in Cyprus have major difficulties in accessing health care and rehabilitation. It can be a question of both mobility-related limitations as well as

financial issues related to travelling long distances to rehabilitation centres.

TeleRehabilitation provides a “tower kiosk”, which is installed at patients’ homes, enabling interaction with a physiotherapist through audio-video. The physiotherapist can monitor the patient’s exercises, as well as vital signs from wearable devices, in real time. The programme improves adherence to rehabilitation programmes and improves the health of the patients, thus reducing readmissions to the intensive care unit. Evaluations show that it is cost-effective and leads to a high level of satisfaction among both users and health professionals.<sup>15</sup>

## CASE: SECURITY CAMERAS IN SWEDEN

The National Board of Health and Welfare in Sweden has studied how security cameras affect the lives of individuals and their relatives, how technology affects the staff’s work situation and what introduction of the technology means for municipalities. The study shows that security cameras are perceived positively by individuals and relatives, the staff’s work situation is improved, and the municipality makes efficiency gains.

Some of the key insights made by the National Board of Health and Welfare:

- The technology improves the care - the security cameras provide a greater measure of security and safety for the individual.

- The security cameras provide the possibility for a better workplace environment for the staff.
- The technology gives care recipients more independence.
- Security cameras deliver efficiency gains.

On the downside, there are shortcomings in managing consent. Not all municipalities in the study have clear procedures for how to handle consent, which is an important factor, not least when it comes to people with dementia. The government agency also noted a lack of consolidation in the organisation, with the technology not being fully implemented. Lack of staff training was another weakness in some municipalities.<sup>16</sup>

## CASE: GPS ALARMS IN ÖSTERSUND, SWEDEN

In Östersund in Sweden, the municipality has worked hard to make technical aids, such as night vision cameras and GPS alarms, a natural part of the everyday lives of the elderly. Östersund municipality is facing similar challenges to those faced by many municipalities across Europe as the number of senior citizens grows. Care requirements are increasing and it is not easy to find sufficient staff resources.

One aid that is highly valued by users in Östersund is the

GPS watch, with a positioning alarm and built-in speaker to communicate with the person using the watch. The Careium Secure® 480 GPS watch is helping more than 250 users in Östersund, and that number is growing rapidly. There are numerous examples of how it has made life easier for both users and relatives. With the municipality’s assistance, a couple holidaying in Spain were able to reset the home address in the watch belonging to the husband, who suffers from dementia, to the hotel resort. The wife was able to relax at all times knowing he was safe.

## CASE: SMARTCARE BY DORO

A survey conducted by Doro showed that 24 per cent of Europeans have some duty of care towards a senior and of them, 61 per cent are frequently worried, 33 per cent are too busy to call or visit as often as they would like and 49 per cent would like to provide more help but can’t because of the distance. The lack of close contact creates worry, stress and guilt for relatives.

SmartCare by Doro is a cloud-based technology care solution that can send real time information about the user’s well-being

to their worried relatives. SmartCare by Doro connects sensors in the home to the cloud, so that relatives are automatically alerted if an accident occurs. For example, sensors can detect a fall or send a warning when the refrigerator hasn’t been opened in a long time. The system is self-calibrating to individual behaviour and can detect and auto alarm any accidents in real time. Whilst this is by no means a replacement for face-to-face care, at times when a relative or carer is called away from a senior’s residency, SmartCare becomes a solution best tailored for the needs of both parties. It provides relatives with peace of mind at times when there’s no alternative.

<sup>16</sup> <http://www.socialstyrelsen.se/Lists/Artikelkatalog/Attachments/21112/2018-11-3.pdf>

## 4. Next step - what needs to be done?

As demonstrated above, there are several examples of how digital solutions and technology enabled care can help both the individual, for example through more independence, participation, safety and a higher quality of life, and society through factors such as cutting costs and easing the burden on personnel.

We have identified four important areas that need to be addressed if technology is to be part of the solution to the challenges facing our society:

1. The chain of care
2. Technophobia
3. Expansion of broadband
4. Individual gains

### A changed chain of care demands that legislation is adapted

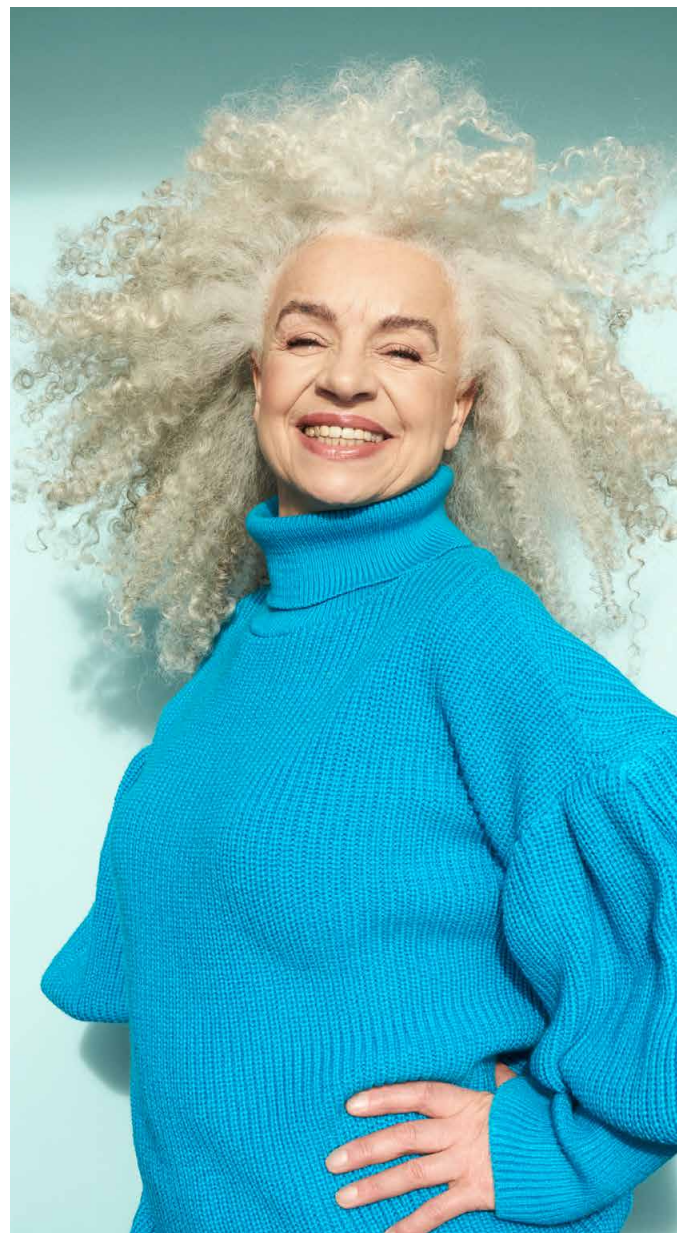
The declining ratio between the working age population and the elderly population makes just hiring more staff an impossible equation – there will simply not be enough people to employ. We must find ways to do more for less. One area to look at more closely is the chain of care. Relying solely on care staff might not be a sustainable chain of care in the future. A change that involves the relatives more could take some of the pressure off an already strained system. However, it doesn't have to stop at relatives. Some of us might be willing to help a friend or a neighbour. One way forward might be different types of alarm systems that can alert relatives, but also friends and neighbours, for example.

Response by Doro is a service that could facilitate a change in the chain of care. It has been developed to give seniors and their relatives' peace of mind and security in their everyday lives. Pushing a button on a mobile phone sends an alarm to the relative. If they are not able to answer, the alarm is automatically forwarded to one of Careium's alarm centres. This is one way to keep some of the pressure off the public system. At the same time, and of the utmost importance, the senior can live life independently but with a reassuring feeling of safety.

However, it is not the technology itself that is setting obstacles to development, instead it is factors such as values, the management model, regulations, legislation and organisational inertia. Regulations might mean that it is not possible for you to get a call if your neighbour needs help. The technology has no limits, but legislation in different countries, regions and municipalities does.

### Technophobia requires firm leadership to change

Another obstacle to implementing new technology identified in several studies is technophobia among the staff in elderly care and health care. In general, up to 80 per cent experience change as a threat and only 20 per cent perceive change as an opportunity. Employees do not always see change as an improvement, but rather, based on their own situation, as a deterioration and that decisions are not made with their best interests at heart. In order to be able to create a change and more effectively implement technological solutions, the staff have to be motivated, they have to get the opportunity to participate and to understand the benefits, which is a leadership task.<sup>17</sup>



<sup>17</sup> [https://www.iffs.se/media/22074/bortom-it\\_low.pdf](https://www.iffs.se/media/22074/bortom-it_low.pdf)



## Broadband expansion is vital

Innovative technology will play a key role in the future of care. Technology such as artificial intelligence, robotics, machine learning, cloud computing, IoT, sensor technology and voice recognition are some examples. Access to the Internet is key to be able to offer digital care throughout Europe. Internet penetration varies across Europe and within each country due to factors such as age, socioeconomic group and rural living. The European Commission has noted that, for example, the use of Electronic Medical Records and ePrescribing is growing across EU countries, and growing numbers of EU residents are using the internet to obtain health information and access health services.<sup>18</sup>

Continued broadband expansion in all of Europe is vital for more equal access to digital care solutions.

## The positive effects for the individual needs to be kept in mind

In all of this it is easy to forget the people who really matter, patients and users. It is their lives that are improved and made easier thanks to new technology.

A thorough survey conducted by the Swedish Agency for Health Technology Assessment and Assessment of Social Services (SBU) shows that it is scientifically proven that digital tools can have a positive effect on loneliness, social isolation, social interaction or social support, participation, physical health as well as security and self-esteem or empowerment.<sup>19</sup>

A survey conducted by Doro in 2018 shows that maintaining their independence is high on seniors' agendas, nine out of ten seniors say it is important that they are able to continue living at home for as long as possible and one-fifth of seniors feel insecure in their own homes. As pointed out in SBU's survey, digital tools can empower the elderly and make them feel more secure. This is also confirmed by figures from Doro, with six out of ten stating that technology enabled care makes them feel more secure at home, and as many as seven out of ten trusting the support provided by solutions for smart homes.

Success in addressing these four areas - the chain of care, technophobia, broadband expansion and individual gains - will take us one step closer to a long-term solution to the challenges we are facing with an ageing population. Technology has an important and vital role to play in the coming period. Technology enabled care has the capacity to provide cost-effective solutions at a time when the demands on health and social care are continuing to increase. It will benefit both society and individuals and enhance the well-being of people throughout Europe. One key to success is collaboration, the challenges are just too great for anyone to face alone. When the public sector, the private sector and other stakeholders come together, the result is often innovative measures. The silver tsunami is upon us and tech is a way to tackle it.

<sup>18</sup> [https://ec.europa.eu/health/sites/health/files/state/docs/2018\\_healthatglance\\_rep\\_en.pdf](https://ec.europa.eu/health/sites/health/files/state/docs/2018_healthatglance_rep_en.pdf)

<sup>19</sup> [https://www.sbu.se/contentassets/57e13f4fe3be44f9a55fe16667f8a8d9/valfardsteknik\\_digitala\\_verktyg\\_som\\_social\\_stimulans\\_for\\_aldre\\_personer\\_med\\_eller\\_vid\\_risk\\_for\\_psykisk\\_ohalsa.pdf](https://www.sbu.se/contentassets/57e13f4fe3be44f9a55fe16667f8a8d9/valfardsteknik_digitala_verktyg_som_social_stimulans_for_aldre_personer_med_eller_vid_risk_for_psykisk_ohalsa.pdf)