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## Glossary

| Acronym    | Meaning                                                                   |
|------------|---------------------------------------------------------------------------|
| ADL        | Activity of Daily Living                                                  |
| AR         | Augmented Reality                                                         |
| EIPonAHA   | European Innovation Partnership on Active and Healthy Ageing              |
| JA-CHRODIS | Joint Action on Chronic Diseases and Healthy Ageing Across the Life Cycle |
| MCI        | Mild Cognitive Impairment                                                 |

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## 1. Introduction

### 1.1. Objective of task 2.3

The objective of task 2.3 *Market and Economic Stakeholder Analysis* is to determine the market size for CoME and to make a study of the applications and projects that could compete with it.

Results from this task are materialized in this document that aims to serve as basis to ensure the successful delivery of CoME in the market, as a product that creates and increases value for all involved stakeholders.

### 1.2. Structure of the document

The content is structured in the following sections:

- Section 2 **CoME Purpose**. This section analyses the mission, key technological innovations and service model of CoME with the aim of setting the basis for the description of its market in the coming sections.
- Section 3 **CoME Market Overview**. This section analyses the current domains and segments in e-health in order to describe those where CoME fits.
- Section 4 **CoME Target Users**. This section defines the group of users towards which CoME has decided to aim its marketing efforts and that will determine the success of the project in the marketplace. This target market is based on the actors of the Use Cases defined in D2.3 Use Case Analysis.
- Section 5. **Trends and Market Size for CoME**. This section analyses the trends that influence the market size of CoME.
- Section 6. **Competitive Environment**. This section analyses the main competitors of CoME as well as the functionalities that they present against CoME.
- Section 7. **CoME Potential Positioning**. This section analyses the positioning of CoME against users' needs and competitors defined in the previous section.
- Section 8. **Conclusions**. This section gathers the main conclusions extracted from this market analysis and that will serve as input for the business model.

## 2. CoME Purpose

### 2.1. Mission

The CoME project aims to facilitate the **self-management of MCI worried seniors**, encouraging them to have a **healthier lifestyle** and helping them in the **prevention/detection of MCI risks**. To reach these aims, the application operates through: the establishment of personalized health goals for seniors, the use of wearable devices for continuous monitoring of their ADLs, the performance of self-assessment tests and the participation in brain games.

Results from above actions are periodically supervised by formal caregivers. They track and check these results and provide reports and recommendations to seniors in order to act upon

the behavioural risks that influence the development of MCI, slowing down in this way the appearance of the disease.

Although the service mainly focuses on seniors, it also addresses other actors involved in the care process:

- ***Informal caregivers.*** CoME enables informal caregivers to know better current senior's health status (if allowed by the senior). In addition, the CoME platform provides a comprehensive and centralized online community of caregivers. Throughout this community, informal caregivers can access useful guidelines on good practice and tutorials as well as share experiences through AR devices. Finally, this platform allows informal caregivers to contact each other for occasional care tasks through a match-making search engine.
- ***Formal/Professional caregivers.*** The platform will provide them with a continuous flow of up-to-date information related to the senior's health status. After processing this information, the formal caregivers will provide health reports where activities to promote healthier lifestyle and slow down MCI will be gathered.

Being MCI prevention and detection the focus of the project, it was clear that the main target group for CoME should be people not yet diagnosed with MCI but worried. However, the **connection with MyGuardian**, enables also to cover MCI diagnosed people, thanks to the functionalities it provides for the care of this group.

Thus, the union of both of them makes **CoME** able to **complete the circle around MCI** disease, i.e. from the initial stage, prevention and detection, to management of the disease in case of detection. However, CoME will mainly focus on **healthy seniors that are worried about cognitive impairment because of memory losses, deterioration of cognitive capabilities, etc.**

## 2.2. Key Technological Innovations

CoME provides an **innovative person-centred care approach** for the case of MCI, covering both prevention, early detection and management. This approach is always framed by an **independent living environment** that try to ensure seniors' independency for as long as possible, allowing them to take their own health decisions, continually supported by professional and formal caregivers.

The person-centred care feature in CoME is ensured through the use of ICT technologies, such as:

- **Wearable devices** and other pervasive systems and sensors that monitor imperative seniors' data (e.g., bio-signals) and context (e.g. activity) and allow them to self-manage their own health and share this data with caregivers in an effective way;
- **User Agent (avatar)** that allows an integrated understanding of senior's world, the whole person and emotional status; and that guide them along the whole healthier lifestyle approach and the platform;
- **Automatic mining of seniors' data** - from wearable devices, self-reports, mood status and goals - by the **user state assessment module**, that is used to assist formal caregivers and professionals in decision-making, i.e. when determining if the senior is at risk of MCI disease;

- **Match-making search engine** that allows the search of the most appropriate occasional informal caregiver for each senior;
- **AR devices**, that allow the recording and displaying care videos in a hands-free way;
- The **integration with MyGuardian** that allows seniors to have a close care network around which managing his/her care – this feature is especially important in the case of seniors already diagnosed with mild cognitive impairment.

### 2.3. Service Model

CoME project aims to develop a **web and mobile application** that foster the **health self-management of cognitive-worried seniors** and helps them to **slow down** or **detect** the appearance of **MCI disease**. In the case of already **MCI-diagnosed seniors**, CoME provides seniors a tool to **manage** their **disease** thanks to the integration with MyGuardian.

The following scenarios, extracted from the D2.3 Use Cases Analysis are covered by the service model of CoME:

- **Health Monitoring** - Senior who feels good, family caregiver who wants to monitor the status of the senior and training him in healthier lifestyle approaches and formal caregiver who provides health reports and recommendations;
- **Physical Exercise Monitoring** – Senior establishes different physical exercise and health goals and both a family caregiver and a formal caregiver determine their effort and degree of achievement through the use of monitoring tools;
- **Health Coaching** – formal caregiver checks the emotional status and self-reports of the senior and customizes his/her goals to encourage him/her;
- **MCI detection** – an alert of MCI risk for a senior is shown in the dashboard of the formal caregiver as results of the processing of the user state assessment module. He/she checks the information from the senior (self-reports, data coming from monitoring, mood status and results from brain training games) and verifies that effectively the senior is showing MCI risks so an alert is sent to his/her family caregiver;
- **MCI management** – MCI management by transforming goals in CoME to reminders and the support of the close care network in MG.
- **Care Task Distribution** – a caregiver is selected from the caregivers' community to help in occasional help tasks;
- **Close Caregiver** – a senior is able to receive feedback and advice from his/her trusted formal caregiver thanks to close circle of care provided by MyGuardian.

This set of use cases reveals the possible application of CoME application and lays the foundations of the aims and purpose of CoME.

## 3. CoME: Market Overview

Once analysed both the mission and service model of CoME, next steps will consist on drawing the lines that will define the market of CoME.

If we focus on European public health expenditure, although in 1900 was on average 5.9% of GDP, then it rose to 10% in 2016(1) and the projections show that expenditure may continue

growing due to the ageing population and other socio-economic and cultural factors. In addition, the long term care expenditure projection would on average almost double over the projection period. Concurrently, the working age contingent is expected to fall dramatically from 61% to 51% of the total population while the share of the elderly (+65) and very old (+80) population in the EU is projected to grow respectively from 13.8% in 2016 to 16.9% in 2060 and from 5.4% in 2016 to 12.1% in 2060(2).

Among the socio-economic factors that may make public health expenditure to rise is the incidence of chronic diseases, as dementia. In 2016, there were an estimated 9.9 million people living with dementia in EU countries and this percentage is expected to rise to nearly 15 million in 2035, with the oldest people (aged over 90) accounting for an increasing share(3). This factor joined to the increased pressure on public budgets, the steady decline in the number of health personnel and the growing demands and expectations from citizens for higher quality services and social care put important challenges in the European healthcare sector(4).

This situation highlights the importance of structural reforms in the health sector to ensure the sustainability of health systems and secure the access to these services for all citizens. Some of the approaches currently followed are:

- **Healthier lifestyles** and **preventive interventions** that could reduce the risk of age-specific chronic diseases. If such efforts are successful, the rise in prevalence may be less dramatic than the ones that numbers suggest(1) and thus, avoid the public/private spending that these diseases require.
- **ICT technologies** that are playing an increasingly larger role in healthcare as they enable integrated person-centred care with less medical errors, costs and resources. These technologies allow care approaches with more focus on **prevention, early detection** and **self-management of disease** in the own home and community environment. They also empower people to manage their own health lifestyle choices and disease so they are assessed as fundamental to enable ageing population to live a more independent and autonomous life, and to sustain the quality of public health and care.

These features lay the foundations of development of the **eHealth market**, an item on the agenda of important International Organizations, such as the European Commission, the International Telecommunication Union (ITU) and the World Health Organization (WHO), as committed solution for the above mentioned problems.

Thus, the eHealth has become a rising market in Europe that, according to (5), amounted 2,350m€ in 2017 and that it is expected to show an annual growth rate (CAGR 2017-2020) of 17.2% resulting in a market volume of 3,800m€ in 2020 as consequence of: the adoption and advancement in ICT, growing number of mobile and internet users and miniaturization and declining costs of sensors and other devices.

This **market** covers different domains such as Electronic Health Records (EHR), tele-health, mobile health (m-health) and health related use of e-learning, social media, health analytics and “Big Data”(6). As result of these domains, different **market segments** for **eHealth market** arise:

| Market Segment                                                | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Clinical Information System (CIS)</b>                      | <p>(a) Specialised <b>tools for health professionals within healthcare institutions</b> (e.g. hospitals). Examples are radiology information systems, nursing information systems, medical imaging, computer-assisted diagnosis, surgery training and planning systems;</p> <p>(b) <b>Tools for primary care and/or for outside care institutions</b>, such as general practitioner (GP) and pharmacy information systems.</p>                                                                                                                                                                                     |
| <b>Secondary Usage Non-Clinical Systems (SUNCS)</b>           | <p>(a) Systems for <b>health education and health promotion of patients/citizens</b>, such as health portals or online health information services;</p> <p>(b) Specialised systems for <b>researchers and public health data collection and analysis</b>, such as biostatistical programs for infectious diseases, drug development, and outcomes analysis;</p> <p>(c) Support systems such as <b>supply chain management, scheduling systems, billing systems, administrative and management systems</b>, which support clinical processes but are not used directly by patients or healthcare professionals.</p> |
| <b>Telemedicine</b>                                           | <b>Personalized health systems and services</b> , such as disease management services, remote patient monitoring (e.g. at home), teleconsultation, telecare, telemedicine and teleradiology.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Integrated Health Clinical Information Network (IHCIN)</b> | Distributed <b>electronic health record systems</b> and associated services, such as e-prescriptions or e-referrals.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

**Table 1 Market Segments in e-Health**

Because of the different functionalities provided by **CoME** (monitoring, treatment, diagnosis, health education, wellness and prevention), that address all actors in the care process, two of these market segments are expected to be reached: **Secondary Usage Non-Clinical Systems (SUNCS)** and **Telemedicine**.

- **Secondary Usage Non-Clinical Systems.** Within this domain, CoME aims to develop a tool that **promotes health education and promotion** both for caregivers and seniors. The former will be part of a comprehensive and centralized online community of caregivers where they will be able to share care experiences and access to useful guidelines on good practice and tutorials for health promotion and treatment of seniors. The latter will receive continuous feedback as well as encouragement to take healthier lifestyle choices that prevent or slow down the appearance of cognitive disease.
- **Telemedicine.** Within this market, two segments are covered by CoME:
  - o **Telehealth.** Telehealth is the remote exchange of data between people at home and formal/informal caregivers to assist in prevention, diagnosis and treatment of seniors through monitoring. This is covered in CoME thanks to the integration of wearable devices that measure and monitor different behaviours of the senior as well as the clinical review performed by remote professionals using wireless technologies.

- **Telecare.** Telecare is support and assistance provided at distance to individuals, their families and carers with the aim of giving them security and peace of mind, through ICT services. It is the continuous, automatic and remote monitoring of users by means of sensors or other tools to enable them to continue living in their own home, while minimising risk situations. This is covered thanks to the integration of MyGuardian into CoME that provides a social networking tool getting the senior and his/her caregivers in touch with each other, improving collaboration among them and providing the needed care for the senior. It also offers a support phone number.

### 3.1. *Health Promotion and Education Market*

Seniors today are well aware that performing healthier lifestyle approaches and be active is key to stay in a good health status for as long as possible.

Also, some familiar and informal caregivers are quite interested in receiving training and support by professional caregivers about how to take care of people around them suffering from certain diseases.

As consequence of this and because of the demographic challenges that European population will face in the coming years, an economic case for investing in health promotion, disease prevention and education is arising stronger than ever. This, joined to the strategy of Internet of Things (IoT) and the latest advancements in technology (hardware and software) are making possible the development of ICT tools that encourage seniors to promote their health and train familiar and informal caregivers to deliver more accurate and effective care.

The market is mainly focused on: (1) the development of apps, available in Google Play<sup>1</sup> or iTunes<sup>2</sup>, and provided under a freemium or paid modality and (2) e-learning approaches which are investing in healthcare training and education strategies both for professionals who want to continue education, informal caregivers who want to be more trained and care organizations to ensure that their work stays compliant with industry regulations.

Thus, as can be extracted from the previous paragraph, the Health Education and Promotion Market under ICT is heavily fragmented and composed by different market segments based on:

- Occupation – formal, informal or family of a senior or the senior;
- Age – prevention for children, teenagers, adults or seniors;
- Country – health promotion and education needs vary between countries depending on the legislative, financial, organizational, managerial and educational potentials necessary for health promotion;
- Type of health promotion intervention – tobacco and alcohol prevention, physical activity, healthy diets, mental health, etc.
- Degree of learning– seniors and informal caregiver who only want to get some feedback for the adoption of healthier habits and people who demands more specialized education and training, at official certification level.

The health promotion and education campaigns, research studies and pathways that European policy makers will perform in the coming years will set the trends and shifts that this market will

<sup>1</sup> <https://play.google.com/store?hl=en>

<sup>2</sup> <https://www.apple.com/itunes/>

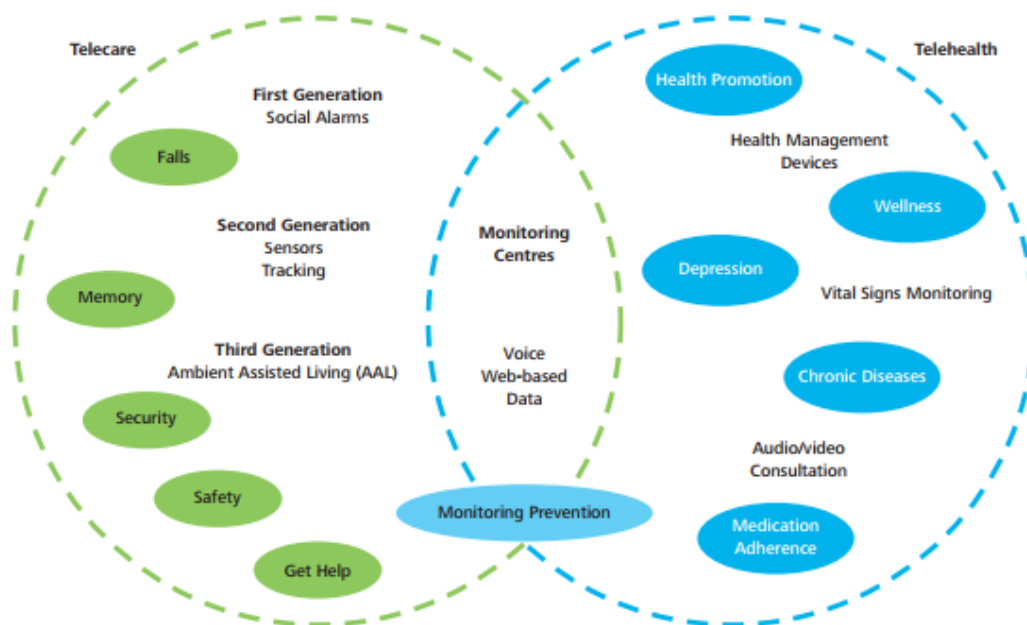


suffer in the future. For the moment, approaches such as the European call for research [H2020-SMEInst-2016-2017](#), [H2020-SC1-2016-2017](#) and [H2020-ICT-2016-2017](#) and actions and initiatives derived from the EU joint actions such as [EIPonAHA](#) and [JA-CHRODIS](#) will determine the direction of this market in coming years.

### 3.2. *Telehealth and Telecare market.*

The home is where much of the medical care takes place. It is no longer confined to clinicians in the clinic or hospital. The ubiquity of digital communications means that many doctor-patient contacts are now virtual enabling them to deliver care to the patient in their home.

A lot of web-based portals that enable video interactions between patient and clinician are now supported by a wide array of web-integrated wireless monitoring devices. This action is empowered by the use of wearable devices that allows capturing and tracking how people live and manage their condition. The information coming from multiple seamlessly devices is used to create a comprehensive view of the individual and thus transforming telecare and telehealth.

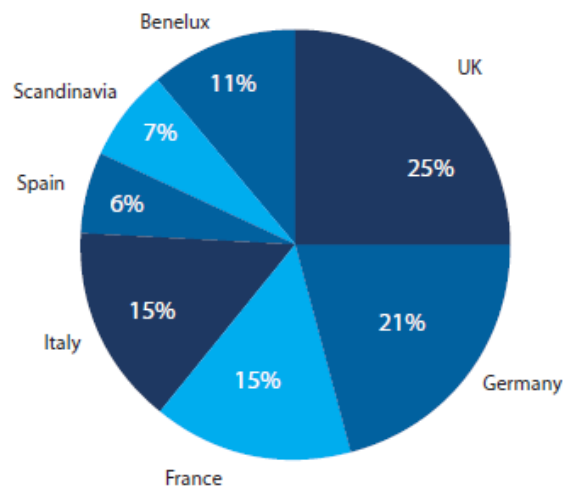


**Figure 1 The broad spectrum of telecare and telehealth uses and services (7)**

The European market in particular is growing fast, with governments investing heavily in the infrastructure required to tackle increasing population needs. However, this market is highly fragmented and relatively small, and with social, institutional, economic and technical barriers to overcome, its growth potential is unpredictable. From a provider perspective, there are blurred frontiers between health and social care; and from a user perspective, there are problems distinguishing types of user as well as overlap between health, social care and wellness.

The European telehealthcare market recorded revenues of approximately 640 million in 2010, that has risen to 1.17 billion € in 2017 with a growth of 9% per year among 2010 and 2017. The telehealthcare UK market was 292 million of € in 2017 with a growth of 8.5% among 2016 and 2017(8). Overall, the market is expected to grow by 12.2 percent per year (CAGR) from 2018 to 2020, compared with 9 percent between 2010 and 2017. Even with a conservative estimate of future use, the European market for telecare and telehealth equipment is likely to be worth billions of €s.

The European market in 2017 was dominated by the UK and Germany with 25 percent and 21 percent market share respectively. Other prominent markets include France, Italy, Benelux (comprising Belgium, Luxemburg and the Netherlands), Scandinavia and Spain(9).



**Figure 2. European telecare and telehealth market share. Source: Frost & Sullivan(9).**

### 3.2.1. Telecare market overview

Telecare offers individuals, their families and carers, security and peace of mind, through services that enable people to stay independent in their own home for as long as possible.

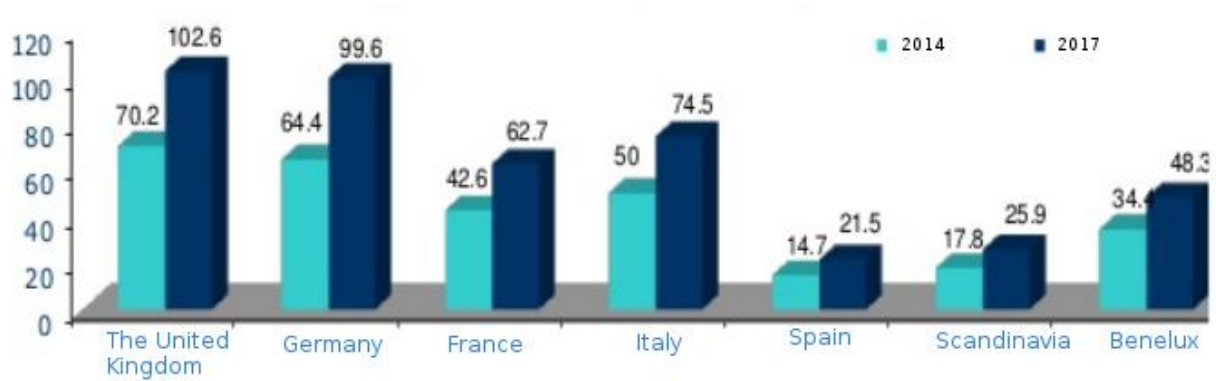
One of the simplest forms of telecare is a personal alarm. A base unit will receive a digital signal from a pendant and is automatically linked to a support centre – like for the support phone number in MyGuardian.

Currently, the telecare market is most mature for first-generation telecare (social alarms), which are widely used compared to second-generation equipment like tracking sensors and third generation equipment like ambient assisted living devices.

Indeed, first generation telecare is mainstreamed in the majority of developed countries, although levels of penetration vary from below one percent to more than 18 percent of over 65s. Second and third generation telecare have yet to be mainstreamed in any country. Europe is the largest market for telecare due to rising geriatric population, increased adoption of advanced telecare solutions, escalating disposable income and government initiatives to develop innovative telecare solutions which are expected to boost the growth of Europe telecare market in the near future. This market revenue 735 million € in 2017 in Europe, with UK as leading nation in this respect with a total market of approximately 190 million € in 2017, i.e. almost 25 per cent of the European market (10).

### 3.2.2. Telehealth market overview

At present, telehealth is much less mainstreamed, with the USA and Japan considered the most advanced. There have been some large-scale trials in Europe and some local trials in other countries. The estimated revenues on telehealth in Europe in 2017 were 435 million of €, being 102.6 million of them achieved in the UK. These revenues, that face a CAGR of 14% per year among 2014 and 2017, are expected to rise in the following years as consequence of the reforms and actions planned to overcome the current barriers in the market(11)



**Figure 3 Regional Market Revenue (2014 and 2017) – Source: Cambridge Healthtech Institute in collaboration with Frost and Sullivan.**

### 3.3. Opportunities: building on market potential

The current high wave of technology has brought with it a huge range of possibilities for innovation in health. In many countries, e-Health is revolutionizing health care delivery and the health information needed to support it. People are more empowered because they have access to information and advice. This is improving the quality of health care and also challenging the traditional roles of health care professionals.”

As previously mentioned, the eHealth is a quite rising market with €2,350m in 2017 and with an estimated revenue of €3,783m in 2020 as consequence of the rapid growing of digital technologies (mobile applications, devices) and the creation of new business because of the convergence between wireless communication technologies and healthcare devices. Redesigning the delivery of care and the “silver economy” are highly promising markets.

While most industries has embraced the idea that customer comes first, eHealth has lagged far behind. No more, the recognitions has finally dawned on healthcare providers that meeting the challenges of today rests on their ability to put the customer at the centre of everything they do, changing from a paternalistic approach to a patient-centred approach that will recast the deal between patient, providers and payers. This personalized “**patient-centred**” approach will benefit citizens, patients, health and care professionals but also health organisations and public authorities as consequence of the more targeted, effective and efficient delivery of care that will help to **reduce errors**, as well as **hospitalization days**. It facilitates socio-economic inclusion and equality, quality of life and patient empowerment through greater transparency, access to services and information ant the use of social media for health.

Such **benefits** have been demonstrated when using telemedicine for **managing chronic conditions**, **mental health** and **health promotion**. Similar benefits have been identified for technology assisted therapies, which can effectively complement routine clinical care and improve the **cost-efficiency** of treatments as well as when using interoperable electronics

In countries under adjustment programmes, eHealth has gained significant importance as a means to improve the **efficiency** and **effectiveness** of systems and their control, and the reduction of expenditures. Finally, facilitation of eHealth is one of the concrete actions to promote free movement of EU citizens within the EU.

### 3.4. Barriers

Despite the previous opportunities and benefits, major barriers hamper the wider uptake of eHealth. These barriers fall mainly into the side of governments and policy makers from who is expected to take action on e-health and provide clear governance structures to oversee implementation, legislation, clinical registries, interoperability, legal protection and other issues such as sustainable funding, reimbursement and defined e-health standards.

Some of the consequences of the previously mentioned are:

- **lack of awareness of, and confidence in eHealth** solutions among patients, citizens and healthcare professionals;
- **lack of interoperability** between eHealth solutions;
- **limited large-scale evidence of the cost-effectiveness** of eHealth tools and services;
- **lack of legal clarity** for health and wellbeing mobile applications **and** the lack of **transparency** regarding utilization of data collected by such applications;
- inadequate or **fragmented legal frameworks** including the lack of reimbursement schemes for eHealth services;
- **regional differences in accessing ICT services**, limited access in deprived areas.

In addition to the above consequences, eHealth technologies have also to fight against **low user acceptance levels** as results of the lack of focus on users' requirements, during design and implementation phases. In order to tackle these low user acceptance levels in CoME, an initial work towards understanding and quantifying the care needs of users has been performed. This work has been based on observations and semi-structured interviews in primary health centres, i.e. the Hospital Universitari de Santa Maria in Spain and different Hungarian local elderly homes like the Pálos Károly Social Service Center and the Retired Federation of Vas County.

## 4. CoME: Target Users

After a brief overview of the overall market for CoME, the target users for this platform will be presented and defined. Once these target users are established, the size of the CoME market for each of these users will be analysed.

### 4.1. Targeted Groups

The **main target group** of CoME is composed by **seniors over 65 year old that are worried about their cognitive status** to whom it provides a decision-making tool to allow seniors to self-manage their own-health and prevent/detect possible risks of MCI disease. However, not only this group is covered but also seniors who **have been already diagnosed with MCI**, thanks to the integration with MyGuardian.

A direct consequence of the accumulating demand on elderly care services is a strenuous work environment for family and informal caregivers that makes that they are increasingly suffering more situations of high workload, stress and lack of knowledge for managing some crisis arising in the senior.

Based on the above mentioned, family and **informal caregivers** surrounding the senior are considered also as target group, mainly because of the important role they play in the purchase

decision of CoME – being main triggers in this decision or being themselves the buyers. Even, in the case of seniors already diagnosed with MCI, they become main target group – i.e. the cognitive deficiencies that these seniors have prevent them to purchase CoME by themselves.

Also, the limited number of resources available to cover the previously mentioned demand on elderly care services, affects the quality of care that **professionals** and **formal caregivers** currently deliver. Professionals frequently suffer that they waste temporal and operational resources when having to arrange face-to-face meeting with patients. This situation makes that they increasingly foster the use of technologies that allow interacting with individual patients irrespective of their geographical location and that help them to deliver a more efficient patient-centred care.

The previous feeling can be extended from formal caregivers to the whole scenario of care provision, i.e. **healthcare and social providers and financing organizations** such as insurance companies, health organisations, medical networks, etc. that can take up CoME and deploy it throughout their customer/patient base thanks to the advantages that its senior-centered approach offers, i.e. gains in efficiency, financial savings, decision-making, quality of care and patient safety.

Seniors, formal and informal caregivers will be involved in each of the stages of CoME and commercial partners will use their channels to establish contact with **healthcare and social providers and financing organizations** around Europe in different phases that will be explained in D5.3. Exploitation Strategy. The participation of all of them is needed in order to develop a useful and realistic application that covers user needs and enjoys good acceptance among them.

## 5. Trends and market size for CoME

### 5.1. Trends for healthy or non-diagnosed with MCI seniors.

Based on the previous analysis, the market size of seniors in CoME will be mainly driven by factors such as: the level of digitalization, i.e. the level of penetration of smartphone/tablets as well as the internet usage, and the self-perceived health status.

#### 5.1.1. Level of skills to use CoME.

Some of the main barriers to be overcome by seniors is the lack of skills they need to access online services. This is one of the trends that could drive a low user acceptance of CoME in the market. Although the population with needed digital, computer and internet skills is rising each year, the percentage of seniors with adequate skills to use CoME is still too low(12):

- **Individuals' level of digital skills:** only 24% of the European28 population aged 65 years and older has enough level of digital skills to use CoME (13).
- **Individuals' level of computer skills:** only 24% of the European28 population aged 65 years and older has enough computer skills to use a smartphone, upload a file or use the mouse (14).
- **Individuals' level of internet skills:** only 37% of the European28 population aged 65 years and older has enough internet skills to use a search engine to find information, send an email or post messages in chat rooms (15).

In order to play safe, it will be determined that **from the European28 population older than 65 years, only 24% have enough skills to use CoME** and thus, are possible to become CoME users.

### 5.1.2. Level of Internet Connection and acceptance of wearable devices

According to (16), **30% of seniors older than 65 years old have internet and access every day**. From them, the most common device to access is a mobile device such a smartphone or tablet (40%) followed by laptops (27%) and desktop computers (24%)(17); the most common place to connect is at home (37%).

As can be shown in the table below, the penetration of wearable is rapidly increasing across the Western world as consequence of the continuous miniaturisation of electronics, advances in sensor technology, computing power and connectivity.

| Wearable Device Penetration in Selected Countries<br>March to December 2016<br>% of population |              |              |              |              |
|------------------------------------------------------------------------------------------------|--------------|--------------|--------------|--------------|
|                                                                                                | Mar. 2016    | Jun. 2016    | Sep. 2016    | Dec. 2016    |
| <b>US</b>                                                                                      | <b>12.2%</b> | <b>13.8%</b> | <b>14.8%</b> | <b>15.6%</b> |
| <b>Australia</b>                                                                               | <b>12.7%</b> | <b>13.6%</b> | <b>14.8%</b> | <b>16.3%</b> |
| <b>EU - 4:</b>                                                                                 | <b>6.6%</b>  | <b>7.8%</b>  | <b>8.5%</b>  | <b>9.2%</b>  |
| - UK                                                                                           | 7.9%         | 11.7%        | 12.2%        | 12.3%        |
| - Italy                                                                                        | 10.3%        | 10.1%        | 10.6%        | 11.3%        |
| - Germany                                                                                      | 5.4%         | 5.9%         | 6.7%         | 7.8%         |
| - France                                                                                       | 4.6%         | 5.1%         | 5.9%         | 6.8%         |

**Table 2. Wearable penetration in the world**

*Source: Kantar Worldpanel ComTech “Quarterly Wearables Report” as cited in press release, January 25, 2017*

However, the lack of awareness on the benefits that these devices have for seniors in health self-management or monitoring, makes that privacy concerns have still a higher weight and thus, they still have low **levels of acceptance (10%)** (18).

Following these percentages, it can be determined that the most meaningful and necessary condition to use CoME is having Internet connection and accessing the Internet every day. Although using wearable devices is also an essential condition for CoME, as extracted from user requirements, most seniors will not reject CoME because of the usage of wearable devices. Thus, it can be established that **30% of the European28 population older than 65 years have Internet connection** and thus, can use CoME.

### 5.1.3. Self-Perceived Health Status in older adults

Self-perceived health is a widely used indicator for health. It deals with the subjective assessment that a senior makes about his/her own health state and serves as an independent

predictor for morbidity, health services use and mortality and is often used as an indicator to compute healthy life expectancy.

According to (19), in the EU-28, **15.4% of the EU28 population aged 65 and older had in 2017 a bad self-perceived health status while a 41.9% had a fair self-perceive**. This percentage accounts the main customer segments for CoME because, as extracted from trials, only those users that were worried about their health were encouraged to use CoME while the state of plenitude that seniors with good self-perceived health status had, prevented them to be worried about their health status; event under the prevention frame, it was difficult to change their mind.

#### 5.1.4. Total Market Size for healthy or non-diagnosed with MCI seniors.

As the main goal of CoME is to offer a self-management, self-monitoring and self-reporting tool that allows seniors to adopt a healthier lifestyle through the adoption of preventive behaviours and detection of MCI risks, seniors with bad or fair self-perceived status are our specific group within the broad older adults group.

However, these seniors usually experiment some fears when using ICT tools. Because of this, the level of internet access as well as the computer skills of these seniors have been pointed out as the most meaningful features for this segment. Due to seniors who access daily through the internet are expected to have enough skills to use a web/mobile application like CoME and due to the existing relationship between daily internet usage and better health status, it can be determined that the more meaningful trend is the percentage of people over 65 years old that access daily to the Internet (**30% of the +65 EU28 population**)<sup>3</sup>, i.e. **35 million of users**.

#### 5.2. Market size for seniors MCI diagnosed

The prevalence of mild cognitive impairment (MCI) and dementia according to age remain still uncertain so several studies have been performed in this topic. Because of this, a study was carried out by Alexander and Perera(20), where extracted age-stratified estimations and meta-analyses of MCI and dementia prevalence were performed over different European studies published since 1995. As result of this study it was extracted that Europe has a **prevalence of MCI diagnosis in people older than 65 years** old comprised **between 2.48 and 14.9%** of the total +65 EU28 population.

In order to play safe, we will select the mean, i.e. **8.69% of the total +65 EU28 population**. Thus, it can be determined that the total market size for seniors already diagnosed with MCI and that use CoME because of its integration with MyGuardian will be **10.2 million of users**.

#### 5.3. Market Size for Informal Caregivers

The burden of caregiving for older people is quickly increasing around Europe as the European population ages and confronts age-related health conditions such as chronic diseases as well as declining cognitive acuity and mental health.

Current dynamics between caregiving and existing health systems demonstrate that there is currently a difficulty and lack of preparedness for informal caregivers to detect and respond

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<sup>3</sup> European population 65 years and older: 117,317,643 people older than 65 years old

effectively to health conditions derived from ageing population. This situation generates feelings of stress, resentment and helplessness in informal caregivers that, despite the personal sacrifices they perform, think that they are not doing enough because of the difficulty of monitoring the senior the whole day and the lack of knowledge. The above feeling combined with other factors such as work, family, etc. can be quite overwhelming for informal caregivers.

Taking into account the above mentioned, two trends will drive informal caregivers to join CoME: (1) the community of caregivers and/or the educational purposes it offers and (2) the possibility of monitoring their senior under care. Due to this, most seniors in CoME will have an informal caregiver related to him/her. Thus, it can be determined that the **market size for informal caregivers will be almost the same that for seniors**, being more emphasized this situation in the case of informal caregivers for seniors already diagnosed with MCI that, due to the lack of cognitive functions these seniors have, will become main actors in CoME. Thus, according to the previous reasoning, this means that around **45 million users** could be informal caregivers in CoME.

#### 5.4. Social and healthcare financing institutions and care providers.

High health care expenditures is making that social and healthcare financing institutions and care providers around the world are experimenting with new approaches to managing costs without detriment of patients' health. Under this framework, digital health care tools have been postulated as solutions to reduce costs and prompt widespread innovation in the healthcare delivery, promoting disease prevention and reducing the number of hospital admissions. Their potential advantages are clear: they offer better services to a larger community; leverage the advanced tracking and processing technology and devices already available and allow several parties to collaborate and provide better care.

However, the implementation of these tools is sometimes limited for the low level of digitalization in insurance and healthcare companies. Thus, although they have been slow to adopt digital channel for health prevention and care, over the next few years, 79% of current healthcare organizations and insurance companies, will grow in digital usage to become the dominant channel to interact with patients/customers (21). Due to, currently, Europe has around 15,000 hospitals(22) and 3,428 insurance companies (23), it can be determined that around **14,558 health care organizations** will constitute the market of CoME.

#### 5.5. Summary of the total market size for CoME

Based on the target users of CoME defined in section 4 and the analysis of the size of the CoME market for each of them performed in this section, the following table is shown with a summary of the results obtained for CoME in the EU28 market:

| Target Group                                | Market Size         |
|---------------------------------------------|---------------------|
| Seniors: worried seniors                    | 35 million of users |
| Seniors: seniors already diagnosed with MCI | 10 million of users |
| Informal Caregivers                         | 45 million users    |



|                                                                 |                      |
|-----------------------------------------------------------------|----------------------|
| Social and healthcare financing institutions and care providers | 14,558 organizations |
|-----------------------------------------------------------------|----------------------|

**Table 3. Market Size for CoME**

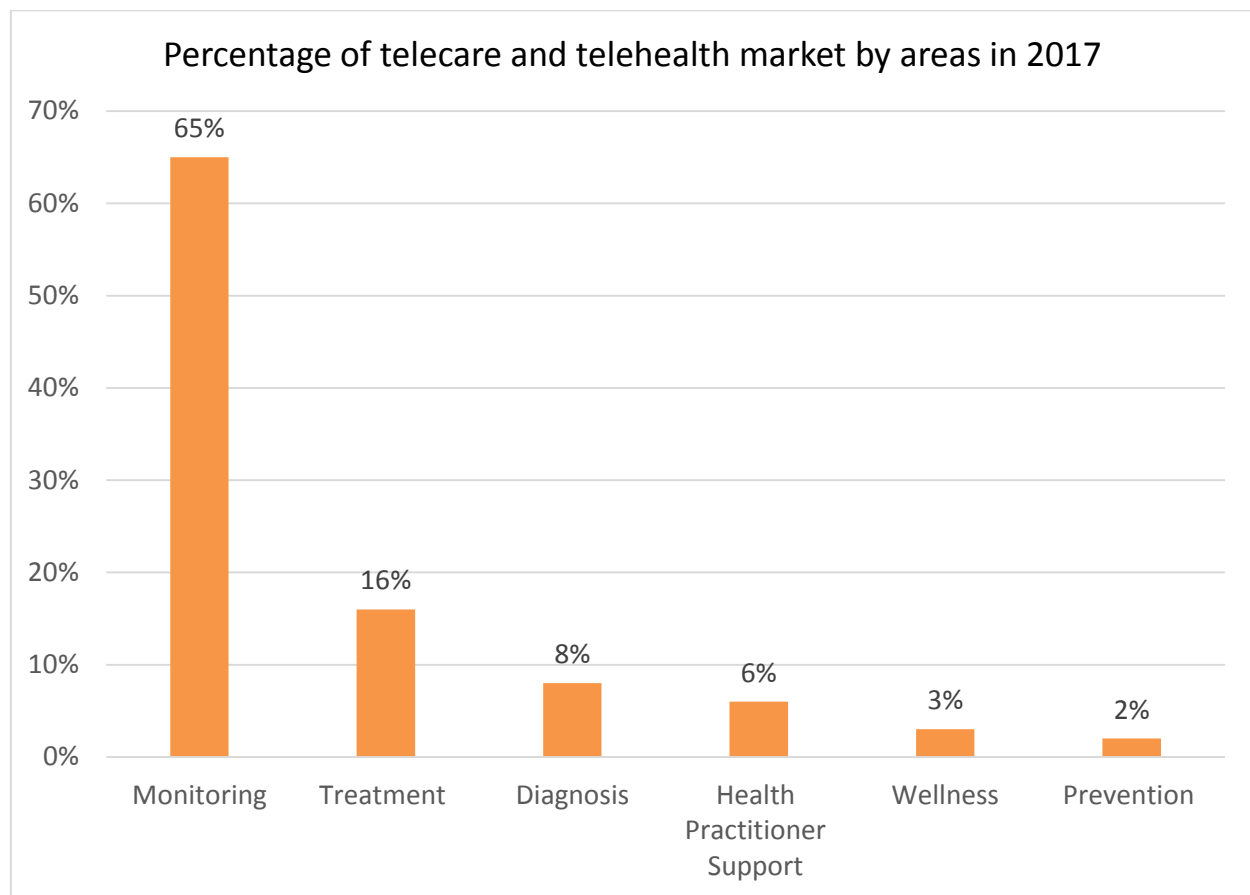
It is important to mention that, due to formal caregivers will be paid by CoME providers or by the healthcare organizations adopting CoME, they have not been included in this market size analysis.

The advantages and disadvantages of reaching these groups of customers directly (B2C) or via distributors and agents such as social and healthcare financing institutions and care providers (B2B) will be analysed in D5.3 Exploitation Strategy, Business Case and Draft Exploitation GA. Although it seems clear that “B2B” is the approach that better fits with the channels that partners of the CoME consortium currently have, a comparison and comprehensive study about these models will be performed when designing the business model for CoME.

## 6. Competitive environment

After analysing the market of CoME and having defined its target groups, next steps will focus on the competitive environment of CoME by looking at some of the key players in the field.

On the customer side, a positive response for telehealth and telecare apps has been performed in the last years - by 2018 50% of the 3.4 billion mobile device users around the world will download telehealth and telecare apps. However, this market is still in a very early stage of development with a fragmented competitive scene and no dominant design.



**Figure 4 Telecare and telehealth market by areas in 2017**

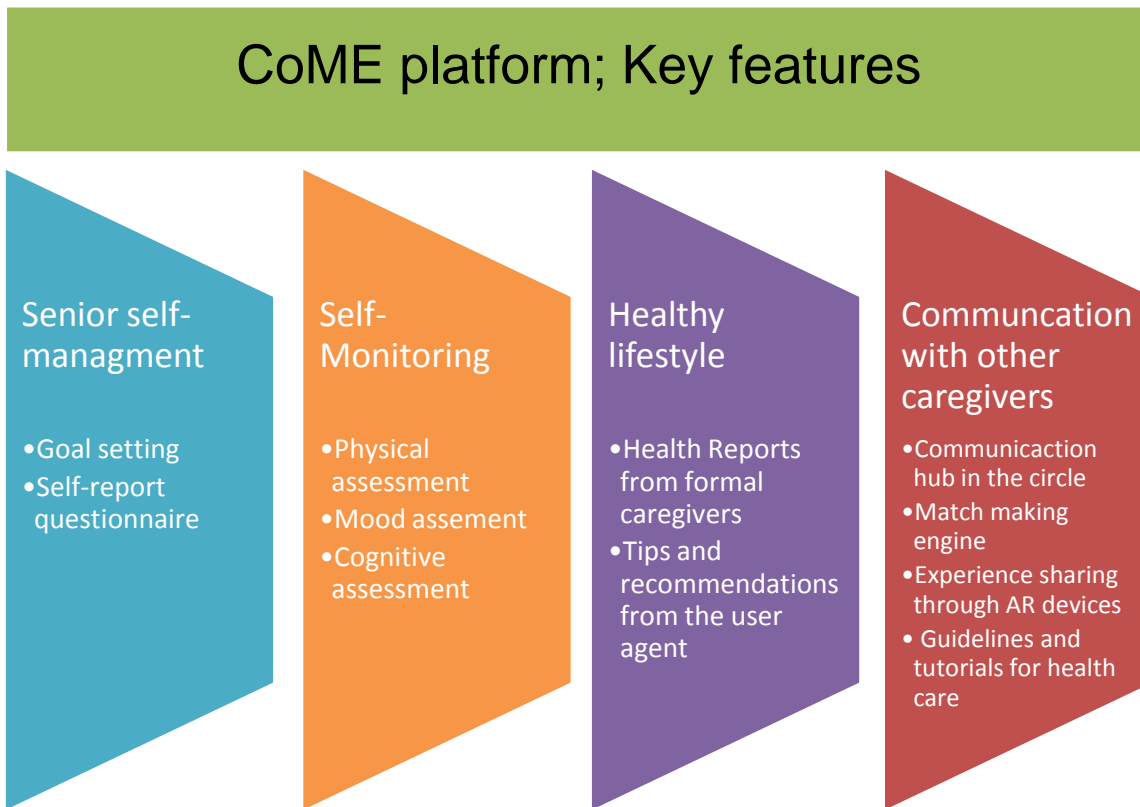
As can be shown, because of this fragmented feature as well as the great number of features that CoME offers, the following kind of application products and apps, that have one or more key elements of the CoME's design, have been considered:

- Apps for wellness and prevention in seniors;
- Apps for health education and training for both seniors and informal caregivers;
- Apps for care distribution and help among informal caregivers;
- App for telecare with professional caregivers;
- Apps for brain training;
- Apps for self-care and monitoring of daily life activities.

The thought behind this approach is that consumers might combine the use of more than one app in their everyday life. In this case, the direct concurrence which CoME might face will lay in this combination of uses of different specific apps.

In addition, it is important to mention that the scope of the analysis was not restricted to apps strictly focused on the senior market as several apps did not directly target them but nevertheless enjoy great success in this segment of the population and do hold key features similar to the CoME platform.

For further information related to the features of the CoME project which have been taken into account when screening the market, please find below.



**Figure 5 CoME platform key features**


**6.1. Products that could compete with CoME**

The following products currently on the market could compete with CoME:


| 1                   |                                                                          | CareZone                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
|---------------------|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| General Information |                                                                          | Main Features                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| Logo                |                                                                          | <ul style="list-style-type: none"> <li>• Stores a complete list of medication and dosages</li> <li>• To-do list with reminder and tracker of things that have to get done as well as medical appointment</li> <li>• Tracks blood glucose, pain, and other important health vitals</li> <li>• Aims to help organize a vast amount of health data</li> <li>• Newsletter related to the relevant family’s health issue</li> <li>• Shares access to important information</li> </ul> |  |
| Website             | <a href="https://carezone.com/home">https://carezone.com/home</a>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
| Available           | IOS/Android                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
| Pricing             | Free                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
| Customer targeted   | Person with medical issue and family with person requiring medical care. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |

Business Delivery Model: B2C through Google Play and App Store with health organizations as main partners.

**Table 4 CareZone**


| 2                                              | Lotsa Helping Hands                                                                       |                                                                                                                                                                                     |
|------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General Information                            |                                                                                           | Main Features                                                                                                                                                                       |
| Logo                                           |          | <ul style="list-style-type: none"> <li>Organizes Help through a match-making engine</li> <li>Enables the creation of an online care community and keep everyone updated.</li> </ul> |
| Website                                        | <a href="http://lotsahelpinghands.com/">http://lotsahelpinghands.com/</a>                 |                                                                                                                                                                                     |
| Available                                      | IOS                                                                                       |                                                                                                                                                                                     |
| Pricing                                        | Free                                                                                      |                                                                                                                                                                                     |
| Customer targeted                              | Targeting the Senior and Baby Boomers segment as well as individuals with chronic disease |                                                                                                                                                                                     |
| Business Delivery Model: B2C through App Store |                                                                                           |                                                                                                                                                                                     |

**Table 5 Lotsa Helping Hands**


| 3                   | Ecare21                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General Information |                                                                                                                       | Main Features                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Logo                |                                    | <ul style="list-style-type: none"> <li>Tool for daily care plan activities</li> <li>Reminder and tracker of uses of medication as well as medical appointment</li> <li>Monitoring of the activities and vitals (i.e. Glucose, Heart Rate, Physical Activity, Medication Adherence, Weight, Calorie Intake, and Sleep among others)</li> <li>Creation of a care community</li> <li>Friendly competition in order to improve stimulate life style improvement.</li> </ul> |
| Website             | <a href="https://ecare21.com/">https://ecare21.com/</a>                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Available           | IOS                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Pricing             | From 7€ per months up to 180€                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Customer targeted   | The app is clearly targeting the senior segment. The app is advertised for individual as well as health organization. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

Business Delivery Model: B2C through App Store

**Table 6 Ecare21**


| 4                                                                                                                    | Caring Bridge                                                                                                                                          |                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General Information                                                                                                  |                                                                                                                                                        | Main Features                                                                                                                                                             |
| Logo                                                                                                                 |                                                                       | <ul style="list-style-type: none"> <li>• Blog platform with collective sharing of update simultaneously</li> <li>• Activate your community and coordinate help</li> </ul> |
| Website                                                                                                              | <a href="https://www.caringbridge.org/">https://www.caringbridge.org/</a>                                                                              |                                                                                                                                                                           |
| Available                                                                                                            | IOS/Android                                                                                                                                            |                                                                                                                                                                           |
| Pricing                                                                                                              | Free                                                                                                                                                   |                                                                                                                                                                           |
| Customer targeted                                                                                                    | Main target customers are individual with chonical disease or terminal illness. The app is not specifically targeting the senior segment of the market |                                                                                                                                                                           |
| Business Delivery Model: B2C through Google Play and App Store and partners such as gofundme and Hallmark Gift Wish. |                                                                                                                                                        |                                                                                                                                                                           |

**Table 7 Caring Bridge**

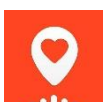
| 5                   | Daily Senior Fitness Exercise                                                       |                                                                                                                 |
|---------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| General Information |                                                                                     | Main Features                                                                                                   |
| Logo                |  | <ul style="list-style-type: none"> <li>• Provide a list of daily exercises for each part of the body</li> </ul> |
| Website             | <a href="http://www.ebmacs.com//">http://www.ebmacs.com//</a>                       |                                                                                                                 |
| Available           | Android                                                                             |                                                                                                                 |
| Pricing             | Free but financed through ads                                                       |                                                                                                                 |
| Customer targeted   | Baby Boomers and Senior are the prime targeted segments of this app.                |                                                                                                                 |

Business Delivery Model: B2C through Google Play

**Table 8 Daily Senior Fitness Exercise**


| 6                                                              |                                                                                   | Senior Fitness Workouts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| General Information                                            |                                                                                   | Main Features                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| Logo                                                           |  | <ul style="list-style-type: none"> <li>• Workouts at beginner, intermediate, and advanced levels</li> <li>• Instructional coaching using video and voiceover</li> <li>• Animated demonstrations with detailed descriptions and freeze frames</li> <li>• Alternative bodyweight exercises are provided for anything that requires a piece of equipment or machine.</li> <li>• Profile with social notifications, past posts, and your bio</li> <li>• For exercises that use equipment, you are provided with alternatives that use just the body, not requiring any equipment.</li> <li>• Active community of coaches, elite athletes, beginners, fitness enthusiasts, nutritionists, and athletic trainers</li> </ul> |  |
| Website                                                        | <a href="http://www.getfitvity.com/">http://www.getfitvity.com/</a>               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| Available                                                      | IOS/Android                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| Pricing                                                        | Freemium approach with premium from 2.5€/month to 6€/month                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| Customer targeted                                              | Baby Boomers and Senior are the prime targeted segments of this app.              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| Business Delivery Model: B2C through Google Play and App Store |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |

**Table 9 Senior Fitness Workouts**

| 7                   |                                                                                     | Healthmapper                                                                                                                                                                                                                                                                                                                                                                    |  |
|---------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| General Information |                                                                                     | Main Features                                                                                                                                                                                                                                                                                                                                                                   |  |
| Logo                |  | <ul style="list-style-type: none"> <li>• Symptom tracker</li> <li>• Create charts to see which symptoms occur most. Identify the effect a new medication, diet or exercise is having on the symptoms</li> <li>• Document how a condition is progressing with health reports which can be exported</li> <li>• Reminder related to the medication that should be taken</li> </ul> |  |
| Website             | <a href="http://www.healthmapperapp.com">http://www.healthmapperapp.com</a>         |                                                                                                                                                                                                                                                                                                                                                                                 |  |
| Available           | IOS                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                 |  |
| Pricing             | 4.5€                                                                                |                                                                                                                                                                                                                                                                                                                                                                                 |  |
| Customer targeted   | Individual with chronic diseases.                                                   |                                                                                                                                                                                                                                                                                                                                                                                 |  |

|                                                                                         |  |
|-----------------------------------------------------------------------------------------|--|
| The app is not target specifically the Senior and Baby Boomer segment of the population |  |
| Business Delivery Model: B2C through App Store                                          |  |

**Table 10 Healthmapper**

| 8                                                                                                                                                         | WebMed                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                           | General Information                                                               | Main Features                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Logo                                                                                                                                                      |  | <ul style="list-style-type: none"> <li>Symptom Checker – Select the part of the body that is troubling you, choose your symptoms, and learn about potential conditions or issues.</li> <li>Medication Reminders – View daily medication schedules and instructions, pill images with dosage and timing information, and receive reminders for when it’s time to take a given medication.</li> <li>Healthy Target – Create and sustain healthy habits by tracking your progress daily, connecting wearable devices, and getting actionable insights at the end of each week.</li> <li>Healthy Living – Choose the healthy living interests that matter most to you to customize a daily lifestyle magazine of tips, fun facts, articles, quizzes, and slideshows</li> <li>Conditions – Find medically reviewed information about conditions relevant to you and learn more about causes, treatments, and related symptoms.</li> <li>Medicine – Search our extensive database for information on drugs, supplements, and vitamins.</li> <li>First Aid Essentials – Your handy guide for medical emergencies.</li> <li>Local Health Listings</li> </ul> |
| Website                                                                                                                                                   | <a href="http://www.webmd.com/mobile">http://www.webmd.com/mobile</a>             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Available                                                                                                                                                 | IOS/Android                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Pricing                                                                                                                                                   | Free finance through advertisement                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Customer targeted                                                                                                                                         | Do not target a specific age segment of the population                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Business Delivery Model: Controlled by KKR and owns a large portfolio of B2B and B2C websites. The mobile app is delivered via Google Play and App Store. |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**Table 11 WebMed**


| 9                                                           |                                                                                   | Peak                                                                                                                                                                                                                                                                                                                       |  |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| General Information                                         |                                                                                   | Main Features                                                                                                                                                                                                                                                                                                              |  |
| Logo                                                        |  | <ul style="list-style-type: none"> <li>• 35 games which aim to challenge memory, attention, problem solving, mental agility, language coordination, creative and emotional control.</li> <li>• Tracking of progress and improvement</li> <li>• Personalized workouts and in-depth insights with the premium app</li> </ul> |  |
| Website                                                     | <a href="http://www.peak.net/">http://www.peak.net/</a>                           |                                                                                                                                                                                                                                                                                                                            |  |
| Available                                                   | IOS/Android                                                                       |                                                                                                                                                                                                                                                                                                                            |  |
| Pricing                                                     | Freemium with in-app purchase of 1€ which could be cumulated up to 180€           |                                                                                                                                                                                                                                                                                                                            |  |
| Customer targeted                                           | Do not specifically target one segment of the population                          |                                                                                                                                                                                                                                                                                                                            |  |
| Business Delivery Model: B2C via App Store and Google Play. |                                                                                   |                                                                                                                                                                                                                                                                                                                            |  |

Table 12 Peak


| 10                                                          |                                                                                     | Lumosity                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| General Information                                         |                                                                                     | Main Features                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| Logo                                                        |  | <ul style="list-style-type: none"> <li>• Daily workouts that draw from 25+ brain games to challenge 5 core cognitive abilities</li> <li>• Workout Modes: carefully curated sets of games that use your training habits and preferences to target different ways to train your brain</li> <li>• Detailed Insights: analysis of your game play that sheds light on your game strengths, weaknesses and cognitive patterns</li> </ul> |  |
| Website                                                     | <a href="https://www.lumosity.com/">https://www.lumosity.com/</a>                   |                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| Available                                                   | IOS/Android                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| Pricing                                                     | Freemium with in-app purchase from 1€ up to 55€                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| Customer targeted                                           | Do not specifically target one segment of the population                            |                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| Business Delivery Model: B2C via App Store and Google Play. |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |

Table 13 Lumosity

| 11                  |  | Fitbit        |  |
|---------------------|--|---------------|--|
| General Information |  | Main Features |  |






|                                                                                                                                                                                                                                        |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Logo                                                                                                                                                                                                                                   |  | <ul style="list-style-type: none"> <li>• Wirelessly SYNC your Blaze, Alta, Alta HR, charge 2, flex 2, surge, charge HR, charge, flex, aria, one or zip tracker with your android device.</li> <li>• Track your daily goals and progress over time for steps, distance, calories burned and more</li> <li>• Use GPS to track your runs, walks &amp; hikes</li> <li>• Log activities like yoga and workouts to keep you on track</li> <li>• Log food to see how many calories you consume each day, and manage your weight over time</li> <li>• - compete with friends with daily or weekly challenges and compare stats</li> <li>• All day heart rate tracking with Fitbit surge and charge HR</li> </ul> |
| Website                                                                                                                                                                                                                                | <a href="http://help.fitbit.com/">http://help.fitbit.com/</a>                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Available                                                                                                                                                                                                                              | IOS/Android                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Pricing                                                                                                                                                                                                                                | App free but purchase of the device needed                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Customer targeted                                                                                                                                                                                                                      | Do not specifically target one segment of the population                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p>Business Delivery Model: it has largely been in the B2C space via App Store and Google Play however they are increasingly moving into the B2B space, turning their devices into a corporate healthcare cost reduction solution.</p> |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

Table 14 Fitbit


| 12                | Dementia Caregiver Solutions                                                                                                                                              |                                                                                                                                                                                                                                                                           |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | General Information                                                                                                                                                       | Main Features                                                                                                                                                                                                                                                             |
| Logo              |                                                                                        | <ul style="list-style-type: none"> <li>• A written overview of dementia</li> <li>• Advice for addressing the difficult behaviors associated with Alzheimer's and other types of dementia</li> <li>• Bookmark or "star" articles you wish to read in the future</li> </ul> |
| Website           | <a href="https://itunes.apple.com/us/app/dementia-caregiver-solutions/id969874075?mt=8">https://itunes.apple.com/us/app/dementia-caregiver-solutions/id969874075?mt=8</a> |                                                                                                                                                                                                                                                                           |
| Available         | IOS (iPhone and iPad)                                                                                                                                                     |                                                                                                                                                                                                                                                                           |
| Pricing           | 2.5€                                                                                                                                                                      |                                                                                                                                                                                                                                                                           |
| Customer targeted | Personal advice for people who care for senior with Alzheimer's and other dementias                                                                                       |                                                                                                                                                                                                                                                                           |

Business Delivery Model: B2B via App Store and B2C through non-profit organizations such as Alzheimer Society of Canada and Alzheimer Society of BC.

**Table 15 DCS**


| 13                                                                       |                                                                                                     | Alzheimer's Caregiver Buddy                                                                                                                                                                                                                                                                                                                                       |  |
|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| General Information                                                      |                                                                                                     | Main Features                                                                                                                                                                                                                                                                                                                                                     |  |
| Logo                                                                     |                    | <ul style="list-style-type: none"> <li>• Get instant caregiver help and advice</li> <li>• Learn how to deal with wandering, bathing, and meals</li> <li>• Get help with challenging behaviors and communication struggles</li> <li>• Learn how daily routines can help</li> <li>• Access live free help from the 24-7 Alzheimer's Association Helpline</li> </ul> |  |
| Website                                                                  | <a href="http://www.alzheimers-illinois.org/cbuddy/">http://www.alzheimers-illinois.org/cbuddy/</a> |                                                                                                                                                                                                                                                                                                                                                                   |  |
| Available                                                                | iOS/Android                                                                                         |                                                                                                                                                                                                                                                                                                                                                                   |  |
| Pricing                                                                  | Free                                                                                                |                                                                                                                                                                                                                                                                                                                                                                   |  |
| Customer targeted                                                        | Caregivers to get in the moment tips and tricks while caring for someone with memory loss           |                                                                                                                                                                                                                                                                                                                                                                   |  |
| Business Delivery Model: B2B via App Store, Amazon Apps and Google Play. |                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                   |  |

**Table 16 Alzheimer's Caregiver Buddy**

| 14                  |                                                                                     | CogniSense                                                                                                                                                                                                                                                                                                                                                                                           |  |
|---------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| General Information |                                                                                     | Main Features                                                                                                                                                                                                                                                                                                                                                                                        |  |
| Logo                |  | <ul style="list-style-type: none"> <li>• Health caregivers assess patients' cognitive health through a score</li> <li>• Formal caregiver could create reports and send to the senior</li> <li>• The app is for health caregivers, not for seniors</li> <li>• Includes exercises for MCI risk detection that formal caregivers could use for face to face evaluation. Association Helpline</li> </ul> |  |
| Website             | <a href="http://www.questcognisense.com/">http://www.questcognisense.com/</a>       |                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| Available           | iOS                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| Pricing             | Free                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                      |  |

|                                                  |  |
|--------------------------------------------------|--|
| Customer targeted                                |  |
| Only licensing professionals could access to it. |  |
| Business Delivery Model: B2C via App Store       |  |

**Table 17 CogniSense**

| 15                                                                                                                                                                                                                                                                      | CAIDE Risk Score App                                                                                                                                                                                                                                                                                                                                                                                      |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| General Information                                                                                                                                                                                                                                                     | Main Features                                                                                                                                                                                                                                                                                                                                                                                             |  |
| Logo                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>• Supports prevention of dementia</li> <li>• After entering gender, date of birth, height and weight, cholesterol level, blood pressure, physical activity and years of education the App calculates the risk of getting dementia within the next 20 years.</li> <li>• Once known the risk, the physician discusses preventive lifestyle interventions.</li> </ul> |  |
|                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| Website                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| <a href="http://www.memantine.com/en/patients_and_caregivers/everyday_life_management/caide_risk_factor_app/caide_risk_factor_app.php">http://www.memantine.com/en/patients_and_caregivers/everyday_life_management/caide_risk_factor_app/caide_risk_factor_app.php</a> |                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| Available iOS                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| Pricing    Free                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| Customer targeted                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| Physicians and individuals                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| Business Delivery Model: B2C via App Store (Partnership with Karolinska Institutet in Stockholm)                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                           |  |

**Table 18 CAIDE Risk Score App**

## 6.2. Projects that could compete with CoME

### 6.2.1. Management of health and care

The following projects, currently on development stage, could compete with CoME when commercialization occurs:

| 1                   | CAREGIVERSPRO-MMD |  |
|---------------------|-------------------|--|
| General Information | Description       |  |
|                     |                   |  |




|               |                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                           |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Logo          |                                                                                                                                                                                                                                                                                                                  | The project is building a <b>mHealth app</b> that is specifically targeted to caregivers and patients with mild to moderate <b>dementia</b> . The result will be a tool integrating a broader diagnostic approach, incorporating the live-in family caregiver-patient dyad and considering this dyad as the unit of care. |
| Website       | caregiversprommd-project.eu                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                           |
| Duration      | 2016-2018                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                           |
| Target Groups | <p>People living with dementia with mild or moderated dementia.</p> <p>Caregivers that want to reduce their stress and burn-out levels.</p> <p>Healthcare professionals that want to reduce the time spent on administration.</p> <p>Social worker professionals that want to know a better understanding on elderly evolution.</p> <p>Overall healthcare system – to reduce hospitalisations</p> |                                                                                                                                                                                                                                                                                                                           |

Table 19 CAREGIVERSPRO-MMD


| 2                   |                                                                                                                                                                                                                            | Dem@Care                                                                                                                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General Information |                                                                                                                                                                                                                            | Description                                                                                                                                                                                                                                     |
| Logo                |                                                                                                                                         | Development of a complete system providing personal health services to people with dementia, as well as medical professionals and caregivers by using a multitude of sensors (context-awareness, lifestyle monitoring, health parameters, etc.) |
| Website             | <a href="http://www.demcare.eu/">http://www.demcare.eu/</a>                                                                                                                                                                |                                                                                                                                                                                                                                                 |
| Duration            | 2011-2015                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                 |
| Target Groups       | <p>People with dementia.</p> <p>Informal caregivers and relatives that want to monitor and assess their status</p> <p>Dementia clinicians to provide objective observations regarding health progression of the person</p> |                                                                                                                                                                                                                                                 |

|                |  |
|----------------|--|
| with dementia. |  |
|----------------|--|


**Table 20 Dem@Care**

| 3             | ICT4Life                                                                                                                                           |                                                                                                                                                                                                                                                                                         |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | General Information                                                                                                                                | Description                                                                                                                                                                                                                                                                             |
| Logo          |                                                                   | ICT4Life is developing a solution for individuals with early stage cognitive impairment living alone. The system will give doctors and caregivers information about the users for taking the best medical or social actions, while extending their independence in a user friendly way. |
| Website       | <a href="http://www.ict4life.eu/">http://www.ict4life.eu/</a>                                                                                      |                                                                                                                                                                                                                                                                                         |
| Duration      | 2016-2018                                                                                                                                          |                                                                                                                                                                                                                                                                                         |
| Target Groups | <p>People with dementia, in general and, in particular, with Alzheimer at an early stage, and with Parkinson's.</p> <p>Doctors and caregivers.</p> |                                                                                                                                                                                                                                                                                         |


**Table 21 ICT4Life**

| 4             | My-AHA                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | General Information                                                                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Logo          |  | <p>My-AHA (My Active and Healthy Aging) will empower seniors to better manage their own health, resulting in healthcare cost savings. My-AHA will use state-of-the-art analytical concepts to provide new ways of health monitoring and disease prevention through individualized profiling and personalised recommendations, feedback and support.</p> <p>An ICT-based platform will detect defined risks in the frailty domains early and accurately via embedded sensors and data readily available in the daily living environment of older adults. When risk is detected, My-AHA will provide targeted ICT-based interventions with a scientific evidence base of efficacy. These interventions will follow an approach to motivate users to participate in exercise, cognitively stimulating games and social networking.</p> |
| Website       | <a href="http://www.activeageing.unito.it">http://www.activeageing.unito.it</a>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Duration      | 2016-2019                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Target Groups | <p>Healthy seniors</p> <p>Doctors and professionals</p>                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

**Table 22 My-AHA**

| 5                   |                                                                                   | PreventIT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
|---------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| General Information |                                                                                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
| Logo                |  | <p>PreventIT will develop and test an ICT based mHealth System (iPAS) for the consumer market that:</p> <ul style="list-style-type: none"> <li>• Enables early identification of risk of age-related functional decline;</li> <li>• Engenders behavioural change in seniors in order to adopt a healthy, active lifestyle.</li> </ul> <p>The project will use an integrated system of a smartphone and smartwatch as frontend technology, and a protected cloud-based solution for handling personal data as backend technology.</p> <p>The researchers will develop online instruments for risk-screening, complexity metrics, motivation for behavioural change, and a method for personalised exercise by phenotype, based on currently available big data sets.</p> |  |
| Website             | <a href="http://www.preventit.eu/">http://www.preventit.eu/</a>                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| Duration            | 2016-2019                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| Target Groups       | Healthy seniors                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |

**Table 23 PreventIT**

| 6                   |                                                                                     | SUCCESS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
|---------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| General Information |                                                                                     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| Logo                |  | <p>Through an interactive avatar, gamification, training and role play, SUCCESS (SUccessful Caregiver Communication and Everyday Situation Support in dementia care) supports both dementia patients and carers in their day-to-day lives.</p> <p>The tool increases the users' knowledge about dementia and how to interact with someone suffering from this disease. SUCCESS also aims at creating meaningful activities for people with dementia in order to maintain a sense of purpose at their individual level of ability. Emotional support is provided as to help carers to keep a balance between care responsibilities and personal needs.</p> |  |
| Website             | <a href="http://www.success-aal.eu/">http://www.success-aal.eu/</a>                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| Duration            | 2016-2019                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| Target Groups       | Dementia patients and their carers in their day-to-day lives.                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |

**Table 24 SUCCESS**


| 7                   |                                                                                   | CIM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| General Information |                                                                                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| Logo                |  | The CiM approach is technologically supported by two complementary services: 'a virtual motion coach' and a 'virtual empowerment coach'. The 'virtual motion coach' enhances everyday life activities with individual exercises and training challenges for the elderly. It aims to empower older people with chronic health conditions to monitor their own abilities. The 'virtual empowerment coach' facilitates and improves collaboration between formal and informal carers. It realizes information exchange between carers by using common nursing language adapted to informal care and provides education opportunities |  |
| Website             | <a href="https://www.careinmovement.eu/">https://www.careinmovement.eu/</a>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| Duration            | 2015-2018                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| Target Groups       | Elderly people and formal and informal carers.                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |

Table 25 CIM

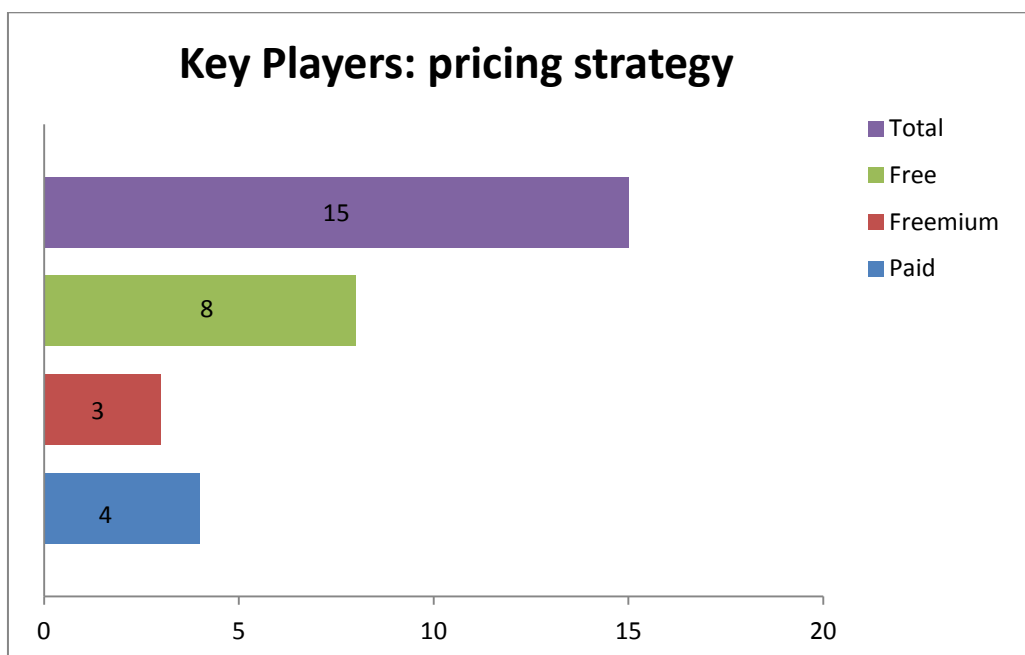
### 6.3. Key Findings

In the analysis of products, 15 players which are either advertised or promoted in blogs, specialized websites and Google Play, Amazon Apps and/or App Store, and that offer one or more features in common with CoME have been selected.

As extracted from the previous analysis, all apps are provided in a B2C and only 3 of them, WebMD, Fitbit and DCS, has also a B2B modality. In this pool of B2C players, three pricing strategies were reviewed:

- Free apps funded through either advertisement and paid-post, donation/subvention or sale of Hardware;
- Freemium approach meaning: the basic version free and the premium to be paid;
- Commercial app with either a monthly fee or a purchase fee.

As shown in Figure 6, the free pricing strategy is the most commonly used followed by the paid approach and then the freemium one. Thus, the overall pricing strategy of the competitor seems to highlight the fact that customers were not willing to pay for these apps and consider that this cost should be covered by the healthcare assurance schemes or public funding.



**Figure 6 Key players: pricing strategy**

As can be observed in the above figure, most of the products provide their functionalities for free. Only 4 of them, healthmapper, ecare21, Fitbit and DCS have a paid pricing strategy – **ecare21** because of the great number of wearable devices it is compatible with, **healthmapper** because of the possibility of sharing the tracking with your doctor under standardized basis (CSV, XLS), **Fitbit** because the app requires the purchase of a Fitbit device and **DCS** because of the degree of specialization.

Also, for the case of management of MCI disease apps, there are few of them that have seniors as main target segment. Most of them aim at informal caregiver and relatives of MCI diagnosed seniors because they are key in the purchase decision of this kind of products.

Following this methodology, in the coming table, the functionalities of CoME are compared with the ones provided by the projects and products listed above:



| CoME vs other products&projects                                              |          |                     |         |               |                               |                        |              |        |      |          |        |     |                             |            |                      |                     |          |          |        |           |         |     |      |   |
|------------------------------------------------------------------------------|----------|---------------------|---------|---------------|-------------------------------|------------------------|--------------|--------|------|----------|--------|-----|-----------------------------|------------|----------------------|---------------------|----------|----------|--------|-----------|---------|-----|------|---|
| Feature                                                                      | carezone | Lotsa Helping Hands | Ecare21 | Caring Bridge | Daily Senior Fitness Exercise | Senior Fitness Workout | Healthmapper | WebMed | Peak | Lumosity | Fitbit | DCS | Alzheimer's Caregiver Buddy | Cognisense | Caide Risk Score App | Caregivers pro-rmmd | Dem@Care | ICT4Life | My-AHA | PreventIT | SUCCESS | CIM | CoME |   |
| UI with accessibility features                                               | N        | N                   | N       | N             | N                             | N                      | N            | N      | N    | N        | N      | N   | N                           | N          | N                    | Y                   | N        | Y        | N      | Y         | N       | Y   | Y    |   |
| Web Platform                                                                 | Y        | Y                   | Y       | Y             | N                             | N                      | Y            | N      | N    | N        | Y      | N   | N                           | N          | N                    | Y                   | Y        | Y        | Y      | Y         | N       | Y   | Y    |   |
| App                                                                          | Y        | N                   | Y       | Y             | Y                             | Y                      | N            | Y      | Y    | Y        | Y      | Y   | Y                           | Y          | Y                    | N                   | N        | Y        | Y      | Y         | Y       | Y   | Y    |   |
| Questionnaires to allow seniors to evaluate their health condition           | Y        | N                   | N       | N             | N                             | N                      | Y            | Y      | N    | N        | N      | N   | N                           | N          | Y                    | Y                   | N        | N        | N      | Y         | Y       | Y   | N    | Y |
| Brain Training Games                                                         | N        | N                   | N       | N             | N                             | N                      | N            | N      | Y    | Y        | N      | N   | N                           | N          | N                    | Y                   | N        | N        | N      | Y         | N       | Y   | N    | Y |
| Prevention or recovery activities (goals) for seniors - prevention&education | Y        | N                   | Y       | N             | Y                             | Y                      | N            | Y      | Y    | N        | N      | N   | N                           | N          | Y                    | Y                   | Y        | Y        | Y      | Y         | Y       | Y   | Y    | Y |
| Goal achievement competition among users                                     | N        | N                   | Y       | N             | N                             | N                      | N            | N      | N    | Y        | Y      | N   | N                           | N          | N                    | N                   | N        | N        | N      | N         | N       | N   | N    | N |
| Encouragement to achieve health goals                                        | N        | Y                   | Y       | Y             | N                             | N                      | N            | N      | N    | Y        | Y      | N   | N                           | N          | N                    | N                   | N        | N        | N      | N         | Y       | Y   | Y    | Y |
| Intraday and historical health conditions data                               | N        | N                   | Y       | N             | N                             | N                      | Y            | N      | N    | Y        | Y      | N   | N                           | N          | N                    | Y                   | Y        | Y        | Y      | Y         | Y       | N   | Y    | Y |
| Monitoring with wearable devices                                             | N        | N                   | Y       | N             | N                             | N                      | N            | Y      | N    | N        | Y      | N   | N                           | N          | N                    | Y                   | Y        | Y        | Y      | Y         | Y       | N   | Y    | Y |
| Reports, tips and recommendations from professional/formal caregivers        | N        | N                   | Y       | N             | N                             | N                      | Y            | N      | N    | N        | N      | Y   | Y                           | Y          | Y                    | Y                   | Y        | Y        | Y      | N         | Y       | Y   | Y    |   |
| MCI or dementia treatment and management (MyGuardian)                        | N        | N                   | N       | N             | N                             | N                      | N            | N      | N    | N        | N      | Y   | Y                           | N          | N                    | Y                   | Y        | Y        | N      | N         | Y       | N   | Y    |   |
| Caregivers community                                                         | Y        | Y                   | Y       | Y             | N                             | N                      | N            | N      | N    | N        | N      | Y   | Y                           | N          | N                    | Y                   | N        | N        | Y      | N         | N       | N   | Y    | Y |
| Distribution of care tasks among informal caregivers                         | Y        | Y                   | Y       | Y             | N                             | N                      | N            | N      | N    | N        | N      | N   | N                           | N          | N                    | Y                   | N        | N        | N      | N         | N       | N   | Y    | Y |
| AR Tutorials                                                                 | N        | N                   | N       | N             | N                             | N                      | N            | N      | N    | N        | N      | N   | N                           | N          | N                    | N                   | N        | N        | N      | N         | N       | N   | N    | N |
| Drug Information                                                             | Y        | N                   | N       | N             | N                             | N                      | Y            | Y      | N    | N        | N      | N   | N                           | N          | N                    | N                   | Y        | N        | N      | N         | N       | N   | N    | N |
| Medications calendar and reminders                                           | Y        | Y                   | Y       | N             | N                             | N                      | Y            | Y      | N    | N        | N      | N   | N                           | N          | N                    | Y                   | N        | Y        | Y      | N         | N       | N   | N    | Y |
| News, recipes, etc.                                                          | Y        | Y                   | N       | N             | N                             | N                      | N            | Y      | N    | N        | N      | N   | N                           | N          | N                    | N                   | N        | N        | Y      | N         | N       | N   | N    | N |
| Organize medical appointments                                                | Y        | N                   | N       | N             | N                             | N                      | Y            | N      | N    | N        | N      | N   | N                           | N          | N                    | N                   | N        | N        | N      | N         | N       | N   | N    | Y |
| Share health updates and tracking info with caregivers                       | Y        | N                   | Y       | Y             | N                             | N                      | Y            | Y      | N    | N        | N      | N   | N                           | N          | Y                    | N                   | Y        | Y        | Y      | Y         | Y       | N   | Y    | N |
| Export data results (CSV, XLS)                                               | Y        | N                   | N       | N             | N                             | N                      | Y            | Y      | N    | N        | Y      | N   | N                           | Y          | N                    | N                   | N        | N        | N      | N         | N       | N   | N    | N |
| Communication with formal caregivers and professionals                       | N        | N                   | Y       | N             | N                             | N                      | Y            | N      | N    | N        | Y      | N   | Y                           | N          | N                    | Y                   | N        | Y        | Y      | Y         | Y       | N   | Y    | Y |
| Exchange of feelings and experiences with informal caregivers and family     | Y        | Y                   | Y       | Y             | N                             | N                      | N            | N      | N    | N        | N      | N   | N                           | N          | N                    | N                   | N        | N        | Y      | Y         | N       | Y   | Y    | Y |

Figure 7 CoME vs competitors

As can be observed, although some of the products and projects analysed share some characteristics with the CoME platform, none of them provides the same mix of features. In this respect, the CoME platform differentiates itself from the rest of its competitors and fills a gap by providing a new answer to the needs of the targeted segment of the population, i.e. worried seniors, seniors already detected with MCI, informal caregivers, formal caregivers and health care organizations.

Furthermore, the CoME platform has a holistic approach taking into account the senior together with the needs of the other stakeholders, such as the formal and informal caregivers. Thus, it goes beyond simple lifestyle cognitive trainer apps, providing a whole tool that assists seniors in the entire process of MCI disease.

## 7. CoME Potential Positioning

Following our mapping of the market for health education and training, telehealth and telecare, as well as what has been learned from this analysis, the ideal positioning of the CoME platform within this distinct market can be explored. To do so, it will be examined how CoME addresses the needs of these key stakeholders by offering a holistic approach which helps seniors, the community of informal caregivers who are surrounding him/her and the support that professional caregivers as well as healthcare organizations currently provides.

### 7.1. Needs of the senior

Regarding the Seniors' needs, CoME positions itself as a global platform with a prominent focus on the whole process of MCI disease: prevention, detection and management.

In this respect, as shown in the table above, against the whole MCI process coverage offered by CoME, the rest of competitors only address specific needs of this process:

- **Prevention**
  - Healthy lifestyle activities and habits for prevention such as Webmed, Daily Senior Fitness Exercise and Senior Fitness Workouts;
  - Monitoring of senior activities and vital signs such as CareZone, Ecare21 and Fitbit.
- **Detection**
  - Identification of symptoms such as Healthmapper;
  - Brain training activities to detect symptoms of cognitive impairment such as Lumosity and Peak.

### 7.2. Needs of the informal caregiver

Due to informal caregivers are also main actors in the case of worried senior that continuously demands care from them because of the lack of security, the CoME platform will include a set of functionalities addressed to them and the current work load they undergo. These are among others: the configuration of senior's profile and the continuous monitoring of the state of the senior (i.e., activities of daily life, ADL). In addition, CoME will incorporate a platform where useful guidelines and tutorials provided by professional caregivers as well as best practices are included. Finally, a tool which enables the sharing of personal information and a match-making application will be developed to better coordinate the effort of the informal caregiver. Finally, the

figure of the informal caregiver is reinforced by MyGuardian that delivers a social networking tool to improve collaboration among caregivers and provide the needed care to the senior.

In that regard, and as already highlighted, it is the grouping of individual functionalities provided by competitors the main differentiation feature: help and advice for caregiving tasks such as Alzheimer's Caregiver Buddy, DCS; distribution of care tasks with occasional caregivers such as Lotsa Helping Hands and creation of a care community like Ecare21 and Caring Bridge.

### *7.3. Needs of social and healthcare financing institutions and health providers.*

Due to the high expenses in healthcare, mainly because of the resources that social and healthcare financing institutions and health providers have to manage to ensure a good service delivery, digital tools for healthcare and prevention face an important challenge for these companies as a way to: on the one hand, deliver good services to higher audiences with limited resources and, on the other hand, use the digital channel to provide more integrated care and prevention service in an environment where all actors of the care process have access to senior's information in a synchronized and coordinated way.

### *7.4. Reinforcement of the formal caregiver role*

With its holistic approach, CoME aims to improve the integration of the professional caregiver within its online care community. CoME can provide the following additional features: continuous flow of up-to-date information related to the senior needs and its state of health (ii) periodic reports with tasks to improve or maintain the health status of the senior. By better integrating the formal caregivers to the online care community, CoME follows a trend which has been observed in the market (i.e. Ecare21, Cognisense).

## **8. Conclusion**

In previous researches, the general conclusion was that the current market is highly fragmented with dominant designs yet to emerge. For this reason, the present market analysis will not be limited to a static analysis of the current players and will also take into account the various constraints and success factors which will shape the dominant design of tomorrow.

The analysis confirms the relevance of CoME:

- The market for health promotion and education, telehealth and telecare services is growing, but has yet to reveal its full potential;
- The need of a whole platform that covers the needs of all the actors involved in care;
- The market is still fragmented with multiple apps addressing different requirements of the targeted user with no dominant design;
- None of the potential competitors have a global platform which focuses on the whole MCI process: prevention, detection and management.

Also, from the analysis of competitors it can be extracted that most of the apps provides these platforms by free or under a freemium methodology that provides basic functionalities by free and the most specialized ones, under payment.