

# ICT Developments Impacting on Dignity and Non-Discrimination of Older Citizens

A summary report from Value Ageing WP1  
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## 1. Introduction

The purpose of this document is to summarise the final report of the research activities, findings and conclusions undertaken within the scope of *VALUE AGEING WP1: ICT Developments impacting on dignity and non-discrimination of older citizens*. We have investigated current practices with the aim to propose strategies for impacting dignity and non-discrimination in the ICT for Ageing sector. Looking forward, the Europe 2020 Strategy was designed to help Europe out of economic recession, and it foresees the digital world as contributing to economic growth and social inclusion. Older people's access to and inclusion in ICT developments is an integral part of the Digital Agenda of the EU's 2020 strategy. This priority is particularly evident in relation to research and innovation, the improvement of digital literacy and the development of sustainable health. Recognising the heterogenous nature of what it means to be 'aged' is a key part of Value Ageing (VA) and of ensuring dignity and non-discrimination. It must be remembered that the goal of the information society is not to increase the presence of technology in everyday life for its own sake, but rather to increase the efficiency of daily tasks and essential services aided by conscientious adoption and refinement of technology, where appropriate. WP1 has interrogated how conscientious adoption has been demonstrated in a range of business models relating to assistive technologies and to teaching and learning in ICT, and looked at the lessons and implications to be drawn from the experience of people involved in those initiatives.

## 2. Dignity and Non-Discrimination

### 2.1 Dignity in history

Theories about dignity have roots in ancient civilisations and various theologies and philosophies. Over time, notions of human dignity have addressed issues about the relationship between 'man' and 'nature'; humans and deities; equality and hierarchies; rights and duties. WP1 explores this historical context as a backdrop to understanding human dignity today. The evolution and widespread application of *rights* for all during the 20<sup>th</sup> to 21<sup>st</sup> centuries continued to place emphasis on the duties of persons, organisations and states to respect individuals' status and capabilities, gender, ethnicity, and culture; and to respect also basic rights for health, education and income. This was manifest in the introduction of human rights conventions for women (1979), children (1989) and people with disabilities (2006). Yet in policy and research reports *dignity* has largely been used as a stand-alone and ill-defined concept. While it has been argued that dignity is subjective and difficult to make operational (Nordenfelt, 2004), some sense of the meaning of *dignity* is required in the policy agenda and for example Jacelon et al (2004) have offered a definition of dignity as:

'an inherent characteristic of being human, it can be felt as an attribute of the self, and made manifest through behavior that demonstrates respect for self and others' (page 81).

### 2.3 Dignity and Ageing

Key to the understanding of dignity in ageing are the definitions emerging from the Dignity and Older Europeans Project. Described in detail in Annex A, the essential four definitions are: Dignity of Merit; Dignity of Moral Status; Dignity of Identity; and Menschenwürde. Dignity of Merit and Moral Status are contingent and selective and hence variable: Dignity of Identity and Menschenwürde are universal.

'Our Menschenwürde provides the basis or grounds of our equal human rights. No body may be

treated with less respect than anyone else with regard to basic human rights' (Nordenfelt and Edgar, 2005:20).

Yet having the basic right to be treated with respect, while necessary, is not of itself sufficient for older people to live with dignity. An individual older person may want to retain her or his dignity of merit within the ascribed social understandings of his/her culture (e.g. being respected as emeritus), or be recognised in terms of moral status for a lifetime of good deeds. Dignity of Identity reflects these aspects of social position and worth within the concept of an individual's sense of personhood. Tadd (2004) described this type of dignity as the most important in the context of older people. Where the physical and mental changes associated with old age can make people more vulnerable to insults to dignity, or where vulnerability is increased because people are unfamiliar with social or cultural changes, relationships and inclusion are essential elements in defending dignity. It is in this context that ICT developments can work in support of dignity in later life. Nussbaum argues that the idea of dignity can be given content and impact by placing it in a network of related notions such as human rights. 'In a wide range of areas ... a focus on dignity will dictate policy choices that protect and support agency, rather than choices that infantilize people and treat them as passive recipients of benefit' (Nussbaum, 2011:30).

#### **2.4 Dignity, ageing, ICT and discrimination**

Technologies in general and ICT in particular have the capacity to prolong independence within an older person's familiar environment, but in practice many technologies including those related to health care have not been fully realised and need to be further developed with care to avoid decreasing levels of person-to-person care and consequentially creating isolation (Rauhalaa & Topod, 2003). Older people often have proportionally higher levels of poor e-literacy and are more likely not to engage with ICT. Increasing age also correlates with an increasing risk of disability and this, along with economic disadvantage, can be another key factor in digital exclusion. Dignity in relation to developing ICTs for older people is highly relevant for examination in the context of EC policy: Europe's fastest growing population is the 80+ group. De Hert and Mordino (2010) have described how technology can protect frail older people from abuse by allowing communication with the 'external world' and participation in decision-making; for those frail older people who prefer privacy to physical intimacy, assistive technologies can re-balance their care needs towards more protection of their personal spaces. Yet they also point out that 'technology could be used to create a dispersed, decentralized, system of "individual nursing homes" where frail people are destined to spend their last years of life, segregated by the human community, isolated into a technological prison made up by electronic bracelets, wireless sensors, networked communication, automatic supervisors, and robotic companions' (page 224).

In terms of each older person's human right to dignity and inclusion, access to ICT through eAccessibility and eInclusion require high standards of ethical appreciation and behaviour because while technology has a powerful potential both for benefit and for harm, individual older people may not necessarily be in a strong position to make informed choices. De Hert and Mordino (2010, p224) point out that: 'The possibility to choose fails when there is no other possibility'. In the context of ICT, older people may be vulnerable to discrimination through lack of realistic choice. To maintain dignity and non-discrimination in later life, ICT needs to be addressed in relation to both research/development and practice/use:

*Dignity in research/development* – The first imperative is to do no harm: the second is not to avoid 'hard to reach' people who might benefit from ICT. The goal of eAccessibility is paradoxical in that in order to be truly inclusive each individual must be able to choose to what degree they want to engage with the Information Society - including the choice to absent themselves from it without being denied access to essential services. But this does not absolve researchers and developers from trying to engage people who might experience discrimination in ICT, such as people living with dementia, resident in rural areas, or living in poverty.

*Dignity in practice/use* - ICT can enable older people in daily activities such as monitoring health, creating social networks, increasing participation in the Information Society and augmenting safety. Technological advancements are frequently linked with delivering care, which can raise moral and ethical questions relating to risk, choice, and respect for human rights. According to Age Platform, the key principles in maintaining end-users' human rights are: upholding autonomy and consent; assessing beneficence (balancing risk, aversion, safety and independence); avoiding harm; respecting decisions (dignity, integrity and personal preferences); and maintaining justice. In practical terms this means paying attention to real choice and appropriateness, and not losing sight of what might help each individual. Privacy and security are essential to dignity but outdated or compromised ICTs may put these at risk, and here intergenerational solidarity can offer support for older people in understanding and maintaining appropriate systems.

#### **2.5 EU Policy on eInclusion and eAccessibility**

eAccessibility aims at ensuring that people with disabilities and elderly people can access ICTs on an equal basis with others. eInclusion means both inclusive ICTs (e.g. through design) and the use of ICT to achieve wider inclusion objectives, focusing on the participation of all individuals and communities in all aspects of the information society. The Charter of Fundamental Human Rights of the European Union (2000) chapter 3 article 25 refers to 'the rights of the elderly', stating 'the Union recognises and

respects the rights of the elderly to lead a life of dignity and independence and to participate in social and cultural life.' The evolution of eInclusion and eAccessibility in EU policy and the background of how they were influenced and conceived is shown in Annex B. The colours indicate the various phases of development, including pre 2000, eEurope initiative (2000- 2005), post Riga Declaration (2006) and towards i2010 and the current moves towards the Europe2020 Strategy. The dashed lines demarcate phases, and the beginning of the current global economic crisis, evident in Europe, is labeled because it has been influential on formulation of policies geared towards the economy.

Member states have also begun to research eInclusion independently and as a result it is possible to see the many ways in which ageing fits into frameworks of ICT and accessibility. In many states, including Finland, Romania and Turkey, priority is given to people living with disability, with ageing mentioned as a subset of that. Slovenia focuses on ageing, but in the context of all age groups, integrating rather than stratifying the different age demographics. Other member states lean more towards accessible eGovernment (Italy); fostering innovation and "smart" economies (Ireland); or increasing the overall penetration of ICT in the general population (Hungary, Latvia). The UK is involved in many projects connected to ICT and ageing, but also has a strong focus on using ICT to cross the class divide and promote inclusion among young people of all backgrounds. Some states need to overcome region specific or geographic issues: most notable those spread across islands, such as Greece and Malta. Here, increasing the overall penetration of broadband poses additional difficulties such as connecting the islands via submarine cables at extra cost.

In this context the Primary Research Questions of WP1 were:

1. To what extent is ICT development threatening older people dignity and putting them at risk of discrimination?
2. To what extent can ICT become a resource to prevent offences to older people's dignity and to prevent ageism and exclusion?
3. To what extent are eInclusion and eAccessibility policies effective to prevent offences to older people's dignity and to prevent ageism and exclusion?
4. To what extent are current EC policies in this field effective to promote respect for older people's dignity and eInclusion?
5. What are (if any) the main policy gaps to be filled?

### 3. Theories and Concepts in Value Ageing

Theories and models are formulated to help explain, predict, and understand phenomena. They may extend existing knowledge or challenge it, forcing questions of how and why. They help to move from description to generalisation, set limits to generalisation, and point to the relevance of key variables. Where phenomena are complex, models can be used to focus on specific aspects to increase understanding. To assess the impact of technology on dignity and equality VA Work Package 1 made use of a modified version of the 'Dignity Encounters' model in conjunction with the 'Extended Technology Adaptation' model and Sens' 'Capability' model.

#### 3.1 Dignity Encounters

The Value Ageing definition of dignity builds on Jacobson's work which identifies two types of dignity: 'human dignity' and 'social dignity' (Jacobson, 2007, 2009a, 2009b, 2012 and Jacobson et. al, 2009).

"Human dignity is a principle, the value that belongs to every human being simply by virtue of being human. Social Dignity is generated in the interaction between and among individuals, collectives, and societies." (Jacobson, 2009b: 1538).

Jacobson argues that all encounters either promote or violate dignity. Her theory focuses on three separate but interrelated dimensions to dignity encounters: the actors, the setting in which encounters take place, and the wider social and political context.

#### 3.2 Capability

The capability approach is aimed at promoting citizenship, premised on the question of what a person is able to do and to be. It is grounded in the ideals of social justice and seeks to combat discrimination, by focusing on notions of choice-making and freedom. The capability approach is directed at the creation of a good (age friendly) society that promotes a set of opportunities or 'substantial freedoms', which people may choose to exercise. Choice, or 'decisive decision-making' is at the core of the capability approach, encapsulating the idea that a choice is freely made and not the result of inadequate resources (including skills and knowledge). Sen (2005) illustrates this difference by comparing a person who is fasting by choice (in control), with a person who is starving (no choice or control). Seeing opportunity in terms of capability allows us to distinguish appropriately between (i) whether a person is actually able to do things she would value doing, and (ii) whether she possesses the means or instruments or permissions to pursue what she would like to do (which may depend on contingent circumstances). Sen (2005) claims that by shifting attention towards the former, the capability-based approach resists an over-concentration, found in some theories of justice, on means such as incomes and primary goods.

Informed by the philosophical ideas of ‘flourishing’, Nussbaum’s work concentrates on the interplay between basic, internal and combined capabilities. *Basic capabilities* are immutable: they are the things that we are born with, such as sex and genetic makeup, but they also include latent potential that may or may not be unleashed depending on wider environmental influences. *Internal capabilities* are the personal characteristics of an individual (e.g. personality, intellectual and emotional capacities, physical health, internalised learning, skills of perception and movement). These traits are dynamic and as such can be developed through investment in training and education. In older people internal capabilities are heavily influenced by a long lifetime of experiences and opportunities. For example a person’s ability to use technologies may be influenced by previous work and/or educational experiences. *Combined capabilities* or ‘substantial freedoms’ are the totality of the opportunities which a person has when environmental/contextual factors are taken into account. The environmental factors include the physical, social and political conditions that may prevent people from choosing to live the life that they are capable of. Supportive environment is key to the capabilities approach. Lloyd-Sherlock (2002) emphasised the importance of changing the external environment to compensate for ageing related decline in internal capacities: Nussbaum emphasised the negative impact of ‘bad conditions’ in terms of hampering the development of internal capabilities. She identified 10 capabilities central to human dignity, the protection of which is a prerequisite for a life lived with dignity (Nussbaum 2011: 33-34). They are: life; bodily health; bodily integrity; senses, imagination and thought; emotions; practical reason; affiliations; other species; play; control over one’s environment.

### 3.4 Technology acceptance model

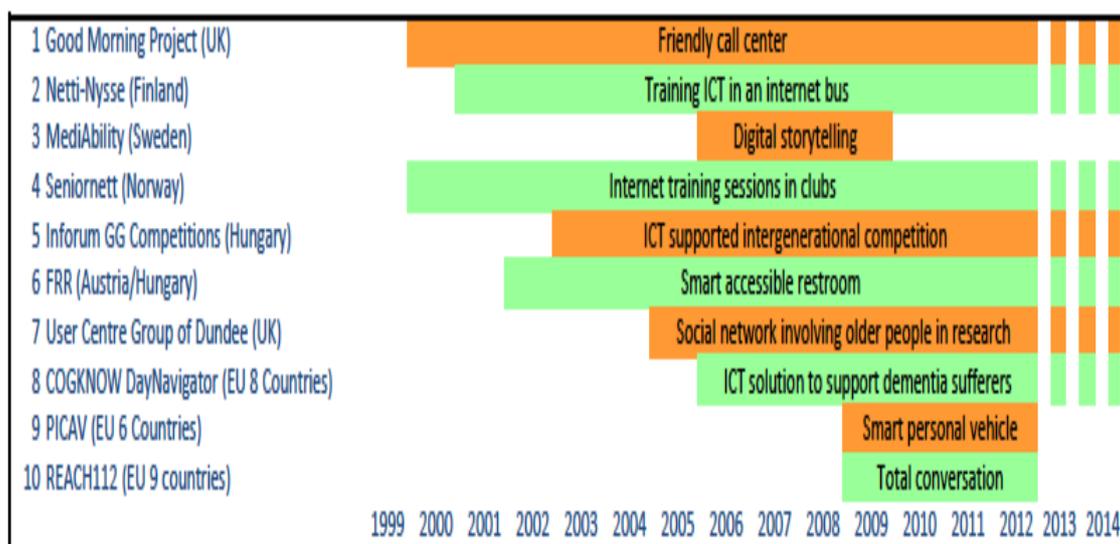
The original Technology Acceptance Model (TAM) was an information systems theory suggesting that attitudes towards technology are predicted by the perceived usefulness of a given technology and its perceived ease-of-use (Davis, 1986). A later extension of the model incorporated more detail concerning social influence and cognitive instrumental processes (Venkatesh and Davis, 2000). The Value Ageing approach recognises the need to take into account the external and perceptual influences that shape individuals’ attitudes and behaviours in using (or not using) specific technologies, for example in choosing whether or not to use online banking.

## 4. Ten Good Practice Business Cases

WP1 aimed to demonstrate how it is possible to keep ICT user-centred and use it to improve older people’s lives by improving their access to ICT through best practices of eAccessibility and eInclusion. Three-fold criteria were used to determine successful business cases of good practice: impact, effectiveness and innovation. These criteria are described in Annex C.

From an analysis of 50 potential business cases, 10 best cases were selected. These cases are described in detail in WP1 Report on Business Cases D.3, outlined in Annex D of this document, and listed in figure 1:

**Figure 1: Chronological order and duration of the selected business cases<sup>1</sup>**



<sup>1</sup> The source of Figure 1 is WP1 D1.3 (p143): Ferulli, D., Gamal, M. and Hadjiri, K (2012) Report on Business Cases

#### **4.1 How the business cases demonstrated impact, effectiveness, innovation**

Through their promotion of eAccessibility and inclusion, each of the selected business cases has contributed in different ways to developing more ICT-integrated living environments for older people. Giving older people access to these technologies has proved effective in many ways in improving their attitudes towards interactions and taking on new challenges, and helped to support social lives on daily basis. In each case, feedback from older people and others involved in these initiatives tended to be positive. Projects that focused on supporting older people through online technology, network, media recording and communications, have substantially contributed to the increase in older individuals' awareness of technology and facilitated an improvement in communications within wider social networks. Other projects used technology devices and services to help older people to safely and independently reach places and people and to fulfill aspirations that were previously beyond reach. The specific findings from the business cases demonstrated impact on individuals and communities in relation to: psychosocial benefits; health benefits; physical range and mobility; civic engagement; impact on others; and effectiveness in increasing older people's engagement with technologies. In the following discussion of these impacts reference to each business case cites its outline in Annex D (e.g. *Good Morning D1*)

##### **4.1.1 Psychosocial benefits – to the person's sense of self, and in their relation to others**

In many cases one of the effects of the ICT interventions described in the case studies was to reduce feelings of isolation and loneliness, accompanied by a boost of self-confidence and an increase in self-esteem.

For example participants in *Good Morning D1* reported feeling more secure and motivated thanks to the 'friend at the end of the phone' each day: these regular contacts had the effect of reducing feelings of isolation and exclusion and increasing feelings of being cared about and safe at home: this had a beneficial effect on health and well-being. The people with dementia who were using the *CogKnow D8* system found it easier to cope with their dementia-related difficulties and to navigate through their day. This increased their self-confidence, dignity and quality of life. The *User Group, Dundee D8* website provides free registration to the group and to classes, and a virtual place for members in the form of a social network, where people may ask for ICT support. In this way the website is a duplex channel, which means that in addition to acting as a source of information (with help available 24 hours) it also promotes communication for older people where they may share issues, knowledge, and information about local news or events. This may assist in reducing feelings of loneliness not only during the face-to-face classes but also when the users are at home and physically alone. Being a member of the *Good Morning D1* community further improved members' connection with their community and knowledge of community services and events. *Seniornett D4* meetings are a way for members to meet new people of similar ages and to start new friendships: as a result there has also been an increase in the number of older people who have registered to and regularly use Facebook, Twitter and other social network sites to communicate with their friends and family, meet new people, and feel less lonely. In Hungary, the older people who took part in *Inforum D5* Grandparent-Grandchild Competitions of Informatics had the opportunity to strengthen their relationships with younger people. During the competition, the grandparents learn how to communicate through ICT (by email, chat, social networks or video-communicating software) with their grandchildren, relatives and friends. This helps them and their friends to feel less isolated: it is a social event where old and young people can meet each other to learn about ICT.

##### **4.1.2 Promoting health and safety**

In addition to the beneficial health effects brought about by a strong sense of self and good social relations, some of the business cases had the potential to directly impact health.

Access to the *Good Morning* service D1 contributed to the health and well-being of older members, from timely responses to serious falls, to simply warning about impending low temperatures. The right to safety and feeling safe is an inviolable human right to which impairments should not present barriers: the service provided by the *Reach122* project D10 was aimed at older people with hearing impairments including deaf sign language users, speech impaired people and deaf-blind people. It enables the hearing impaired to access the emergency service 112 and this is an important progress in terms of inclusion because it gives the end users both an aid to personal safety and the possibility of helping others in case of dangerous situations. The *Reach122* project D10 improved the routing of emergency calls in the countries where it had been piloted and allowed the users to make direct calls to police and fire service PSAPs, optimising the time required for people with hearing impairments to make emergency calls.

##### **4.1.3 Range and mobility**

The business cases included ways to expand the range of older people – either physically (in space) or virtually (online presence).

In terms of mobility, The *PICAV* prototype (Personal Intelligent City Accessible Vehicle) D9 has been designed small and agile, composed by eco-sustainable materials, and moved by a fully electric engine

with zero emission of air pollution and less than 45 dBA of noise emission. For people with little physical strength, including older people and people with disabilities, access to such a technology can enable their (re)engagement in the active life of their town, encouraging them to exit from their home and enjoy possibilities to move independently around their neighbourhood. The project aimed to be fully compatible with the urban environment, especially city centres which are often characterised by very tight street, steps and irregular streets. Older people, particularly those with age related disabilities or weakness, often opt to stay at home instead of going out when they feel unconfident about the risks involved in a long walk – possibly on slippery floors, uneven sidewalks and broken curbs typical of many towns and cities and especially historical centres. Regular public transport vehicles are often not able to circulate in pedestrian-restricted areas, inadvertently discriminating against people who need to go into these areas but are not in a condition to walk safely to get around them. The *PICAV* project D9 demonstrated an approach to dealing with this through an ICT solution which provides empowerment and dignity for the user, giving the possibility to go alone to meet friends or go shopping. Similarly, responses to the *CogKnow* project D8 suggested that the mobile devices used in that project can support the older user outside their home, allowing them to meet friends and establish new friendships. In the *Friendly Rest Room* project D6 the involvement of the end user in the design and evaluation during the iterative steps was aimed to create user-centred solutions. The older people involved were reported to appreciate their experiences in using the developed prototypes: manifest in c.80% satisfaction rate in responses to questionnaires. Daily use of the prototypes increased during the test phase. Involvement with this technology expanded the range of older people in two ways. First spatially, by producing a technology to enable individuals to move more independently and safely. This point is underpinned by participants' attitudes to going out when they know there are no adequate toilets in the place they want to go to. It was evident that an increased availability of the toilet prototype tested could overcome many of the issues of safe and convenient use. Secondly, involvement in *FRR* D6 allowed participants to push their reach into the early design and development stages of a technology to have a say in a technology that would directly concern them.

#### **4.1.4 Civic engagement**

In one way or another all the cases studies gave the older people involved opportunities to feel included in the wider world. This might mean being able physically to get out and about, become involved in online communities, have a voice about personal issues or public matters, become better informed about community services and events, or feel an improved connection with communities of choice or valued as a contributor to research.

The City of Tampere is using the *Netti-Nysse* bus D2 to promote the social inclusion of older people and people from socially deprived areas. The *Good Morning* Project D1 supports older people in getting access to services in their surrounding environment and updated about any local social initiatives in order to motivate them to get involved. By attracting older people every day to take part in active conversations about certain topics or issues, the *Good Morning* project D1 acts as an integrative tool, through which members can become involved with the issues and topics that concern society. The daily calls are a very effective mechanism to keep older people engaged with their community and encourage the feeling of being part of general discussion, decision and debate. In return, being aware that their opinion and thoughts count and are sought encourages members to read and listen more about ongoing debates and arguments, with a positive impact on the person's mood and self-esteem. Arguably this has a 'training' effect as each member feels him/herself more involved in society and accordingly predisposed to participate more and more actively in group concerns. This is a bilateral mechanism against discrimination: on one hand communities have the opportunity to welcome positive and experienced senior citizens to the debates that concern them: on the other hand old people can retain belief that their views and experience can contribute to a better future and are not ignored.

*MediAbility* D3 allowed the authors to voice their opinions and describe their life experiences in their own words. The project allowed for individuals who are usually marginalised within the media domain (especially older people) to post their own stories of business, movies, news, and programs to the online public domain. The popularity of a person's story can be seen online through a ranking system and by the number of views their video receives. This opening up of expression and response is important in terms of dignity and social engagement, and for some older people, it has changed their lives. The *CogKnow* D8 solution is intended to alleviate difficulties experienced by people living with mild dementia and thus promote independence and self-confidence. Allowing people with a diagnosis of dementia to continue an active life in the town outside their home and to remain socially active for longer also contributes to reducing the discrimination of 'invisibility'. The *Inforum* Grandparent-Grandchild Competition D5 became a social movement in 2003. When the initiative started, the number of internet users over 60 in Hungary was 20,000. By 2012 it had reached 300,000. Through its media exposure the competition is contributing to the fight against the digital discrimination of older people and encouraging older people and their friends and family to become involved in the Information Society.

#### **4.1.5 Impact on others**

Directly or indirectly, the business cases often helped family, friends and neighbours to support older people. This might mean less effort required as a carer, or that family friends of the same and different generations were encouraged to get involved. As well as supporting the older people who directly

received their services, the family, neighbours and friends of members of *Good Morning* D1 were also helped by getting some peace of mind about the well-being of the older person and knowing that they were being regularly contacted. Positive feedback in the *CogKnow* project D8 was registered among the associated carers of the people living with dementia who were using the devices, as well as from the people living with dementia themselves. Carers reported considerable improvements in terms of independence for the user of the technology, and as a consequence of the support provided by the technology, less effort was required from them as a carer.

#### **4.1.6 Older persons' engagement with technology**

Involvement with technologies had an impact on how the older participants perceived technologies and further engaged with them beyond the project. This included extending choices about when, where, how, and if to get involved; increased interest in benefits of technology; and increased confidence and capability in using technologies safely.

Through surfing the web and looking for information online, any worries that the older users in *Inforum* D5 had with regards to the internet and information technology (such as the fear of damaging the PC or getting a virus) were reduced. The *Netti-Nysse* project D2 discovered that once those older people who had never surfed the web before learned how to use it correctly and got used to dealing with search engines, they could decide whether or not they wanted to become involved in the Information Society. More than 80 percent of those who took part in the training said that they were going to use computers after the course. Often they became unexpectedly interested in the benefits of technology. These included online banking; customer services; social networks; video communication with relatives and friends; entertainment; and real-time information. Participants in the *Netti-Nysse* bus project D2 have themselves promoted the project as they often discuss and share their opinions with friends to encourage them to join the Information Society. The *User Centre* group D7 is strategically located in the Queen Mother Building of Dundee University to allow for mutual cooperation and benefits between the older people who are members and the researchers of the School of Computing. The project contributes to making the Internet and its benefits accessible for older people, and involves them in the design of future innovations. This can improve self esteem and dignity for older participants because as well as learning ICT skills as an older citizen, they are also able to bring their own opinions and values to inform future progress and advancements. By participating in the focus groups and the design phases of innovative technologies, older members have the chance to become protagonists in removing discrimination about themselves and people that they represent in the development of upcoming technologies before they enter the market.

Evidence from the evaluation questionnaires used in *MediAbility* D3 showed that participants were willing to share their stories with each other, and felt they were learning something together. One person was inspired to buy their own camcorder and intended to use it to produce more movies after the project. All participants enjoyed producing a film in two days to put on a public broadcaster's web-site. This had been a good experience for all the participants, including those who had no knowledge of computers: developing a story was the motivation for them to use technology as a group. Once they got used to the PC, they became interested, and some participants started to use computers for other purposes. The *FRR* project D6 made the experience of using the toilet more accessible, allowing users to feel independent and comfortable and adapt to surrounding environments. Adjustable elements in the prototypes were moved by the end user during the tests, demonstrating that there was a need for such an option, which they had previously been unable to satisfy. The same is true for the grips and the alarm device, which made the users feel safe using the toilet 1 and contributed to their dignity and quality of life. By engaging with the prototyping process, the older participants were able to ratify aspects of the design such as adjustability, and at the same time learn about possible benefits from technology that they might not have previously considered.

## **4.2 Lessons learned from the selected business cases**

### **4.2.1 Design of technology/services/learning**

ICT-related activities can enable people to try new experiences, meet new people, and reduce boredom. Tools and ideas need not be complicated: Relatively simple tools (*Good Morning*) and ideas (*Netti-Nysse*) can be very effective. Where possible, services should be provided close to people's homes: equipment should be personalised to fit the individual user's needs (*FRR*). Innovation can usefully build on existing solutions, through the integration of innovative solutions within already existing infrastructures. New technologies and services can empower existing service rather than aim to replace them: or they can make accessible links to join together existing services. In the case of *PICAV*, sustainability of the project itself is based on the concept of integration. Where projects involve an element of training for older people, it is useful to recognise that older people tend to prefer learning ICT in connection with practical aspects of life rather than, for example, learning a specific software. Participants appreciate time to elaborate doubts, formulate questions. Coffee breaks allow learners to meet and become friends willing to help each other – with the potential to extend this co-operation beyond the classroom e.g. via the web. A familiar learning environment, with a good layout and an informal look to the lesson room contributes to success. Trainers must themselves be

continuously taught, to keep them updated and to improve their teaching techniques and approaches. Some of these updates come from their experience of teaching courses, while others are a result of studies and progress in teaching science (*Seniornett*). Trainers must be able to interpret trainees' responses, and humour is a useful tool in training (*Nett-Nysse*).

#### **4.2.2 Design of technology research projects**

Results from the business case studies point to the benefits of involving end users in consultation, focus groups and prototype testing, in terms of both the products produced and encouraging older people into civic engagement (*FRR; User Centre Group*). Good practice in project design includes:

- Realistic examples can help to clarify concepts (*CogKnow*)
- Using an iterative process, adding more detail at each stage can be successful (*CogKnow*)
- Frequent communication is essential (*Good Morning*)
- 'Human' research methods, for example using humour and storytelling to engage participants, including people with dementia (*CogKnow*).

In *MediAbility*, the storytelling method allowed mixed groups of people of different ages, gender, disability, ethnic background and prior experience of using computers to develop their skills both individually and as a group.

Benefits for carers can flow from benefits to older person (*FRR*): and technology can expand useable spaces (*PICAV*) - these possible outcomes should be taken into account in designing projects.

#### **4.2.3 Participative involvement in design and research**

Older people are highly heterogeneous in terms of capacity, social characteristics, and technological experience and perception. Participants in research and users of services often have to overcome a lack of confidence in their abilities, and supporting a sense of worth can help to generate enthusiasm and promote dignity. Good practice points to ways to engage with older people, both individually and in groups. Useful learning from the business cases includes:

- Where online investigation is involved, it is important for older participants to choose their topics as this was found to be linked to attention, mood and interest in learning (*User Centre Group*).
- Meeting like-minded people from the same age group can be beneficial (*Netti-Nysse; Good Morning*), but so too can intergenerational approach (*Inforum*).
- Beyond lessons/sessions, social networking can help people to overcome problems at home e.g. resolving issues in using different computers, operating systems, applications.
- It is important to make people aware of their valuable input to research. Feedback about the outcomes of projects is an incentive for further involvement in research.

#### **4.2.4 Engagement with media**

Engagement with traditional and new media has an essential role in drawing the attention of relevant audiences at various stages of projects, including:

- Making older people aware of projects of interest to them. In the case of *Netti-Nysse*, this involved painting the computer bus in bright colours to draw the attention of older people.
- Making the general public aware of issues, and fostering anti-discriminatory attitudes to older people
- Drawing the attention of policymakers to good practice for dignity and non discrimination in ICT

#### **4.2.5 Underpinning principles of good practice**

Good practice in ICT begins with respect for the dignity of older persons and with conscious effort to practice non-discrimination. From there, details of project and product design, participative engagement with older people, and engagement with audiences via appropriate media all contribute to successful outcomes. In addition, good practice in ICT is characterised by recognising that:

- Older people need to be motivated to learn about ICT, to help them take part in the Information Society (*Inforum*).
- There is no age limit for learning about ICT. In *Inforum* grandparents were able to teach their grandchildren as well as the other way round.
- The capacity issues in dementia are particularly challenging in the development of ICTs, and it is important to consider that people with dementia may also be affected by other age-related conditions such as mobility and sensory impairments (*CogKnow*).

Good practice is often transferable. For example for over a decade, *Good Morning* has set software, procedures and guidelines that have informed standards for a popular concept in social care that have transferred from Scotland to the Northern Ireland with further plans of further spread across Ireland.

Good practice is supported by:

- taking account of Capacity – what a person is able to be and do. This draws attention to the needs of the person, rather than the dictates of the system or technology
- making opportunities for beneficial Dignity Encounters – so that older people are neither excluded nor subject to discriminatory behaviour
- recognising differences in Technology Acceptance - not expecting older people either to *automatically accept or reject new ICT solutions on account of their age*.

### 4.3 Validation

Taking into account the findings of WP1 with respect to EU policy, theoretical frameworks, and the examination of good practice, the conclusions of this Final Report and Summary must be validated by review and comment from groups of older people themselves, as well as those representing them, as part of the dissemination process to primary, secondary, and tertiary users. This is particularly important because the business case review, while producing rich information about responses to actions and products, was based primarily on written reports of internal evaluations.

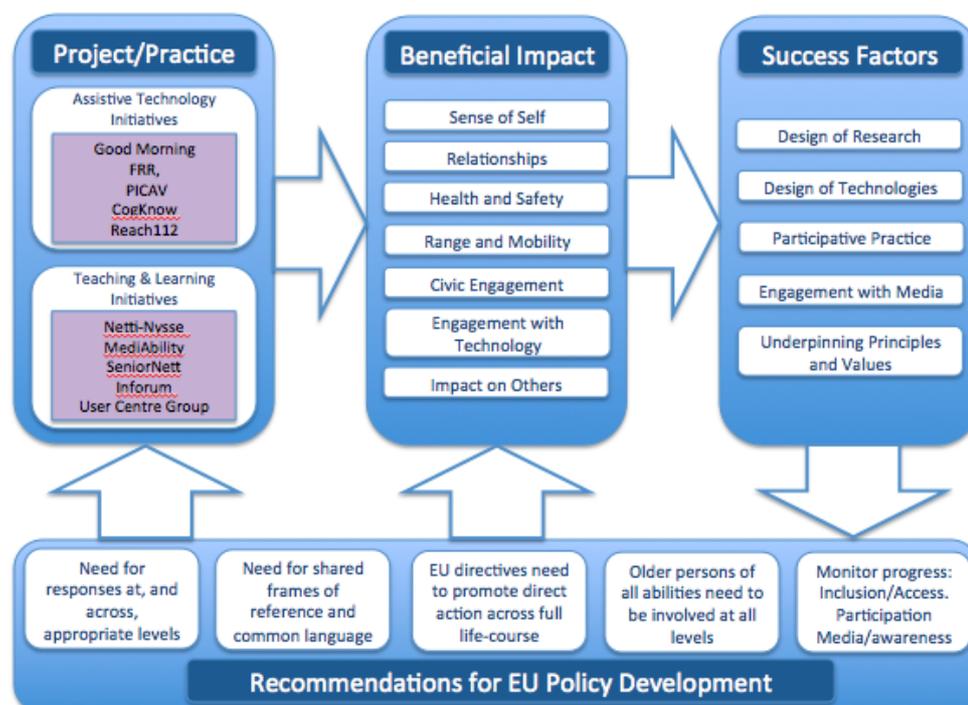
### 4.4 Recommendations for EU Policy

From the WP1 analysis, it seems apparent that policy on eInclusion and eAccessibility, especially since the economic downturn, is largely focused on matters relating to the economy. Locally, different legislations and infrastructures between countries have a bearing on how policy can be implemented. But the challenges associated with current policy options (for example who provides services and training, and for what purpose) have potential to lead to further divisions in inclusion. Furthermore the increasing pace of technological development adds more frequent challenges to eInclusion and eAccessibility policy. Yet smarter use of emerging technologies will require better engagement with older people in research and development.

- EU policy must explicitly address and promote action upon issues of inequality, and dealing with the pace of change in ICT, in the context of life-long needs for inclusion
- For effective delivery of dignity and non-discrimination, WP1 has identified a need for interventions from high-level authorities, at all other appropriate levels, and between levels of implementation and governance.
- There is a need for shared frames of reference and common language with respect to principles.
- Strengthening the involvement older people and people with disabilities at all levels will produce more effective outcomes.
- To support dignity and non-discrimination, the effectiveness of ICT initiatives should be evaluated by considering both process and impact

The development of EU policy can be supported by the analysis of validated examples of good practice where underpinning principles of ethical behaviour are being translated into positive impact (figure 2)

**Figure 2: Good practice learning for EU Policy Development<sup>2</sup>**



<sup>2</sup> Figure 2 designed by Rodd Bond

## 5. Conclusions

We here present brief answers to the main research questions.

### *1. To what extent is ICT development threatening older people's dignity and putting them at risk of discrimination?*

The evidence from WP1 is that many older people have found that ICT developments in conditions of good practice have supported them in maintaining dignity and independence. However ICT development has the potential to damage the well-being of older people if it is used inappropriately, or if it is not used (for example on the grounds of age) when it could be of benefit. This can be exacerbated by the speed of technological and social change, costs of ICT and support, incompatible systems, and inadequate information. Yet technologies should not be forced on older people, or create an artificial 'need' where there never really was one. In the case of ICT solutions for surveillance and monitoring there is potential for older people to be pressurised to accept devices and services primarily to relieve the concerns of someone else. While sometimes this acceptance is a form of familial compromise, it is important that the dignity of the older person is upheld both in the process of acquisition and using the technology and in the personal consequences to them of using it.

The current worldwide economic focus carries a danger of leading to a further divide between the included and the excluded. Digital literacy, eGovernment, active ageing, and infrastructure and services in remote areas are issues that have been identified as still tending to show a lag (Gheorgiu and Unguru, 2009) and the increasing pace of technological development adds more frequent challenges to eInclusion and eAccessibility policy. Advocating dignity in EC policy and successfully implementing it may mitigate the results of other intentions, including those purely orientated around the economy, which place many older people at risk of discrimination by virtue of deficiencies of wealth, health, and good information. Hence within ICT developments lie both risks and solutions to discrimination, and the theoretical exploration in WP1 points to some of the ways to address these issues.

Value Ageing cautions against the ageist attitudes, both intentional and unintentional, behind labels such as 'elderly' or 'older people'. In order to talk about and work with sub-groups of the population, such collective terms must be used, but we should be aware of the inherent risks of treating 'older people' as a homogenous group because they are labeled in this way. Engagement with a broad spectrum of older people in technology related R&D and implementation is therefore important to safeguard and promote the dignity of individuals. WP1 suggests that it is generally not ICT development per se that threatens dignity and inclusion, but the ways that specific ICTs and services may be conceived, promoted, introduced, used, and supported if dignity is not an underlying principle.

### *2. To what extent can ICT become a resource to prevent offences to older people's dignity and to prevent ageism and exclusion?*

While they cannot solve all problems, ICT sources if used well can go some way to help prevent offences to dignity and support social inclusion. The United Nations Principles for Older Persons specifies five principles which should inform definitions around eAccessibility for older persons: independence, participation, care, self-fulfillment and dignity. ICT can be a resource to prevent offences to older people's dignity and the risk of exclusion by upholding these principles. ICT can:

- support independence by smart interventions to support physical, cognitive, emotional, social and cultural aspects of daily life, and safety in the environment.
- increase participation in the Information Society and in social and civic life by opening avenues for older people to have a presence in both physical and online communities, mitigating some of the practical barriers to inclusion.
- support good and appropriate care by making allowance for personal choices, e.g. between intimacy and privacy; time and place of activities; monitoring health.
- encourage self-fulfillment by allowing older people to continue longer with chosen activities (such as reading, of getting out and about), and encouraging self expression to support a sense of identity.
- underpin dignity by supporting, and mitigating incapacities; giving more control over Dignity Encounters.

### *3. To what extent are eInclusion and eAccessibility policies effective to prevent offences to older people dignity and to prevent ageism and exclusion?*

ICT, used appropriately, is a powerful resource to defend older people's dignity and foster social inclusion by making it possible for individuals to become, or remain, engaged in physical and online communities. eInclusion and eAccessibility policies have a significant role to play by directing effort and supporting initiatives to include older people as engaged citizens, whatever their individual capacity. Initiatives to support the dignity of older people and counter ageism and exclusion can be based on local, regional, national and European-wide policies. For example from the business cases, the City of Tampere is using the *Netti- Nysse* bus to promote social inclusion of older people and people from socially deprived areas: here there is strong political commitment, with funding provided by the regional

government and ministry of education. Evidence from WP1 is that policies on eInclusion and eAccessibility can be effective insofar as local environments, including financial, structural and cultural aspects, allow the policies to effectively be put into practice and their impact to be monitored. Current policies appear to be having some impact for some people, but the reality of indignity and exclusion persists for many thousands of older EU citizens. WP1 suggests more emphasis on co-creation with older people and more integration of effort between different levels of governance and implementation, to help move policy into action.

#### *4. To what extent are current EC policies in this field effective to promote respect for older people's dignity and eInclusion?*

One of the most important steps towards an inclusive European Information Society was the Riga declaration of 2006. This defined Member States and EFTA country priorities as follows:

- Needs of older workers and elderly people
- Geographical digital divides
- eAccessibility and usability
- Digital literacy and competencies
- Cultural diversity in relation to inclusion
- Inclusive eGovernment

However from the analysis of WP1 it seems apparent that current policy on eInclusion and eAccessibility tends to be focused on matters relating to the economy, particularly since the global economic downturn (post 2007), and this is evident in how policy is worded. Clearly within markets consumers, as a group, have great power though individuals may have little. In the case of technologies, for example in purchasing assistive technologies, influence is sometimes exercised through the direct or indirect involvement of older people and the various stakeholders involved in ICT and ageing (as well as voluntary NGOs who are acting on behalf of older people representing their interests). WP1 has identified the need to include a wide range of stakeholder in decision-making, to balance the costs of implementing ICT interventions against not implementing them, in the light of real understanding of people's needs, capabilities and preferences. The repeated mention of 'user- rights' in EU eAccessibility and eInclusion policy needs to better consider the unique needs and heterogeneity of older people, where rights of themselves may not in practice promote non-discrimination.

#### *5. What are (if any) the main policy gaps to be filled?*

The impact and aftermath of the economic downturn, combined with the diversity of member states regarding infrastructure, assets, markets and socio-cultural expectations means that some member states will struggle more than others to deploy ICT initiatives to promote respect and eInclusion and avoid using them primarily as instruments of control. However, wherever member states are starting from and whatever their time scales for action, it should be possible for EU policy to guide them towards taking the dignity of older people very seriously as a key objective. In terms of legitimisation, it is important to bear in mind the threats to human rights posed by highly modern technological societies. This perspective features prominently in the EU Charter of Fundamental Human Rights (2000) but is absent from the revised European Social Charter, 1996 (Mordini & De Hert, 2010). Generally there is a lack of reference throughout EU policy on human rights, dignity and equality: these issues are often mentioned briefly at the start of a document but the focus shifts (without contextualising the relevance of dignity) to the need to address the broadband gap, promote eGovernance (especially for those who are housebound to promote participation in the modern society), avoid isolation and deliver training in ICT skills where appropriate. This is an area which could be better addressed in future policies, placing the emphasis back onto the dignity of older people and on examples of good practice of how to achieve dignity and equality.

Discussing care, and recognising the mediating impact of cultural settings, Agich (2007) cautioned against studies of dignity and the care of older people in different countries which focus on commonalities such as demographic and health trends but neglect the differences inherent in culture, economic, social and political contexts. Recognising that tacit understandings of dignity may be shared by people from different countries, he advised that unless examined within these respective contexts the implications of their beliefs about dignity may vary hugely. This insight applies equally to the uses of technology and future EU policy needs to take account of the influence of local contexts.

If an ageing demographic is to be targeted, it is imperative to understand user's needs. Design of technologies for 'vulnerable' old people has proven in the past to produce some patronizing/over-simplified or over-complicated options. This reinforces the essential need for older people to be involved early in research and development phases and to continue their involvement, which requires better ways to engage with older people in the research and development of emerging technologies. EU policy could be strengthened in this regard across the broad spectrum of technological development and not just in relation to age-related assistive technologies. This realisation can both enable empowerment of older people directly and increase the quality, usability and value of products and services.

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## **Annex A: Definitions of dignity and non-discrimination (Dignity and Older Europeans Project)**

**Dignity of merit:** a concept of dignity associated with a person's position or role in society: whether from a formal source (position or office) or an informal one (achievement in sport, arts, science). Seen as transitory since position may come and go, and related to hierarchy. This implies that dignity is not inherent, but is by its nature ascribed and social.

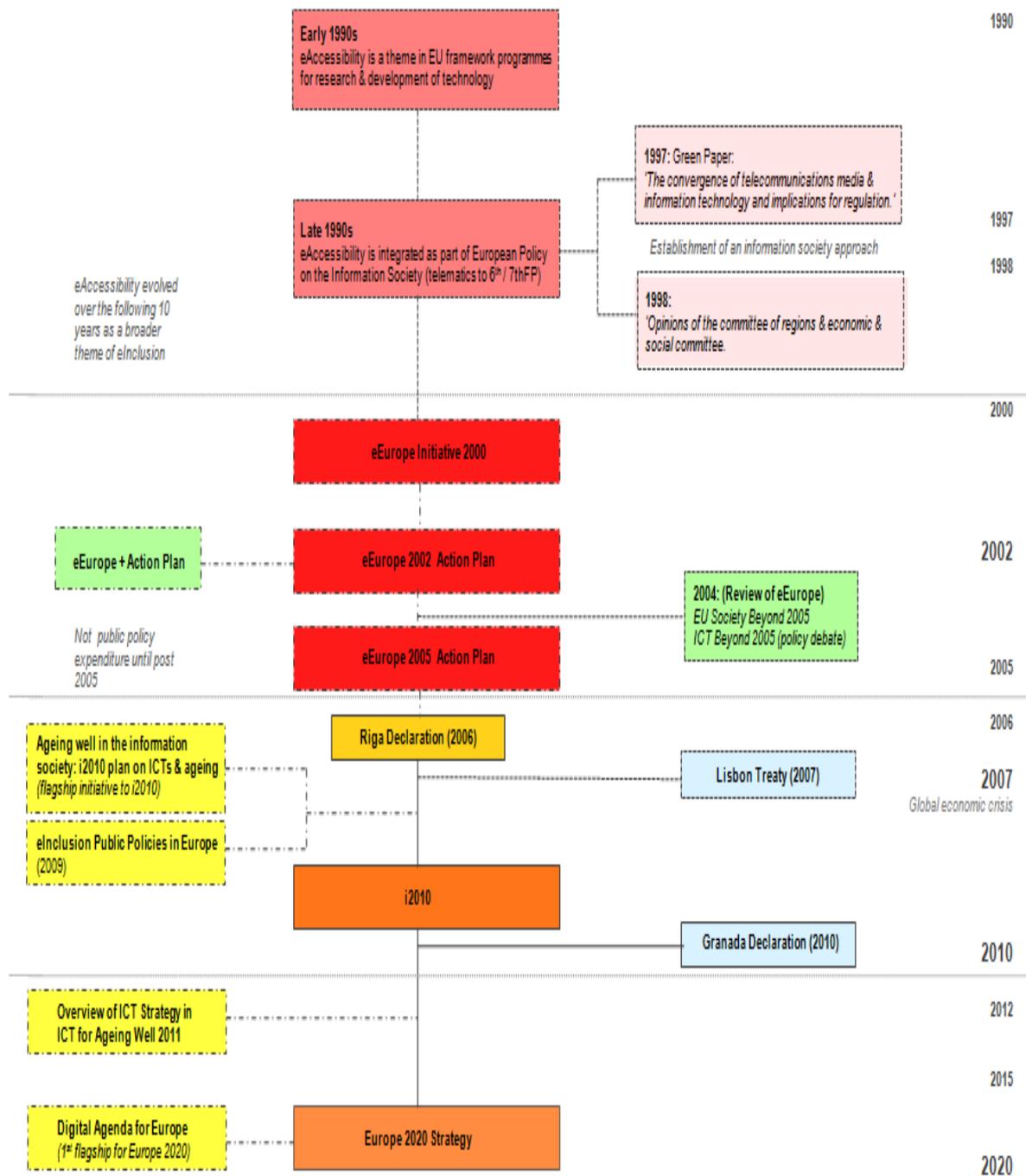
**Dignity of moral status:** associated with a person's moral autonomy or integrity – 'the result of the moral deeds of the subject' (Nordenfelt and Edgar, 2005:17). It can therefore be diminished or lost through 'immoral deeds'. This understanding of dignity implies that it is impermanent and unevenly distributed through society.

**Dignity of identity:** associated with self-respect and reflecting an individual's sense of personhood. Dignity of identity is dependent on relationships with others and a sense of inclusion in society: it can be violated by physical interference and emotional insults or humiliations.

**Menschenwürde:**(essentialism) differs from the other three understandings of dignity in that it is universal, intrinsic, and persisting. In common with Kant's notion of human dignity that requires human being to be treated with respect because of their 'inalienable value as human beings': it cannot be lost as long as the person exists.

## Annex B: Evolution of EU policy in terms of eAccessibility and eInclusion

Figure 3: Policy Analysis<sup>3</sup>



<sup>3</sup> The source of Figure 3 is Value Ageing WP1 D1.2 (p28) Faith, V. and Dimitriou, D. (2012) Policies on eInclusion and eAccessibility

## **Annex C: Business Case Selection Criteria**

**Impact** – In Value Ageing, Impact is based on analysis of the responses of the final users – in this case, older people – to the ICT-driven solution presented by each business case. The responses include feedback and spontaneous expressions of personal impact. Irrespective of the degree of innovation or the kinds of technology used, significantly impact is often a function of surrounding aspects such as a perfect local context for a particular solution, alongside good design and smart interaction. If there is a solution which achieves a wide spread impact, it deserves to be analysed to allow better understanding of how the same impact could be reproduced elsewhere.

**Effectiveness** – Effectiveness is assessed in Value Ageing from a analysis of the improvements that each ICT-driven solution produces in the lives of older people. This includes direct effects, consequent upon that specific development; and indirect effects arising as a consequence of the added value brought by the solution in context (such as when new eAccessible modules or interfaces have the indirect effect of increasing the number of eAccessible websites and web services). In these terms, the effectiveness of a solution in achieving improvements in the lives of older users may go beyond its original focus. Where an initiative is seen to be very effective, it must be studied to understand why and how its benefits may be extended.

**Innovation** – The third consideration consists in the pure innovative aspect of the technology solution. This may concern the level of technology developed, or how an existing technology is improved to meet the needs of previously discriminated users. Some smart solutions are sufficiently innovative to potentially enhance the paradigms of eAccessibility and eInclusion more generally and pave the way for new, non-discriminatory standards to be adopted. In other cases an existing technology may be adapted to extend its usability to a larger number of user including older people and people with special needs. Sometimes, a new technology developed using user-centred design becomes the new referencing solution or standard.

In the search for relevant business cases demonstrating impact, effectiveness and innovation, criteria for selection were used, and a successful case would normally have most of the following characteristics:

- a very simple technology and a very smart use of it
- a very innovative technology able to be easily assimilated by the older people
- a new interface of existing technology or a new user-friendly technology working as a gateway to other technologies and services
- a combination of the above aspects designed to take place in a wider geographical and cultural context
- a new ICT concept of user approach encompassing older and discriminated people
- a technology solution addressing an important issue affecting older population, perhaps neglected by the other solutions in the current state of the art
- a strategic public help (e.g. financial support; or free training on ICT) even if not innovative in terms of technology, but specifically answering the eAccessibility and eInclusion needs of the older population in their particular context

## **Annex D: Ten Best Practice Business Case**

### **1. Good Morning (UK)**

The Good Morning project started in Glasgow (Scotland) in 2000, subsequently spreading to numerous sites in Scotland and Northern Ireland, and is on-going in 2014. Good Morning consists of a call centre, mainly staffed by volunteers and part-time staff. The technology used is basic, comprising PCs, phones and software to enable regular scheduled friendly calls to older people living in the community.

The Good Morning project's main focus is to enable older people to retain independence as long as possible by improving life in their own home and community, and to:

- reduce isolation and exclusion – encouraging dialoguing social engagement
- improve emotional well-being via regular friendly and positive phone calls
- improve feelings of being safe - the phone calls allow a periodic check on the health status of the older person at home, and can be used to remind people both to follow their prescribed therapy and to practice safe and healthy behaviours.
- alert to potential health problems – when an older person refers to a health problem or if a call remains unanswered, the operator alerts nominated contact persons or the emergency services
- connect people into their community – the operators stimulate the older people to join in a community and to enjoy the advantage this bring in their social life.

### **2. Netti-Nysse (Finland)**

Netti-Nysse began in 2001 and is on-going in 2014, based in Tampere, Finland. The Netti-Nysse concept is a bus equipped with ICT technology including interconnected computers and internet access, which can deliver free training courses in basic computer and internet skills to digitally excluded people in their local communities. The bus also includes a 10-seater auditorium with a projector and audio-video equipment. The service has five full-time staff and is funded by a consortium of public and commercial organisations.

The main goal of Netti-Nysse is to help people to see the possibilities and benefits of Internet use and to enable them to make their own choices concerning their role within the Information Society. The bus is intentionally painted with bright colours to create a friendly non-threatening environment and to generate interest amongst people who see it out and about. The Netti-Nysse service is available for groups of people, clubs and societies. The official website gives people the chance to find out when the bus will be travelling to their neighbourhoods and to book a course.

### **3. MediAbility (Sweden)**

The MediAbility project took place in Sweden from February 2006 to June 2009, inspired by an idea of digital storytelling developed in California and modified in order to make it easy and inexpensive for excluded people. The project in Sweden was initiated by the Swedish Disability Federation.

MediAbility had two aims:

- to empower e-excluded people by providing them with the tools to make their own digital video stories.
- to get the media to focus its attention on eInclusion, and to use it as a voice for the e-excluded to the rest of the world.

Twenty-five 2-day workshops were organized, starting with oral story-telling in small groups with peer-to-peer discussions and coaching in "story-telling and technology". Participants were taught how to use video-making software programs such as MovieMaker for PCs and iMovie for Macs. Each video, typically 2 minutes long, was mastered to CD and was shown to the other participants.

### **4. Seniornett (Norway)**

Seniornett is a voluntary organisation encouraging seniors (55+) to try the Internet. It receives annual funding from The Ministry of Education and Research and the Ministry of Government Administration and Reform, and some funding from industry and local authorities, as well as from club member fees. Seniornett teaches people how to use the internet in local public places such as clubs, libraries, senior citizen centres, social organisations and voluntary centres.

The Seniornett objective is to encourage people to try the Internet experience by delivering it in public places near their homes where they are used to meeting other people and where they can learn from each other. By attending Seniornett courses older people can develop their learning skills and have the opportunity to develop cognitive functions and to keep their brain active for longer. In addition, the 'Senior-surf day' is an annual open house event held at libraries and community centres nationwide for older adults to learn about ICT.

### **5. Inforum Grandparents/Grandchildren Informatics Competition (Hungary)**

Inforum was initiated in December 2003 and is on-going in 2014: during this period the competition has become a tradition, involving 1350 families, with media coverage and followed by decision makers. In this way it has promoted the elderly agenda as a political, welfare, quality of life and eInclusion issue.

Inforum aims to highlight the importance of including older people in the Information Society. The annual competition joins families, seniors, children, decision makers and other

organizations together to create a synergy to activate a change in society regarding discrimination towards the older generation. The competition uses the stimulating influence that children can have on their grandparents in order to motivate people to use ICTs. The will to win the competition with their grandchildren is strong and encourages grandparents to learn how to interact with technology. Inforum aims to be a reference point for the information society in Hungary, and lead the elclusion movement in the country, fighting the digital divide and defending the user's interest.

#### **6. Friendly Rest Room (FRR) (Austria/Hungary)**

Friendly Rest Room is a consortium project which was partly funded by the European Commission in 2002 with the aim to carry out a study in several European countries in order to develop a more user-friendly toilet system for older and disabled people, thus increasing their independence, self-esteem and dignity.

The project developed several prototypes of smart toilets and tested them with end users, and is on-going in 2014. The FRR project carried out the research into the design, the engineering and the evaluation of prototypes. By involving people from the target group in the design phase, the project aimed to respond to the needs of a large number of older and disabled people. The user centred approach of the project began with the analysis of 316 toilet sessions involving 255 people of different ages and disabilities, analysing their behaviours, preferences and needs as well as the impact that product specification has on disabled people.

A questionnaire was produced in five different European countries to investigate the need for innovative toilet design across a variety of geographical, cultural or gender differences and to evidence the main difficulties found by people using a normal restroom.

#### **7. Centre Group of Dundee (Scotland)**

The User Centre was established at the University of Dundee in Scotland in 2005 and is on-going in 2014. The main goal of the User Centre is to provide a space for older people to become familiar with technology and benefit from learning opportunities, social interaction and research. Training courses can overcome the lack of computer skills among older people and encourage their participation in the digital world. Courses can take the form of formal class based training, or informal training by friends and family who act as "coaches". Meeting spaces can be both physical, represented by the classrooms where lessons are held, and virtual, represented by the online social network embedded in the official website. In these spaces older people can meet up and teach each other or follow lessons provided by the trainers. Another objective of the User Centre Group is to involve older people as reviewers of some software, projects and initiatives which have older users as their target group. The project aim in this way to make the registered members of the group become potential protagonists in removing discrimination of older people in the Information Society.

#### **8. Day Navigator (EU, 8 Countries)**

The Cogknow project began in 2006 as an EU funded 36 month IST-FP6, and followup projects are on-going in 2014. The Cogknow DayNavigator is a holistic embedded solution which emerged from the original project. Designed to assist persons with mild dementia to take care of themselves within their own homes and outdoors, it includes a stationary touch screen, a mobile device, home-based sensors and actuators. Devices are networked together with the Cogknow server: a home based device through a home hub, and a mobile device through a broadband connection (or the home wireless when it is at home). The server has the capacity to relay information between people and carers through a dedicated web interface. The aim is to improve quality of life by promoting independence, safety and social interaction.

The project aimed to:

- break through with research that addresses the daily needs of people with mild dementia, in order to address the most frequently identified neglected needs in the areas of information (on treatment, care and support, appointments); memory problems; communication; and psychological distress.
- prototype a portable, remotely- configurable, user- validated cognitive assistive technology to help people with the initial symptoms of dementia (including memory loss) - to remember, maintain social contact, perform activities of daily living and enhance their feelings of safety for longer.
- promote associated services which are intended to interact with people who have mild dementia through the developed prototype. These should be unobtrusive in the provision of information, further support and reassurance and in the reinforcement of their cognitive functions.

#### **9. Intelligent City Accessible Vehicle System (Picav) (EU, 6 Countries)**

PICAV was an 38 month European FP- 7 project which ran from August 2009 to September 2012. The aim was to develop an innovative personal fully- electric vehicle specifically to extend the accessibility of city transport to weak, older or impaired people. It was designed to be ergonomic, small, maneuverable, comfortable, stable, assisted in driving, eco- sustainable, and easy to park and move. Accordingly PICAV can access pedestrian areas including areas with uneven pavements, interactions with high pedestrian flows and zones where no other vehicle, off- road or wheelchairs can go, especially on conventional public transport.

The strategic goals of the project were:

- to provide accessibility for all in urban pedestrian environments, creating a new mobility concept for passengers.
- to create an example of clean energy, efficiency, safety and Personal Intelligent City Accessible Vehicle (PICAV)
- to integrate into the existing urban transport system a fleet of PICAV units acting as a smooth link between walking, bicycle and conventional public transport.
- to develop PICAV units with a number of features including ergonomics, comfort, stability, small size, mobility, dexterity, step overcoming, onboard intelligence, assisted driving, eco- sustainability, parking in narrow places, vehicle/infrastructures intelligent networking, specifically designed for people with restricted strength or mobility, but enjoyable for all.

#### **10. Reach 112 (EU, 9 Countries)**

Responding to All Citizens needing Help, REACH112 was a three year EU-funded consortium project which started in 2009 and aimed to implement more accessible person- to- person communications as well as person- to-emergency-service 112 communications.

It was based on the concept of “Total Conversation”, consisting of simultaneous combination of voice, video (including sign language or lip reading communication) and real- time text forms of communication. The target group was individuals for whom visual communication represents a significant improvement respect of voice-only communication: in particular deaf people and people with hearing impairments, including older adults suffering from hearing loss, people with a speech impairment, and deafblind people.

The strategic goals of the REACH112 project were to:

- demonstrate that 112 emergency call centres could be more accessible if they were supported by more technologies
- demonstrate that the next generation of communication solutions can allow the deaf community to access to emergency services which are currently inaccessible to them
- represent a flagship project for the EC in promoting the accessibility of the 112 emergency service
- promote the extension of IP- based communication and Total Conversation
- Implement an accessible alternative to traditional voice telephony based on the concept of Total Conversation, that can be applied to all situations.
- guide improvements in communication between citizens, in particular those with disabilities.