Project acronym	CAMI
Project number	AAL 2014-1-087
Project full name	Artificially intelligent ecosystem for self-management and sustainable quality of life in AAL
Dissemination level	Public
Type of deliverable	Report
Contractual Date of Delivery	M26
Actual Date of Delivery	M26
Deliverable Number	D3.2
Deliverable Name	Report on target group and user classification
Workpackage / Task	WP3/T3.2
Work package responsible / Task responsible	CITST/CITST
Number of Pages	20
Contributors	CITST, ECO, STOCZNIA
Version	5
Keywords	end-user classification, UML diagrams
Abstract	This report has identified the most important target groups of end-users that will benefit more from a particular service or group of services. Various selection and classification criteria have been considered and justified based on current demographics and statics from the three end-user countries and the EU-28 as a whole. Also, UML diagrams have been provided to illustrate the use case scenarios of how different target groups interact with the CAMI services. Some of these scenarios and service will be implemented in T3.4, while selected services will be considered for end-user evaluation in one or more of the three end-user countries. It is planned that CAMI end-user evaluation will target the primary end-users in two age groups: 55-70 (seniors), and the 70-75 (elderly) with a focus on end-users with one or more chronic condition. We will employ the term seniors (comprising both age groups) during the end-user involvement in the field trials. Due to the large differences in health status and economical status between the participating countries, we will not use equal groups in terms of age and size. Also, secondary end-users, both formal and informal caregivers will be included in the end-user evaluations.

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1   Executive summary

Aim of the deliverable
This task aims to prepare for the field trials (T3.4) by identifying the most important target groups of end-users that will benefit more from a particular service or group of services. It will get input from T1.4 reporting on the results of the mockup application tests. Various selection and classification criteria will be considered and justified. UML diagrams will be constructed to illustrate use case scenarios of how different target groups interact with CAMI. Some of these scenarios will be implemented in T3.4.
Brief description of the sections of the document
Section 4 starting with an introductory part followed by primary user (4.1) and secondary users (4.2) classification criteria. In 4.3 we present country specific end-user groups for the three end-user countries involved, i.e. Denmark, Romania and Poland. The last section of the deliverable contains the conclusions.
Mayor achievements
CAMI end-users have been classified in various groups according to their needs, wishes and/or limitations. Age limits for the CAMI primary users have been established.
Summary of the conclusions obtained
This report has identified the most important target groups of end-users that will benefit more from a particular service or group of services. Various selection and classification criteria have been considered and justified based on current demographics and statics from the three end-user countries and the EU-28 as a whole. Also, UML diagrams have been provided to illustrate the use case scenarios of how different target groups interact with the CAMI services. Some of these scenarios and service will be implemented in T3.4, while selected services will be considered for end-user evaluation in one or more of the three end-user countries. It is planned that CAMI end-user evaluation will target the primary end-users in two age groups: 55-70 (seniors), and the 70-75 (elderly) with a focus on end-users with one or more chronic condition. We will employ the term seniors (comprising both age groups) during the end-user involvement in the field trials. Due to the large differences in health status and economical status between the participating countries, we will not use equal groups in terms of age and size. Also, secondary end-users, both formal and informal caregivers will be included in the end-user evaluations.

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4   Introduction

WP3 aims to integrate and optimize all system elements and set-up trials at the end users' premises. This WP will provide feedback to WP2 to perform the needed adjustments and tune-up the system, gather end-user feedback and validate the platform. Field trials in real-life settings will be conducted in different countries with help of the end-user organizations. Within WP3.2 which aims at "End-user groups differentiation" we have defined and organized the end-users into different groups according to their limitations to perform certain daily activities such as personal hygiene, outdoor activities, etc. or according to their expressed interest in receiving support even in the absence of a limitation. The input given by the end-users in WP1 was taken as the basis of the categorization. Various selection and classification criteria are considered and justified. UML diagrams are constructed to illustrate use case scenarios of how different target groups interact with CAMI.

The CAMI development strategy puts at its core both primary and secondary users. Consequently, there are mainly two types of end-user actors that interact with the system and benefit directly from it. Both primary end-users and secondary end-users benefit directly from the CAMI technology, but primary end-users are the 'final' beneficiaries. Secondary end-users mediate the influence of the system on several dimensions of assistance. For instance, a primary end-user (e.g., elderly citizen) may be assisted by a secondary end-user (e.g., caregiver) in performing certain daily activities or in support of certain executive physiological or cognitive functions.

4.1   Primary end-users classification criteria

The end-users can be classified according to a varying number of guiding principles or criteria, ranging in complexity from demographic separators (or categorical identifiers) to health statuses or more elaborate criteria.

However, the first selection criterion is the one that defines the primary end-users of the CAMI system. Specifically, the primary end-users are the beneficiaries of the specific technologies that CAMI provides in the field of ambient assisted living. As such, seniors (age 55-65) with specific health problems like cardiovascular diseases, diabetes, etc., and with potential higher acceptance rate of advanced technologies were identified at the project start to be the main primary end-users. The initial age limit for seniors was set, in order to increase acceptance, to 55-65 years. The criterion for an existing health problem is given by the existence of a limitation which requires the use of assistive technologies. Consequently, the initial categorization of primary end-users in CAMI, according to the proposed project, was as follows:

"Primary end-users will be older adults (seniors) in general and adults with cardiovascular diseases, diabetes and mild cognitive impairment in particular (highest incidence for the target group). The targeted age limits are 55-65 years old. Our choice is justified by the already recognized (AAL projects and own experience of the CAMI end-user organizations) that the acceptability of ICT technologies is at its lowest limit in the group of elderly people (70+). It constitutes in fact one of the main barriers for its large-scale commercialization and exploitation. Our aim is to target primary users who have the highest changes of accepting CAMI solution and thus have the highest benefits from the project results (technology and services). These are today's adults age 55-60 who were not older than their 40ties (35-40 years) when the internet started its widespread use around 1995 and who were still

able at that time to adopt emerging technologies and services in their everyday life. We expect that today's older adults, age 60-65, are facing the lower margins of ICT acceptability. CAMI will evaluate this within its extensive end-user involvement in WP1. We will also take into account that cognitive age, or the perceived, mental age of an individual, plays a significant role in that person's acceptance of technology."

Regarding the age criterion which, presumably is also connected to the acceptance criterion as outlined above, the following arguments lead already to the differentiation of end-users. Results reported in D1.1 revealed that Danish end-users age 65-71 did not appear to be in great need of technical solutions for their daily activities. On the other hand, Romanian and Polish end-users appeared less familiar with modern ICT technologies even at 65 years old. Consequently, several possibilities were considered for the further inclusion of end-users in CAMI. One possibility was to have age limits tuned for each country. The other possibility which was also the one adopted in CAMI was to extend the initial age limit to cover requirements in all end-user countries. The limits 55-75 years old were the ones adopted as age selection criterion in WP1. The present task aims in identifying and defining additional end-user selection criteria (e.g. criteria arising from the differences in health status and economical status).

Obvious criteria arise from the support offered by the CAMI modules to the limitations or needs of the end-users. These modules were described in WP2 and exploited when preparing the multinational survey, conjoint analysis and focus groups in WP1.

Table 1. Basic groups of activities together and their coresponding specific activities along with the CAMI modules/functionalities addressing them

Groups	Generic/ broad category of activity	Specific activity	Modules/functionalities addressing the problem
Health-related	Health crisis or problem interventions	Taking first aid measures etc. Falling down Calling for help	Fall detection and fall avoidance Robotic platform
	Health monitoring	Recording physiological parameters	Health monitoring at home
	Health activities	Exercising	Monitoring of physical activity; computer supervised physical exercises
		Obtaining medical advice	Communication with health professionals (OpenTele, Telepresence)
		Taking medication	Reminders
Household specific / related	Daily / regular chores	Buying various items	Reminders
		Cleaning	Intelligent home appliances (service robots)

		Reminders	
	Cooking / preparing food/Eating	Reminders	
	Maintenance	Robotic platform	
Hobbies & leisure	Socializing	Socializing	Robotic telepresence
		Watching TV, listening to radio	Voice control
		Utilizing PC / other technology	
		Gardening, landscaping	Service robots

4.1.1   Health related end-user group

4.1.1.1   *Description of the end-user group*

The end-users in this group are characterized by various health conditions. The main ones targeted in CAMI are cardiovascular diseases, diabetes and mild cognitive impairment in particular. The health condition of the elderly interviewed in D1.2 was estimating through several questions in the multinational survey. Out of the 105 users from the three end-user countries 60 respondents suffer from chronic diseases such as: cardiovascular (24), diabetes (16), respiratory System (11), osteoporosis and rheumatism (8), liver and kidneys (2), thyroid problems (3), other: obesity (1), alcoholism (1), cancer (1), depression (1), digestive system (1). However, only 20% of respondents are not satisfied with the status of their health which indicates that their health problems are under control. However, this does not exclude the need for regular medical checkups and communication with health professionals.

The most profound daily obstacle among all listed is remembering about the small things and remembering about taking their medication pills (see Figure 1). Another often encountered complain was that of falling inside the home. Nearly 30% of the participants have experienced at least one such event. In the first case reminders, home automation and a robotic presence can help users. In the second case the fall and alert module will be the one supporting the users.
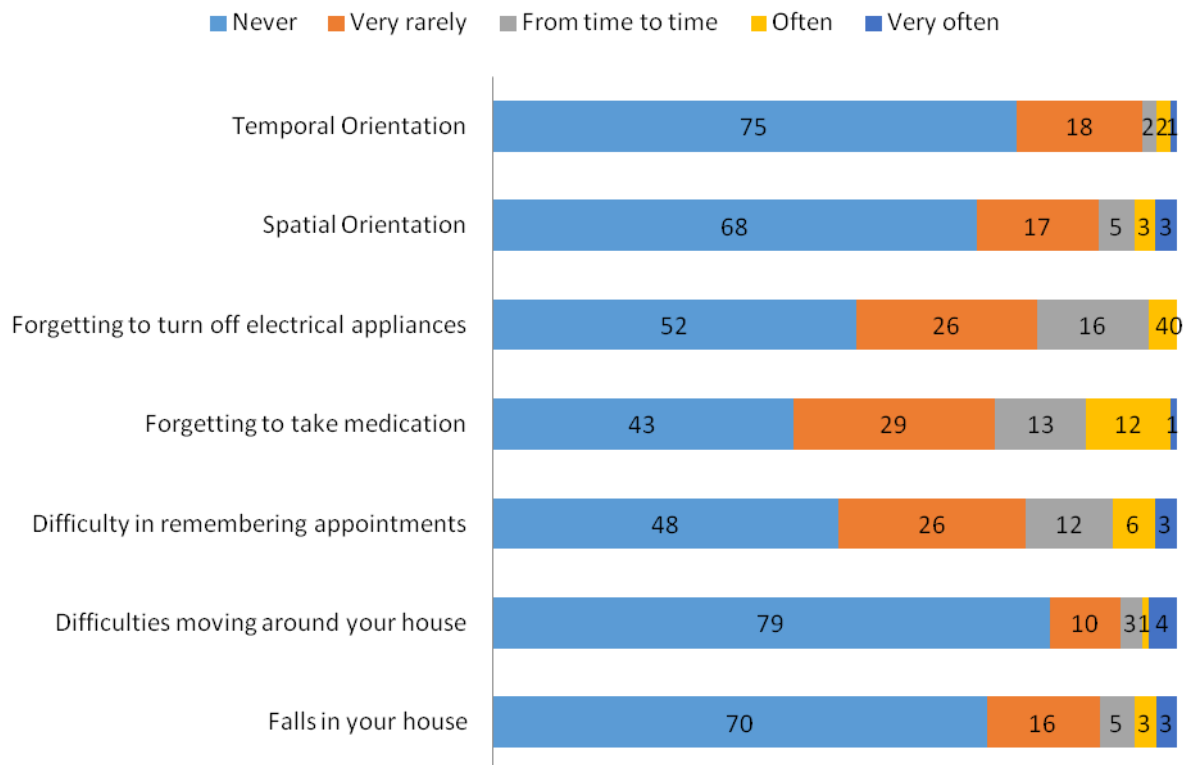
Figure 1. Limitatins encountered by the users in D1.2 due to their health problems.

Among the chronic health problems reported cardiovascular diseases and diabetes were prevailing. The end-users in these groups can benefit from CAMI services by using the health monitoring at home. They can also use the reminder module associated with the dynamic program management module to not forget taking their medication, measuring the glucose levels or doing their insulin shots. Additionally, for the insulin dependent seniors in particular but also for the other diabetic users the fall detector service is essential during hypoglycaemic episodes. Also, monitoring their daily physical activity and performing regular exercises is important for tuning their treatment and maintaining a healthy lifestyle.

4.1.2   Diagrams of use-cases

A series of use-cases have been developed in D1.4 by taking into account the interaction between the end-users in this group and the CAMI platform. For example, the diagram below (Figure 2) presents the interaction with the Linkwatch module developed by CNET for monitoring various important physiological parameters (e.g. blood pressure, blood glucose, heart rate) at home.

Figure 2. UML diagram of the interaction between primary and secondary CAMI users with Linkwatch.

The Linkwatch module can help monitor both the cardiovascular and the diabetes groups described above. For both groups, in addition to disease specific parameters (i.e. blood pressure, heart rate, glucose), also body weight needs regular monitoring. Integration of Linkwatch in the CAMI platform will offer additional functionalities such as reminders and alerts. Figure 3 is presenting the interaction of the users with the dynamic program management module which issues medication reminders.
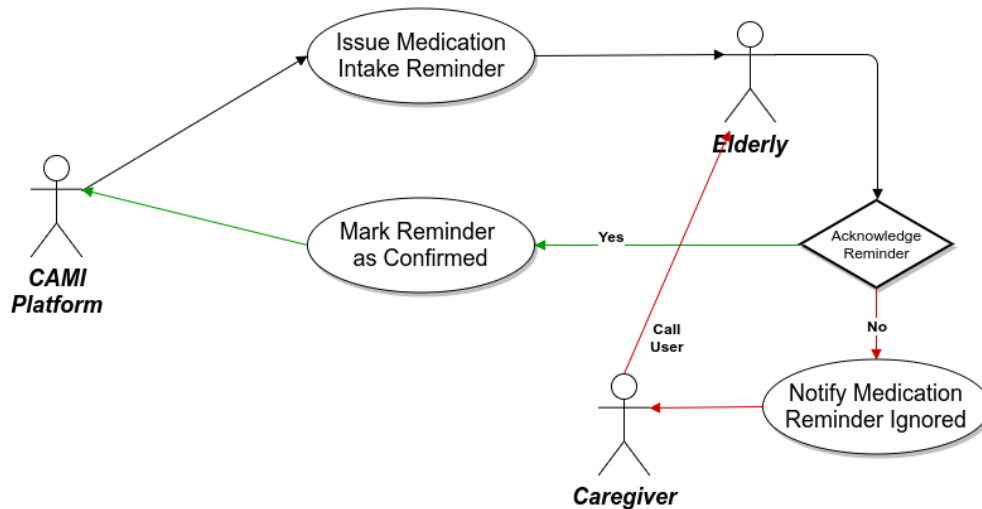
Figure 3. Interaction diagram for the medication reminders.

4.1.3   House hold related end-user group

4.1.3.1   Description of the end-user group

Areas of functioning characterizing end-users in this group are related to house-hold activities. As all surveys clearly demonstrate, people (not only seniors but all adults no matter what their limitations or needs) are determined to keep the best possible level of self-sufficiency and independence in their daily lives. House-hold chores belong to this area in which assistance is mostly needed or early desired but not always available. The matter of non-availability of assistance is strongly correlated with the problem of feeling safe. Respondents in D1.2 (multinational survey) declare however they have a person to rely on in emergency cases. One of the main foreseen outcomes of using the CAMI platform is for its users to feel secure/safe. The home monitoring and automation module in CAMI can be used to guarantee the safe closure of all windows, doors as well as deactivation of electronic devices (electronic cooker, iron, etc.). At the same time, the intelligent home appliances (also called service robots) can aid in house hold chores such as vacuuming, windows cleaning, lawn mowing, etc. A robotic presence can ensure a smooth (e.g. vocal) interaction between all sensors and devices in the user's home and the users themselves. It can also issue alerts in case of abnormal situations.

According to the results of the conjoint analysis, home directed functionalities were ranked by 57 users (25 Romanians, 12 Danish and 20 Polish) among the most preferred ones along with health monitoring and supervised exercises. Moreover, primary end-users in the multinational survey declared to be more interested in purchasing the sensors and devices for home rather than renting them.

4.1.3.2   Diagrams of use-cases

A series of use-cases have been developed in D1.4 by taking into account the interaction between the end-users in this group and the CAMI platform. For example, the diagram in Figure 4 (see D1.4) is presenting the interaction of end-users with the home automation in CAMI.

Additionally, the first integration of a robotic platform (Tiago by Pal Robotics) in the CAMI platform is being implemented through the home automation module which will relay on the OpenHAB software. OpenHAB is a highly modular opens source solution which is integrating different home automation systems and technologies and offering intuitive user interfaces. It also offers an IoT-bridge[1] which can enable the communication between the robotic platform and the home automation devices and sensors.

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[1] http://wiki.ros.org/iot_bridge

The IoT_bridge provides a bi-directional bridge between ROS and the OpenHAB Home Automation system. This allows a ROS robot to connect to a vast variety of IoT devices such as motion detectors, Z-Wave devices, lighting, door locks.
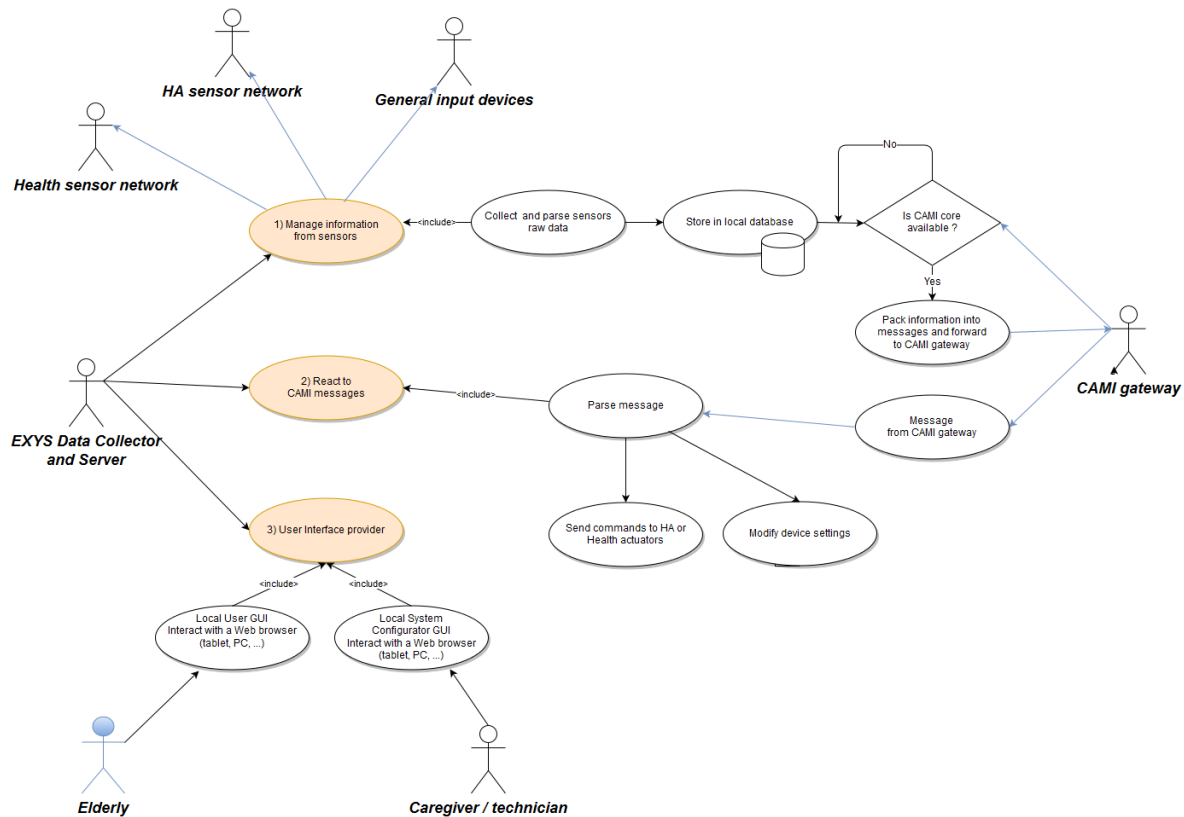

Figure 4. General UML diagram of the interaction between end-users and CAMI home monitoring and automation.

4.1.4   Hobbies and leisure related

4.1.4.1   Description of the end-user group

The end-users in this group (a) have expressed their interest for increased participation in hobby activities; (b) have an interest to have an active social network; (c) have characteristics that affect their daily life including their potential hobbies and/or leisure time respectively. The characteristics concern their body functions, their body structures, their activities and participation to various hobbies and social activities. An active social life proved to be of interest to the majority of CAMI's interviewed primary users in D1.2. Out of all respondents in the multinational survey 99% expressed their need for socialization (Figure 5). More than half of them (64%) need to socialize often and 8% even need to socialize all the time. Only 27% of the respondents feel the need to socialize seldom. Respondents who do not need to socialize amount to only 1%.
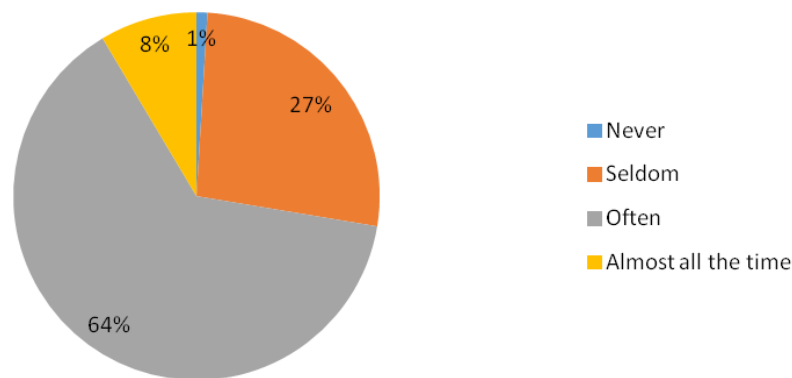
Figure

5. Need to socialize expressed by the respondents of the multinational survey in D1.2

End-users in this group are expected to benefit from the use of the CAMI platform, especially through services such as reminders of appointments, multi-user supervised exercises and telepresence platforms. Additionally, CAMI end-users will also benefit indirectly by being able to engage in their preferred hobbies or a more active social life due to the fact that they maintain a better health status and feel more secure to leave their homes due the home monitoring and automation module.

4.1.4.2   Diagrams of use-cases

As outlined in D1.4, the functionality of the robotic platforms in CAMI is to support the communication between primary and secondary users of CAMI but also among primary users. It is also delivering information to the primary users from the other CAMI modules, e.g. daily reminders. In addition, if the telepresence is replaced with a robotic platform (e.g. Tiago or Pepper in Figure 6) then this module can become the interface between the house and the CAMI users in addition to being a valuable help in everyday tasks: as an intelligent and autonomous security agent for the home; as a hub capable of managing the equipment of their connected home for more comfort and economy; as a personal assistant who is issuing reminders and even brings objects from around the house.
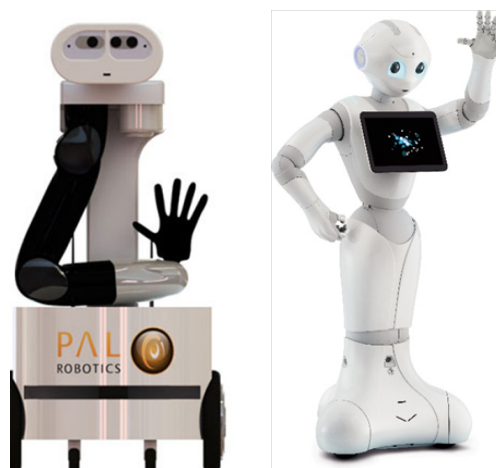

Figure 6. Tiago by Pal Robotics (left) and Pepper by Softbank (right).

The actors interacting with this module are primary users (elderly person) and secondary users (formal and informal caregivers). All actors can initiate the communication, through the telepresence, with other actors. Communication will be accompanied by remote manipulation of the telepresence by the

caregiver. Figure 7 is showing the interaction of the users with the telepresence module for communication purposes and also for requesting a demo of physical exercises.
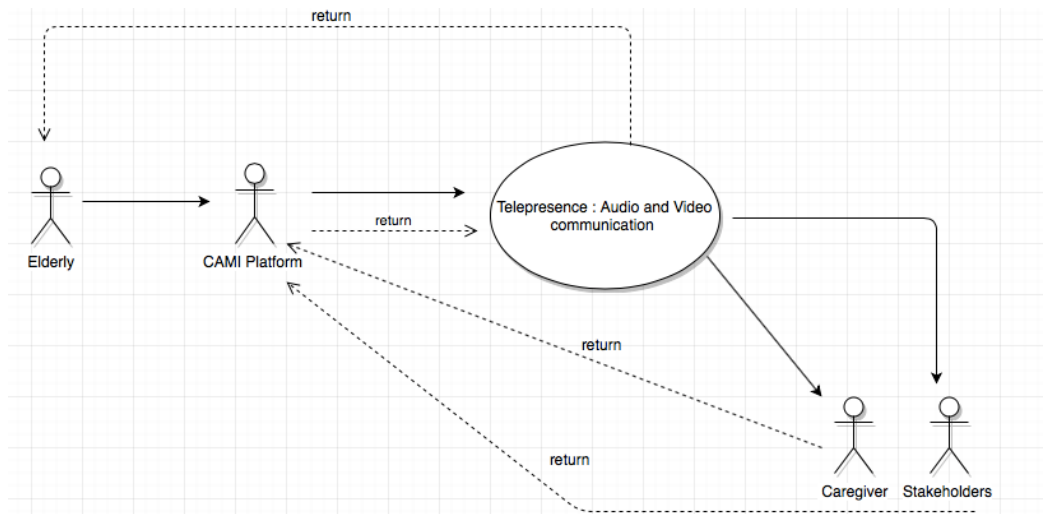
Figure 7. Use case diagram depicting use of telepresence for communication between elderly, caregivers and stakeholders (see D1.4).
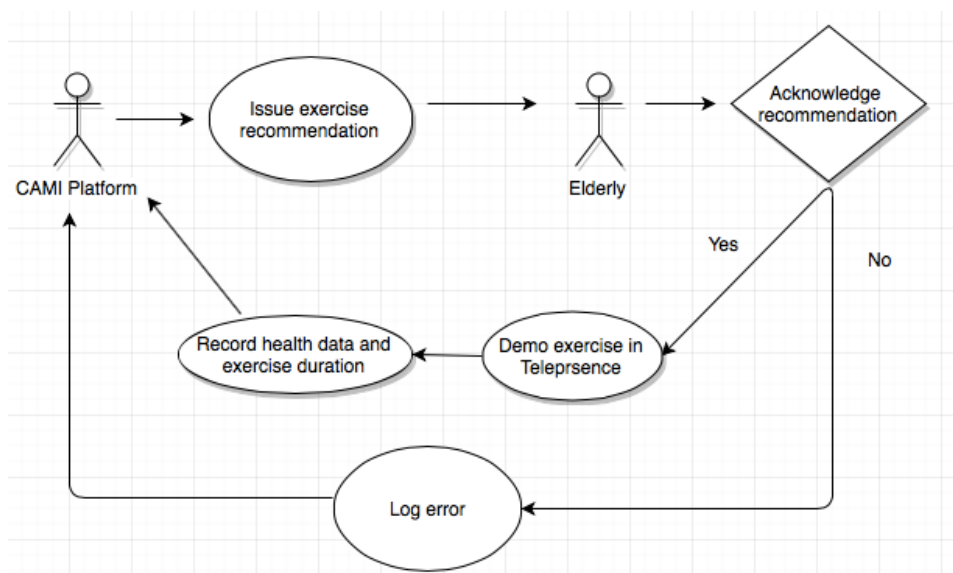
Figure 8. Interaction diagram depicting use of telepresence for supervised physical exercises.

4.2   Secondary end-users classification criteria

CAMI secondary end-users have been defined as being mainly informal caregivers (family, friends, neighbors…). However, we will also consider formal caregivers which will access or use AAL solutions for the benefit of primary end-users. Informal caregivers are any relative, partner, friend or neighbor who has a significant personal relationship with, and provides a broad range of assistance for, an older person or an adult with a chronic or disabling condition. These individuals may live with, or separately from, the person receiving care. Formal caregivers are typically paid providers but they may also be volunteers from a government or nonprofit organization. Where care is being provided in the home there is often a mix of formal and informal care. This happens mostly because with the increasing retirement age, informal caregivers are often still working and thus, the added responsibilities of care make it necessary to hire non-medical home aides to provide supervision and help when the primary caregiver cannot be present.

Depending on the country, when informal care is no longer possible, formal caregivers come into play on a full-time basis. This may be in the form of a congregate living arrangement, assisted living, a continuing care retirement community or a nursing home. It is at this point that long term care can have a significant impact on the finances of the care recipient and a healthy spouse living at home.

Another reality of providing informal care services in the home is the increasing need for physical and emotional support that often goes unrecognized until too late. As care needs increase, both in the number of hours required and in the number or intensity of activities requiring help, there is a greater need for the services of formal caregivers.

The need for a caregiver among CAMI primary users has been assessed during the multinational survey (D1.2, see Figure 9). Almost all of the seniors (96%) have a caregiver they can rely on in cases of emergency such as health issues, accidents etc. The survey indicates that a common tendency is to get help and support by close family members (87%). The second popular caregiver type is a friend (46%). The public or private services are the third popular possibility (15%).
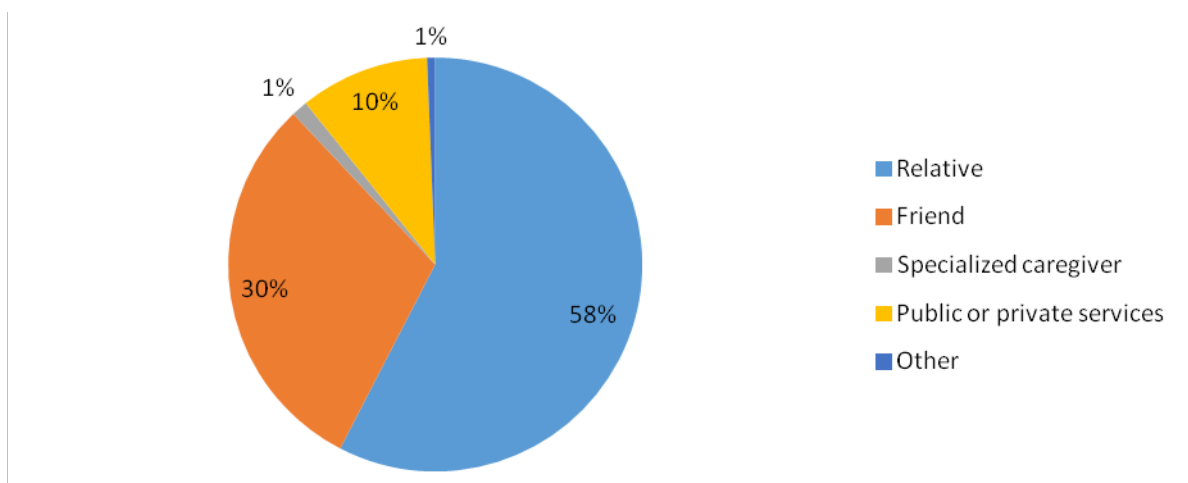
Figure 9. Caregiver type for the end-users in D1.2

All of the caregivers are educated but not necessary as formal caregivers (see Figure 10). Most often it is higher education: 18 of 58 caregivers have a master degree or higher, 26 have post-secondary school. This is most probably due to the fact that most of the caregivers in the survey are informal ones (55%). So, their studies do not reflect their actual training as caregivers. The majority of the secondary users respondents are employed (69%) or retired (16%).

Figure 10. Working status of caregivers in D1.2.

A total of 55% of respondents (32 respondents) declare that persons they have in care are their family members, friends or neighbors, while 45% (26 respon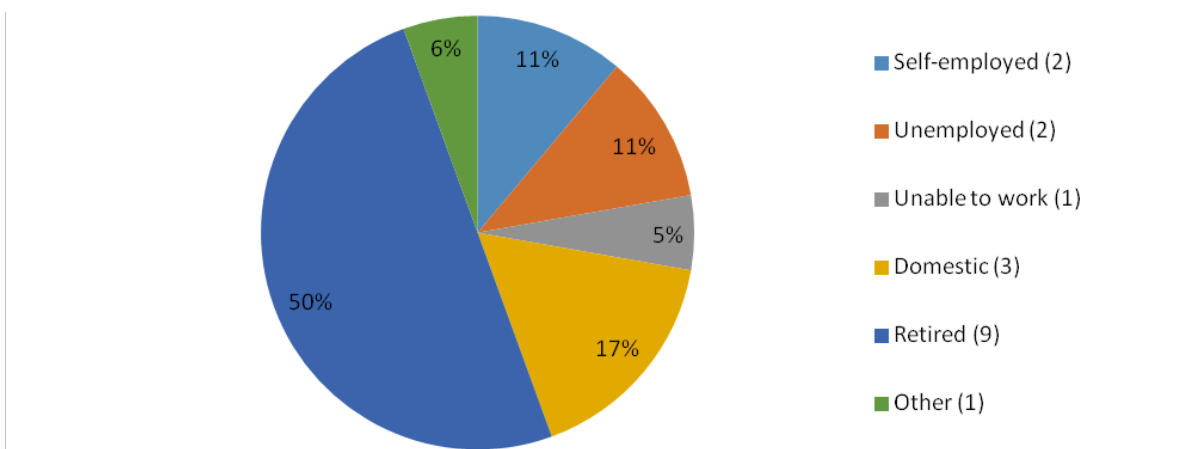dents) of them work as a professional caregiver. Most caregivers work in a retirement home (48%), while the 40% of the professional caregivers work in public institution but in the home of the person in care. Nearly 83% of the respondents think that collaboration with others is very important for their work.

The respondents seem to be highly engaged in their work. Most of the respondents work as a caregiver every day (60%) or almost every day (23%). Only one respondent declared to work as a caregiver only once a month.

Half of the respondents declare to live in the same house with the person they have in care (50%). The other half (50%) live in other places. Among respondents the majority (75%) is working as caregivers in urban areas, this outcome confirms also the information from the primary user research where the majority of the respondents live in the urban neighborhood. Some 12% of the caregivers work in rural and 12% work in sub-urban locations.

The experience of respondents as caregivers varies between 1 and 38 years. Most frequent experience is 5 years of experience (6 respondents). 8 of the respondents have worked as caregivers longer than 30 years.

4.3   Country specific user groups

Primary end-user selection in the three participating countries will take into account the demographic differences. These are outlined in the following section which is using Eurostat statistics[2] (including figures) to present in more detail the following aspects:

- The share of elderly (65 or over) in the total population
- The life expectancy after 65 years
- The years of being healthy over the age of 65
- The share of elderly who live alone
- The share of elderly who are still economically active
- The share of elderly who travel
- The share of elderly who use the internet at least once a week

4.3.1   The share of the elderly (65 or over) in the total population

The ageing population is one of the greatest social and economic challenges facing the EU countries. Projections foresee a growing number and share of elderly persons (aged 65 and over), with a particularly rapid increase in the number of very old persons (aged 85 and over). These demographic developments are likely to have a considerable impact on a wide range of policy areas. A direct influence is expected with respect to the different health and care requirements of the elderly, but also with respect to labor markets, social security and pension systems, economic fortunes, as well as government finances.

For those senior citizens who remain in good health, some will decide to continue to work or to become active in voluntary work, while others may join a variety of social groups, return to education, develop new skills, or choose to use their free time for travelling or other activities. As life expectancy continues to rise, the constraints, perceptions and requirements of retirement are changing.2 As shown in Figure 11, the share of elderly (65+) in Romania is 16.5%, 14.9% in Poland and 18.2% in Denmark. For the EU-28 member states, it is 18.5%.

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[2] People in the EU – statistics on an ageing society (link)

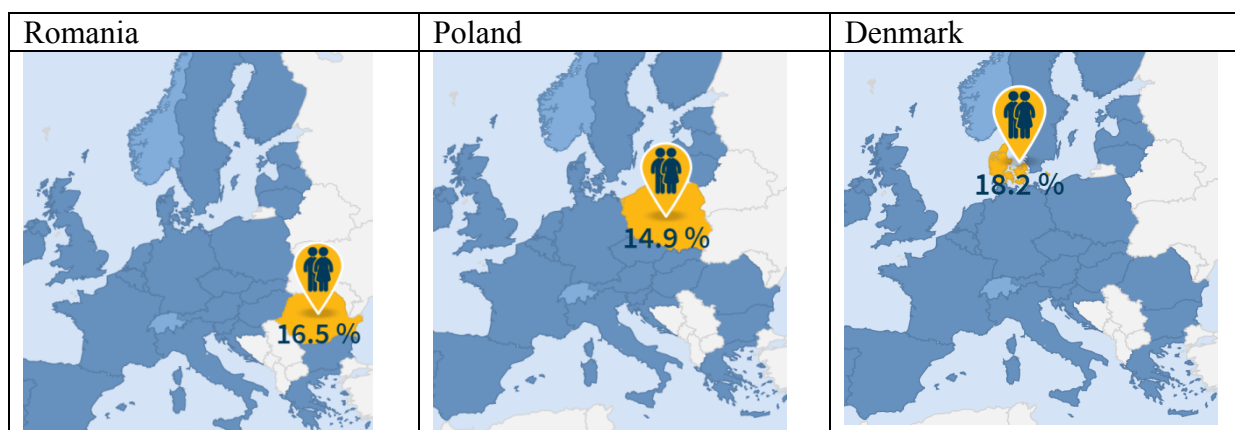| Romania	Poland	Denmark

Figure 11. The share of elderly (65+) in the total population.

4.3.2   The years that men and women expect to live over 65 years old

While it is broadly positive that life expectancy continues to rise and each person has a good chance of living longer, it is not so clear that additional years of life are welcome if plagued by a medical problems, disability or mental illness. Indicators on healthy life years combine information on mortality with data on health status (disability). They provide an indication as to the number of remaining years that a person of a particular age can expect to live free from any form of disability, introducing the concept of quality of life into the analysis of longevity. These indicators can be used, if needed, to monitor the progress being made in relation to the quality and sustainability of the healthcare today.

As shown in Figure 12, it is expected that in Romania men live approximately 15 years more after the age of 65 years while women exceed the age of 65 by approximately 18 years. For Poland the numbers are 19.9 for men and 15.5 for women, while the numbers for Denmark are 20.4 for men and 17.7 for Women. For the EU-28 the numbers are 21.3 for men, and 17.9 for women.
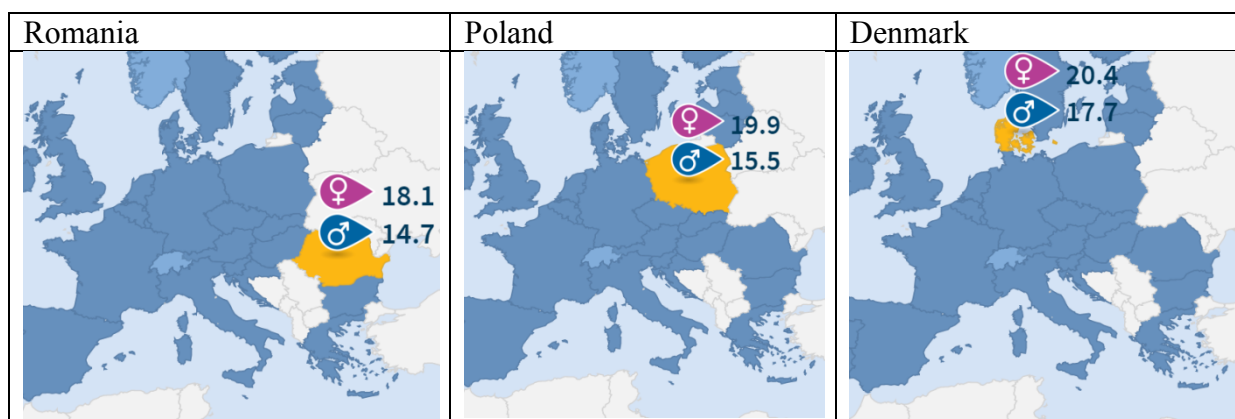
Romania	Poland	Denmark

Figure 12. *The years that men (♂) and women (♀) expect to live over 65 years old.*

4.3.3   The healthy life years men and women can expect to live over 65 years old

Health is an important priority in Europe, and also for Romania, Poland and Denmark, as EU member states. Romanian, Polish and Danish population expects to be protected against illness and accident and to receive appropriate healthcare services. The competence for the organization and delivery of healthcare services is largely held by the individual EU Member States. In Romania, the Government and health institutions as well as non-profit organizations are making efforts to bring the health system at EU level, in terms of providing health services at a high level of efficiency and professionalism. The Romanian Government actions are concentrated mainly on protecting people from health threats and disease (e.g. epidemics), consumer protection (food safety issues), promoting lifestyle choices (fitness and healthy eating), workplace safety, etc. Also in Poland, seniors' health is area of governmental

actions. One of the objectives of Long-term Senior Policy for years 2014-1020 adopted by the Council of Ministers[3] is providing and supporting conditions for seniors to maintain good health and autonomy for as long as possible. Nevertheless, the Polish health system was identified as "not meeting needs of elderly in terms of universality, quality, availability and comprehensiveness". Equal access to health services for all citizens is guaranteed by the polish constitution. The Polish health system is based on a mandatory health insurance service, which covers around 98% of the population, and provides access to wide range of health services. Nevertheless, many of them are not easily available in particular specialist outpatient services are hard to access. Poland also faced a deficit of professionals in area of geriatric care. Additionally, family physicians (in the primary care sector) often lack geriatric training and knowledge. Taking actions aimed at providing specialized, holistic, high quality geriatric care is one of the seniors' policy priorities. The Danish healthcare sector is mainly based on a public system, with free access to most medical services and medication cost coverage (above a certain minimum threshold), except for dentistry, which is only free for children. Nursing home and home care is also freely available for the frail elderly, provided by the individual municipalities. The European Commission works with EU Member States (including Romania) in using an open method of coordination for health issues. As shown in Figure 13, the expectation to live a healthy life over 65 years old is in Romania around 5 years for women and almost 6 years for men. In Poland it is 7.8 for men and 7.2 for women, and in Denmark it is 12.7 for men and 11.6 for women. For the EU-28 member states as a whole, it is 8.6 years for men, and 8.5 years for women. Thus, both Romania and Poland face challenges as compared with the EU-28 as a whole, and could benefit from the Danish experience in the area.
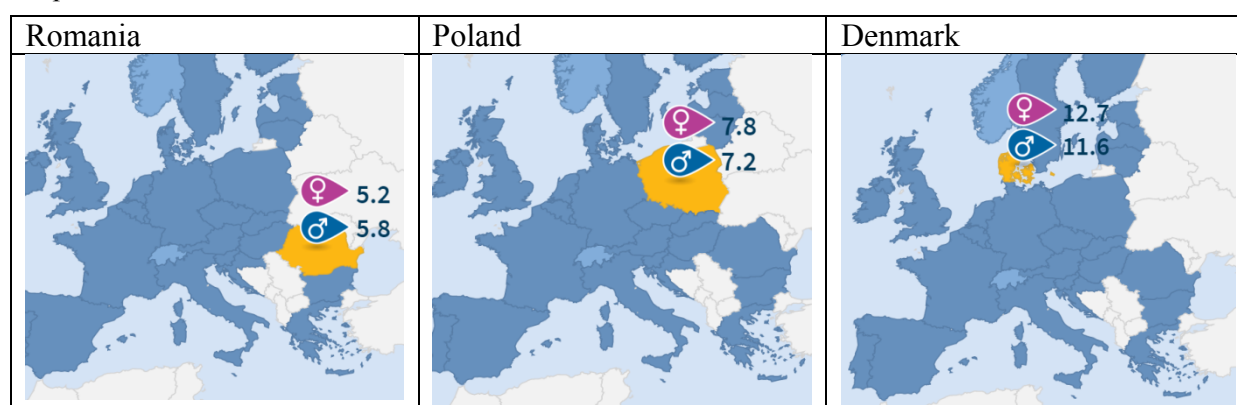

Figure 13. *Healthy life years for men (♂) and women (♀) over 65 years for the three member states.*

4.3.4   The share of the elderly who live alone

According to EU statistics on income and living conditions (EU-SILC), some 13.4% of households in the EU-28 in 2013 were composed of a single person aged 65 or over. This share ranged from highs of 18.6 % in Romania and 17.7 % in Lithuania down to lows of 9.9 % in Spain and 7.4 % in Cyprus. In 2015, the Romanian population living alone increased to 30% (see Figure 15). For Poland the number is 28.1%, while in Denmark it is 40.3%. For EU-28 the number is 31.4%

Living alone is a major risk factor, as sudden illness (e.g. strokes and heart attacks) and falls and other accidents in the home, could be significantly more dangerous, as swift hospitalization is critical for good recovery prospects. Especially the "long lie", e.g. elderly falling and not being able to raise the alert themselves, is highly dangerous. Thus, development of novel, effective and cost-effient technologies for fall detection and for the monitoring of behaverioal changes, e.g. due to sudden illness, is paramount to develop. Especially in a country like Denmark, where more than 40% of all senior citizens live alone, such support technology is considered highly important.

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[3] Long-term Senior Policy in Poland for the years 2014-2020 (link)

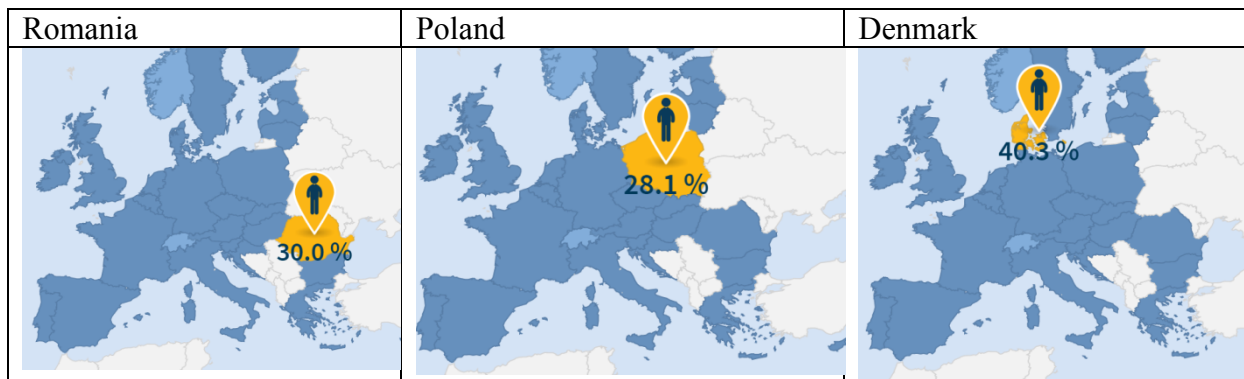| Romania	Poland	Denmark
30.0 %	28.1 %	40.3 %

Figure 14. The share of the elderly 65+ who live alone.

As a further note, the share of institutionalized people by the age of 85 is higher in Denmark than in Poland and Romania (Figure 15). This is partly due to a tradition of building public nursing homes of high quality in Denmark, rather than having seniors and elderly live with the younger members of their families.

Share of population aged 85 years and over living in an institutional household, by NUTS level 2 region, 2011 (¹)
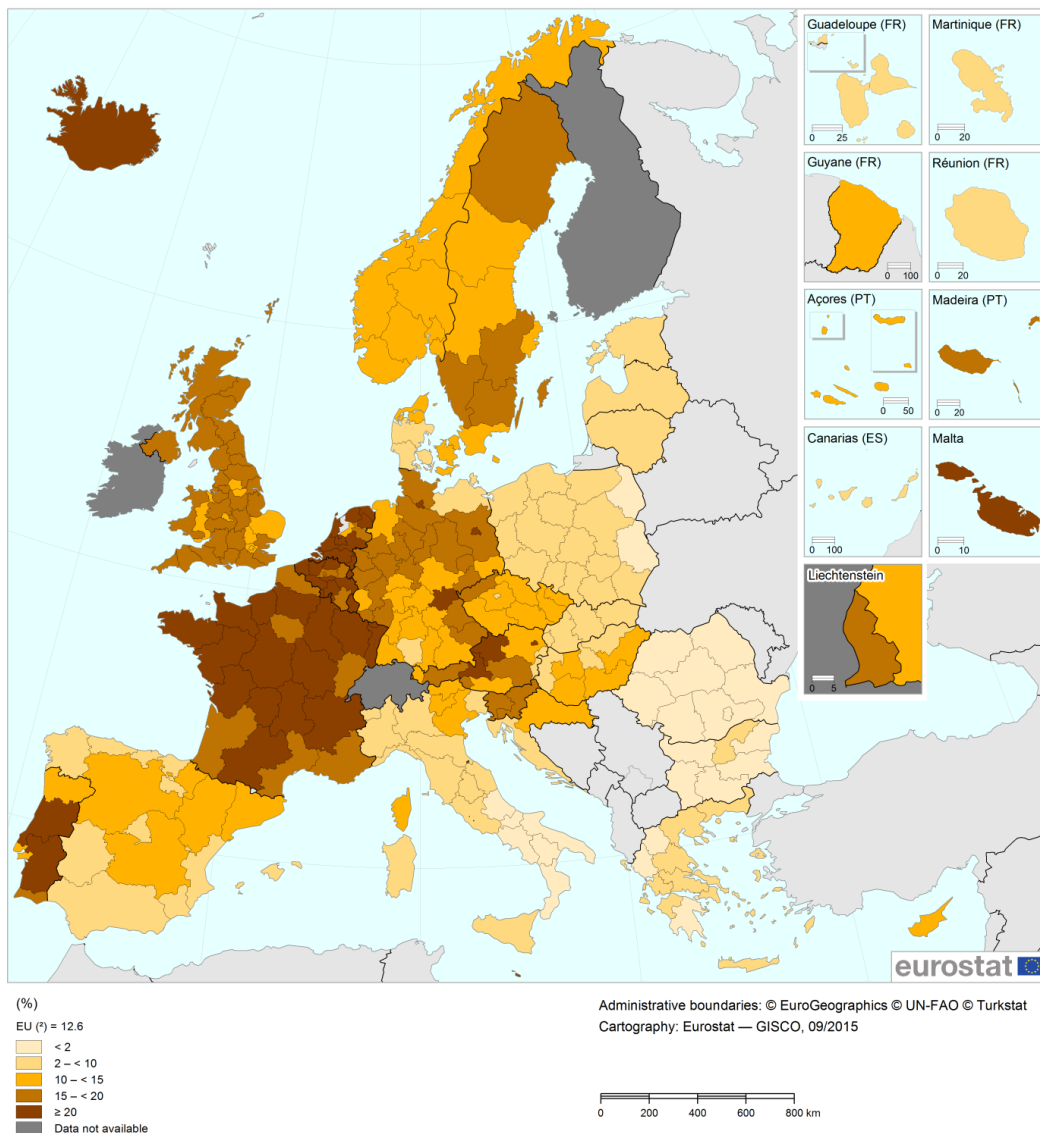
(%)

Figure 15. Share of population aged 85 living in institutional care.

4.3.5   The share of the elderly who are still economically active

The coming years will most likely experience considerable changes in the demographic profile of the EU labor force. Activity rates among those aged 55–64 has increased during the last decade and their growth was unabated during the financial and economic crisis. In the future most expectations are for these patterns to continue, with a growing proportion of the elderly remaining in work for longer. This is in part due to an increase in retirement age and to restrictions on entering early retirement. This is also due to some people wanting to carry on working and others feeling forced to work for economic reasons. In Denmark, the government and parlament has for the last two decades been pressing an agenda of raising the retirement age. Currently it is 65, but it will raise to 68 before 2030, and likely 69 or 70 before 2050. Against the European trend, the reverse situation can be observed in Poland where after raising the retirement age to 67 for both men and women in 2012, it was recently lowered to previous level - 60 years for women and 65 for men.

Just over 20 % of those aged 65–84 in Romania remained economically active. This is the highest activity rate recorded since more than one fifth (20.8 % - see Figure 16) of the elderly population remained economically active. Among those aged 85 years and over, the activity rate in Romania was also by far the highest among the EU Member States. The reasons for these comparatively high activity rates in Romania may be: the relatively large share of the population who continue to work in family-run agricultural holdings, the low or even very low pension rates for the elderly retired people which does not ensure decent living conditions, etc. Also in Denmark, the rate is higher than the European average at 11.6%, which may be due to the excellent health condition of many seniors, as well as a shortage of specialist, e.g. medical doctors, nurses, teachers, academics, and other groups where age is not nessecarilly an obstacle for keeping a job. Also, part-time employment has become part of many Danish public sector work accords, meaning that many seniors retain a parttime position, while recieving their pensions at the same time. Again, this is based on a policy of a dwildeling work force, and the need to retain specialist on the work market for as long as possible. On the contrary, in Poland the share of the elderly who are still economically active is among the lowest in Europe, below the EU-28 average of 6.8%. One of the reasons for this is the low average retirement age but also that the Polish system is not enhancing elderly to stay economical active in terms of training and educational forms dedicated to this group. Taking actions aimed at activating seniors to stay at the labor market is one of main objectives of the Polish senior policy.[3]
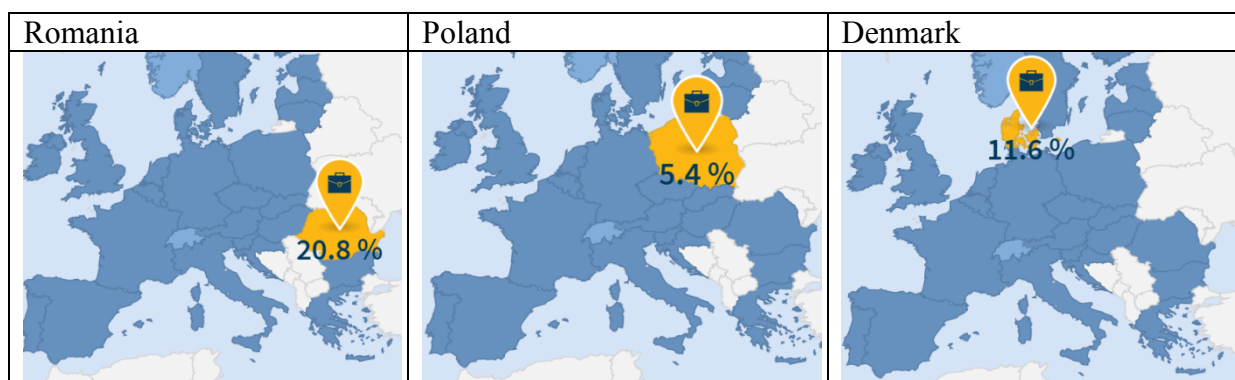

Figure 16. The share of the elderly who are still economically active.

4.3.6   The share of the elderly who travel

Travelling around the world is something that many people from all generations enjoy doing. Indeed, many older people take great pleasure from having more spare time in their retirement to be able to travel around their own country, other EU Member States or to destinations that are further afield.

As with other age groups, the possibilities for enjoying travel and tourism in older age are linked to the availability of income (financial reasons) and health status. Thus, travelling is a good indicator of the "active and healthy living" status of a population. Among the seniors and elderly the issue of healthy life expectancy is of particular importance. In Romania health issues and financial issues are determining both, whether or not the Romanian elderly population participated in tourism. The share of elderly population participating in tourism is among the lowest in Romania, see Figure 17. The number for Romania is 11.7%, while Poland and Denmark is at 37.5% and 67.3% respectively. This should be compared with an EU-28 average of 48.1%. Thus, the Danish figures represent the good health status and high share of economically sound seniors and elderly.
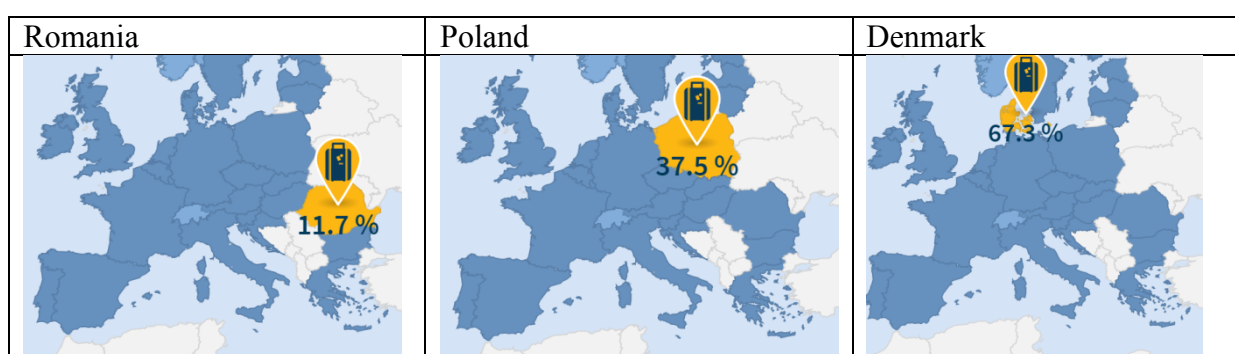

Figure 17. The share of the elderly who travels.

4.3.7   The share of the elderly who use the internet at least once a week

Some senior citizens remain wary of technology and in particular computers and the internet. In particular the internet opens up a wealth of new opportunities and services that may be of particular interest to the elderly. Consequently, a growing proportion of the elderly goes online, either as younger generations who have used the internet move into the older age classes, or as people develop internet skills in their old age. Some statistics show that, once the elderly are confident enough to use technology, they start using the internet actively, just like younger generations.

In relation to their regular use of the internet, there is a relatively large digital divide between northern and western EU Member States on one hand and southern and eastern EU Member States on the other. Luxembourg (79 %), Denmark (76 %), Sweden (76 %), the Netherlands (70 %), the United Kingdom (66 %), Finland (62 %) and Belgium (52 %) were the only EU Member States where more than half of the elderly population aged 65–74 used the internet in 2014 at least once a week. In Romania and Bulgaria, on the other hand, less than 10 % of all senior citizens aged 65–74 went online at least once a week. The information for Romania, Poland and Denmark is given also in Figure 18. This should be compared to an EU-28 average of 41%, For Denmark, the coverage has risen and is now closer to 96%. It may be expected that EU member states numbers has also risen in the last two years. In fact, polish long- term senior policy stressed out the need for adaptation seniors citizens to the world of new technologies and outline the necessity of taking actions that will improve their digital skills. It will allow them not only benefit from online resources and services but also it is seen as a way to prevent them from marginalization and social exclusion.

Access to computer and internet technology is paramount for securing the proliferation of the assistive technologies and services, like those being developed for the CAMI project. Thus, such access should be secured by all means. One viable strategy includes keeping equipment and infrastructure costs low. Thus, the CAMI project has focus on delivering both cost-effective services which are likely to be

more easily proliferated (due to their low cost and maintenance), besides the more advanced technology available, such as presence and service robots (which are currently very expensive and requires fairly high maintenance costs).
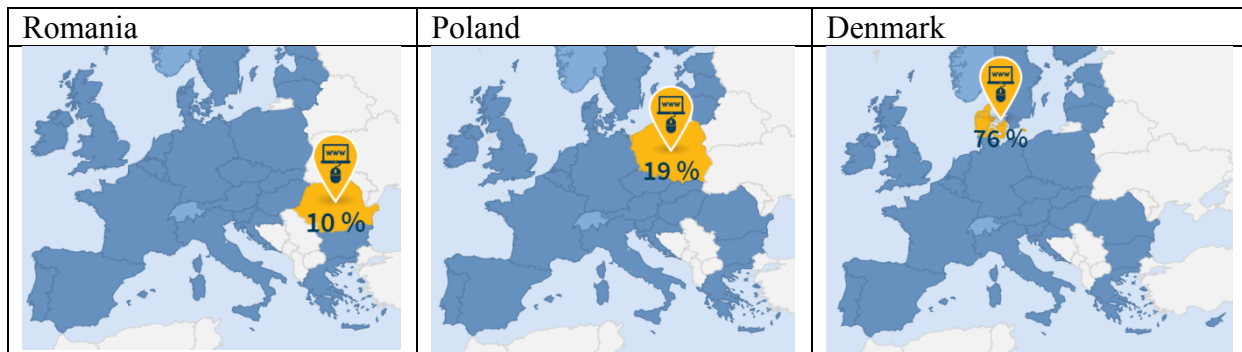
Romania	Poland	Denmark

Figure 18. The share of the elderly who use the internet at least once a week.

5   Conclusions

This report has identified the most important target groups of end-users that will benefit more from a particular service or group of services. It is based on the input from the task T1.4 which reported on the results of the mockup application tests. Various selection and classification criteria have been considered and justified based on current demographics and statics from the three end-user countries and the EU-28 as a whole. Also, UML diagrams have been provided to illustrate the use case scenarios of how different target groups interact with the CAMI services. Some of these scenarios and service will be implemented in T3.4, while selected services will be considered for end-user evaluation in one or more of the three end-user countries.

Thus, it is planned that CAMI end-user evaluation will target the primary end-users in two age groups: 55-70 (seniors), and the 70-75 (elderly) with a focus on end-users with one or more chronic condition. Although a different terminology is used here for the end-user age groups, we will employ the term seniors (comprising both 55-70 and 70+ age groups) during the end-user involvement in the field trials.

 Due to the large differences in health status and economical status between the participating countries, we will not use equal groups in terms of age and size. Also, secondary end-users, both formal and informal caregivers will be included in the end-user evaluations.

Several of the CAMI services will be tested in each country, and as such, not all of the CAMI services will be tested in all of the three participating end-user countries. Specifically, healthcare services, service robots, home automation services, exercise services, and fall detection services is currently planned for evaluation in Denmark to the extent that the technical to which these will be delivered by the technical development team. For Poland end-user evaluations will likely include healthcare services, home automation services, exercise services, and fall detection, while for Romania end-user evaluations will likely include in addition also robotic platforms. A small series of end-user tests will be performed over shorter timespans, while each country will perform a longitudinal study of at least 2-3 months with 2-4 primary end-users, and 1-2 secondary end-users in each country.