Deliverable 7.1: Innovation Prospect Report

Josef Hilbert, Rolf G. Heinze, Gerhard Naegele, Peter Enste, Sebastian Merkel, Claudia Ruddat, Fabian Hoose, Katja Linnenschmidt

<table>
<thead>
<tr>
<th>Deliverable:</th>
<th>7.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title:</td>
<td>Deliverable 7.1: Innovation Prospect Report</td>
</tr>
<tr>
<td>Lead contractor:</td>
<td>Institute for Work and Technology</td>
</tr>
<tr>
<td>Contact:</td>
<td>PD Dr. Josef Hilbert</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:hilbert@iat.eu">hilbert@iat.eu</a></td>
</tr>
<tr>
<td>Date:</td>
<td>October 2013</td>
</tr>
</tbody>
</table>
## Contents

1. Introduction .......................................................................................................................... 7
   1.1. The concept of active and healthy ageing – a brief introduction .................................... 9
   1.2. The “Silver Economy” .................................................................................................. 9
   1.3. Physical-spatial-technical environments – ICT, housing and mobility from an “active and healthy ageing perspective” ................................................................. 10
2. Country profiles – facts and figures .................................................................................. 13
   2.1. Measuring active and healthy ageing ............................................................................. 13
   2.2. Demographic development ......................................................................................... 16
3. Information and communication technologies (ICT) ....................................................... 20
   3.1. ICT – A new understanding .......................................................................................... 20
   3.2. The user’s needs ........................................................................................................... 22
   3.3. ICT-related trends and developments ......................................................................... 23
      3.3.1. Internet access of households ............................................................................... 23
   3.4. ICT and ageing in Europe .......................................................................................... 27
      3.4.1. Ambient Assisted Living Joint Programme .......................................................... 28
      3.4.2. Competitiveness and Innovation Framework Programme – ICT Support Policy Programme ................................................................. 30
      3.4.3. 7th Framework Programme .................................................................................. 32
   3.5. eHealth ......................................................................................................................... 33
   3.6. eHealth in European countries ...................................................................................... 35
      3.6.1. eHealth in Finland ................................................................................................. 35
      3.6.2. eHealth in Germany ............................................................................................... 35
      3.6.3. eHealth in Poland .................................................................................................. 36
      3.6.4. eHealth in Spain ................................................................................................... 37
      3.6.5. eHealth in the UK ................................................................................................. 37
   3.7. Barriers to the diffusion of ICT-based services and products ...................................... 38
      3.7.1. Technical challenges ............................................................................................. 39
      3.7.2. Economic challenges ............................................................................................ 39
      3.7.3. Social challenges .................................................................................................. 40
      3.7.4. Regulative challenges ............................................................................................ 40
4. The housing situation of older persons in Germany, Spain, Finland, Poland and the United Kingdom ...................................................................................................................... 41
   4.1. Housing and active and healthy ageing: complex interactions ...................................... 41
   4.2. Housing – the needs of the elderly ............................................................................... 42
4.3. Housing in old age: Trends ........................................................................ 55
   4.3.1. Accessibility ...................................................................................... 55
   4.3.2. Ambient Assisted Living .................................................................. 56
   4.3.3. Shared Housing ................................................................................. 56
   4.3.4. Age-friendly neighbourhoods .......................................................... 57
4.4. Drivers and Barriers regarding implementation and diffusion .................... 57
   4.4.1. Drivers and barriers regarding accessibility ....................................... 57
   4.4.2. Drivers and barriers regarding ambient assisted living ..................... 57
   4.4.3. Drivers and barriers regarding shared housing ................................... 58
   4.4.4. Drivers and barriers regarding age-friendly neighbourhoods ............ 58

5. Mobility ........................................................................................................ 59
   5.1. Defining mobility .................................................................................. 59
   5.2. Mobility needs of older people ............................................................. 59
   5.3. Mobility and transport in the European Union ........................................ 61
       5.3.1. Communications of the European Commission ................................ 61
       5.3.2. Mobility and ageing in European projects ....................................... 62
       5.3.3. Mobility and ageing in the Framework Programmes ......................... 63
       5.3.4. Mobility and ageing in the Ambient Assisted Living Joint Programme 64
       5.3.5. Programmes within the European Regional Development Fund ....... 64
   5.4. Mobility and transport policies with regard to ageing in selected countries 66
       5.4.1. Mobility and transport in Finland .................................................... 66
       5.4.2. Mobility and transport in Germany ................................................ 67
       5.4.3. Mobility and transport in Poland ..................................................... 68
       5.4.4. Mobility and transport in Spain ....................................................... 68
       5.4.5. Mobility and transport in the United Kingdom ................................. 69
   5.5. Research on and data of public transport and ageing .............................. 70
   5.6. Drivers and Barriers for mobility and older people ................................. 72

6. Conclusions .................................................................................................. 74
7. References ..................................................................................................... 76
Figures

Figure 1: Topics of WP7 – ICT, housing and mobility. ................................................................. 8
Figure 2: PST-environments. ........................................................................................................ 11
Figure 3: The Active Ageing Index – overview of domains and indicators .................................. 14
Figure 4: The Global AgeWatch Index – overview of domains and indicators .......................... 14
Figure 5: Population age.............................................................................................................. 16
Figure 6: Speed of ageing 60+ .................................................................................................. 17
Figure 7: Speed of ageing 80+ ................................................................................................. 18
Figure 8: Life expectancy for persons at the age of 65. ......................................................... 18
Figure 9: Share of persons aged 65 and older with an equivalent income less than 60 per cent of the median income. ......................................................................................... 19
Figure 10: The spectrum of needs and technologies. ............................................................... 21
Figure 11: Households having access to the Internet at home .................................................. 24
Figure 12: Households with broadband access ........................................................................ 24
Figure 13: Frequency of Internet access: once a week age 55 to 64. ........................................ 25
Figure 14: Frequency of Internet access: once a week age 65 to 74. ......................................... 25
Figure 15: Use of internet every day or nearly every day according to income ....................... 27
Figure 16: European projects on ICT and ageing ..................................................................... 28
Figure 17: Project partners in ranked proposals Call 1 to Call 5 (AAL JP). ................................. 30
Figure 18: Countries involved in ICT-PSP funded projects ....................................................... 32
Figure 19: Countries involved in FP7 funded projects .............................................................. 33
Figure 20: eHealth and related areas ........................................................................................ 34
Figure 21: Potential barriers to the diffusion of eHealth ........................................................... 38
Figure 22: Monthly net household income (in €). ..................................................................... 43
Figure 23: Share of people aged 65 and older living alone ..................................................... 44
Figure 24: Share of owners among low-income households (2008). ......................................... 45
Figure 25: Ownership structure for different areas for people aged 65 and older ................... 47
Figure 26: Share of owner occupation for different types of areas .......................................... 47
Figure 27: Mean of ”Problems with Accommodation”-Index for ownership situation. ............. 48
Figure 28: Mean of satisfaction with accommodation for ownership situation ........................ 50
Figure 29: Mean of satisfaction with accommodation for different areas ............................... 50
Figure 30: Satisfaction with accommodation / Health Status .................................................. 51
Figure 31: Mean of ”Negative Infrastructure”-index for different areas ............................... 52
Figure 32: Mean of ”Negative Infrastructure”-index / health status ....................................... 53
Figure 33: Share of people aged 65 and older in bad health status / ownership situation ......... 54
Figure 34: Share of dwellings built before 1980 ................................................................. 55
Figure 35: How would you describe your access to public transport facilities ..................... 71
Figure 36: How would you rate the quality of public transport ............................................. 72

Tables

Table 1: Key factors about the focus countries ........................................................................ 13
Table 2: Active Ageing Index overview .................................................................................. 15

4
Table 3: Global AgeWatch Index overview................................................................. 16
Table 4: Population development until 2050......................................................... 17
Table 5: Relevant cases in the EQLS 2011............................................................... 25
Table 6: Use of the internet according to age ....................................................... 26
Table 7: AAL JP calls and projects........................................................................... 28
Table 8: Ownership structure of housing for people aged 65 and older.................. 45
Table 9: Area people aged 65 and older are living in............................................ 46
Table 10: Share of people aged 65 and older affected by problems with accommodation........ 48
Table 11: Satisfaction with accommodation........................................................... 49
Table 12: Share of people aged 65 and older having difficulties to access the following facilities ..... 51
Table 13: Subjective health status of people aged 65 and older.............................. 53
Table 15: Projects within FP7 and FP5 relevant to mobility and ageing.................... 64
### List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAI</td>
<td>Active Ageing Index</td>
</tr>
<tr>
<td>AAL</td>
<td>Ambient Assisted Living</td>
</tr>
<tr>
<td>AAL JP</td>
<td>Ambient Assisted Living Joint Programme</td>
</tr>
<tr>
<td>DAE</td>
<td>Digital Agenda for Europe</td>
</tr>
<tr>
<td>DfT</td>
<td>Department for Transport</td>
</tr>
<tr>
<td>EC</td>
<td>The European Commission</td>
</tr>
<tr>
<td>e. g.</td>
<td>for example</td>
</tr>
<tr>
<td>EIP</td>
<td>Entrepreneurship and Innovation Programme</td>
</tr>
<tr>
<td>EQLS</td>
<td>European Quality of Life Survey</td>
</tr>
<tr>
<td>ERDF</td>
<td>European Regional Development Fund</td>
</tr>
<tr>
<td>FP7</td>
<td>7th Framework Programme</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross domestic product</td>
</tr>
<tr>
<td>Ibid</td>
<td>ibidem</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communication Technologies</td>
</tr>
<tr>
<td>ICT-PSP</td>
<td>The Information Communication Technologies Policy Support Programme</td>
</tr>
<tr>
<td>IEE</td>
<td>The Intelligent Energy Europe Programme</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>PC</td>
<td>Personal computer</td>
</tr>
<tr>
<td>PEIT</td>
<td>Plan Estratégico de Infraestructuras y Transporte</td>
</tr>
<tr>
<td>PST</td>
<td>physical, spatial and technical</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and development</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>WP</td>
<td>Work package</td>
</tr>
</tbody>
</table>
1. Introduction

The demographic development in Europe (and beyond) is characterised by three major trends: The increasing life expectancy and the simultaneously decreasing birth rates as well as the growing amount of very old persons (aged 80 and older). Result of all this is an increasing number of older people – in relative and absolute terms. Though Europe is already the oldest region worldwide, the share of persons aged 65 and older will increase to almost 30 per cent by 2030 (Eurostat 2011) and the increase in life expectancy averages twelve month every five years (FUTUREAGE 2011: 7; Oeppen and Vaupel 2001).

These developments go along with extensive societal and economic implications, which demand political and scientific actions. An often cited example is the rise of support needs with respect to a better prevention, curing and caring of diseases. The forecasted demographic developments can only be adequately responded to, if promising innovative approaches are invented, adopted, implemented and diffused within all European countries. Also, a multi-generational society with an increasing proportion of older people has to be aware of new demands, customer patterns and market opportunities. In fact, plenty of promising approaches targeting the challenges of the demographic developments already exist. Therefore it is the aim of this report to identify trends and promising solutions helping to deal with the demographic change and its implications.

Accompanying these trends is a shift within public discourses of ageing. A transition from a passive to a more active and enabling political orientation can be diagnosed (Walker 2009). MOPACT follows the vision that open-ended longevity is an asset for the society. However, this vision implies the individual and societal necessity to consider ageing as a chance instead of a burden.

This report represents the first task of work package seven (WP7) – “Built and technological environments”. This task (WP7.1) will identify and analyse innovative information and communication technologies, mobility and housing trends which are addressed to meet the needs of the elderly. Hereby we set a focus on five countries: Finland, Germany, Poland, Spain and the United Kingdom (UK). Each of those countries has its own characteristics and deals with the implications of the demographic change in a different way. The countries were selected according to the different types identified by comparative welfare state research. A northern European (social-democratic) welfare state (Finland), a continental (corporatist) welfare state (Germany), an Anglo-Saxon (liberal) welfare state (UK), a southern European welfare state (Spain) and an eastern European (post-communist) welfare-state (Poland).

ICT, housing and mobility each represent a broad field on their own; therefore, the focus will be set narrowed (see figure 1). Based on an international literature review and on a research for initiatives and R&D projects, trend-reports for each of the three topics will be provided. These will result in the identification of potential benefits for both, the elderly and the economy, as well as in an informed understanding of barriers and driving forces. The first section describes the background of the analysis and provides the understanding for the further steps. This includes a brief introduction into the concepts of active and healthy ageing and the silver economy as well as a description of what is understood by physical and spatial environments.
Figure 1: Topics of WP7 – ICT, housing and mobility.

The second section of this report provides an overview of the country profiles of Finland, Germany, Poland, Spain and the UK, focusing on general indicators and on indicators with respect to the demographic change and potential upcoming challenges. The third, fourth and fifth sections represent the three topics: Information and communication technology (ICT), housing and mobility.

**Information and communication technologies (ICT)** can help supporting an independent living as ICT-based devices help persons to stay in their own home as long as possible, support their mobility and provide access to daily services, especially healthcare. Much effort has been put into R&D of ICT-based solutions on the European level as well as on national level in recent years. But up to now not many products and services have been implemented on a large basis, the lack of diffusion can be seen as the most relevant challenge – due to various reasons. We identified these reasons – with respect to national characteristics of the focus countries – by analyzing secondary data like the European Quality of Life Survey (EQLS, wave 2011) and Eurostat. Furthermore we took a look at European project on ICT and ageing as well as on available literature.

As especially the elderly spend a very high part of their time in their homes, a **housing** situation that fosters active and healthy ageing is crucial. As most of the elderly want to stay in their (kn)own environment even and/or especially if in need of support and care, four fields of action regarding housing have been identified, that contribute to a self-determined life for the elderly: accessibility in and around the homes, ambient assisted living, age-friendly neighbourhoods and shared housing. In order to identify the needs of older persons the EQLS (wave 2011) to analyse the social structure of housing of the elderly in the five case study countries. This analysis reveals a high variance between and inside the observed countries. Those differences reflect but also ask for different policy strategies regarding the different target groups regarding the above mentioned fields of action.

**Mobility** is an important factor to facilitate that older people can take part in social life, have access to social services and health care as well as living in their own homes and staying in their familiar environment. Thus, to enable and to encourage older people to use public transport, the mobility chain which includes all phases of a trip has to ensure availability, acceptability, accessibility and affordability. As we concluded in the analyses of the policies of the European Commission and of the selected countries, availability and accessibility are the striking challenges in mobility today and in the future. Availability is foremost a concern in rural areas, accessibility is a requirement for barrier-free transport for all people.
1.1. The concept of active and healthy ageing – a brief introduction

The concept of active and healthy ageing is the central element of MOPACT. This introduction has to be understood as a very brief summary on active and healthy ageing, which will introduce the core principles of the concept.

In the past ageing was predominantly perceived as a process of decline concerning physical and mental skills and capabilities. This view has changed. Still facing stereotypes, ageing is now understood as an asset instead of a burden for society. This paradigm shift was accompanied by new approaches to ageing - most known the concept of “Active and Healthy Ageing”. However, the term “active and healthy ageing” itself does not represent a “coherent strategy and is sometimes just a slogan used to cover anything that seems to fit under it” (Walker 2002: 124). Therefore it is necessary to provide a short overview of what we understand as active and healthy ageing.

The concept originally emerged in the United States during the 1960s and found its way to Europe in the late 90s (Walker 2002; Walker 2009). A major stakeholder who influenced the ascension on the European level was the World Health Organization (WHO), which released a policy framework in 2002 that describes three central themes (“pillars”) of active and healthy ageing: participation, security and health (WHO 2002; Butler, Oberlink and Schecter 1990). Within the framework active and healthy ageing is defined as “…the process of optimizing opportunities for health, participation, and security in order to enhance quality of life as people age” (WHO 2002: 13). The concept provided by the WHO has a strong focus on health whereupon the understanding of health covers a wide variety. It follows the vision that active and healthy ageing depends on six determinants of health effects – social determinants, economic determinants, health and social services, behavioural determinants, personal determinants and physical determinants – framed by gender and cultural aspects (WHO 2002).

According to Walker, seven key principles of active and healthy ageing can be identified (Walker 2002):

- The term “activity” should include all aspects relevant for a person’s well-being such as “family, the local community or society at large” (Walker 2002: 124);
- The concept includes all older people;
- It is a preventive concept;
- Active ageing has to be understood as an intergenerational approach, that calls for intergenerational solidarity;
- The concept embodies rights as well as obligations;
- The concepts strategy should be both, participative and empowering;
- The concept has to respect national and cultural diversities.

1.2. The “Silver Economy”

The concept of the “silver economy” is based on the following paradigm: While in the past older persons were not regarded as potential customers and nearly ignored as a financially target group by providers of products and services, this perception has changed during the last decade. For a long time there were prevalent negative stereotypes on old age, but an increasing heterogeneity and differentiated images of old age associated with an age specific change in consumption requirements led to conceptual win-win considerations for both sides (Enste, Leve and Naegele 2008).
Along with demographic change, the general socio-economic situation of older people in Europe has improved due to the development of pension schemes and other welfare features. In fact the income situation of older people has considerably improved in the past few years. Despite these positive trends, there are significant variations in the level and the structure of incomes for example, older women receive smaller pensions on the average than men as they earn less and their working careers are more fragmented. So this group has a high risk of falling into poverty at old age. Also there are differences in income levels between European countries, for example the average income situation of older people in Germany is much better than in Poland (see section 2.2.).

The consumer behaviour of older people has changed during the last decades. In particular the German and British today’s older generation is influenced by the upswing after the Second World War. This generation is characterised as powerful but also critical consumers. Once again, the consumer behaviour is hallmarked by a huge heterogeneity, which leads to different needs and desires. For example in the last decades, an uprising desire for health related products and services has to be mentioned (Gross, Hilbert and Potratz 2009).

Based on these developments, the aims of the silver economy can be summarised as follows: On the one hand, there is the social policy goal of increasing the quality of life of all older people. This perspective focuses particularly on supporting independent living in old age by enhancing an age-friendly environment. Keeping this in mind, the silver economy should not be seen as an own economic sector but rather as a cross-section market, which affects diverse sectors like health, mobility, ICT, nutrition or housing (Heinze, Naegele and Schneiders 2011).

A well-functioning silver economy can lead to more jobs and economic growth. Nevertheless, not all enterprises have discovered the silver economy as a strategic field of activity. However, the silver economy bears also dangers: focusing mainly on older persons with high purchasing power could lead to (increasing) social inequalities. Hence it has to be a central task to develop business models including low- and premium price services which also includes identifying alternative ways of financing.

1.3. Physical-spatial-technical environments – ICT, housing and mobility from an “active and healthy ageing perspective”

As pointed out in the “Road Map for European Ageing Research”, built and technical environments represent an area with the opportunity to support the process of active and healthy ageing. Built and technical environments are a relatively novel, but nevertheless essential theme within ageing research at the European level. Within the last two decades or so ageing research began seeing the environment – homes and communities – as a central aspect. This includes person-environment dynamics as well as the importance of physical-spatial-technical (PST) environments for the process of ageing (Wahl and Iwarsson 2007). However, the importance of PST-environments in the context of ageing is not new. In fact, during the 1970s and even earlier, theoretical approaches emphasise a correlation between the biological process of ageing, the individual activity and a stimulating setting (Mollenkopf 2005).

The term “PST-environments” covers home environments, out-of-home environments and technology (see figure 2). PST-environments include the “full range of private living units, neighbourhoods, retirement communities, workplaces, shops and other service facilities, public transport facilities as well as long-term care institutions, hospitals, other health care facilities and
products” (FUTURAGE 2011: 58). This listing covers a broad variety of different areas; this report will concentrate on three of them: ICT, housing and mobility, as all of them have special characteristics, opportunities as well as challenges. Therefore a detailed view including a definition will be given for each of these three within the further explanations (see section 3, 4 and 5).

Up to now many features have been identified for how PST-environments influence the process of active and healthy ageing: “These include strategies to foster the ongoing social engagement of older people through improving access to buildings and public transport, improving walkability, creating destinations that encourage older people to leave their homes, strengthening intergenerational links and developing innovative technology such as web-based networking and videoconferencing.” (Beard and Petitot 2010:443).

As a result of the European project FUTUREAGE, several questions were raised that should guide future research on PST-environments; this report will focus especially on one of them:

- “What are the key enabling and constraining characteristics of built and technological environments for older adults, for example in terms of maintaining autonomy, well-being and identity? (FUTUREAGE 2011: 61)

![Figure 2: PST-environments.](image)

ICT, housing and mobility all play a major role within the context of ageing. They can help to secure social inclusion of older people and increase their quality of life, respectively support the process of active and healthy ageing. With changing physical and cognitive skills, environmental factors are getting more and more significant and “misfits between behavioural competence, personal needs, and environmental conditions might undermine life quality” (Mollenkopf 2005: 56). This applies growing importance on PST-environments and innovative solutions within this context. This includes “strategies to foster the ongoing social engagement of older people through improving access to buildings and public transport, improving walkability, creating destinations that encourage older people to leave their homes, strengthening intergenerational links and developing innovative technology such as web-based networking and videoconferencing.” (Beard and Petitot 2010: 448).

Furthermore, the environment people live and age in, accounts for variation in the way people age – not only according to physical health, but also to personal satisfaction. Or, put in other words, “the
everyday difficulties imposed by age-related functional decline such as mobility problems, sensory loss, or cognitive impairment significantly shape the dynamics of persons and environments” (Wahl and Iwarsson 2007: 49).

With increasing age, people spend most of their time at home – which usually is their first preference; being at home creates identity and implies the feeling of security. But this must not mean to be socially and physically excluded from the (social and local) community. Social inclusion and mobility depend largely on infrastructure and public as well as individual transport. Despite the fact that technology is not necessarily needed to provide opportunities for the elderly to stay home as long as possible and to participate in their communities, new social, organisational and technical solutions can play a key role within this context.

This leads to multiple demands to PST-environments and it should be clear, that each of the three areas (ICT, housing and mobility) can offer its own measures to support an active and healthy living. Still, the full potential can only be achieved if a holistic approach is applied. This will increase the complexity and ask for new solutions and research questions. But it could also help seeing each area from a different angle.
2. Country profiles – facts and figures

The five countries (Finland, Germany, Poland, Spain and the UK) offer a broad variety of different characteristics – not only in view of geological reasons. The following table shows common indicators like the size of the population and the inhabitants per km². However, in terms of active and healthy aging demographical facts are of most importance. Therefore, starting with indexes to measure active and healthy aging, this section compares multiple indicators to provide a starting position for the further steps.

Table 1: Key factors about the focus countries.

<table>
<thead>
<tr>
<th></th>
<th>Finland</th>
<th>Germany</th>
<th>Poland</th>
<th>Spain</th>
<th>United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (in million)</td>
<td>5,39</td>
<td>80,5</td>
<td>38,19</td>
<td>46,07</td>
<td>61,76</td>
</tr>
<tr>
<td>Inhabitants per km²</td>
<td>16</td>
<td>225</td>
<td>123</td>
<td>94</td>
<td>260</td>
</tr>
<tr>
<td>GDP (nominal)</td>
<td>266,5</td>
<td>3,577</td>
<td>513,8</td>
<td>1,493</td>
<td>2,417</td>
</tr>
<tr>
<td>GDP per capita in US$</td>
<td>37,846</td>
<td>39,187</td>
<td>19,908</td>
<td>32,501</td>
<td>35,441</td>
</tr>
</tbody>
</table>

Source: OECD 2013.

2.1. Measuring active and healthy ageing

When it comes to realize the concept of active and healthy ageing, one question is inherent: How can active and healthy ageing be measured? Zaidi and colleagues developed the Active Ageing Index (AAI, see figure 3) (Zaidi et al. 2012). The index expresses a positive normative judgment and targets four domains which can be consulted to compare different countries and their success in realizing the benefits of older people:

- Employment of older workers;
- Social activity and participation of older people;
- Independent and autonomous living of older persons; and
- Capacity and enabling environment for active ageing.

If combined, these four domains “can be interpreted as the gap between the achievement of the full active ageing potential and the current situation in a given country” (Zaidi et al. 2012: 2). For each domain different indicators – in total 22 – are used to express the current situation within a country. E.g. the indicator “use of ICT” represents the share of people aged 55-74 using the internet at least once a week. For each indicator, a higher value is associated positively concerning the domain and therefore the overall index.

Another recent publication compares the data of 91 countries worldwide to form the “Global AgeWatch Index” (see figure 4). The index ranks countries in terms of the wellbeing of older people. Four domains are used to calculate the overall result:

- Income security
- Health status

---

1 All domains are given equal weight, except for indicator 1.1 and the health indicators (2.1., 2.2. and 2.3.). (HelpAge 2013: 13).
• Employment and education
• Enabling environment

Each of those domains includes different indicators, 13 in total. E.g. the indicator “physical safety” “[...] gives an idea about how safe people feel in their neighbourhoods” (HelpAge 2013: 14).

Figure 3: The Active Ageing Index – overview of domains and indicators. Source: http://www1.unece.org/stat/platform/display/AAI/Active+Ageing+Index+Home

Figure 4: The Global AgeWatch Index – overview of domains and indicators. Source: HelpAge 2013.
Comparing the results of the Global AgeWatch Index and the AAI, it can be seen that both indexes come to similar results. A glance at the AAI shows that the countries perform very differently (see table 2). While the UK (4) and Finland (6) come at the top, Germany (9) is placed within the upper half and Spain (17) in the lower half. Poland is located at the very bottom (27). Considering all European countries, it becomes clear that northern countries such as Sweden or Denmark perform relatively better; eastern countries like Lithuania or Slovakia are positioned at the bottom of the ranking - with exception of the Czech Republic. However, a top ranking does not mean that there is no need for action; even Finland or the UK show opportunities for further improvements.

Taking a look at the separate domains, different results can be found. While Poland scores less in almost all categories, it performs better than Spain in the domain of independent living. The UK and Germany perform relatively low considering the domain “participation”, which represents indicators like “care to older adults”. Table 2 shows the ranking in each domain as well as the overall result. A correlation between countries with a high GDP and the results of the AAI shows that those countries “perform better in experiences of active ageing and in generating better capacity and enabling environment for active ageing” (Zaidi et al. 2012: 3).

Table 2: Active Ageing Index overview.

<table>
<thead>
<tr>
<th>Country</th>
<th>Employment</th>
<th>Participation</th>
<th>Independent Living</th>
<th>Capacity</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Index Rank</td>
<td>Index Rank</td>
<td>Index Rank</td>
<td>Index Rank</td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>19.8</td>
<td>25</td>
<td>20.405</td>
<td>9</td>
<td>73,436,299</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>24.55</td>
<td>16</td>
<td>12.875</td>
<td>26</td>
<td>65,216,161</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>26,35</td>
<td>14</td>
<td>19.425</td>
<td>12</td>
<td>73,790,076</td>
</tr>
<tr>
<td>Denmark</td>
<td>34.6</td>
<td>6</td>
<td>20.09</td>
<td>10</td>
<td>79,044,622</td>
</tr>
<tr>
<td>Germany</td>
<td>31,175</td>
<td>10</td>
<td>14.94</td>
<td>19</td>
<td>75,725,599</td>
</tr>
<tr>
<td>Estonia</td>
<td>34,425</td>
<td>5</td>
<td>13.34</td>
<td>24</td>
<td>69,983,568</td>
</tr>
<tr>
<td>Ireland</td>
<td>30,955</td>
<td>11</td>
<td>25.156</td>
<td>1</td>
<td>75,690,493</td>
</tr>
<tr>
<td>Greece</td>
<td>24,35</td>
<td>17</td>
<td>14.155</td>
<td>21</td>
<td>65,247,882</td>
</tr>
<tr>
<td>Spain</td>
<td>23.3</td>
<td>18</td>
<td>18.255</td>
<td>14</td>
<td>67,304,039</td>
</tr>
<tr>
<td>France</td>
<td>20.95</td>
<td>21</td>
<td>22.415</td>
<td>5</td>
<td>74,568,036</td>
</tr>
<tr>
<td>Italy</td>
<td>20.9</td>
<td>22</td>
<td>24.0</td>
<td>2</td>
<td>69,876,125</td>
</tr>
<tr>
<td>Cyprus</td>
<td>36.05</td>
<td>2</td>
<td>18.725</td>
<td>13</td>
<td>69,144,949</td>
</tr>
<tr>
<td>Latvia</td>
<td>28.3</td>
<td>12</td>
<td>13.925</td>
<td>22</td>
<td>63,209,539</td>
</tr>
<tr>
<td>Lithuania</td>
<td>27,375</td>
<td>13</td>
<td>15.255</td>
<td>18</td>
<td>70,626,917</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>21,075</td>
<td>20</td>
<td>22.56</td>
<td>3</td>
<td>74,749,131</td>
</tr>
<tr>
<td>Hungary</td>
<td>17,775</td>
<td>27</td>
<td>16.1</td>
<td>17</td>
<td>71,905,320</td>
</tr>
<tr>
<td>Malta</td>
<td>18,25</td>
<td>26</td>
<td>18.185</td>
<td>15</td>
<td>70,085,328</td>
</tr>
<tr>
<td>Netherlands</td>
<td>31.4</td>
<td>9</td>
<td>22.41</td>
<td>6</td>
<td>77,363,415</td>
</tr>
<tr>
<td>Austria</td>
<td>24,625</td>
<td>15</td>
<td>21.395</td>
<td>8</td>
<td>73,017,850</td>
</tr>
<tr>
<td>Poland</td>
<td>19,825</td>
<td>24</td>
<td>12.233</td>
<td>27</td>
<td>67,467,489</td>
</tr>
<tr>
<td>Portugal</td>
<td>35,275</td>
<td>4</td>
<td>14.275</td>
<td>20</td>
<td>66,745,277</td>
</tr>
<tr>
<td>Romania</td>
<td>31,4</td>
<td>8</td>
<td>12.925</td>
<td>25</td>
<td>70,089,436</td>
</tr>
<tr>
<td>Slovenia</td>
<td>21,625</td>
<td>19</td>
<td>16.705</td>
<td>16</td>
<td>74,356,689</td>
</tr>
<tr>
<td>Slovakia</td>
<td>20,125</td>
<td>23</td>
<td>3.7</td>
<td>23</td>
<td>67,043,969</td>
</tr>
<tr>
<td>Ireland</td>
<td>32,025</td>
<td>7</td>
<td>22.375</td>
<td>7</td>
<td>76,594,151</td>
</tr>
<tr>
<td>Sweden</td>
<td>41</td>
<td>1</td>
<td>22.56</td>
<td>4</td>
<td>78,665,794</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>35,45</td>
<td>3</td>
<td>20.015</td>
<td>11</td>
<td>75,725,922</td>
</tr>
</tbody>
</table>

A higher value means a better active ageing outcome. Missing values are due to missing data. Source: Active Ageing Index 2013.

The Global AgeWatch Index comes to comparable results. Germany (3), the UK (13), Finland (15) and Spain (22) are placed in the top third, while Poland (62) is placed within the least third. With respect to the four domains, differences occur especially in terms of employment and education and the enabling environment (see table 3).
Table 3: Global AgeWatch Index overview.

<table>
<thead>
<tr>
<th>Country</th>
<th>Index</th>
<th>Rank</th>
<th>Index</th>
<th>Rank</th>
<th>Index</th>
<th>Rank</th>
<th>Index</th>
<th>Rank</th>
<th>Index</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>87.0</td>
<td>8</td>
<td>74.8</td>
<td>7</td>
<td>74.3</td>
<td>5</td>
<td>83.3</td>
<td>5</td>
<td>89.9</td>
<td>1</td>
</tr>
<tr>
<td>Norway</td>
<td>91.4</td>
<td>3</td>
<td>73.5</td>
<td>13</td>
<td>85.4</td>
<td>1</td>
<td>76.2</td>
<td>22</td>
<td>89.9</td>
<td>2</td>
</tr>
<tr>
<td>Germany</td>
<td>86.1</td>
<td>9</td>
<td>75.2</td>
<td>6</td>
<td>78.7</td>
<td>6</td>
<td>82.8</td>
<td>6</td>
<td>89.3</td>
<td>3</td>
</tr>
<tr>
<td>Netherlands</td>
<td>90.9</td>
<td>4</td>
<td>71.3</td>
<td>18</td>
<td>66.2</td>
<td>13</td>
<td>85.4</td>
<td>1</td>
<td>88.2</td>
<td>4</td>
</tr>
<tr>
<td>Canada</td>
<td>81.1</td>
<td>26</td>
<td>80.3</td>
<td>2</td>
<td>69.6</td>
<td>9</td>
<td>82.8</td>
<td>9</td>
<td>88.0</td>
<td>5</td>
</tr>
<tr>
<td>Switzerland</td>
<td>80.6</td>
<td>28</td>
<td>81.3</td>
<td>1</td>
<td>66.1</td>
<td>12</td>
<td>84.6</td>
<td>4</td>
<td>87.9</td>
<td>6</td>
</tr>
<tr>
<td>New Zealand</td>
<td>72.7</td>
<td>43</td>
<td>78.7</td>
<td>3</td>
<td>71.1</td>
<td>7</td>
<td>80.2</td>
<td>13</td>
<td>84.5</td>
<td>7</td>
</tr>
<tr>
<td>USA</td>
<td>77.9</td>
<td>38</td>
<td>70.1</td>
<td>24</td>
<td>76.6</td>
<td>2</td>
<td>78.1</td>
<td>16</td>
<td>83.8</td>
<td>8</td>
</tr>
<tr>
<td>Iceland</td>
<td>84.7</td>
<td>15</td>
<td>74.2</td>
<td>9</td>
<td>58.5</td>
<td>18</td>
<td>82.9</td>
<td>7</td>
<td>85.4</td>
<td>9</td>
</tr>
<tr>
<td>Japan</td>
<td>80.7</td>
<td>27</td>
<td>76.9</td>
<td>5</td>
<td>66.2</td>
<td>14</td>
<td>77.2</td>
<td>19</td>
<td>83.1</td>
<td>10</td>
</tr>
<tr>
<td>Austria</td>
<td>88.2</td>
<td>5</td>
<td>72.7</td>
<td>17</td>
<td>45.5</td>
<td>42</td>
<td>85.3</td>
<td>2</td>
<td>79.8</td>
<td>11</td>
</tr>
<tr>
<td>Ireland</td>
<td>81.9</td>
<td>24</td>
<td>73.1</td>
<td>14</td>
<td>49.4</td>
<td>32</td>
<td>84.0</td>
<td>3</td>
<td>79.5</td>
<td>12</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>85.8</td>
<td>10</td>
<td>71.0</td>
<td>19</td>
<td>53.8</td>
<td>24</td>
<td>78.1</td>
<td>17</td>
<td>78.7</td>
<td>13</td>
</tr>
<tr>
<td>Australia</td>
<td>57.2</td>
<td>57</td>
<td>78.2</td>
<td>4</td>
<td>76.3</td>
<td>4</td>
<td>71.4</td>
<td>25</td>
<td>77.2</td>
<td>14</td>
</tr>
<tr>
<td>Finland</td>
<td>84.8</td>
<td>14</td>
<td>70.8</td>
<td>21</td>
<td>51.4</td>
<td>27</td>
<td>77.4</td>
<td>18</td>
<td>77.1</td>
<td>15</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>98.2</td>
<td>1</td>
<td>72.7</td>
<td>16</td>
<td>38.4</td>
<td>55</td>
<td>81.2</td>
<td>11</td>
<td>76.7</td>
<td>16</td>
</tr>
<tr>
<td>Denmark</td>
<td>82.3</td>
<td>21</td>
<td>57.5</td>
<td>40</td>
<td>55.7</td>
<td>26</td>
<td>82.2</td>
<td>10</td>
<td>75.9</td>
<td>17</td>
</tr>
<tr>
<td>France</td>
<td>93.2</td>
<td>2</td>
<td>63.6</td>
<td>31</td>
<td>45.6</td>
<td>41</td>
<td>78.8</td>
<td>15</td>
<td>75.0</td>
<td>18</td>
</tr>
<tr>
<td>Chile</td>
<td>74.2</td>
<td>42</td>
<td>74.2</td>
<td>10</td>
<td>53.9</td>
<td>23</td>
<td>67.7</td>
<td>39</td>
<td>70.6</td>
<td>19</td>
</tr>
<tr>
<td>Slovenia</td>
<td>82.0</td>
<td>22</td>
<td>63.2</td>
<td>32</td>
<td>39.3</td>
<td>51</td>
<td>80.7</td>
<td>12</td>
<td>70.5</td>
<td>20</td>
</tr>
<tr>
<td>Israel</td>
<td>58.4</td>
<td>56</td>
<td>70.9</td>
<td>20</td>
<td>63.7</td>
<td>13</td>
<td>69.8</td>
<td>31</td>
<td>70.0</td>
<td>21</td>
</tr>
<tr>
<td>Spain</td>
<td>79.7</td>
<td>31</td>
<td>57.6</td>
<td>39</td>
<td>39.4</td>
<td>56</td>
<td>79.3</td>
<td>14</td>
<td>67.6</td>
<td>22</td>
</tr>
<tr>
<td>Finland</td>
<td>84.8</td>
<td>14</td>
<td>70.8</td>
<td>21</td>
<td>51.4</td>
<td>27</td>
<td>77.4</td>
<td>18</td>
<td>77.1</td>
<td>15</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>98.2</td>
<td>1</td>
<td>72.7</td>
<td>16</td>
<td>38.4</td>
<td>55</td>
<td>81.2</td>
<td>11</td>
<td>76.7</td>
<td>16</td>
</tr>
<tr>
<td>Denmark</td>
<td>82.3</td>
<td>21</td>
<td>57.5</td>
<td>40</td>
<td>55.7</td>
<td>26</td>
<td>82.2</td>
<td>10</td>
<td>75.9</td>
<td>17</td>
</tr>
<tr>
<td>France</td>
<td>93.2</td>
<td>2</td>
<td>63.6</td>
<td>31</td>
<td>45.6</td>
<td>41</td>
<td>78.8</td>
<td>15</td>
<td>75.0</td>
<td>18</td>
</tr>
<tr>
<td>Chile</td>
<td>74.2</td>
<td>42</td>
<td>74.2</td>
<td>10</td>
<td>53.9</td>
<td>23</td>
<td>67.7</td>
<td>39</td>
<td>70.6</td>
<td>19</td>
</tr>
<tr>
<td>Slovenia</td>
<td>82.0</td>
<td>22</td>
<td>63.2</td>
<td>32</td>
<td>39.3</td>
<td>51</td>
<td>80.7</td>
<td>12</td>
<td>70.5</td>
<td>20</td>
</tr>
<tr>
<td>Israel</td>
<td>58.4</td>
<td>56</td>
<td>70.9</td>
<td>20</td>
<td>63.7</td>
<td>13</td>
<td>69.8</td>
<td>31</td>
<td>70.0</td>
<td>21</td>
</tr>
<tr>
<td>Spain</td>
<td>79.7</td>
<td>31</td>
<td>57.6</td>
<td>39</td>
<td>39.4</td>
<td>56</td>
<td>79.3</td>
<td>14</td>
<td>67.6</td>
<td>22</td>
</tr>
</tbody>
</table>

A higher value means a better active ageing outcome. Source: Global AgeWatch Index 2013.

2.2. Demographic development

Considering the population age in 2012 it becomes apparent that Germany represents a relatively low share of people aged up to 64 years and a relatively high share of old (15.2 per cent) and very old persons (5.4 per cent), making it the “oldest” country in the European Union (see figure 5). Poland is, compared to the focus-countries, the “youngest”, having the largest share of people aged up to 65 and the least share of people aged 65 and older. The other countries circle around the EU-27 average.

Figure 5: Population age. Source: Eurostat 2011.
A possible scenario for 2050 could look like the one shown on table 3. The share of the population aged 65 and older will increase in all countries; especially Poland and Spain will face an increasing number of old and very old persons, aged 80 and older. Compared to the other countries, Germany will have the highest share of very old people.

Table 4: Population development until 2050.

<table>
<thead>
<tr>
<th></th>
<th>Population aged 60+</th>
<th>Share of people 80+</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Numbers (thousands)</td>
<td>Proportion of population</td>
</tr>
<tr>
<td>2012</td>
<td>2050</td>
<td>2012</td>
</tr>
<tr>
<td>Finland</td>
<td>1.396</td>
<td>1.766</td>
</tr>
<tr>
<td>Germany</td>
<td>21.866</td>
<td>28.037</td>
</tr>
<tr>
<td>Poland</td>
<td>7.830</td>
<td>12.322</td>
</tr>
<tr>
<td>Spain</td>
<td>10.601</td>
<td>19.687</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>14.436</td>
<td>21.568</td>
</tr>
</tbody>
</table>


Figure 6 and figure 7 visualise the speed of aging. It can be seen that Poland and Spain show the fastest increase of the share of elderly persons aged 60 and older. However, Poland shows the least speed of ageing of very old persons aged 80 and older - in contrast to Germany. While the societies continue to age in each of the countries, Finland and the UK have the lowest speed of ageing. Within the time span, the countries age very differently. Up to date, Poland has a relatively young population, but will catch up until 2050, although the share of persons aged 80 and older remains relatively low. Germany and Finland on the other hand tend to have a higher amount of very old people.

Figure 6: Speed of ageing 60+. Source: United Nations 2012.
Figure 7: Speed of ageing 80+. Persons aged 80 and older as a percentage of persons aged 60 and older. Source: United Nations 2012.

Regarding the life expectancy at 65 (see figure 8) these trends can be confirmed. While Spain has the highest life expectancy for both, women and men, Poland contrasts these results.

Figure 8: Life expectancy for persons at the age of 65. The EU-27 data are based on 2009. Source: Eurostat 2011.

A very crucial aspect within aging societies is the income of older persons. Poverty among the elderly and thus social inequalities has to be concerned, especially within the context of the silver economy. Figure 9 shows the share of population with an equivalent income less than the poverty threshold, which is calculated with 60 per cent of the national median income. While Poland has a low share of older persons below that threshold, in Spain and in the UK approximately a fifth of the population aged 65 and older can be regarded as poor. The figure also shows that age poverty is heavily influenced by gender aspects – and this is true for all countries examined. Especially in Poland, older female persons have to live with a low income.
Figure 9: Share of persons aged 65 and older with an equivalent income less than 60 per cent of the median income. Source: Eurostat 2011.

Summing up, the data reveal different initial positions as well as forecasts for the five countries in terms of the demographic change. This underlines the fact that national characteristics have to be kept in mind when looking at European developments.
3. Information and communication technologies (ICT)

Josef Hilbert, Peter Enste, Sebastian Merkel

This part of the report will focus on ICT and its potential benefits within ageing societies. Within recent years there is great hope that ICT has the potential to improve the quality of life of older persons and help to support active and healthy ageing. Numerous projects, initiatives and examples have underlined and proven the possibilities of ICT in different areas, e.g. health, living, mobility or work. According to various publications, ICT offers much potential to help supporting an independent life of older persons. Just to name a few:

- Improved quality of life, e.g. by helping to stay home as long as possible
- Decreasing social isolation, e.g. by using audio/video conferencing devices
- Increase the feeling of safety, e.g. by monitoring vital parameters
- Supporting family carers and making work easier

However, technology bears certain risks, most dominant social exclusion. This makes it necessary to find an approach which combines the technological view as well as the concept of active and healthy ageing. At first this requires finding a working definition which will provide an understanding of this broad and scattered field. Using this definition we will scan European and national programs, literature and R&D projects for an innovative use of new ICT and identify solutions which are addressed to meet the needs of elderly. These will result in the identification of potential benefits for both the elderly and the economy as well as in an informed understanding of barriers and driving forces.

3.1. ICT – A new understanding

Reviewing the literature, a variety of definitions of the term “Information and communication technologies” can be found, leading to a broad understanding of this field. A reason for this variety is the continuous technological development, which leads to new products on a frequent basis. Especially with the emergence of the internet, numerous possibilities and combinations of products and services are available.

The term “ICT” has been introduced during the second half of the 1990s by Stevenson who used it as an extended synonym for Information Technology (IT) (Sallai 2012: 9; Stevenson 1997). According to Sallai the “term ICT is generally used and usually refers to the integration of information and telecommunication technology sectors involving their convergence with the media technology sector based on common digital technology.” (Sallai 2012: 10). A similar definition is provided by the European Commission which defines ICT as “an umbrella term covering technologies used for the manipulation and communication of information.” (Panella 2009: 17). This approach is also closely linked to the OECD understanding: “ICT goods are those that are either intended to fulfill the function of information processing and communication by electronic means, including transmission and display, or which use electronic processing to detect, measure and/or record physical phenomena, or to control a physical process.” (OECD 2004).

These definitions follow an understanding of ICT from a general perspective. Gaßner and Conrad focus on concrete products and a specific target-group – the elderly. According to their study (“ICT
enabled independent living for elderly”), ICT includes “telecommunication technologies, such as telephone, cable, satellite and radio, as well as digital technologies, such as computers, information networks, and software.” (Gaßner and Conrad 2010: 19).

Summing up the definitions so far, they share a technology-oriented approach. Following the objectives of MOPACT, this perception has to be expanded. Thus we need to understand the term ICT from a different point of view, integrating social aspects. An example is provided by the study “ICT and Ageing” by empirica who explicitly include a user-centered perspective into their understanding (Kubitschke et al. 2010: 4). The research team provides the following figure:

![Figure 10: The spectrum of needs and technologies. Source: Kubitschke et al. 2010: 5.](image)

Within this figure three core technology domains can be identified: Mobility, smart homes and telecare/telehealth (Kubitschke et al. 2010: 6). This approach helps to break down the general definitions of ICT, following a topic-based understanding. It also reflects – though not directly – the concept of active and healthy ageing by addressing the three pillars of the WHO concept – participation, security and health.

From the perspective of active and healthy ageing, our working definition of ICT within has to include two core aspects: It has to follow a user-centered perspective with the central focus on the social needs of the target-group.
3.2. The user’s needs

As written above the combination of ICT and ageing demands the integration of social aspects. Not the technology itself, but the use and integration of technical innovations within social structures is the focus of our research. The integration of end-users into the development process of new ICT-solutions and projects is an important step. For instance, the Ambient Assistance Joint-Programme (see section 3.4.1.) requests “creating an innovation culture where the design of new solutions is done with and for older persons” (AAL JP 2011: 24).

To take the user-centered perspective into account, it is necessary to know the user’s needs and their conditions. The latter means that the access to new technologies is strongly dependent on physical and cognitive skills as well as income and education (Mollenkopf and Kasper 2005: 56). A central point, which is addressed in nearly all gerontological publications, is the fact that “the elderly” do not represent a homogenous group and do not only differ according to age, income, education and physical or cognitive resources, but also in terms of open-mindedness due to new technologies.

While the general needs of the elderly apply to the three pillars of active and healthy ageing, supplemented by independence and mobility (Gassmann and Reepmeyer 2006), the technology-related needs seem to be more scattered. A major challenge within these areas was described by Cutler in (Cutler 2006: 269): “Gerontological research has not kept pace with technological change and gerontological research on technology has itself been beset by lags”.

However, technology can be a double-edged sword: On the one hand innovative solutions can help people to participate in their community and hence support social inclusion; on the other hand technology can lead to exclusion (“digital divide”). Up to date, stereotypes of the elderly – like frailty and poorness – are still applied. The same is true when it comes to technical aspects; older persons are often regarded as not capable to use technology. Indeed, studies show that the use of the internet is declining with increasing age, but these results cannot be generalized. The elderly are not afraid to use ICT and instead are willing to learn how to use new technologies – if the technology is reliable and meets a certain need (Malanowski 2009: 112, originally McCreadie and Tinker 2005). Malanowski distinguishes three levels of technology-related needs (see table 5):

Table 5: Different levels of older people’s technology-related needs.

<table>
<thead>
<tr>
<th>Level</th>
<th>Technology-related needs of older people (examples)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>Devices for hearing and vision</td>
</tr>
<tr>
<td>Individual environment</td>
<td>Appropriate equipment at home (e.g. intelligent stair lifts and smoke detectors)</td>
</tr>
<tr>
<td>Societal environment</td>
<td>Appropriate communication tools (e.g. easy to use internet, easy access)</td>
</tr>
</tbody>
</table>

Source: Malanowski 2009: 114.

This means, that newly developed technologies have to be seen within a particular context. Since the elderly do not represent a homogenous group, the same is true for ICT. As seen in figure 10, different ICT-domains can be distinguished. A taxonomy, allowing to better understand needs and wishes of older persons in terms of ICT-based products and services classifies eight families of technology-use; each of them with own specifications (BRAID 2010: 10):

- Telemedicine
- Collaborative networks/ collaborative software
- Broadband access
Additionally the life-course perspective plays an important role. The “life course is as succession of events and activities in different fields of life and in institutional settings that is subject to many influences. The life course perspective [...] may reflect the complexity and reflexive character of choices and constraints throughout the whole life course” (IPTS 2006: 4). This means, that individuals and their preferences can change with increasing age. The integration of the life-course perspective could help to identify and forecast future needs of the succeeding generations (Malanowski 2009: 108).

The different user needs and characteristics imply that newly developed ICT-based products and solutions require a user-centered design approach which goes beyond the question of usability. Usability is a central aspect, but not sufficient. As Pohlmeyer and Blessing comment: “It is a pity that if designers focus too much on age-related declines they sometimes overlook what kind of skills are still maintains up to very high age.” (Pohlmeyer and Blessing 2010: 133).

3.3. ICT-related trends and developments

3.3.1. Internet access of households

The accessibility of the internet is a central requirement for many ICT-based products and services. Most of the solutions do not only require internet access, but demand an increasing bandwidth. Therefore two dimensions have to be considered: The general availability of the internet, and the spread of broadband\(^2\) access. Within the last years, the increasing diffusion of mobile devices, which can go online using a broadband connection, has led to an uptake in terms of availability. However, especially rural areas are still not completely covered. Figures 11 and 12 show the households with access to the internet at home and the households with broadband access. Two things have to be noticed. Firstly, during the last six years, more and more households have access to the internet and to a broadband connection at home. Secondly, there are major differences between the countries: Finland, UK and Germany have the best developed infrastructure, while Poland and especially Spain show coverage rates of around 70 per cent of all households, ranging below an EU-28 average.

\(^2\) Broadband access can be defined as a technology that has a higher capacity than ISDN (more than 144 kbit/s).
Figure 11: Households having access to the Internet at home. Source: Eurostat 2012.

Figure 12: Households with broadband access. No data available for 2010. We used the moving mean. Source: Eurostat 2012.

However, the availability of the internet is only one dimension; the actual use another – especially with respect to the user’s age. Looking at the frequency of internet use of the age cohorts 55 to 64 (figure 13) and 65 to 74 (figure 14) the differences between the countries is even more striking: While the UK, Finland and, to a certain extent, Germany show rates above the EU-28 average, in Poland and Spain approximately 15 per cent of the people aged 65 to 74 use the internet more than once a week. Furthermore the figures show an increase of the frequency of the internet usage for all countries within recent years. They also point out that the frequency of internet use is correlated to age and declines with increasing age.
Figure 13: Frequency of Internet access: once a week age 55 to 64. Including every day. Source: Eurostat 2012.

Figure 14: Frequency of Internet access: once a week age 65 to 74. Including every day. Source: Eurostat 2012.

Table 5: Relevant cases in the EQLS 2011.

<table>
<thead>
<tr>
<th>Country</th>
<th>N</th>
<th>N &gt;64</th>
<th>Share of &gt;64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>1020</td>
<td>303</td>
<td>29.71 per cent</td>
</tr>
<tr>
<td>Germany</td>
<td>3055</td>
<td>996</td>
<td>32.60 per cent</td>
</tr>
<tr>
<td>Poland</td>
<td>2262</td>
<td>465</td>
<td>20.56 per cent</td>
</tr>
<tr>
<td>Spain</td>
<td>1512</td>
<td>386</td>
<td>25.53 per cent</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>2252</td>
<td>655</td>
<td>29.09 per cent</td>
</tr>
</tbody>
</table>

Source: EQLS 2012.
Table 5 and figure 15 use data of the EQLS. Table 6 shows the use of internet according to age. It can be seen that persons who are aged 80 and older rarely use the internet. The only exception is Finland with a relatively high internet usage compared to the other countries.

Table 6: Use of the internet according to age (in per cent).

<table>
<thead>
<tr>
<th>Use of internet</th>
<th>Country</th>
<th>Age</th>
<th>&gt;55</th>
<th>55–64</th>
<th>65–79</th>
<th>80+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every day or almost every day</td>
<td>Finland</td>
<td>82,3</td>
<td>58,9</td>
<td>35,4</td>
<td>14,3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Germany</td>
<td>67,1</td>
<td>37,5</td>
<td>18,0</td>
<td>6,9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Poland</td>
<td>50,3</td>
<td>16,2</td>
<td>5,2</td>
<td>2,5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spain</td>
<td>48,4</td>
<td>16,7</td>
<td>4,9</td>
<td>3,4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>70,9</td>
<td>48,1</td>
<td>28,4</td>
<td>7,9</td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>Finland</td>
<td>3,3</td>
<td>20,8</td>
<td>51,0</td>
<td>50,0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Germany</td>
<td>8,4</td>
<td>32,5</td>
<td>66,5</td>
<td>90,4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Poland</td>
<td>20,4</td>
<td>63,5</td>
<td>84,6</td>
<td>95,1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spain</td>
<td>22,2</td>
<td>62,9</td>
<td>82,8</td>
<td>88,1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>10,0</td>
<td>28,7</td>
<td>56,2</td>
<td>84,2</td>
<td></td>
</tr>
</tbody>
</table>

Source: EQLS 2012.

Figure 15 shows the use of internet according to the income. Stating that a high income correlates with higher education, it becomes clear that wealthier people (aged 65 and older) access the internet significantly more often.

---

3 The structure of the dataset is as follows (see table 5): The share of respondents older than 65 years is higher than in the overall population which has to be kept in mind during the analysis. The European Quality of Life Survey is household based. The respondent in the household was selected randomly ("next birthday"). Information (gender, age, occupation) was collected among the other persons living in the household, starting with the oldest.
Comparing the countries, striking differences can be seen: First of all, the five focus countries can be divided into three groups. While Finland and the UK show a relatively good availability of broadband access as well as a frequent use of the internet among older persons, in Spain and especially Poland the internet is less available and less used. Germany lies somewhere in between, as the availability and the use of the internet can be described as relatively good. Another striking point can be seen in the digital divide, which is influenced by two factors: the age and the income. Therefore older persons are affected twofold. Though no data comparing the correlation between the use of the internet and the income is available for Poland and Spain, especially considering Poland, poverty in old age can be seen as a major factor influencing the use of ICT services and products.

3.4. ICT and ageing in Europe

Solving the challenges and receiving the full benefits of aging societies requires multiple approaches. As seen, the use and integration of ICT represents one of these. Especially in recent years and within the context of European Union “i2010” initiative and the “Digital Agenda for Europe (DAE)" and the “Action Plan on Ageing well in the Information Society”, different funding programmes and numerous projects have been launched. The following section will provide an overview, concentrating on the Ambient Assisted Living Joint Programme, the ICT Policy Support Programme under the Competitiveness and Innovation framework Programme (ICT-PSP) and the Seventh Framework Programs for Research and Technological Development (FP7).

Those three programs represent different levels of research activities and market readiness. While the FP7 supports basic research, the Ambient Assisted Living Joint Programme (AAL JP) focuses on

---

4 The DAE is of based on eight pillars and aims at maximizing the social and economic potential of ICT. ICT is seen as a tool to enhance the citizen’s quality of life. The eight pillars underpinning the DAE: 1. Vibrant digital single market, 2. Interoperability and standards, 3. Trust and security, 4. Fast and ultra-fast internet access, 5. Research and innovation, 6. Digital literacy skills and inclusion, 7. ICT-enabled benefits for EU society and international aspects.
market-oriented research and development with a short time-to-market phase and the integration of business models. The ICT-PSP aims at developing service innovations for already developed products.

Figure 16: European projects on ICT and ageing. There are two projects each names ALICE and CONFIDENCE.

3.4.1. Ambient Assisted Living Joint Programme

The AAL JP aims at “enhancing the quality of life of older people and strengthening the industrial base in Europe through the use of [...] ICT”. The programme itself is led by the member states of the European Union, while the funding is provided by public actors – the European Commission and 22 member states – and private organisations. Between 2008 and 2013 six calls and more than 130 projects have been launched:

Table 7: AAL JP calls and projects.

| Call 1 – ICT based solutions for Prevention and Management of Chronic Conditions of Elderly People | 23 projects - A2E2, AGNES, ALLADIN, AMICA, BEDMOND, CAPMOUSE, CARE, CCE, DOMEO, eCAALYX, EMOTIONAAL, HAPPY AGEING, HEALTH@HOME, HEAR ME FEEL ME, HELP, HERA, HOPE, IS-ACTIVE, PAMP, REMOTE, RGS, ROSETTA, SOFTCARE |
| Call 2 – ICT based solutions for Advancement of Social Interaction of Elderly People | 32 projects - 3rd-LIFE, ALIAS, ALICE, AMOSCOP, AWARE, CO-LIVING, CVN, EASYREACH, ELDERSPACE, EXCITE, EXPRESS TO CONNECT, FAMCONNECTOR, FOSIBLE, GO-MY LIFE, HELASCOL, HOMEDOTHOLD, HOPES, JOIN IN, M3W, NOSTALGIA BITS, OSTEOLINK, PELIFE, PEER ASSIST, SENIOR CHANNEL, SENIOR ENGAGE, SI-SCREEN, SILVER GAME, SO MEDALL, TAO, TRAINUTRI, V2ME, WE CARE |
| Call 3 – ICT-based Solutions for Advancement of Older Persons’ Independence and Participation in the “Self-Serve Society” | 22 projects - 2PCS, AALUIS, ALFA, AMCO, BANK4ELDER, CARE@HOME, ELDERHOOP, ENTRANCE, FEARLESS, FOOD, GOLDUI, HOST, INCLUSION SOCIETY, LILY, MOBILE SAGE, MYLIFE, NACODEAL, SAAHPO, SOCIALIZE, STIMULATE, VASSIST, WAY FIS |

http://www.aal-europe.eu/about/
With more than 700 Mio. Euro budget, the programme funds international projects and activities with a time-to-market perspective of two to three years after the end of the project. The specific aims are described as:

- “Foster the emergence of innovative ICT-based products, services and systems for ageing well at home, in the community, and at work, thus increasing the quality of life, autonomy, participation in social life, skills and employability of elderly people, and reducing the costs of health and social care.
- Create a critical mass of research, development and innovation at EU level in technologies and services for ageing well in the information society, including the establishment of a favorable environment for participation by small and medium-sized enterprises (SMEs).
- Improve conditions for industrial exploitation by providing a coherent European framework for developing common approaches and facilitating the localization and adaptation of common solutions which are compatible with varying social preferences and regulatory aspects at national or regional level across Europe.” (http://www.aal-europe.eu/about/objectives/)

Taking a closer look at involved organisations and member states, it becomes apparent that Spain plays a dominant role within the AAL JP (see figure 17). Between 2008 and 2012 more than 340 Spanish organisations were involved in AAL projects funded in the programme. In contrast, Poland plays only a minor role with 19 Polish organisations participating.
Figure 17: Project partners in ranked proposals Call 1 to Call 5 (AAL JP). Source: Own calculations based on AAL Central Management Unit (2008-2012), http://www.aal-europe.eu/get-involved/statistics/.

3.4.2. Competitiveness and Innovation Framework Programme – ICT Support Policy Programme

Focusing primarily on small and medium sized enterprises, the Competitiveness and Innovations Framework Programme (CIP) was launched in 2007 and will run until 2013. The aim of the programme is to support innovation activities and business support services to secure the competitiveness of European enterprises. CIP is divided into three specific programs:

- The Entrepreneurship and Innovation Programme (EIP)
- The Information Communication Technologies Policy Support Programme (ICT-PSP)
- The Intelligent Energy Europe Programme (IEE)

A main target of the ICT-PSP is the promotion of ICT based products and services by identifying and addressing existing obstacles which affect and hinder the diffusion of innovations. The programme sees ICT as a potential toolbox which can help to cope with the challenges of an ageing society.

To implement projects, three different instruments can be identified:

- “Pilot (Type A) – building on initiatives in Member States or associated countries
- Pilot (Type B) – stimulating the uptake of innovative ICT based services and products
- Thematic Networks - providing a forum for stakeholders for experience exchange and consensus building
- Best Practice Networks (up to 2011) – making European digital libraries more accessible and usable by combining the consensus building and awareness raising function of a network with a large-scale implementation in a real life context”

Within the program six calls have been launched. With the exception of Call 4 (2010) and, to some extent, Call 2 (2008) each of them targets ICT and ageing as a theme.

---

6 http://ec.europa.eu/information_society/activities/ict_psp/about/implementation/index_en.htm
Table 7: ICT-PSP calls, themes and objectives.

<table>
<thead>
<tr>
<th>Call</th>
<th>Theme</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 (2008)</td>
<td>Theme 1: ICT for user friendly Administrations, Public services and inclusion</td>
<td>1.1: Preparing the implementation of the Services Directive 1.2: Reduction of Administrative Burdens across the EU 1.3: Emergency Services Accessible to All – Total Conversation 1.4: ICT for ageing well with cognitive problems, combining assistive and independent living technologies 1.5: Capacity building for eInclusion</td>
</tr>
<tr>
<td>4 (2010)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6 (2012)</td>
<td>Theme 3: ICT for health, ageing well and inclusion</td>
<td>3.1: Wide deployment of integrated care services 3.2: Towards open and personalized solutions for active and independent living 3.3: Digital capacity and skills 3.4: Fall prevention network for older persons 3.5: Large scale deployment of telehealth services for chronic conditions management 3.6: Adoption, taking up and testing of standards and specifications for eHealth interoperability 3.7: Community building on Active and Healthy Ageing</td>
</tr>
</tbody>
</table>

Source: http://ec.europa.eu/information_society/activities/ict_psp/about/implementation/index_en.htm

We included 19 projects7 (14 Pilot type B and five thematic networks) into our research; taking a look at the involved partner organisations, Spain is by far the most involved country, followed by the UK and Germany. Compared to our five selected countries, Polish institutions are participating least (see figure 18).

---

7 T-SENIORITY, COMMONWELL, CLEAR, NEXES, DREAMING, SOCIALE, LONGLASTING MEMORIES, ISISEMD, inCASA, HOME SWEET HOME, INDEPENDENT, CAALYX-MV, I-DONT-FALL, FATE, AgeingWell, ReAAL, ProFouND, E-NO FALLS, ENGAGED.
3.4.3. 7th Framework Programme

The 7th Framework Programme (FP7), running from 2007 to 2013, supports research within four grouped categories: Cooperation, ideas, capacities and people. ICT plays an important role within the FP7; the main objective is to improve the competitiveness of the European industry and to meet the societal and economic demands of Europe\(^8\). Each year’s work programme defines the priorities which need to be addressed; ICT and ageing have been included several times:

- ICT 2007.7.1 – ICT and ageing
- ICT-2009.7.1 – ICT & Ageing
- ICT-2011.5.4 – ICT for Ageing and Wellbeing
- ICT -2013.5 – ICT for Health, Ageing Well, Inclusion and Governance

For our research, we identified 28\(^9\) projects. Regarding our focus countries, Germany, Spain and the UK play an important role; Finish and Polish organisations are less – or rarely – participating in FP7-funded projects.

---

\(^8\) http://cordis.europa.eu/fp7/ict/home_en.html

\(^9\) GIRAFF+, SILVER, HOBBIT, MOBISERV, USEFIL, DALI, KSERA, FLORENCE, SRS, COMPANIONABLE, BRAID, WISEL, VM, ROBOT-ERA, UNIVERSAAL, GOLDENWORKERS, ISTOPFALLS, FARSEEING, ACCOMPANY, OASIS, CONFIDENCE, AALIANCE, AALIANCE2, HERMES, SMILING, CAPSIL, SENIOR, EPAL.
### 3.5. eHealth

With respect to ageing, health is one – if not the largest – field of ICT-based solutions. The demographic development is accompanied by another trend: the increase of chronic diseases. Chronic diseases are defined by the WHO as “diseases of long duration and generally slow progression” and include e.g. cancer, respiratory diseases, cardiovascular diseases or stroke. Despite the fact that chronic diseases are the leading cause of death among people aged 65 and older, they represent a challenge for all age groups. However, the prevalence increases among ageing societies, as does the risk of co- and multimorbidity. Innovative solutions capable of helping people to live with chronic diseases and health problems in general can also affect the rising health care expenditures. Therefore, eHealth solutions can help people to manage their daily life and support independent living.

The term “eHealth” was introduced during the late 90s (Tautz 2002) and can be understood as “the use of [...] ICT for health to, for example, treat patients, pursue research, educate students, track diseases and monitor public health.”\(^{10}\). Unfortunately, the term “eHealth” does not seem to be well-defined. The “e” within eHealth does not necessarily stand for electronic, but can also be understood as “efficient” (Eysenbach 2001). We understand eHealth as an umbrella term (see figure 20) covering a broad variety of approaches, services and solutions. eHealth solutions can be found at any point of the health supply chain consisting of prevention, curing diseases and rehabilitation. Since the concept of eHealth requires a more detailed view, we will focus on two areas: telehealth and telecare.

**Telehealth**, or remote patient monitoring, covers services to monitor the health status of persons. Telehealth and telemedicine are often used as synonyms, but the scope of telemedicine\(^{11}\) is more on

---

\(^{10}\) http://www.who.int/topics/ehealth/en/

\(^{11}\) With respect to the literature review done by Sood et al. (2007), we telemedicine can be understood as a service to provide healthcare services at a distance. This understanding excludes medical education, which can also be seen as a part of telemedicine. Telemedicine has its focus on the interaction between the users, e.g. the patient and the professional. The benefits of telemedical services can be seen in the interconnectedness of services, which – in the optimal case – lead to improved medical treatment in terms of accessibility as well as
clinical services, while telehealth can also include training sessions or health education. Telehealth requires sensors which can transmit health-related data, e.g. like blood pressure. Those data is usually transmitted from a client to a professional (P2C), but also professional to professional (teleconsultation) and client to client (C2C) solutions can be found.

**Telecare** on the other hand follows the concept of independent living. Therefore telecare and ambient assisted living are directly connected. Telecare includes sensors and comparable technical solutions within the environment people live in – like the household as well as the neighbourhood. These sensors are designed to monitor the environment and give a remote alarm in case of an irritation. A typical example for a telecare solution are social alarms or home emergency call systems. These basic products represent a way to call for emergence if needed and can be seen as a starting point for more advanced telehealth and telecare products and services.

![Figure 20: eHealth and related areas.](image)

One emerging trend in the field of eHealth can be found in the diffusion of mobile devices like smartphones and tablet-PCs. Mobile devices of newer generations are capable to run applications and contain additional hardware like a GPS-module. With an increasing use of such devices, health services become accessible wherever a broadband connection is available. The spread of mobile devices itself can act as a promoter for health applications as well as hardware. Such devices also bring people closer to technology and can reduce fears.

A good example for successful eHealth products can be found among serious games\(^\text{12}\). Today, serious games exist in various areas like health prevention and promotion or rehabilitation. Meanwhile quality and the reduction of costs. Other often named aspects are an increase of self-responsibility through transparency and the fast exchange of knowledge and opinions (Häckl 2010: 65).

\(^{12}\) Sostmann et al. understand serious games as software for amusement and didactic simulations. Core difference to games for sole amusement and entertainment is the author’s explicitly defined educational target.
serious games are also increasingly utilised in supply chains for tertiary risk prevention and rehabilitation (Marin et al. 2011).

Two critical points are the improvement of care and the reduction of costs. It is undoubtful that eHealth solutions can enhance the quality of care: “[...] it must be noted, that in addition to cost reductions and better outcomes, the level of patient satisfaction when using telemedicine to access care and to connect with healthcare providers has always been very high” (BRAID 2010 D1.2: 13). Nevertheless, in terms of cost-benefits these results do not seem to be so clear. A recent study conducted in the UK analysed the cost effectiveness of telehealth13 and comes to the conclusion that the pay-off was limited (Henderson et al. 2013).

3.6. eHealth in European countries

3.6.1. eHealth in Finland

Finland can be seen as one of the first countries applying eHealth solutions. The first initiative was drawn up in 1996 and built around citizen-centered and seamless service structures. Emphasise was placed on the following targets (Doupi et al. 2010: 18):

- adaption of digital patient and client records in all levels of care;
- nationwide interoperability between distributed legacy systems;
- high level of security and privacy protection.

Hämäläinen et al. summarise: “The original strategic visions are still up to date; that said, during the past 15 years many plans and efforts have been made to take the visions closer to everyday routine health and social care performance.” (Hämäläinen et al. 2013: 25).

The access of the internet respectively broadband connections is among the highest in Europe. Also the take-up of social alarm systems can be considered as relatively high, lying between eight and ten per cent of people aged 65 and older (Kubitschke et al. 2010: 74). According to more advanced telecare and telehealth solutions, there still seems to be a low saturation. Overall it seems that “there is currently no developed policy on home telehealth in Finland. The organisational structure of healthcare in Finland is reported to be a barrier to take-up, with an absence of clear incentives and/or working arrangements that would encourage provision of home telehealth services.” (Kubitschke et al. 2010: 75).

3.6.2. eHealth in Germany

eHealth in Germany follows a long tradition: The first social alarm system was installed in 1981 (Heinze, Hilbert and Paulus 2011). Up to now, around 2,3 per cent of people aged 65 and older have a social alarm system installed (Kubitschke et al. 2010). Compared with other European countries, “people in need of care use these [social alarms] less often in Germany [...] – even when a person classified as needing care is entitled to receive the basic equipment.” (Mollenkopf et al. 2010: 64).

(Sostmann et al. 2010: 3). Two approaches can be distinguished: 1) Serious games offering preventive measures and exercises targeting the secondary health supply market; 2) utilization of training software within the framework of classical health service by physicians, physical and ergo therapists.

13 The study compared telehealth in addition to “standard care” and monitoring, compared to standard care and monitoring alone. The study lasted twelve months; 965 patients with three long-term conditions (heart failure, chronic obstructive pulmonary disease or diabetes) were included.
Since Germany is affected more than other countries by the demographic change, the development of eHealth services and products was pushed by multiple programmes. For instance, within the framework of the “High-Tech Strategy for Germany” a research programme entitled “Altersgerechte Assistenzsysteme für ein gesundes und unabhängiges Leben” was carried out. Moreover, German organisations are in many cases involved in projects on the European level, especially within the field of AAL (see section 3.4.).

Besides social alarm systems, there are no funding schemes for more advanced devices. Most of the services and products have to be paid on a private basis. Out-of-pocket payments are relatively unknown in Germany, the spending behaviour on eHealth can be considered relatively low. Due to the large amount of costs caused by chronic diseases, some care insurance provider started disease management programmes making use of eHealth.

Still, most of R&D projects – as well as initiatives of the insurance companies – have somehow failed entering the market. Within the project “eHealth@home” a map showcasing AAL and telemedical projects all over Germany was developed. In total 235 initiatives were recorded, 60 of those offer sustainable devices, the rest are pilot projects. A reason for the lack of diffusion can be seen in the fact that many pilot projects can only be started with the aid of public funding. Since public financiers expect “successful” developments, pilots are more promising than large scale applications – “particularly in the intersections where technology and "traditional" social services meet” (Heinze, Hilbert and Paulus 2011: 161).

3.6.3. eHealth in Poland


Up to now, telehealth services have not been integrated on a broad basis; most of them represent academic pilot projects. “Yet, although benefits of telemedicine have been noticed, there are still only small projects ongoing. Therefore, the further development of telemedical services has been made a priority in the Polish eHealth strategy and large-scale initiatives are in planning.” (Turowiec et al. 2010: 23/24).

However, the project’s focus seems to be mainly set on the medical dimension and not with the perspective to support independent living among the elderly. The current situation in Poland is somehow characterised by a lack of awareness among older persons (Kubitschke et al. 2010: 104). One reason for this can be found in a missing public discourse about aging, especially in terms of ICT-based services.

Additionally, Poland is involved only in a few European projects and scores, compared to our other focus countries, less in terms of availability of online access. Furthermore it needs to be taken into account that “the majority of older people in Poland have low levels of education [...] and as a result of this they often feel nervous about new technologies and their ability to master them.” (Kubitschke et al. 2010: 104). Additionally, elderly people in Poland are amongst the poorest in Europe and only

have a low level of education, making it on the one hand difficult to invest into basic technology as well as master new technologies. Beyond that, the Polish health care system is characterised by relatively high out-of-pocket payment, lowering the willingness to pay for additional services.

3.6.4. eHealth in Spain

The Spanish situation is characterised by a huge participation in European programmes funding activities on ICT and ageing. This development also has been pushed by public sector programmes under the common framework of the successive “National Plans Research, Development and Innovation”, running from 2007 to 2012. The projects with the participation of Spanish partners cover mostly AAL-related solutions and services and only in some cases telehealth solutions. Telehealth is still at an early stage and mostly used in pilot projects.

Moreover, huge differences between the communities can be found. “If telehealth to become mainstreamed it will need to fit within the publicly funded, universal, free health services at the time of use model in Spain” (Kubitschke et al. 2010: 72). Additionally, projects in the area of telecare, including AAL initiatives, seem to have a low level of provision as well. It also has to be noted that the availability of broadband connections as well as the use of the internet among people aged 65 and older is relatively low.

This is also underlined by geographical characteristics. While traditional family structures change especially in urban areas, they still persist in rural areas with more or less “isolated” communities. Those communities stick to traditional caring structures and have a low level of technological awareness (ibid.).

3.6.5. eHealth in the UK

The UK can be seen as a country which plays a leading role in the deployment of eHealth solutions. Starting in the late 90s in England, several strategic papers were written and programmes initiated. Up to now, in England, Scotland, Wales and Northern Ireland several programmes were initiated to promote telecare and telehealth projects. With respect to social alarms systems, the UK is among the well-developed countries in the EU. Most local authorities offer social alarm systems; about 15 per cent of persons aged 65 and older are using this technology. Barriers exist mainly in a lack of cooperation between the housing and social care services (Kubitschke et al. 2010).

Even according to more advanced telehealth solutions, it “seems that home telehealth for older people and others with chronic conditions is beginning to take-off in the UK, even if such services are currently only available in some localities and are typically tied to specific hospital services and medical conditions.” (Kubitschke et al. 2010: 112/113).

The leading role of the UK is also underlined by the “Whole System Demonstrator” programme. This programme was launched in 2008 and guided by the question “Does the use of technology as a remote intervention make a difference?”. For three conditions (diabetes, COPD and heart failure) the largest randomized control trial so far was conducted. A result of the project came to the result that, if telehealth is used in a correct way, patients and healthcare professionals can benefit. The results include (Steventon et al. 2012):

- 45% reduction in mortality rates

http://3millionlives.co.uk/about-telehealth-and-telecare
• 14% reduction in the number of patient bed days
• 20% reduction in emergency admissions
• 14% reduction in elective admissions
• 15% reduction in emergency department visits
• 8% reduction in tariff costs

3.7. Barriers to the diffusion of ICT-based services and products
Up to date, telehealth services (including AAL solutions) still fail to be implemented at a widespread level. While some of the more “basic” devices, like first generation social alarms, are – at least in some countries – widely accepted, the formula “the more technological advanced, the less adopted” remains true. Asking for possible barriers to diffusion, a glance at the literature offers a broad variety of reasons (Schultz et al. 2005; Häckl 2010; Mollenkopf et al. 2010; Abadie et al. 2011). There is not a single or dominant cause that hinders the diffusion of ICT technology among older persons. Developers, designers, salespersons, etc. have to be aware of a multidimensional construct of factors which influence the success of telehealth. Though there are different barriers for the diffusion of AAL, telecare, telehealth and telemedicine, the dominant challenges remain the same. This is also true with respect to national obstacles: While there are specific national characteristics, e.g. a lack of infrastructure or differences due to national frameworks, the obstacles can be compared across the European Union.

This deployment-gap has been around since the very first applications and products have been developed. Within the Commission Communication “Telemedicine for the benefit of patients, Healthcare Systems and Society” three major aims were named: (1) increasing confidence and acceptance of telemedicine services; (2) gaining legal clarity; (3) overcoming unsolved technical issues and supporting market development (Commission of the European Communities 2008; Palmer et al. 2010). These goals reflect the four main areas, respectively potential barriers, to the diffusion of telemedicine in particular, but also according to telehealth products and services in general.

Figure 21: Potential barriers to the diffusion of eHealth.
3.7.1. Technical challenges

The infrastructure is regarded as one of the core barriers. Significant differences exist between the European countries regarding the availability of basic systems like social alarms, which are regarded as an enabling technology for more advanced products and services. Another aspect is the already mentioned accessibility of the internet. While the internet is available in most cities, rural areas are often less developed, which can be seen as a problem for older persons who tend to stay in rural areas.

Another major challenge can be seen in the technical and semantic interoperability. The participation of more and more players on the market led to parallel standards, which do not harmonize. Moreover, stakeholders and experts do not seem to be aware of existing initiatives within this area (Abadie et al. 2010: 140). No single player dominates the market and the communication between existing participants seems to have failed up to now. This is an issue on the European level, but also true with respect to the member states and can lead to uncertainty of the potential users (Häckl 2010).

Another point is the fast developing technology itself. Today, technical products and services have a very limited product cycle. In the context of an ageing society this leads to the problem that products developed in pilot projects may be outdated when they are about to enter the market.

3.7.2. Economic challenges

Another crucial point – and maybe the most cited – can be found in a lack of reimbursement and financing, especially due to the fragmentation of responsibilities. E.g. telecare products and services can be financed within the primary or the secondary healthcare market. For the former case, the financing structures of eHealth solutions vary greatly among European countries. For instance, in Germany providers have to negotiate with insurance companies, in other countries, such as Spain, with local authorities. In some cases, there is no clear pattern of financing and if, it takes a long time to negotiate the terms. Targeting the secondary healthcare market and thus mainly privately financed products and services, the willingness to pay is directly correlated with the significant added value for users and customers (Balasch 2009). However, the willingness to pay for healthcare varies from country to country.

Furthermore, companies need to understand the health care systems, respectively markets, they want to participate. This often leads to a problem of transparency: “For market players, the lack of transparency on reimbursement models and the complexity of national frameworks and legislation make it difficult to get an overview of what services may be reimbursed where and to what extent;” (Abadie et al. 2010: 57).

Another point can be seen in the lack of business models or a missing business case. While business models are a central aspect of funding programmes, this point still leads to failure in terms of deployment. Considering AAL-solutions Brem et al. state “missing business models are almost unanimously considered to be the greatest market obstacle to a broad implementation of Ambient Assisted Living systems.” (Brem et al. 2013: 290). Due to the previous mentioned fragmentation of healthcare systems, a clear business case is still missing. While some countries consider telecare solutions as an opportunity to increase quality and decrease costs, this view is not shared by all member states (Kubitschke et al. 2010).
3.7.3. Social challenges
At first, the development process was mainly technology driven, without a clear understanding of the user’s needs. That recently changed; a central aspect of the funding programmes is the integration of the end-users into the development process. E.g. the AAL-JP states as one of the objectives the “Proactive end-user involvement throughout the life of the project”. However, even though the users are playing an increasingly important role, the deployment-gap has not been overcome.

A central aspect can be seen in the design of products and services. eHealth solutions have to be aware of their target groups, which also includes secondary users like practitioners and tertiary users like insurance companies. This leads to the challenge that devices have to suit very different requirements. For instance, telemedical services do not only involve patients, but medical personal as well. Professionals could, due to uncertainty and anxiety, simply not be willing to use technical devices (Häckl 2010). Therefore training should include professionals and, as far as involved, patients or users in general.

In short, the general preconditions for eHealth products and services have to cover:

- “user friendly design, barrier-free, accessible, affordable and reliable technologies;
- Intensified training of potential users and further vocational training [...]);
- accessible, objective information and advice, independent of manufacturers, traders, care providers and financial or funding authorities;
- Turning away from technology-driven research towards needs- and user-driven research and developing a better understanding of the context and circumstances [...]” (Mollenkopf et al. 2010: 68).

As already pointed out (see section 3.2.), targeting older persons as end-users requires detailed knowledge of basic as well as technology-related needs as well as of individual preferences. Tailored approaches combining technology and services are of huge relevance. Up to date, especially in the area of telecare, there seems to be a lack of this – even though, theoretical approaches and empirical results in this field already exist (Meyhorn et al. 2004; Mollenkopf et al. 2004; Malanowski 2009).

However, one has to be aware that some persons will never use technologies and refuse to integrate them into their daily lives. Therefore the formula “social services before technology” cannot be discarded; technology has to support social activities. Though technology is a central aspect of today’s life, future generations will be more used to it. This could lead to a better acceptance in old age as well and include much more reliance on technology in terms of health and care issues.

3.7.4. Regulative challenges
Legal uncertainties are a good example for regulative obstacles and can occur in different scenarios. For instance, liability can be a major issue of great complexity. Furthermore, the already mentioned lack of transparency applies also to legal questions; it seems difficult for involved stakeholder to see through regulative frameworks, especially within the healthcare sector.

Another crucial aspect can be found in the unclear responsibilities. Especially within healthcare systems this can cause irritation; it has to be clear who can benefit from eHealth solutions, but also who has to bear the risk as well as the costs.

---

Finally, if data is involved and will be transmitted, privacy questions arise. Especially health-related data is seen as a sensible field.

4. The housing situation of older persons in Germany, Spain, Finland, Poland and the United Kingdom

Rolf G. Heinze, Claudia Ruddat, Fabian Hoose

4.1. Housing and active and healthy ageing: complex interactions

Housing is a basic need, giving shelter and providing the necessary facilities for a large array of activities in everyday life. This is especially true in old age, as older people are spending a vast amount of their time at home. For instance, German surveys show a share of about 80 per cent of the elderly that want to stay at home even especially when in need of long term care (Generali Zukunftsfond und Institut für Demoskopie Allensbach 2013). While “ageing in place and preventing relocation are among the strongest needs of older adults as well as their families” (Iwarsson et al. 2007: 78), different conditions of housing (and neighbourhoods) are quite strongly associated with different outcomes regarding active and healthy ageing. This has been shown by the European Commission funded project ENABLE-AGE (Enabling Autonomy, Participation, and Well-Being in Old Age: The Home Environment as a Determinant for Healthy Ageing): “Participants who live in better accessible homes, who perceive their home as useful and meaningful [...] are independent in daily activities, have better well-being, and suffer less from depressive symptoms” (Oswald et al. 2007: 104, see also Iwarsson et al. 2007, Nygren et al. 2007). Recent analyses of the SHARE-data18 (Angelini and Laferrère 2013) stress the importance of the housing environment for the size of social networks, which can be seen as “particularly relevant in old age when help from others becomes a necessity” (ibd.: 323). Besides an independent effect of the type of building (living in a row house, flat or even in a high-rise building is positively related to network size) and the density of the environment, these effects interact with the general importance of socio-economic resources for the network-size, so that social disparities are of high relevance in this field (ibd.: 334).

An age-friendly accommodation (through accessibility, AAL, shared housing) respectively an age-friendly neighbourhood (through accessibility, infrastructure) is thus of extreme relevance for an independent and active life in old age as it allows elderly people to stay in their known environment as long as possible. Staying at home is not only what most of the elderly want but also advantageous regarding the financing of support and care, the continuity of social networks in the neighbourhoods and the continuity of tenancy agreements. Housing is related to all pillars of active and healthy ageing named by the WHO: participation, security and health. While accessibility in and around the home prevents accidents it also allows continuous mobility and activities in this area. Accessibility also helps the elderly to reach medical facilities (such as doctors or pharmacies) if they are available in an appropriate distance. An age-friendly infrastructure in the neighbourhood, that goes beyond accessibility but includes different kinds of facilities and services the elderly need, is thus a crucial part of the analysis of the housing situation. Additionally, in need of support or even care, devices of technical assistance (AAL) can foster an independent life style in old age as it can provide low-

---

18 The Survey of health, Ageing and Retirement in Europe (SHARE) includes 19 European countries. Unfortunately for our purposes the UK and Finland are not included. The above mentioned study uses the fourth wave of the data collected in 2010. For more information see http://www.share-project.org.
threshold assistance and medical supervision (telemedicine). The facilitation of new forms of housing, as most prominently shared housing for the elderly or for intergenerational groups, also facilitates an independent and active life style in the known environment, even if in need of long term care.

Nevertheless, regional and social disparities are quite high and have to be kept in mind. For example, even though the necessary technical devices for an accessible accommodation with AAL devices are already existent, they are only of limited use if there are no resources to afford them – be it in a rented or a privately owned home. Furthermore, rural areas lack often the necessary infrastructure for the elderly with diminishing mobility. Finally, the different municipalities and regions lack more and more often the necessary financial resources to improve the situation also in highly urbanised areas. Multiple inequalities often result in even more problematic disparities as for example for the socially disadvantaged in rural areas.

**4.2. Housing – the needs of the elderly**

In order to identify the needs of the elderly as well as the relevant stakeholder that have to be addressed we first of all have to clarify the social structure of housing (for the elderly, meaning aged 65 and older) in the case study countries: Germany, Spain, Finland, Poland and the United Kingdom. The first overview allows deriving the needs and problems of the different groups of elderly regarding the conditions of their accommodations and neighbourhoods. It furthermore allows identifying the target groups for the different stakeholders that will have to address the different rationalities of the different groups. The data used is the European Quality of Life Survey wave 2011.

This part of the report gathers information on the income, the ownership structure of housing, the area of living (meaning the rural-urban divide), the general satisfaction with the accommodation, specific problems with the accommodation, difficulties to access different facilities as well as the self-evaluated health status for people aged 65 and older in Germany, Spain, Finland, Poland and the UK. In a second step the ownership structure as well as the area of living are combined with the other variables in order to specify needs and identify the target groups for potential policy programmes.
Figure 22: Monthly net household income (in €). Source: EQLS 2011.

Figure 22 compares the monthly net household income (transferred into €) for the five case study countries, showing the values for the complete EQLS sample and for the respondents aged 65 and older. We see that in all countries the elderly live in households with a lower income than the country-average. There is, however, a high variance between the countries regarding the absolute height of the income that is in line with the differences between the GDP per capita (World Economic Outlook Database). The differences regarding the variance of the gap between the average income and the mean income of the elderly are more relevant for our endeavor. These might partly be due to differences in household composition between the countries, but it is nevertheless striking that this gap is highest (in absolute as well as relative terms) in the UK.

Figure 23 shows the share of people living alone in old age (65 and older) for the five case study countries. The share is above 50 per cent for the UK and little above 26 per cent for Poland. Comparing male and female persons can confirm what is known from care research; living alone and thus being probably more dependent on external support and care is mainly a female issue. The share of women living alone is higher than the share of men living alone in all five observed countries. It is especially high in Germany with above 60 per cent (compared to only slightly above 26 per cent for men) and relatively low in Poland with 34 per cent (compared to only 13 per cent for men). Thus, women are an important target group regarding low-threshold homecare solutions that help them to continue living independently in their known environment, while men have a quite higher chance to be cared for by other family members.
We will start the analysis of the ownership structure of the housing for people aged 65 and older. Table 8 shows a great variance between the observed countries. The differences between the countries seem to be even more accentuated for people aged 65 and older, especially regarding privately owned houses and municipal/social housing. It has to be stressed that high shares of the elderly live in their own houses or flats but more importantly that only a small share has to pay mortgage, a situation that probably compensates for the loss of income in old age. Notable are the high shares of owner occupation in Spain and Poland and the commonly known very low share for Germany (see also Helbrecht and Geilenkeuser 2010). Germany, a so called tenant society, has consequently the highest shares of tenants (private and social/cooperative/municipal) among the elderly with almost 46 per cent. Social/Cooperative/Municipal housing plays also a big role in the UK with more than 21 per cent using that kind of accommodation. In those countries landlords/cooperatives/local authorities become important actors regarding the adaption of the accommodation for the needs of the elderly assuming that there is a consensus between them and the users.

Figure 23: Share of people aged 65 and older living alone. Source: EQLS 2011.
Table 8: Ownership structure of housing for people aged 65 and older (in per cent).

<table>
<thead>
<tr>
<th>Ownership Structure</th>
<th>Germany</th>
<th>Spain</th>
<th>Finland</th>
<th>Poland</th>
<th>United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own without mortgage</td>
<td>46.99</td>
<td>86.53</td>
<td>74.59</td>
<td>86.88</td>
<td>65.34</td>
</tr>
<tr>
<td>Own with mortgage</td>
<td>4.02</td>
<td>6.74</td>
<td>9.24</td>
<td>2.37</td>
<td>7.63</td>
</tr>
<tr>
<td>Tenant, paying rent to private landlord</td>
<td>25.90</td>
<td>4.40</td>
<td>3.96</td>
<td>1.29</td>
<td>4.43</td>
</tr>
<tr>
<td>Tenant, paying rent in social, voluntary, municipal housing</td>
<td>19.88</td>
<td>0.00</td>
<td>10.23</td>
<td>7.96</td>
<td>21.07</td>
</tr>
<tr>
<td>Accommodation is provided rent free</td>
<td>2.91</td>
<td>1.81</td>
<td>1.32</td>
<td>0.86</td>
<td>0.76</td>
</tr>
<tr>
<td>Other</td>
<td>0.10</td>
<td>0.26</td>
<td>0.33</td>
<td>0.65</td>
<td>0.61</td>
</tr>
<tr>
<td>Do not know</td>
<td>0.10</td>
<td>0.26</td>
<td>0.33</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Source: EQLS 2011.

Unsurprisingly, figure 24 (share of owners among low-income households) even accentuates the above mentioned trends. We find very high shares in Spain and Poland compared to very low shares especially in Germany. While the data could not be differentiated for age, it is legitimate to assume that these trends hold true for the elderly, too. Having the responsibility for the adaption of their homes, the elderly in those situations might not have the necessary resources to finance them, while housing companies / cooperatives (more important in Germany and the UK) might be in a more privileged financial position if they see an interest to do so.

Figure 24: Share of owners among low-income households (2008). Source: ENTRANZE, EUROSTAT, UEPC.

19 Social housing in Spain is almost entirely provided for owner-occupation (and as such different from social housing in most other European countries) rather than for rent. That explains not only the low share of social, voluntary or municipal housing for the elderly in Spain (while reasons for the absence of any case may also lay in the data), but probably also parts of the high share of owner occupied (with or without mortgage) accommodation (see http://www.housingeurope.eu/publication/social-housing-country-profiles/social-housing-in/es).
Table 9: Area people aged 65 and older are living in (in per cent).

<table>
<thead>
<tr>
<th></th>
<th>Germany</th>
<th>Spain</th>
<th>Finland</th>
<th>Poland</th>
<th>United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>The open countryside</td>
<td>10.14</td>
<td>8.55</td>
<td>24.75</td>
<td>4.09</td>
<td>6.72</td>
</tr>
<tr>
<td>A village/ small town</td>
<td>44.28</td>
<td>45.60</td>
<td>29.04</td>
<td>43.23</td>
<td>49.16</td>
</tr>
<tr>
<td>A medium to large town</td>
<td>24.00</td>
<td>26.68</td>
<td>30.36</td>
<td>30.97</td>
<td>23.82</td>
</tr>
<tr>
<td>A city or city suburb</td>
<td>21.49</td>
<td>19.17</td>
<td>15.84</td>
<td>21.72</td>
<td>20.15</td>
</tr>
<tr>
<td>Do not know</td>
<td>0.10</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Source: EQLS 2011.

Regarding the type of area, the elderly are living in (see table 9), we find a great variance between the observed countries. Of course, due to sampling biases there might be differences between the survey sample and the overall population. This is not an unbearable problem as the main interest of this report does not lay in the degree of urbanisation of the five countries but in the specific problems and needs people in the different types of area have. Combining type of area and ownership structure (see figure 25 and 26) consequently allows grasping further disparities in and between the observed countries. Owner occupation is more important on the countryside and in villages / small countries in all five countries. But this divide is not very big in all of the countries with Germany being characterised by an important divide regarding ownership between rural and urban areas and Spain having only very little differences regarding the share of owner occupation between the different types of areas. This is – again – important in order to identify the interests, resources and the appropriate policy instruments targeted towards users, user/owners and different types of landlords (private, companies, cooperatives, public,…).  

20 Unfortunately, the existing data did not allow further analysis regarding the income for ownership structure and types of area (too few cases and thus biased data).
Figure 25: Ownership structure for different areas for people aged 65 and older. Source: EQLS 2011.

Figure 26: Share of owner occupation for different types of areas (people aged 65 and older). Source: EQLS 2011.
Table 10 gives information on problems with the accommodation itself. The results seem to be in line with the differences regarding the economic situation (GDP) of the countries, with the elderly in Finland, Germany and the UK having fewer problems than the elderly in Spain and Poland. This holds especially true for the rather “important” problems such as rot, a leaking roof, lacking sanitary facilities and problems to afford adequate heating.

### Table 10: Share of people aged 65 and older affected by problems with accommodation.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Germany</th>
<th>Spain</th>
<th>Finland</th>
<th>Poland</th>
<th>United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortage of space</td>
<td>2.81</td>
<td>4.66</td>
<td>1.98</td>
<td>11.18</td>
<td>8.24</td>
</tr>
<tr>
<td>Rot in windows, doors or floors</td>
<td>2.21</td>
<td>4.15</td>
<td>5.28</td>
<td>10.97</td>
<td>2.90</td>
</tr>
<tr>
<td>Damp or leaks in walls or roof</td>
<td>4.12</td>
<td>11.66</td>
<td>8.58</td>
<td>12.47</td>
<td>4.12</td>
</tr>
<tr>
<td>Lack of indoor flushing toilet</td>
<td>1.10</td>
<td>1.04</td>
<td>0.66</td>
<td>5.38</td>
<td>0.46</td>
</tr>
<tr>
<td>Lack of bath or shower</td>
<td>1.10</td>
<td>1.30</td>
<td>2.31</td>
<td>8.60</td>
<td>0.61</td>
</tr>
<tr>
<td>Lack of place to sit outside</td>
<td>8.84</td>
<td>17.62</td>
<td>5.94</td>
<td>10.32</td>
<td>3.05</td>
</tr>
<tr>
<td>Cannot afford to keep home adequately warm</td>
<td>4.22</td>
<td>16.32</td>
<td>3.30</td>
<td>27.74</td>
<td>8.70</td>
</tr>
</tbody>
</table>

Source: EQLS 2011.

![Figure 27: Mean of “Problems with Accommodation”-Index for ownership situation (people aged 65 and older). Source: EQLS 2011.](image)

If we compare the mean of a cumulated index of problems with accommodation (possible values: 0-7) for the different ownership situations (the value “accommodation is provided rent free” had to be
removed for the reason of too few cases), we see an interesting picture (figure 27). We find variances between different ownership situations (people in privately owned housing generally have less problems with their accommodation) and countries (people in Poland generally have more problems regarding their accommodation) as well as the combination of both (some values have a small or great variance regarding countries, others regarding the ownership situation). The divide between tenants and owners is for example highest in Poland.

Table 11 presents the overall satisfaction of people aged 65 and older with their accommodation. In general, most of the elderly are satisfied or very satisfied with their housing conditions with the big exception of Poland, where there were more problems regarding the accommodation, too. However, there might be a subjectivity bias, as the own accommodation is very private and intimate.\(^{21}\)

Table 11: Satisfaction with accommodation (people aged 65 and older).

<table>
<thead>
<tr>
<th></th>
<th>Germany</th>
<th>Spain</th>
<th>Finland</th>
<th>Poland</th>
<th>United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Dissatisfied</td>
<td>1.80</td>
<td>0.00</td>
<td>0.66</td>
<td>3.44</td>
<td>0.31</td>
</tr>
<tr>
<td>(Rather) Dissatisfied</td>
<td>5.82</td>
<td>7.25</td>
<td>5.94</td>
<td>19.36</td>
<td>3.82</td>
</tr>
<tr>
<td>(Rather) Satisfied</td>
<td>38.15</td>
<td>42.75</td>
<td>40.92</td>
<td>39.56</td>
<td>32.36</td>
</tr>
<tr>
<td>Very Satisfied</td>
<td>54.12</td>
<td>50.00</td>
<td>52.47</td>
<td>37.21</td>
<td>63.52</td>
</tr>
<tr>
<td>Do not know</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.43</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Source: EQLS 2011, in per cent (partly own calculations).

If we differentiate the mean satisfaction with accommodation for the ownership situations (figure 28), living areas (figure 29) and health status (figure 30), the pictures gets clearer. People in privately owned homes are (only) slightly more satisfied with their accommodation than tenants. People aged 65 and older in the UK are more satisfied with their when living outside large towns and cities while the elderly in Finland and Poland are more satisfied with their accommodation when living inside large towns and cities.

\(^{21}\) Furthermore, the Easterlin paradox referring to the fact that people mostly refer to a specific reference group when evaluating their satisfaction / happiness contributes to the high values of satisfaction regarding the accommodation (see Easterlin 2001).
Figure 28: Mean of satisfaction with accommodation for ownership situation (people aged 65 and older). Source: EQLS 2011.

And finally also the health status is connected to the satisfaction with the accommodation (figure 30). People with a bad health status are less satisfied with their accommodation in Germany, Spain and Poland. It is very interesting that this cannot be generally stated for Finland and the UK. This might be due to better care and health services that do help people in poor health to cope with the constraints linked to their accommodation.
Next to problems with the accommodation itself, further data is provided on difficulties to access different facilities what gives indications on the infrastructure of the neighbourhoods. Table 12 indicates the share of people aged 65 and older that have difficulties to access facilities for the supply of everyday goods and services. People in Germany and Poland have the biggest problems with access to the different facilities. What has to be noted additionally is the high share of elderly in the UK that state to have difficulties to access medical care.

Table 12: Share of people aged 65 and older having difficulties to access the following facilities.

<table>
<thead>
<tr>
<th>Facility</th>
<th>Germany</th>
<th>Spain</th>
<th>Finland</th>
<th>United Kingdom</th>
<th>Poland</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A food store / supermarket</strong></td>
<td>25.52</td>
<td>10.00</td>
<td>15.59</td>
<td>16.25</td>
<td>7.89</td>
</tr>
<tr>
<td><strong>Postal services</strong></td>
<td>27.34</td>
<td>9.84</td>
<td>15.84</td>
<td>15.55</td>
<td>14.5</td>
</tr>
<tr>
<td><strong>Banking services</strong></td>
<td>18.49</td>
<td>8.29</td>
<td>14.19</td>
<td>15.12</td>
<td>21.68</td>
</tr>
<tr>
<td><strong>Public transport</strong></td>
<td>18.4</td>
<td>13.99</td>
<td>26.4</td>
<td>19.01</td>
<td>14.04</td>
</tr>
<tr>
<td><strong>Cultural facilities</strong></td>
<td>42.71</td>
<td>21.5</td>
<td>21.78</td>
<td>30.88</td>
<td>27.18</td>
</tr>
<tr>
<td><strong>Recreational / green areas</strong></td>
<td>13.27</td>
<td>12.18</td>
<td>3.63</td>
<td>11.66</td>
<td>9.16</td>
</tr>
<tr>
<td><strong>Medical care</strong></td>
<td>29.62</td>
<td>17.35</td>
<td>13.2</td>
<td>40.64</td>
<td>20.92</td>
</tr>
</tbody>
</table>

Source: EQLS 2011 (partly own calculations) except item 1 (food store/ supermarket not in walking distance) from EQLS 2007.
While problems with access to the above mentioned facilities (measured in a cumulated “negative infrastructure”-index, possible values 0-7) are more common on the open countryside and in villages/small towns, this difference is more pronounced in Germany and Poland than in the other three countries (figure 31). Furthermore, the infrastructure seems to be more age-friendly in medium to large size towns than in really big cities, an observation that is valid for all the five countries.

![Figure 31: Mean of "Negative Infrastructure"-index for different areas (people aged 65 and older). Source: EQLS 2011.](image)

Regarding the combination of health status and the “Negative Infrastructure”-Index, we see how strongly the health status affects the difficulties to access facilities of everyday life, a connection that varies from country to country regarding its strength. While it is quite strong in Germany, meaning that people with a bad health status are far more affected by those problems than people in a good health status, it is weaker and less stringent in the other countries.
Figure 32: Mean of "Negative Infrastructure"-Index / health status (people aged 65 and older). Source: EQLS 2011.

Some remarks regarding the self-evaluated health status in general will follow. The variance found (see table 13) in general fits the existing knowledge on the effectiveness of the different health systems (with Poland being a laggard and especially Finland having very good results). As mentioned above, the elderly in a bad health status are more strongly affected by problems regarding the access to different facilities of everyday life (due to the reduced mobility) and are less satisfied with their accommodation. Furthermore, tenants seem to have a more fragile health than owners (figure 32)\textsuperscript{22}, which has to be kept in mind regarding the responsibility of the landlords to adapt the housing situation in case of need for support and care.

Table 13: Subjective health status of people aged 65 and older (in per cent).

<table>
<thead>
<tr>
<th></th>
<th>Germany</th>
<th>Spain</th>
<th>Finland</th>
<th>Poland</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very good</td>
<td>5.62</td>
<td>3.89</td>
<td>5.28</td>
<td>3.01</td>
<td>16.18</td>
</tr>
<tr>
<td>Good</td>
<td>32.43</td>
<td>34.97</td>
<td>30.36</td>
<td>17.42</td>
<td>34.35</td>
</tr>
<tr>
<td>Fair</td>
<td>44.98</td>
<td>47.67</td>
<td>52.48</td>
<td>44.95</td>
<td>34.2</td>
</tr>
<tr>
<td>Bad</td>
<td>13.25</td>
<td>11.14</td>
<td>10.56</td>
<td>24.95</td>
<td>11.15</td>
</tr>
<tr>
<td>Very bad</td>
<td>3.41</td>
<td>2.33</td>
<td>0.99</td>
<td>9.46</td>
<td>3.97</td>
</tr>
<tr>
<td>(Don’t know)</td>
<td>0</td>
<td>0</td>
<td>0.33</td>
<td>0</td>
<td>0.15</td>
</tr>
<tr>
<td>(Refusal)</td>
<td>0.3</td>
<td>0</td>
<td>0.22</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: EQLS 2011.

\textsuperscript{22} Some extreme values regarding Poland might be due to too few cases regarding data own elderly living in own homes with mortgage.
Figure 33: Share of people aged 65 and older in bad health status / ownership situation. Source: EQLS 2011.

To summarise, there is quite a high variance between the different countries. It is assumed that the different groups (urban/ rural, privately owned/ rented homes) will have quite different interests (and resources) to act in the researched fields of action: accessibility, AAL, age-friendly neighbourhoods and shared housing. These differences will result in and are an expression of quite different existing policy approaches that interact with the general institutional structure of the housing and social service systems in the observed countries. These interactions will lead to quite different existing drivers and barriers fostering social innovations in the researched fields of action.
4.3. Housing in old age: Trends

Several projects funded by the European Commission (most prominently: ENABLE-AGE, FUTUR-AGE) have underlined the importance of the person-environment nexus for active and healthy ageing. Housing and neighbourhoods play a crucial role in this relationship. The relevant stakeholders, be it politicians, local administrations, welfare associations, private landlords or the housing industry and civil society organisations, will have to address four fields of action in order to improve the housing situation of the elderly in a way that fosters active and healthy ageing. As they all have – for quite different reasons – an interest (most often financial) to address the will of the elderly – to stay in their (kn)own accommodation and neighbourhood for as long as possible – there are opportunities for coalitions that could push the necessary action forward. As such, the private home gains importance as a health- and care-point. However, a large part of the existing buildings and neighbourhoods is not appropriate for these developments.

Figure 34: Share of dwellings built before 1980. Source: ENTRANZE.

4.3.1. Accessibility

Barriers in and around the accommodation can lead to problems for a lot of the elderly. As they live mainly in older buildings (for Germany, half of the elderly live in dwellings from 1949 – 1980, for Spain, Finland, Poland and the UK the situation might be similar or even more pronounced (especially in the UK) due to the average age of the building stock (see figure 22 above and http://www.entranze.eu/data-tool/interactive-data-tool for details)) which are most often not appropriate for people with reduced mobility due to many staircases, too small bath rooms and
toilets as well as the general room dimensions. E.g. estimates for Germany assume that only two per cent of the existing accommodations are appropriate for the elderly. As it is not possible to meet the expected need of barrier free or barrier reduced buildings with new buildings alone adaptation of the existing building stock are necessary, not to mention the adaptations of the larger environments / neighbourhoods the elderly are living in. Many of the existing barriers can quite easily be removed. The (German) elderly have quite clear priorities which aspects are most important to them: bathrooms without barriers, the reduction of the number of staircases and the possibility to get help via an alarm system. Safety (against or in case of health incidents) is thus a central issue for the people aged 65 and older.

4.3.2. Ambient Assisted Living
The above mentioned alarm systems exist since the 1970s and are mainly used for possible health incidents (see also section 3). They can be seen as the basis for networked housing in old age. The development of the technical components is accelerating and moves in the direction of telemedicine. Assisting technologies for so called Ambient Assisted Living (AAL) can contribute to independent living in the own accommodation even in old age when mobility is reducing and general health constraints are accumulating. While the technical development is quite advanced, the acceptance of the population is still lacking. Technical solutions are often seen as impersonal and concerns of data security have to be kept in mind when the existing devices are implemented and tested in the existing pilot projects (as e.g. http://www.i-stay-home.eu/).

Target groups for alarm systems are people that want to stay independent but are impaired by chronic diseases or general age-associated constraints that do not allow them to reach the telephone in due time in case of an emergency. This technical device is highly accepted among the elderly. Studies for Germany show that around 50 per cent would be prepared for the installation of an alarm system and would even pay for it. It has to be kept in mind; however, that being prepared to do something does not automatically mean actually doing so. As the household income of the elderly is shrinking, technical assistance systems have to be implemented in the near future if other modes of financing cannot be organized.

Target groups of AAL are not only the elderly even though a lot of pilot projects focus on these groups. Assisting technologies can help the elderly with health- or age-related constraints to remain in their own accommodation. It is furthermore non-controversial that technical assistance systems have the potential to increase life quality in the domestic environment and can be used for the manifold needs of people with chronic diseases and / or in need of long term care. In general domestic care of the elderly or permanent homecare of chronic diseases are providing links for the use of networked technologies regarding the home itself, the communication with the elderly at home or the measuring and communication of vital signs of sick or handicapped people. Nevertheless the implementation and diffusion of technical assistance systems still remains behind its potential.

4.3.3. Shared Housing
Shared housing in old age and especially for people suffering from dementia has attained high media attention. Groups of elderly (or intergenerational groups) organize themselves in order to live together and care for each other as long as possible or are assisted by care services. Additionally, welfare associations and care services are offering places in shared flats they are organizing themselves. In spite of the theoretical attractiveness of this form of living in old age, only about one
to two per cent of the elderly live in shared housing and regarding the people that can imagine living in shared housing, numbers are not expected to increase a lot. Nevertheless the existing houses can play an important role in their neighbourhoods when they provide for example cultural and recreational activities.

**4.3.4. Age-friendly neighbourhoods**

As such, the importance of neighbourhoods for active and healthy ageing in the own accommodation is more and more uncontested. As especially mobility is declining with increasing age, the close environment is of extreme relevance for the provision of health and care services, the opportunities for (political) participation etc. Homecare needs a functioning infrastructure of formal and informal support that can also empower the people in need of support and care. The adaption of the infrastructure of the neighbourhood (constructional and in services) can enable the elderly to stay in the (kn)own accommodation and environment, which is, as mentioned above, the declared will of most of the elderly population. The idea is the development of “caring communities” age-friendly neighbourhoods need (see Michell-Auli 2011):

- an appreciating environment
- a functioning social infrastructure
- constructional adaptations (e.g. barriers)
- offer of appropriate housing
- need-tailored services
- advice and guidance.

**4.4. Drivers and Barriers regarding implementation and diffusion**

The above mentioned fields of action are rather organisational than technical challenges as a lot of devices, products and services already exist but questions of acceptance, organisation and most prominently financing remain open.

**4.4.1. Drivers and barriers regarding accessibility**

Technically, the organizing of barrier-free accommodations is not a problem, even in existing buildings. Nevertheless, the financing remains the crucial problem especially for low- or middle-income users (or even owner/users) or non-corporate landlords with fewer resources. Cheap credits (with a subsidy share) such as in Germany might not be attractive for those groups. This holds especially true, as the willingness to invest into the own home shrinks with increasing age. More proactive programmes are needed, so that the elderly in need of a barrier-reduced or barrier-free accommodation do not only react to the new situation but already live in or can easily find such an accommodation for a fair price.

**4.4.2. Drivers and barriers regarding ambient assisted living**

As for the implementation of accessible living space, ambient assisted living is no technical challenge as such, as the necessary devices exist and are improved in very short time spans. Nevertheless, several problems exist regarding especially the acceptance and the financing of these devices. Especially the very old fear the impersonal character of technical solutions; younger generations are additionally concerned about data security regarding the communication of their vital signs etc. Therefore, pilot projects need to focus on these aspects as well, in order to develop products that are accepted and thus diffused (see also section 3.7).
The second problem concerns the financing of technical devices. Not all social security systems are apt to introduce new benefits (this holds especially true for the fragmented health security system in Germany) and the people that most need the devices might not have the necessary resources to finance them privately. But without a consensus on the benefits of those systems that will closely depend on a higher acceptance mentioned above it will be difficult to enforce the necessary regulations for a reimbursement of the devices.

4.4.3. Drivers and barriers regarding shared housing
As already mentioned, shared housing will probably stay a rather marginal phenomenon as most people wish to stay in their own accommodation also in need of support and care. Nevertheless, as shared houses can have an important impact on the whole neighbourhood when offering cultural activities, advice etc.. People that wish that live together with other elder persons or together with several generations should not be hindered by unnecessary regulations, for example regarding the ownership structures, the organisation and financing of care etc. Policy approaches as cheap credits or even subsidies can be very helpful for people that want to take care for each other (and the larger community in the neighbourhood).

4.4.4. Drivers and barriers regarding age-friendly neighbourhoods
Organizing age-friendly neighbourhoods is a quite challenging endeavour. It requires that all relevant actors and stakeholders are consenting on common interests and are working together regarding accessibility, supply of goods and services, community building and participation. New modes of financing are needed for local actors that go beyond the often only housing space oriented development schemes but integrate soft factors (e.g. the financing of community or neighbourhood managers). A consistent bottom-up approach is needed in order to relate to the existent strengths and weaknesses, in order to really address the wishes and needs of the people in place. At the same time, the known challenges of participative processes can and will arise in some neighbourhoods as the elderly that are most in need are most often not those that can and will articulate their interests the most loudly etc. A local and more integrated system of care is furthermore dependent on the integrated organisation (and financing) of (medical) care. While this is for example more easy in the United Kingdom with its National Health System, the fragmented social security and social service system in Germany makes the realization for such concepts very difficult so that they often remain in the state of model projects.

Local authorities are often unable to cope with these challenges due to the existing regulations and are often unable to foster “caring communities” from the scratch, especially as the mobility of the elderly (and especially the very old, meaning 80 and older) is reducing to about 200 to 300 meters, in which the necessary facilities need to be provided.
5. Mobility

Gerhard Naegle, Katja Linnenschmidt

5.1. Defining mobility

Mobility is one of the key factors helping people to maintain their independence and involvement in society. However, the understanding of mobility varies contextually and can cover topics like physical mobility, driving, migration or occupational mobility. This section is about mobility in terms of public transport with a special focus on older persons.

A variety of definitions of mobility consider the environment at home or the broader environment when leaving home. Webber et al. (2010) characterise mobility in a more comprehensive way that allows considering all involved aspects. They define mobility “as the ability to move oneself (either independently or by using assistive devices or transportation) within environments that expand from one’s home to the neighbourhood and to regions beyond” (Webber/Porter/Menec 2010: 444). The authors emphasise the importance of considering multiple determinants with a possible influence on mobility and extend the focus to a broader spatial environment. This definition is in line with the concept of Active Ageing and the overall approach of MOPACT aiming for a widely faceted understanding of interrelated factors. As mentioned in section 1, active and healthy ageing must be seen from multiple angles and, according to the life course perspective, aim at all age groups and also apply to people that are to some extent frail and dependent (Walker/Maltby 2012: 126). For an age-friendly city, the active ageing framework of the WHO underlines the importance of policies, services, social settings as well as environmental and organisational features. Recognising the wide variation in capacities and resources among older people, flexible approaches are recommended to respond to age-related needs and preferences (WHO 2007).

5.2. Mobility needs of older people

Mobility is a basic need in (modern) societies. For instance, getting to work, buying groceries or pursuing other daily activities is essential to take part in society. For elderly people however, mobility can be quite a challenge and each step of the mobility chain could be a potential obstacle. Mobility in older age is a complex topic that involves several dimensions. Key determinants are cognitive, psychosocial, physical, environmental, and financial influences (Webber/Porter/Menec 2010: 446).

Cognitive and/or physical impairments such as declined hearing and vision or limitations in the musculoskeletal system increase with age and might hinder mobility. In comparison to younger people, older persons tend to spend more time at home. Yet, due to improved health, more travelling options and better foreign language skills, elderly people of today are more active than former generations at comparable age (EC 2009). Another strong influence on mobility is the number of people living in one household. There is a growing share in one-person households and older people living alone tend to be less mobile than people living with a partner. In addition, financial aspects directly influence mobility and thus social inclusion since low economic resources limiting the options for activities (Fiedler 2007; Follmer et al. 2010). In general, all of these aspects interact with each other and influence the mobility behaviour of older people.

To ensure the continuous social inclusion of people as they age and to support an independent life at home as long as possible, mobility and public transport needs must take into account barrier-free
mobility options. The project GOAL, tackling needs and requirements of older people using public transport, specifies the following aspects for the mobility chain of public transport:

- Finding information about the service and bus stop location
- Walking to bus stop
- Waiting at bus stop
- Stopping the bus
- Boarding a bus
- Purchasing/validating a ticket
- Moving to a seat
- Bus journey
- Indicating for bus to stop
- Moving to exit
- Disembarking
- Walking to the destination

If one of these features is unsuitable for older people, they may not be able to access public transport at all (GOAL 2013: 22). Further aspects like service quality influence the travel experience as well. A survey carried out in the project “European Bus System of the Future” identifies the following features (EBSF, 2010: 14):

- Personal security (at the station/stop and on the bus).
- Certainty about the travel (being on the right bus, travelling to the right destination/direction, having the right ticket).
- Rapidity, reliability and frequency of the service.
- Continuity of the service (temporal and physical).
- Comfort and cleanliness (at the station/stop and on the bus).
- Customer care and welcoming environment/staff.
- Real time information.
- Affordability of the fare system.

As a result of several focus groups with senior citizens the Beverly Foundation summarised the transport needs of older adults under the five “A’s” of public transport: availability, acceptability, accessibility, adaptability and affordability (Beverly Foundation 2010: 1; first published in 2001). Others speak of only four A’s: affordability, availability, accessibility and acceptability (DfT 2012). As adaptability is quite similar to accessibility we focus on the following aspects:

**Availability** is defined through the effort of time and distance to reach the destination. In urban regions the availability is higher than in rural areas (Follmer et al. 2010: 42).

**Acceptability** can be a hurdle to choose public transportation especially for people who are accustomed to driving themselves. For many people driving a car means individual independence and it is difficult for seniors to voluntarily hand back their driving licence (Beverly Foundation 2010: 2). Of course public transport and individual motor car traffic are not excluding each other but can complement one another. Also prejudices or bad experiences made with public transport can hinder people from taking a bus.
Accessibility has to be ensured through barrier-free stations and vehicles. It covers multiple aspects and features within the mobility chain (DfT 2012: 16).

As mentioned before, affordability is one of the major aspects for social inclusion. Reduced ticket fares for seniors can help that also older people with low income make use of public transport (DfT 2012: 4).

5.3. Mobility and transport in the European Union

5.3.1. Communications of the European Commission

Mobility and transport can be regarded as a relatively new topic within the official communications of the European Commission. The term first got mentioned in the Green Paper “Towards a European strategy for the security of energy supply” in 2001. The core message of the paper sets the focus on a more efficient and cleaner public transport (EC 2001: 70). The following White Paper “European transport policy for 2010: time to decide” was published in the same year and recognises the importance of urban transport, but the role of the European Union was seen as limited. Several measures such as developing high-quality urban transport were proposed and elderly were identified as a user group with potentially reduced mobility. However, in these papers urban transport is solely understood as a topic of the environment (COM(2001) 370 final).

The Green Paper “Towards a new culture for urban mobility” of 2007 contains questions to innovative proposals (COM (2007) 551 final) and also initiated a consultation process. As in previous papers, environmental issues are a major concern, but accessibility gains importance to improve the quality of life, especially for people with reduced mobility. Public transport has to be accessible and furthermore frequent, quick, reliable, and comfortable (COM (2007) 551 final: 13). Even though the paper focuses on urban mobility, the challenge to offer collective transport solutions in peripheral areas e.g. to ensure sufficient health care for the elderly is also mentioned.

To realise the targets and strategies the platform CIVITAS was set up. CIVITAS is a Commission demonstration and research programme for clean urban transport. It helps towns and cities testing and demonstrating integrated packages of policy and technology measures that aim to achieve a more sustainable, clean and energy-efficient urban transport system (COM (2007) 551 final: 21).

The White Paper has again been reviewed in 2009 and comes to the conclusion that the European transport policy has all in all achieved the targets by substantially contributing to the development of the European economy and its competitiveness, by facilitating market opening and integration, by establishing high quality standards for safety, security and passenger rights, and by improving working conditions. However, it states that the environment remains the main policy area where further improvements are necessary.

Ageing is now identified as one of the major trends and challenges for Europe, also bearing in mind the aspect that older people generally travel less than when they were younger but tend to travel more than the generation of their parents. The report also considers the forthcoming strain on the supply and maintenance of transport infrastructure, because of a higher devotion of public resources to pension payments, health care and nursing. To approach accessibility for all, infrastructures should be built, maintained and upgraded. A safer and more secure urban environment helps to increase reduce emissions and even has positive effects on people’s health and well-being and therefore contribute to increase the quality of life (COM(2009) 279 final).
Building on the previous papers and on the review of 2009 an “Action Plan on Urban Mobility” (APUM) was published in the same year. The actions reflect the aforementioned challenges; for example, to set up an urban mobility observatory – the European Local Transport Information Service (www.eltis.org) – which is part of Intelligent Energy Europe. Elderly are identified as a vulnerable group demanding particular attention to their mobility needs (COM(2009) 490 final).

The second White Paper “Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system” was published in 2011. Though environmental aspects have not lost importance, this time quality of life is more prominent – together with social and economic aspects. For instance, one of the mentioned initiatives focuses on improving the transport for older persons. The quality, accessibility and reliability of transport services are indicated as crucial and thus the promotion of public transport is needed. Service quality should improve in terms of frequencies, comfort, easy access, reliability of services, and intermodal integration. In this context seamless door-to-door mobility under the precondition of availability of information over travelling time and routing alternatives is considered as crucial. For the first time a mandatory approach for cities of a certain size based on EU guidelines and an audit certificate for urban mobility performance and sustainability are under discussion (COM (2011) 144 final).

In 2012 an “Action Plan on Urban Mobility – State of Play” described the proceedings of the Action Plan on urban mobility of 2009. A total of 20 actions are illustrated and their current status indicated. Elderly people are no longer mentioned but the action to improve the accessibility for persons with reduced mobility presumably includes older persons. New technologies and concepts to improve accessibility have been funded within the CIVITAS initiative through the European Research Framework Programme and enhancements on the ELTIS website are emphasised (European Commission 2012).

5.3.2. Mobility and ageing in European projects

To bring forward mobility and transport in Europe, several projects have been carried out or are still running – most of them funded within the Seventh Framework Programme of the European Commission. Ageing is not in all projects an explicit focus but is dealing with impaired or reduced mobility or people with disabilities. Many projects are about urban public transport and take the user’s needs into account.

Two projects which target older persons and aim at increasing their quality of life are SIZE23 and OASIS24. The project EBFS – European Bus System of the Future – was looking for innovative solutions in the design of buses, e.g. wide doors or reducing gaps25. The projects AENEAS26 and ISEMOA27, both funded by Intelligent Energy Europe28, are about accessible and energy efficient mobility. Both projects wanted to enable and encourage the target group using energy-efficient mobility in European cities, municipalities and regions.

With good practice examples, projects are showing how mobility measures are implemented and the diverse treatment of the topic in several regions of Europe. Projects with good practice examples are

23 http://www.size-project.at
24 http://www.oasis-project.eu
25 http://www.ebsf.eu
26 http://www.aeneas-project.eu
27 http://isemoa.eu
28 http://ec.europa.eu/energy/intelligent
Healthy Ageing Project\textsuperscript{29}, FLIPPER\textsuperscript{30}, AENEAS and ISEMOA. In the project Mediate\textsuperscript{31} a good practice guide for accessibility of Transport in Europe was developed which also includes good practice examples. Networks to exchange experiences were established in the projects BRAID\textsuperscript{32} and NICHES+\textsuperscript{33}.

Some projects are describing how mobility support for older people or people with impairments could look like with the help of (future) scenarios. These are illustrated with personal stories and characters that face different challenges when making a journey. The seamless door-to-door mobility is shown with its steps from home to the destination and back. This is a very vivid way to demonstrate the various obstacles older people face when travelling. Projects with scenarios are BRAID, GOAL\textsuperscript{34} and ICMA amobilife\textsuperscript{35}.

With a funding of more than 200 Million Euros and over 800 measures and transport solutions tested since 2002, CIVITAS\textsuperscript{36} is the main initiative in regard to mobility and transport. It contributes to the targets of Europe 2020 for achieving smart, sustainable and inclusive economic growth. The motto “cleaner and better transport in cities” is attempted to be reached through several projects in 31 countries. The current forth funding period CIVITAS PLUS II is running from 2012 to 2016. As in the communications of the European Commission environmental aspects are predominantly, ageing is only addressed in the project CIVITAS ELAN where citizens are supposed to be mobilised, ensuring health and access for all. In the work package safety and security for seniors measures were taken to improve public transport for elderly people.

\textbf{5.3.3. Mobility and ageing in the Framework Programmes}

The most relevant funding programmes for mobility and ageing are the Framework Programmes (FP5, FP6, FP7). Of 21.570 projects funded in this programme, 569 are in the field of transport; six of them combine mobility and ageing (see Table 14). Even though mobility was one of the key thematic areas within the funding period of FP6 (2002 – 2006), no project with a focus on mobility and ageing has been funded within this programme.

\begin{small}
\textsuperscript{29} http://www.healthyageing.eu
\textsuperscript{30} http://www.interreg4cflipper.eu
\textsuperscript{31} http://www.mediate-project.eu
\textsuperscript{32} http://www.braidproject.eu
\textsuperscript{33} http://www.niches-transport.org
\textsuperscript{34} http://www.goal-project.eu
\textsuperscript{35} http://www.icma-mobilife.eu
\textsuperscript{36} http://www.civitas-initiative.org
\end{small}
Table 14: Projects within FP7 and FP5 relevant to mobility and ageing.

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Project title</th>
<th>Thematic area</th>
<th>Framework Programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCESS 2 ALL</td>
<td>Mobility schemes ensuring accessibility of public transport for all users</td>
<td>Transport</td>
<td>FP7</td>
</tr>
<tr>
<td>BRAID</td>
<td>Bridging research in Ageing and ICT Development</td>
<td>ICT</td>
<td>FP7</td>
</tr>
<tr>
<td>EBSF</td>
<td>European bus system of the future</td>
<td>Transport</td>
<td>FP7</td>
</tr>
<tr>
<td>FUTURAGE</td>
<td>A roadmap for ageing research</td>
<td>Health</td>
<td>FP7</td>
</tr>
<tr>
<td>GOAL</td>
<td>Growing Older, stAying mobiLe</td>
<td>Transport</td>
<td>FP7</td>
</tr>
<tr>
<td>MEDIATE</td>
<td>Methodology for describing the accessibility of transport in Europe</td>
<td>Transport</td>
<td>FP7</td>
</tr>
<tr>
<td>NICHES+</td>
<td>New and innovative concepts for helping European transport sustainability - towards implementation</td>
<td>Transport</td>
<td>FP7</td>
</tr>
<tr>
<td>OASIS</td>
<td>Open architecture for accessible services integration and standardisation</td>
<td>ICT</td>
<td>FP7</td>
</tr>
<tr>
<td>TRACY</td>
<td>Transport needs for an ageing society</td>
<td>Transport</td>
<td>FP7</td>
</tr>
<tr>
<td>SIZE</td>
<td>Life quality of senior citizens in relation to mobility conditions</td>
<td>Quality of Life</td>
<td>FP5</td>
</tr>
</tbody>
</table>


Content overlap to ICT can be found in the projects BRAID and NICHES+. BRAID is an ICT project wherein ageing and mobility is a field of implementation and a setting for scenarios. Mobility and transportation is part of the setting “independent living”. In NICHES+ mobile travel information services for the public were developed. ICT and housing can be found in FUTURAGE and OASIS. In FUTURAGE the digital divide should be overcome by facilitating accessibility, social inclusion and intergenerational relationships. PST-environments at home and community levels are the priority in housing.

5.3.4. Mobility and ageing in the Ambient Assisted Living Joint Programme

The AAL JP, running from 2008 till 2013, launched five calls which all focus on older people and ICT. In Call 4 (ICT based solutions for Advancement of Older Persons’ Mobility), several projects were launched. See table 7 in chapter 3.4.1. an overview.

5.3.5. Programmes within the European Regional Development Fund

The European Regional Development Fund (ERDF) is to minimise the difference of development between European regions. Programmes within the ERDF are covering specific regions and setting certain priorities. The current funding period is running from 2007 until 2013 with a total budget of 201 billion Euros.

INTERREG North-West Europe (NWE) is a Programme of the European Union to promote the economic, environmental, social and territorial future of the North-West Europe area. It funds activities based on the cooperation of partners from eight countries: Belgium, France, Germany, Ireland, Luxembourg, The Netherlands, Switzerland and the UK. INTERREG IVB has four thematic

---


38 [http://www.nweurope.eu](http://www.nweurope.eu)
priorities: Innovation (Capitalising on innovation), Environmental challenges (Managing resources and risks), Connectivity (Improving connectivity) and Strong and prosperous communities (Strengthening communities). Two projects within the priority connectivity are relevant for mobility and ageing: ICMA Bridging Mobility Gaps - Improving Connectivity and Mobility Access\(^{39}\) and BAPTS - Boosting Advanced Public Transport Systems\(^{40}\). ICMA offers alternatives to the car and makes public transport more attractive by providing missing links in mobility chains or improving the scheduling and delivery of door to door transport. BAPTS wants to implement an integrated package of high-quality public transport systems and services as model solutions for clean, efficient, accessible and sustainable mobility in North West Europe.

INTERREG IVC\(^{41}\) has two thematic priorities: i) Innovation and the knowledge economy and ii) Environment and risk prevention. Within the second priority under the subtheme energy and sustainable transport is the project FLIPPER. FLIPPER – standing for Flexible Transport Services (FTS) and ICT platforms for Eco-Mobility in urban and rural European areas – aims at establishing a knowledge transfer network among different EU areas and authorities. In line with this, its prime objective is to achieve capability-building, environmental, sustainable and innovative solutions in public transport by evaluating the viability and real impacts and by gathering good practices identified at site level.

Intelligent Energy Europe (IEE) has four fields of action in the current programme: Energy efficiency and the rational use of energy (SAVE), New and renewable resources (ALTENER), Energy in transport (STEER) and Promotion of renewable energy sources and energy efficiency in developing countries (COOPENER). In the area of energy-efficient transport the projects AENEAS – (Attaining Energy Efficient Mobility in an Ageing Society) and ISEMOA – (Improving seamless energy-efficient mobility chains for all) - are carried out.

The EU Northern Periphery Programme\(^{42}\) funds projects in member states and non-member states. It has two priorities: i) Promoting innovation and competitiveness in remote and peripheral areas and ii) Sustainable development of natural and community resources. In the second priority the project O4O (Older People for Older People) is executed to develop transport services in communities.

The overall goal of the Central Europe Programme\(^{43}\) is to pursue with the following strategic approach: improving the competitiveness of Central Europe by strengthening innovation and accessibility structures. Furthermore, the territorial development is to be improved by enhancing the quality of the environment and developing attractive cities and regions. The fourth priority within this programme is Enhancing competitiveness and attractiveness of cities and regions. The project Q-Ageing (Quality Ageing in an Urban Environment) is funded under this priority and treats the topics mobility and housing.

\(^{39}\) http://www.icma-mobilife.eu
\(^{40}\) http://www.bapts.eu
\(^{41}\) http://www.interreg4c.eu
\(^{42}\) http://www.northernperiphery.eu
\(^{43}\) http://www.central2013.eu
5.4. Mobility and transport policies with regard to ageing in selected countries

5.4.1. Mobility and transport in Finland

Finland has a centralised system for research policy planning and decision-making. The Parliament and the national government are responsible for decision making at the highest level and are supported in matters related to research, technology and innovation policy by a high level advisory body, the Research and Innovation Council (TRIP 2013).

Bus transport is the main mode of public transport in Finland. Due to high costs, accessibility cannot be provided in all travel centres of Finland and thus some travel needs must be fulfilled by special arrangements. Instead of providing special solutions for people with impairments, the primary goal is to promote a safe traffic environment and high-quality services which are suitable for everyone (MTC 2008).

Within the current government programme of Finland, the transport policy is part of the economic, employment and innovation policy. Being a country with long distances and dependent on exports, a good transport system is essential. Reducing transport-related emissions and sustainable development are priorities in the transport policy. The Finish Government encourages citizens to use public transport, walking and cycling instead of using private cars. E.g. a national ticketing system stimulates the usage of public transport. Accessibility is a main aspect in the transport policy, especially with regard to older people, children and people with disabilities (Finnish Government 2011).

The research programme “transport infrastructure 2030” was initiated by the Ministry of Transport and Communications in 1999. In the following summary report “Meeting the Challenges of Concentrating Population and Industrial Changes” of 2002 the demographic change is mentioned as a challenge for the transport infrastructure. Seeing that home care of elderly people will become more common, the regular service traffic related to home care is expected to grow (MTC 2002: 33/34).

In the subsequent paper of 2007: “Transport 2030. Major challenges, new directions.” competitiveness in logistics is a major topic for the economy. Public transport is promoted as an attractive alternative to the use of a private car. Social sustainability is one of the objectives, meaning that benefits and problems of the transport system are distributed as evenly as possible between all groups of the population. This includes: barrier-free access, traffic routes, opportunities to use transport services, access to information, safety and reliability of travelling. Maintaining a reasonable level of (public) transport in rural areas with decreasing population remains a challenge for individuals as well as the economy. Further challenges are climate change, traffic safety to decrease accidents and new technology to create intelligent transport systems (MTC 2007).

In 2008 the first government policy report “Transport policy guidelines and transport network investment and financing programme until 2020” was published by the Ministry of Transport and Communications. Essentials of this paper are elderly people as a target group, traffic safety and accessibility. As the proportion of older people in the population increases, the aspect of accessibility of and within travel chains becomes more important. Even if the majority of everyday trips will still be done by the use of a private car, a good public transport system is essential since there are more than two million Finish people without a driving licence (MTC 2008).
The “Finland’s Strategy for Intelligent Transport” of 2009 is a national policy paper for intelligent transport with objectives to be reached until the year 2020. The aim is to implement an intelligent transport system (ITS) to utilise information and communication technology in the transport system, covering all modes of transport for both, passengers and goods. The vision of this ITS covers: cleaner transport, safer vehicles and transport infrastructure, predictable transport movements as well as informed travellers. To accomplish this vision, several principles are followed. Objectives of the strategy include for example a 20 per cent higher share of public transport users, cyclist and pedestrians. The second of these principles promotes the approach “accessibility for all”, considering the special needs of all population groups, including the needs of elderly. In general, transport policy aims to ensure a high level of service for passenger travel and goods transport, though the measures taken to reach this goal may vary due to regional or other conditions (MTC 2009).

### 5.4.2. Mobility and transport in Germany

Transport issues are and have been highly relevant for the Federal German Government for many decades. In 2004 the scientific advisory council of the Federal Ministry of Transport, Building and Urban Development drew attention to the implications of demographic change on traffic, including features such as presumably more people being dependent on supportive services, more one-person-households and more individual motorised traffic emerging. Also the growing heterogeneity of lifestyles and regional differences were taken into account (BMVBW 2004).

The strategy for innovation in Germany (“Hightech-Strategie 2020”) follows an integrative approach and contains so called “future projects” (e.g. self-determined living in old age). Within this strategy mobility is one out of five global challenges. To tackle the predicted increase of passenger and goods traffic by 70 per cent between 2004 and 2025 new forms of mobility are needed. Above all traffic technologies, electric mobility, navigation and saving of resources are the main aspects considered (BMBF 2010: 15/16).

The transport research programme “Mobilität und Verkehrstechnologien” of 2008 has a strong emphasis on technology, based on three pillars. One of those pillars is mobility for people in the 21st century. It has to been seen against the background of climate change, costs of fuel and demographic change. With respect to the latter, older persons, respectively their needs are directly addressed (BMWi 2008: 23-25).

In the “Research Agenda for Demographic Change: The New Future of Old Age” published by the German government in 2011, mobility is a key aspect for social inclusion. The Research Focus “Social Inclusion: Staying Mobile and in Touch” has a strong emphasis on technological solutions and aims at barrier-free mobility offers, assistant technologies for motoring and travel information. Local public transport is seen as an alternative to driving an own car; technical systems and intelligent services that adapt to the wishes and capabilities of the older generation will be developed (BMBF 2010).

Quality of life in rural areas and self-determined living at old age are two important areas of action mentioned in the strategy paper “Jedes Alter zählt” published by the German Government in 2012. The paper has several common topics with housing; one key measure is to develop a long-term strategic concept of self-determined living for independent accommodation in a familiar environment and old age mobility. Flexible mobility concepts should enable access to public services and local supply. Furthermore, research on specific topics such as senior-friendly construction and housing, senior-friendly mobility, road safety and transport infrastructure is going to be conducted.
In the working group “self-determined living” housing and mobility are being worked out within a combined approach. Measures are for example age-appropriate rebuilding and cities with low barriers. Another important measure is technical research for seamless mobility chains (BMFSFJ 2012).

5.4.3. Mobility and transport in Poland

In the “National Transport Policy for 2006 – 2025” the biggest challenge for Poland is seen in reaching the civilization development level and standard of living in Western European countries. An efficient transport system is one part to facilitate economic growth. European funding programmes provide opportunities for development and also for transportation themes. The first out of six objectives is the improvement of transport accessibility and transport quality as a way to improve conditions of living and removing barriers for economic development. More specifically and directly targeting older persons, a priority is seen in improving the quality of transport in cities. This can be accomplished through improved competitiveness of public transport compared to individual transport and improved conditions for pedestrian and bicycle traffic with special emphasis on meeting the needs of disabled users (Ministry of Infrastructure 2005).

The “National Development Strategy 2007-2015” focuses on the “improvement of the conditions of the technical and social infrastructure”. Investing in transport infrastructure should lead to improved safety and a better quality of life. The role of public transport will be increased and thus be an alternative to individual automobile traffic. An integrated strategy is suggested with traffic-management systems and development of city transport. For older and disabled persons standards and conditions of safety and availability will have to be improved by modernising and adapting vehicles (MRD 2006).

5.4.4. Mobility and transport in Spain

The overall mobility and transport research strategy in Spain is determined by the “Estrategia Española de Ciencia y Tecnología y de Innovación 2013-2020” (MEC 2013a). Within this strategy “intelligent, sustainable and integrated transport” is one of eight challenges. In the governmental plan “Plan Estatal de Investigación Científica y Técnica y de Innovación 2013-2016” this challenge is described in detail; priorities are set to technologies for reducing CO₂ emission, developing intelligent cities, improving traffic flow and enhancing accessibility for disabled persons (MEC 2013b).

In the strategic plan for infrastructures and transport “Plan Estratégico de Infraestructuras y Transporte” (PEIT), published in 2005 by the Ministry of Transport, urban mobility and accessibility are two of the key questions posed. It is stated that data on urban mobility is diffuse and heterogeneous. Few Spanish cities have a medium- or long term urban mobility plan. Mobility requirements should keep in mind the differences of the urban areas. Part of the objective to enhance social and territorial cohesion is ensuring equitable conditions of accessibility throughout the country – in particular for non-mainland Spain. For social cohesion PEIT emphasises the importance of guaranteed universal minimum access to public services such as healthcare and social assistance for all citizens. Special attention is paid to vulnerable groups like children, elderly persons, and those with reduced mobility. In cooperation with the Autonomous Communities so called “key spaces” (transport nodes) should be declared until 2006, the quality conditions defined for public transport services should be ensured for the entire country by 2020 (MDF 2005: 39).
A new culture of mobility is the aim of the strategy of urban environment “Estrategia De Medio Ambiente Urbano” of 2006. It mainly focuses on the reduction of individual motor car traffic. One of the objectives for sustainable mobility is to improve the autonomy of social groups without access to a car. These are children, women, people with disabilities or low income, elderly people and those, who simply don’t want to be dependent of cars. Transport alternatives should be offered (MMA 2006: 22/23).

One of the priorities of action in the “Estrategia Española de Movilidad Sostenible” (EEMS) is safety and health. An aim in support of this priority is better accessibility of people with reduced mobility. Adaptations of architectural barriers, walkways and accessibility to public transportation for social groups with disabilities will have to be undertaken (MDF/MMA 2009). Older people are not explicitly mentioned, as this paper is mainly about environmental aspects rather than focusing on specific social groups.

The protection of vulnerable groups has first priority in “La Estrategia española de seguridad vial 2011-2020” – the Spanish strategy for transport safety of 2011. For elderly persons this means improved monitoring of their driving capabilities, providing safe spaces for more mobility, collecting and researching better data about their accident and mobility rate (MDI 2011).

5.4.5. Mobility and transport in the United Kingdom

In the UK accessibility and equality run like a golden thread through policy papers in the context of mobility and transport. Compared to other European nations, the UK started comparatively early to focus on older people and mobility in rural areas. The quality of life for older people in rural areas is mentioned already in the rural White Paper of 2000 “Our Countryside: the future”. It sees the risk of social isolation and also aims at supporting older people to stay at home and have a good health service. However, the difficulty to access services can particularly be a problem for older people and is foremost seen as a transport issue (DETR 2000). In the “Review of the Rural White Paper” older people are identified as vulnerable group whose needs have to be sufficiently drawn out to avoid exclusion. The Government is clearly seen as responsible to ensure equitable access to quality public services. This is especially true for rural transport solutions and local public and community based transport (DEFRA 2004).

Equal access as a central theme in the UK policy is also addressed in the Accessibility and Equalities Unit Research Programme by the Department for Transport (DfT) running between 1996 and 2011. The purpose was to improve travel for disabled and older persons, reduce crime or fear of crime and allow transport choices also for people with low income. The programme also included research on technical standards for better access to vehicles and social exclusion research. The policy “Making transport more accessible to all” of 2012 is an example for the mainstreaming process and focuses primarily on access to buses, coaches, trains and taxis for disabled people. One measure explicitly focusing on the elderly can be found in guidance and funding for community and voluntary transport (DfT 2012a).

Against the background of the “British Equality Strategy” with its two principles of equal treatment and equal opportunity (GEO 2010) and the “Equality Act” of 2010, the initiative Age UK identified

44 http://www.dft.gov.uk/rmd/programme.asp?intProgrammeID=112
45 https://www.gov.uk/government/policies/making-transport-more-accessible-to-all
several transport barriers of concern for older people (e.g. physically inaccessible transport vehicles, the pedestrian environment, safety concerns, and attitudes of transport staff). These barriers are tackled in the “Transport Solutions for Older People”. Examples are door to door transport (to improve availability) or travel training and mentoring (to improve acceptability) (DfT 2012b). Furthermore, the Department for Transport published in 2012 the policy statement “Green Light for Better Buses” that promotes concessionary travel in England for older and disabled people to give them greater freedom for visiting family and friends as well as reaching facilities within and outside their local area (DfT 2012c).

5.5. Research on and data of public transport and ageing

In the project FUTURAGE – (The Future of Ageing Research in Europe: A Road Map) – two research approaches are identified to promote inclusion and enable participation through accessibility: firstly to maintain and promote physical mobility and secondly to develop accessible environments in the community to support physical accessibility (FUTURAGE 2011: 43).

There is a lot of data about mobility, but data about transport that differentiates by age is very scarce. If surveys differentiate by age they usually summarise older people in only one age group, e.g. “60+”. This does not reflect the heterogeneity of the elderly and can lead only to inappropriate one-dimensional conclusions.

Neither the WHO report "Physical activity Promotion in socially disadvantaged groups: Principles for action" nor the United Nations report "The UNECE Transport Statistics for Europe and North America" differentiate between age or give detailed information on public transport. The report "Survey on perception of quality of life in 75 European cities" by Eurostat does not give a closer look at age and public transport either. The urban mobility portal Eltis provides one of the few databases on mobility and transport and offers a search for statistics but there are still only few surveys available for selected countries.

Even the frequently quoted SHARE48 – Survey of Health, Ageing and Retirement in Europe – which is a panel database on health, socio-economic status and social and family networks of more than 85,000 individuals from 19 European countries aged 50+, does not collect data about mobility or public transport.

The Flash Eurobarometers “Attitudes on issues related to EU Transport Policy” of 2007 and “Future of transport” of 2011 are surveys on several aspects of mobility like car usage or pollution of the environment. Over 25,000 EU citizens from all 27 member states were interviewed. Reports differentiate between age groups and older people (the latter is summed up as “55+”). Amongst other things it asked how car users could be convinced to use more public transport and if a better public transportation system would improve the traffic situation in the corresponding area (EC 2007/2011).

One of the few surveys on mobility that differentiates not only between ages but is also making a distinction within the group of the elderly is the German survey “Mobilität in Deutschland”. This survey is carried out in over 50,000 households in Germany every five years. It asks about the modes, reasons, frequencies and distances of transport. Older people are differentiated in age groups of 50-59, 60-64, 65-74 and 74+ (Follmer et al. 2010: 77).

47 http://www.ageuk.org.uk/
48 http://www.share-project.org
The “Quality of life survey” is carried out every four years in all 27 member states on behalf of Eurofound. 1,000 to 3,000 persons per country are interviewed face-to-face about employment, income, education, housing, family, health, work–life balance, life satisfaction and perceived quality of society. The reasons for difficulties of access to doctors are explored and the distance to health care is another subcategory. The image of public services, including public transport, is an intensely questioned area and member states are compared. Age groups are not explicitly depicted but younger (18-24 years) are contrasted with older (50-64 years) (Eurofound 2012).

In the following two figures, based on the data of the EQLS, the access to and the quality of public transport for older people is analysed for the target countries Finland, Germany, Spain, Poland and the UK. In figure 35 the access is described as most easily in the UK, followed by Spain. It is rated as quite easily in Germany but is still classified as only moderate in Poland. It stands out that Finish interviewees were evaluating the access to public transport facilities as more difficult than other selected countries and in comparison a much bigger part of the respondents stated to not use public transport at all. It seems that difficult access to public transport in Finland leads to disuse.

In figure 36 the quality of public transport is again rated highest by the respondents from the UK, followed by Spain. Finland’s and Germany’s quality of public transport is also mostly rated as high. Polish respondents evaluated the quality to a larger extend than the other countries as poor or very poor. This goes in line with the Polish national policy priority to make up for the Western European development level.

![Figure 35: How would you describe your access to public transport facilities (people aged 65 and older)? Source: EQLS 2011.](image-url)
Big gaps in urban mobility statistics at the EU level have already been recognised in the Green Paper of 2007 (COM(2007) 551 final). To improve data on European transport systems, the European Commission is currently initiating a public consultation for the „Access to Multimodal Traffic and Travel Data in the European Union”\(^\text{49}\). Three data-related gaps have been identified for delivering multimodal travel information and planning services: i) access to transport data, ii) improving and maximising the availability of data, iii) interoperability of data formats (EC 2013). The consultation is an outcome of the initiative 22 seamless door-to-door mobility in the White Paper “Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system” (COM(2009) 279 final).

### 5.6. Drivers and Barriers for mobility and older people

Mobility and transport are topics on the rise. The thought is quite new that mobility is not only a matter of the environment, but also important to facilitate a self-determined life and social inclusion. The demographic change implies many challenges for public transport – above all an expected / higher share of people with impairments and a growing urban-rural divide. One barrier for the usage of public transport is low availability, foremost in rural areas. In Europe there are several regions that are difficult to reach. In this case, people with reduced mobility are specifically dependent on flexible transportation arrangements.

As seen in the national policies of the target countries and in the European policies, accessibility is the major concern at all levels. Accessible vehicles and stations are very important for people with limited mobility.

Moreover, public transport of the future has to take into account the heterogeneity of the people which is increasing with age. Not only do older persons differ widely because of various ways of living but also because of the range of mental and physical impairments. Respective diverse needs and requirements of older people have to be considered when developing measures and offers for mobility and transport.

A strong driver for mobility is the technical development that helps older people to orientate and inform themselves before and during the trip for seamless door-to-door transportation. Another driver for mobility policies is the aim to decrease CO² emissions through a higher usage of public transport instead of driving a car.
6. Conclusions
Each of the three topics – ICT, housing and mobility – offers excellent opportunities to support independent living and to improve quality of life for older persons. The different aspects of built and technological environments are closely linked to each other and should be thought, designed and developed together. However, this raises complexity. While the dominant driver of innovative solutions within all three topics can be found in the demographic change, each has its own challenges.

With respect to ICT, the dominant problem can be seen in the lack of diffusion. While great efforts are undertaken to design and develop innovative products and services, most of them never enter the market. As far as housing is concerned, the financing of adaptations of dwellings and environments as well as of the different neighbourhood management schemes are central problems. Regarding mobility, the supply of a convenient transport infrastructure can be seen as an obstacle especially in rural areas.

Taking a closer look at those barriers, it becomes clear that the countries in Europe are facing many common challenges. However, each country has specific profiles and conditions of these common challenges that have to be taken into account. Especially, targeting at cross-national cooperation this has to be kept in mind. Ideas and solutions which are successful in one country may not be transferred one-to-one to another country. Furthermore, with respect to active and healthy ageing, it must be underlined that people age differently. These insights may not be new; still, there seems to be a lack of awareness.

One of the most central questions brought up in the present paper, was how to overcome the enormous and undeniable deployment-gap in all three areas, most notably concerning ICT-based solutions – be it in telemedicine or AAL. Of course, there is no single answer to this question, but a plethora of possible approaches exists. As shown, a central challenge can be seen in the transfer of scientific knowledge. Much effort is put on R&D, but only a fraction of the results is successfully implemented and diffused. Therefore this implies to focus more on the introduction to the market. Tailored policy programmes taking into account the diverging resources and interests of the different stakeholders (e.g. housing-companies and especially low-income owner/users) will be necessary in order to cross the Rubicon from promising R&D projects to a vast diffusion of innovative solutions.

Another approach aims at rethinking the innovation system. Among others this refers to an approach recently developed by the High Level Group on Innovation Policy Management which postulates a radical change in innovation policy: “from fragmentation to coordination, from a narrow science and technology orientation to an all-encompassing, holistic and coherent strategy involving several policy areas, from a diffuse to a highly focussed division of labour between all the players and stakeholders involved.” (HLGIPM 2013: 9). The approach includes seven key activities (ibid: 13):

- Optimize the embryonic European innovation ecosystem;
- Improve policy coherence;
- Reduce regulatory complexity and rigidity;
- Eliminate obstacles and provide new funding to innovations;
- Facilitate industrial cooperation and re-interpretation of competition law;
- Take an encompassing and inclusive view of intellectual property;
- Increase the innovation potential through user and consumer drive;
From an active and healthy ageing perspective, attention needs to be paid to the last bullet-point. User-integration, design for all and a better understanding of the needs and wishes of older persons have to be seen as essential. This also means to learn from failed examples and to accept that some products and services are just not suitable or address needs which are already sufficiently covered by existing solutions.

Last but not least, the search for means to overcome the deployment-gap brings new challenges for researchers. Parallel to their R&D activities they have the chance to developed a clearer and more detailed understanding of the deployment-gap and its backgrounds and causes – and this gives them the knowledge but also the responsibility to go for possible solutions to overcome the existing challenges.
7. References


- Butler R; Oberlink M; Schecter M. (1990): The promise of productive aging, New York.


• **Gassmann O; Reepmeyer G (2006):** Wachstumsmarkt Alter. Innovationen für die Zielgruppe 50+, München.

• **Goßner K; Conrad M (2010):** ICT enabled independent living for elderly. A status-quo analysis on products and the research landscape in the field of Ambient Assisted Living (AAL) in EU-27, Berlin, available at: ICT enabled independent living for elderly. A status-quo analysis on products and the research landscape in the field of Ambient Assisted Living.


• **Heinze R G; Hilbert J; Paulus W (2011):** Care is coming home: towards a new architecture of health service in Europe. In: Krüger K; de Gier E (eds.): Long-term care services in 4 European countries: labour markets and other aspects, Barcelona, pp. 147-163.

• **Heinze R G; Naeglele G; Schneider K (2011):** Wirtschaftliche Potentiale des Alters, Stuttgart.


• **IPTS (2006):** Active Ageing and Independent Living Services: Core propositions leading to a conceptual framework, IPTS, Seville.

• **Iwarsson S; et al. (2007):** "Importance of the home environment for healthy aging: Conceptual and methodological background of the European ENABLE–AGE Project." The Gerontologist 47.1, pp 78-84.

• **Kubitschke L; Müller S; Gareis Ka; Frenzel-Erkert U; Lull F (2010):** ICT & Ageing. European Study on Users, Markets and Technologies.


• Ministerio de Fomento/Ministerio de Medio Ambiente y Medio Rural y Marino (2009): Estrategia Española de Movilidad Sostenible (EEMS), Spain.


• Ministry of Transport and Communications (2009): Finland’s Strategy for Intelligent Transport, Finland.

• Mollenkopf H; Kloé U; Oldermabb E; Klumpp G (2010): The Potential of ICT in supporting Domiciliary Care in Germany, Luxembourg.


• **Nygren C; et al. (2007):** "Relationships between objective and perceived housing in very old age." The Gerontologist 47.1 (2007), pp. 85-95.


• **Oswald F; et al. (2007):** "Relationships between housing and healthy aging in very old age." The Gerontologist 47.1, pp. 96-107.


• **Schultz C; Saloma S; Gemünden H G (2005):** Akzeptanz der Telemedizin, Berlin.


• **Tautz F (2002):** E-Health und die Folgen, Frankfurt/New York.


• **Zaidi A; et al. (2012):** Active Ageing Index 2012 for 27 EU Member States, available: http://www.esfage.eu/sites/esfage/files/attachments/Active%20Aging%20Index%202012.pdf.