European SeniorWatch Observatory and Inventory -
A market study about the specific IST needs of older and disabled people to guide industry, RTD and policy

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Short Description:

This report provides a comprehensive view of the results obtained within the overall Senior-Watch project and of the methodologies and approaches applied. It summarises the project's aims and objectives and the degree to which these have been reached.

The structure of this report follows the guidelines for preparing project reports for IST KA I projects published by the Commission of the European Union (version 1 from 16th October 200). In accordance with these guidelines, Chapter 1 provides an overview over the overall project. This is followed by a description of the project's objectives (chapter 2) and of the analytical and methodological approach pursued (chapter 3). Following to this, chapter 4 describes the main results achieved. An overview of all project deliverables is provided in chapter 5, and chapter 6 deals with aspects related to the project management as well as with co-ordination aspects. Finally, an outlook is provided in chapter 7.

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1 Project overview

SeniorWatch addresses the need to better understand and monitor the market dynamics of Information Society Technology (IST) products and services relevant for older citizens in Europe. It provides a unique European and global source of reliable empirical information on their market potential. Thus, the project contributes to key European Union (EU) industrial and social policies.

The challenge

The progress towards the Information Society (IS) represents the most significant socio-economic change since the Industrial Revolution. At the same time, Europe is facing dramatic demographic change through the aging of its population. European industries have so far failed to fully exploit the market potential of products and services for the rapidly growing number of older users. The main reasons for this are a lack of information on the needs and preferences of older persons, and on the barriers they face in accessing and using Information Society products and services. Also, industries too seldom consider older persons as relevant users when developing new products.

The solution

The need for stimulation and better matching of supply and demand for IST systems and services for older people is not a regional issue but one which requires a pan-European perspective and approach. The SeniorWatch study provides descriptions and analyses of current and future demand and supply in Europe as a whole and across each of the Member States, and benchmarks this against the situation in the USA and Japan.

Principal objectives

The overriding objectives of the SeniorWatch study are

- to support European industries in addressing global market opportunities and challenge the current competitive advantage of US industries
- to enable older Europeans to articulate their views, needs and priorities regarding IST and thus to encourage them to express a demand for IST products and services which meet their requirements
- to contribute to Information Society Standardisation by surveying systematically the specific interests and needs of older people as well as of care and social services, and through dissemination of best practice.

The procedure

A comprehensive, innovative approach is applied which integrates a set of complementary research methods. These include:

- European-wide representative surveys of 10.000 older people and of 500 decision makers in care services across all Member States
- establishing an Industry Expert Technology Watch Group focusing on new IS technologies and innovative product and service developments
- country reports focusing on each of the national environments

- case studies of leading edge implementations to serve as a useful source of information on how the needs of older users can adequately be served
- integration and analysis of survey data, technology studies and country reports into a comprehensive portrait of the situation and trends in and across Europe

The results

SeniorWatch provides a unique European source of reliable empirical information on user needs and market potential for IST-based products and services geared towards older people. In particular, this includes:

- a European data base on user needs and preferences
- description of short and medium term technological options
- identification of new opportunities for IST-based products and services for older people
- strategic recommendations in respect of industrial and social policy in the European Union geared towards older and disabled people.

The project team

The project team includes – as principal contractors or subcontractors - partners from

- all EU Member States and
- the key competing markets/industries in the USA and Japan,
- each of which is thoroughly expert in their fields with strong track records.

It is lead by empirica, a research and consultancy institute based in Bonn, Germany (WP7: overall project coordination, WP 2: user surveys, WP 5: analysis and reporting). Further principal contractors are the Work Research Centre, Dublin (WP 1: analytical and methodological framework); the Finish National Research and Development Centre for Welfare and Health, Helsinki (WP 3: technology watch), the Netherlands Platform Older People and Europe, Utrecht (WP 4: case studies and country reports) and the European Federation of the Elderly, Brussels(WP 6: dissemination of project results). Through this composition of team members, SeniorWatch is in the advantageous position to have very strong and experienced work package leaders who complement each other in covering all fields/perspectives of particular relevance for the success of this project.

Moreover, a network of national correspondents - covering all European Member States plus the USA and Japan – has been subcontracted to gather information and data for a more policy oriented assessment of national conditions and for global benchmarking using desk-research and expert interview techniques.

Apart from this, an Industrial Expert Technology Watch Group has been established in order to feed a more supply-oriented perspective into the overall market assessment. Its focus is on technology and industry trends and new opportunities emanating from newly emerging Information Society (IS) techniques. This group provided guidance for the overall project and critically accompanied its tasks and activities. Overall 19 industry experts joined the group and - with the European Information and Communications Technology Industry Association (EICTA) - a high level industrial umbrella organisation has participated in this group.

2 Project objectives

As stated in the recent *Communication* of the EU Commission *e*Europe - An Information Society for All[1], the changes the Information Society is bringing about are the most significant since the Industrial Revolution. The benefits of the IS must reach *all* Europeans. Information Society Technology[2] (IST) developments offer extensive opportunities to overcome barriers (social, economic, geographical, cultural, time) for older people and disabled people. But: "European industry has so far failed to exploit the full market potential for products and services targeted at people with disabilities" and, more generally, at older people. Europe has the world's oldest population structure,[3] and there is a strong correlation between age and disabilities; about 70 % of disabled people are over 65.[4]

A major hindrance for the full development and exploitation of IS technologies by industry and service providers is - as voiced by both industry and policy-making representatives[5] - the "lack of information about the specific needs of older people and disabled people, and about the barriers that they face in accessing the Information Society ... A mechanism should be developed at EU and national level for collecting, regularly updating and disseminating information on user needs and solutions to these needs." Similarly, the EC Ad Hoc Advisory Group on *Ageing* recently noted that "the issues concerning lifestyle, work, and the provision and delivery of health and social care, are often complex. Ideally they would be based on evidence, but in many domains information is incomplete and uncertain."[6] A second hindrance is that industry tends not to automatically consider older people when developing new devices and services. Lack of awareness is only one reason, the other being the difficulty to convince all actors involved in the design and implementation chain that older and disabled customers represent a considerable market share.[7]

The overriding objective of *European SeniorWatch Observatory and Inventory (SeniorWatch)* is to redress this state of affairs, to support the development of a competitive industry and market across Europe for IST related products and services both designed-for-all and assisting in particular older people to participate in the Information Society to the fullest extent pos-

[1] eEurope - An Information Society for All. Communication on a Commission Initiative for the Special European Council of Lisbon, 23 and 24 March 2000.

[2] For the purposes of SeniorWatch the term Information Society Technology (IST) is used as a synonym for Information and Communications Technology (ICT). According to the analytical and methodological framework developed in the context of this study (see SeniorWatch deliverable no.1.2: Analytical and Methodological Framework – Final Version, Jan 2002), the focus is on IST applications with potential relevance for older people as end users or for institutions/persons providing care to them. In this sense, applications are uses to which ISTs are or could be put and in SeniorWatch the focus is mostly on communications applications, that is, on applications that involve doing things at a distance. This set of applications is very wide ranging but can be grouped into three main domains that relate, on the one hand, to needs and lifestyles, and on the other hand to possible market segments and to IST technologies and services. These three domains are general-purpose applications, care-related applications and accessibility-related applications/requirements. General-purpose applications are those that are likely to be of interest (or not of interest) to older people to more or less the same degree as any other age group. This category would include generic activities, carried out at a distance, such as interpersonal communication, shopping, getting information, working, learning and so on. Care-related applications are those that involve access to or delivery of care services, at a distance, such as social services, social alarm and monitoring services and health care. Accessibility-related applications and requirements are those that relate to needs resulting from functional changes due to disability and/or age, for example changes in vision, hearing, mobility and so on.

[3] Cf. the latest UN World Population or Human Development Reports.

[4] CEC/P.R.W. Roe (ed.): Telecommunications for All - COST 219, Brussels: 1995, p. 13.

[5] Report of the PROMISE [PROmoting an Information Society for Everyone] Colloquium on „Information Society for all: Equal Opportunities and Good Practice for Older People and Disabled People in the Information Society, p. 9, www.stakes.fi/promise/colloq/prcolloq.htm.

[6] EC: Survey on the current status of research into "Ageing" in the Europe, Brussels: May 1999.

[7] See http://www.stakes.fi/include/good_practice.htm and http://www.stakes.fi/include/handbook.htm.

sible. The focus is on older people aged 50 years and above. The study covers the needs of disabled persons to the extent that there is overlap with older persons who may develop impairments linked with the ageing process.[8] For all EU Member States, it provides comprehensive, representative market data complemented by a global perspective trend analysis; best-practice cases; policy analyses and recommendations: all drawn together and integrated to provide a well-structured, but complete "picture" through a framework developed cooperatively by leading experts from all key player groups by integrating them directly into all phases of the study.

Specific objectives of the SeniorWatch project are to:

- support European *industry*, including SMEs - the main players in this market - to address global market opportunities and challenge the current competitive advantages of US industries, and to spread information on these markets, thereby also fostering employment in these industries,
- contribute to Information Society Standardisation (ISS) in this area through taking into account the specific interests and needs of older people, through the dissemination of best practices, and articulating public interest and policies,
- empower older *citizens*, their representatives, and health and social service organisations to articulate their views, needs and priorities, but also to inform them about what is now possible with the support of IST and, thus, encourage them to demand IST products and services which meet their requirements,
- enable *policy* at European and national levels to really influence the current situation and to benchmark achievements between different European regions and countries, and to make comparisons with competing world economies (Japan, US) most relevant to the field,
- closely co-ordinate with *IST Programme* activities all results, and through mutual exchange and feedback guide the work of this study as well as support IST projects, coordination and Programme development,
- develop an *unique, integrative approach* taking into account all relevant players at the same time, based on the observations that insufficient information available to all players is a major barrier for market development in this field, and that the Schumpeterian innovative entrepreneur can play his/her key role only if he/she has the right "feeling" for market status-quo, perspectives, rules and regulations, and policies.
- exploit and *disseminate* study results and recommendations to all actor groups and policy fields mentioned above already from an early phase of the project through communications channels they are used to achieve maximum impact.

Further objectives are to

- contribute to a more even distribution of access to relevant, high quality IST applications and services for older people across all Member States, meeting their needs and aspirations in their respective national, regional, cultural and "emotional" environments, thus supporting social and economic cohesion,
- identify priority issues - emanating from this area - for the further development of an ALL-inclusive Information Society, including quality of life, health and safety aspects,
- contribute to a user friendly, balanced and integrative European Information Society,
- lay the foundation for a unique and innovative European knowledge base, inventory and observatory to be repeated regularly.

[8] We estimate that about 80 % or more of disabled people fall into the age bracket 50+.

3 Approach

Ensuring access to IST products and services for older citizens (many of whom are suffering from functional restrictions) is becoming increasingly important as Europe progresses towards the so called Information Society[9] (IS). On the social side, it will be necessary to ensure that the opportunities presented by IST to support care and independent living become a reality, and that all aspects of the IS are accessible for all. On the market side, there are significant opportunities for the telecommunications services industry, for equipment providers and for IS service providers to expand their current customer base and develop new markets. Provision of as much choice as possible for the consumer is the best way to ensure the optimal achievement of both social and market benefits. In this regard, the current situation presents something of a paradox. On the one hand, a wide range of IST-applications are emerging or already available which have great potential to support, integrate and improve the quality of life of the user groups in question. On the other hand, it is however becoming evident that most of these applications are not being provided or taken up as rapidly as they might.

As indicated by previous research[10] partial market failure, insufficiencies and barriers are hampering rapid market development across Europe. Information deficits on both sides of the market – i.e. on the demand side and on the supply side - play a critical role. For instance, already Schumpeter[11] noted that for new markets to be developed by innovative entrepreneurs, for diffusion to take place these "creators" need to have an understanding of the market, of the (hidden) needs, emotions and priorities of market players, and of the opportunities technological developments present; from this they create concrete, new products and services which consumers sometimes could not even tell that they really need them

To impact on basic causes of this partial market failure, SeniorWatch has applied a comprehensive analytical and methodological overall approach. On a high level, this approach is straight foreword and structured according to four subsequent project phases, namely:

- Preparation
- Information gathering
- Analysis
- Exploitation

These four project phases are described in some more detail in the following sub-sections.

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9 Despite the fact that there is no common definition of the term Information Society it describes a normative concept and social vision, based on "flow" of information as central value. It claims that: it is a primary moral duty of humans to exchange information, that it is a primary goal of the state to facilitate this, that culture should value flow of information, and that an infrastructure for information flow should be provided, if necessary by the state (see http://web.inter.nl.net/users/Paul.Treanor/is.def.html, 26th August, 2002). In recent discussions other terms have emerged - such as knowledge based society - which basically describe the same concept.

10 There have been many useful studies and actions especially Cost 219 ; MART and MARTEL under the TIDE Bridge phase; TUDOR under the RACE programme; the HEART study; the recent study for DG INFSO on Design for All awareness and practice amongst European industry ; the recent study for DG INFSO on emerging and future technologies of relevance for older people and disabled people ; and the recent study for DG INFSO telecommunications policy on the telecommunications needs of older people and disabled people. Each has given useful information about particular aspects of the demand and/or supply of ICTs and/or assistive technologies for disabled people and/or older people, or has given wider demand estimates at a particular point-in-time. Unfortunately, these previous studies, neither alone nor in combination, provide the necessary level of comparable quantitative and qualitative data on the current and emerging demand, supply and environmental situation that prevails in Europe.

11 Schumpeter, Josef: Theorie der wirtschaftlichen Entwicklung. Berlin 1926 (2nd ed.)

Phase I: Preparation

Experiences from earlier market-oriented projects in the field[12] had shown that differing concepts, definitions, etc. are in use among the various groupings involved (industry, research, etc.). Against the background of these experiences, the preparation phase ensured that all the project participants had a common understanding about the work to be carried through further in the project. As an indispensable starting point for the further research work, the SeniorWatch conceptual and methodological framework was developed at this stage of the project. In particular this was to:

- ensure common understanding of concepts across the project;
- maximise coherence of interpretation and results across all countries;
- help define the scope of survey work;
- document agreement on appropriate definitions across all partners;
- contain and enable expression of sector issues and European policy concerns while leaving room for peculiarities of national social systems and structures.
- adequately reflect the changing environment of senior markets and care in Europe, current opportunities for IST application in the sector, and trends leading to future opportunities

Phase II: Information Gathering

During this project phase all the information required for subsequent analyses was gathered. For undertaking a comprehensive assessment of the market opportunities for IST in the older people sector (short/medium term demand, identification of market drivers, constraining factors, etc.), however, different perspectives needed to be considered. Firstly, it was necessary to get a valid picture of the demand potential for relevant products and services as it can be found on the users side. Secondly, the current and future options available to satisfy this demand then needed to be assessed from a more supply-oriented perspective. This needed thirdly, to be augmented by a more environmentally-oriented perspective considering the socio-economic, political, legal, etc. circumstances in which an optimal market for relevant IST products and services is to be realised. According to these perspectives, a multi-method approach was applied in order to collect both quantitative and qualitative data. This included:

EU-wide user surveys	Availability of representative data on the potential demand for relevant products and services is a cornerstone in assessing the market potential for IST. There were, however, no such data available which could be used ,e.g., for the purpose of secondary analysis. Therefore, primary data had to be collected. The two market segments to be considered here - namely residential/private demand among older people and institutional demand within the care sector - required two different surveys, one of older people and one of decision makers in care provider organisations. The overall objective of these surveys was to investigate both actual and potential demand for IST amongst older citizens and their carers on a European level.
Industry Expert Technology Watch Group	An Industrial Expert Technology Watch Group was established in order to feed a more supply-oriented perspective into the overall

[12] See footnote no. 10.

market assessment. Its focus was on technology and industry trends and new opportunities emanating from newly emerging IS techniques. This group was to provide guidance for the overall project, to critically accompany its tasks and activities, to provide a sounding board for ideas and new approaches, to perform quality control and, through its work package leader, to become directly involved in the management of the project.

Country Reports

The uptake of IST among older people is not at least affected by their wider environment. It is, e.g., known that uptake of relevant applications varies depending on the structure of the national social system, the geographic region, the economic development, national or regional policy priorities etc. However, the information which were available on the market environment for IST in the sector in question (e.g. from previous projects such as MARTEL, MART, HEART) was not suitable to substantially feed into the overall analytical approach developed for SeniorWatch. Either it was too general or it had been produced under an analytical perspective unsuitable for the purposes of SeniorWatch (e.g. regarding bench marking). Therefore, to obtain background information and understand different national environments, country reports were conducted according to a common reporting structure. Furthermore, this allowed to better understand and interpret any country-specific survey results. The consortium members and subcontractors produced one country report for each of the 15 EU Member States. For benchmarking purposes and to enable identification of global trends, these were complemented by country reports on the United States of America and Japan, the leading markets in this field.

Case studies

Moreover, case studies of leading edge implementations were conducted to gather information on how the needs of the user groups in question can adequately be served. On the one hand, these provided useful inputs to the overall understanding and analysis of the market for IST amongst older people through complementing information coming from the surveys, the technology watch and the country reports. In this sense, they were used to look in a more in-depth way at interesting and/or important aspects of the demand-supply situations and processes. On the other hand, the case studies provide examples of success stories (and failures) that can guide and motivate others to take actions that will support the diffusion and take-up of IST by or for older people. To allow a comparative and integrative analysis of such experience, all cases were described according to a common reporting structure.

Phase III: Analysis

The wealth of data and qualitative information gathered within the previous project phase was integrated, summarised and analysed in close cooperation of the consortium members, supported by the Industry Technology Watch Expert Group where specific issues arose. In technical regard, the first step was to draw together the European picture, utilising data from the surveys, projecting the likely future penetration of IST applications relevant to the field across Europe. The vast amount of data and information available at this stage required a

tight selection and concise presentation. The second step was to take a more global perspective, benchmarking Europe against the leading nations in the field, namely Japan and the USA. The global perspective allowed to pursue a "SWOT" approach highlighting strengths and weaknesses of Europe and the opportunities and threats faced here. In a third analysis step, factors constraining and facilitating uptake and the policy impacts were at the focus of attention. In a final step, all material relevant to policy was collated and strategic recommendations were drawn up in a separate report to present key results and policy related conclusions in a concise manner.

Phase IV: Exploitation

The objective of the final project phase was to ensure that SeniorWatch results are going to be utilised by industry as well as EU and national policy makers. Moreover, this phase was to deliver a service to the European citizens by demonstrating the opportunities IST holds for them. Targets for dissemination activities include:

- European IST industry,
- European Union and IST Programme (both programme management level and projects),
- national policy debates and programme development,
- care service providers and other professionals in the field,
- older and disabled citizens themselves as well as their associations, self help groups, etc.

Overall, three different types of activities were conducted within this project phase, namely:

- provision of information to the wider public (dedicated project web site, mailings, project flyer and brochure, media partnerships, publications),
- targeted presentations (e.g. at conferences, workshops, meetings),
- realisation of synergies with other initiatives and projects (e.g. with national Information Society initiatives, data repositories, IST programme activities)

4 Project results and achievements

In the following sub-chapters, key results of the overall project are summarised along the line of the analytical path described in the previous chapter three (see description of project phase III).

4.1 Current situation and trends regarding IST usage among older people and their carers within the European Union

In the following, the current situation and trends regarding IST usage among and for older citizens within the EU are sketched according to:

- general IST infrastructures and services available in the Member States as a precondition for IST uptake among the target group in question,
- European policy environment as far as it relates to IST uptake among older people and organisations providing care to them,
- Current usage of and potential demand for IST among older Europeans,
- Utilisation of IST within the EU home care sector.

Current IST infrastructure and services in the Member States

The SeniorWatch study has brought together a wealth of data of secondary sources from a wide variety of surveys to paint a picture of the IST infrastructure and services available in all Member States. These general data on access to telecommunications networks and services, the utilisation of telephones and desktop computers, of advanced networks and services like ISDN, cable and internet or of specific content services in fields like e-Government, e-Commerce or e-Health provide us with a rather mixed impression. The situation varies to a considerable, sometimes even to a very large extent across Member States. But no definite structure or development tendencies emerge for all these fields in the sense that one Member State always leads or lags behind with respect to basic structural elements and ingredients of the Information Society. Nevertheless, one can observe a certain north-south gradient with respect to the IST infrastructure and access opportunities, but much more so with respect to various services offered and their usage by the general population.

The European policy environment

In all EU Member States, the given policy environment was investigated as far as it relates to IST uptake among older people or their carers. Here, different policy lines are concerned starting from general purpose Information and Communications Technology (ICT) policies and moving on to care- and accessibility-related ICT policies, then to Research and Development polices and other activities as far as they are of relevance for our topic. The situation across Europe appears relatively uniform with regard to the existence of IS and IST-related policy plans and/or strategies, with most Member States reporting activity in this area. From the national reports it appears that e-Europe initiatives have been one of the dominant driving forces behind the acceleration of IS and e-Government policies. Older people are addressed in these policies in several different ways. In some countries, specific and direct reference to older people is made in recent policy documents, while others address older people in other more general ICT-related policy papers, such as ensuring access to the IS for all citizens, lifelong learning and in relation to the 'digital divide'. Countries also address older

people and ISTs in social welfare or inclusion policies, such as labour market policies to attract older people back to the workforce or to develop and acquire new IST skills.

In relation to care-related policy, there is a considerable amount of positive activity in this area also, with existing and recent policies that address ISTs in general healthcare policy. Based on the information from the country reports, it appears that Finland is leading the field in this area in Europe. However, the picture appears less positive in relation to IST policy in this area addressing family carers. Most countries have no explicit policy or initiatives in relation to the use of ISTs as an empowering tool for family carers. Only two member states (Belgium & UK) make specific reference in policy documents to the use of ISTs for empowering family carers.

In relation to *accessibility-related* IST, the policy focus here was on whether regulations and/or legislation existed within Member States on anti-discrimination, design-for-all and public procurement policy. Overall, the reports highlighted an almost total absence of policy in each of these areas, which was reflected by poorly developed AT services and complicated AT delivery systems and processes in most Member States.

Overall, it appears that some attention has been given to formulating policy within each of the three main IST application domains addressed by SeniorWatch[13] (general purpose IST, care related IST, accessibility related IST) and some areas are better served than others. The existence of formal documents, statements, papers, etc. within the Member States indicates significant activity at least at the level of political endeavour and will.

Current usage of and potential demand for IST among older Europeans

Up to now, the lack of robust and credible data on IST usage among older people has contributed to a tendency to view this sector as a "worthy" one, without appreciating its enormous significance from an economic point of view. The SeniorWatch data for the first time allow to paint a much richer, more differentiated picture and show that older people already make up a considerable - and fast growing - proportion of the overall market for IST products and services. Like in any other age group, the European 50+ population cover the whole range of involvement in IST applications, of relevant skills, attitudes, and usage patterns. A quite considerable part of the older population are involved in IST-related activities. IST users - even at an experienced and advanced level - are not as rare among them as public discussion often suggests. And also among many non-users, there is eminent interest in learning more about and acquiring various products, services and applications.

With a penetration rate of 98 %[14], the TV set is at present the most widespread means of receiving electronic media content in older European's households. According to SeniorWatch data, there are currently some 20 million older Europeans (16 % of the EU 50+ population) who would be interested in accessing the internet via their TV set, and about two third of these do currently not possess an internet connection at home. Moreover, some 55 million older Europeans (45 % of the EU 50+ population) use teletext and can thus be regarded as being familiar with retrieving structured information by means of electronic media - at least in a rudimentary form.

When it comes to computer usage, the share of older Europeans who have already gained at least some hands-on experiences with a PC is considerable. 40% of the EU 50+ population, i.e. some 50 million people, state that they have ever used a computer in their life time (including 20% of those who are in their 70ies and 10% of the 80+). Roughly one third (36%)

[13] For details see SeniorWatch deliverable no.1.2: Analytical and Methodological Framework – Final Version, Jan 2002.

[14] Note that "penetration" refers to the individual level, reading 98% of all older Europeans live in households with at least one TV set.

have access to a computer at home. Moreover, 8% or some 10 million older people across Europe say that they are likely to purchase a computer during the next one or two years, and this figure does not include those who already have such a device and who plan a renewal of their equipment. Overall, the market for computer sales to older citizens will grow by about 22% within the next two years. Many new computer customers will have particular user requirements due to their restricted ability to hear, to see or to manipulate computer equipment with their hands. Overall, some 10 million of those who will have started to use a computer by 2003 can be expected to be severely restricted in this regard.

The internet has only begun to enter the European senior market. Our data reveal that 22% of the European 50+ population (27 million) currently live in a household with internet access; these are 61% of those who own a computer. Overall, 17% use the internet at least once a month. The market is heading for 60% growth within the next two years, and some 32 million Europeans who are 50 years and older will be on the Web by the end of 2003.

Regarding e-health applications, the survey results indicate that there is great interest for such applications within both groups - internet users and non-users. But the potential of the internet as a health information source has to be communicated to the target group as a key benefit of being online. The large market potential for internet-based health information services is obviously not yet appropriately exploited.

Compared with the internet, the European 50+ mobile phone market has more quickly matured. Here only 20% growth is expected on a relatively high penetration level (almost 50%) within the next two years. Older Europeans appear to regard their mobile phone as a kind of security device but also as a frequently utilised communication tool.

With regard to recent discussions of the digital divide, our data reveal that from an ICT perspective, older people cannot and must not be looked upon as a homogeneous group. For example, the majority of older Europeans are in principle open-minded towards new technology and many have already gained hands-on experience with a computer. At the same time, about one third of the European older population are at risk of exclusion from the Information Society and this does not only concern older age cohorts. Also, a clear north/south gradient can be observed with respect to IST involvement of older citizens across the European Union.

Utilisation of IST within the European home care sector

The situation of European home care providers was looked at from two perspectives. On the on hand, the usage of IST products and services can streamline and improve their internal organisation. On the other hand, it can help them to speed up home care delivery processes, provide better and totally new kind of services to more clients. In this sense - although our data reveal that IST uptake in general is not as slow within the home care sector as public discussion sometimes suggests - actual utilisation mainly refers to an administrative context. As regards deployment of IST applications in the care delivery process itself, current applications mostly aim at supporting mobile field staff. Mobile phones have become almost ubiquitous (82%), and growth in the up-take of laptops (from presently 24% to 35% within the next two years, i.e. by 2003) and of hand-held computers (from 13% to 32%) for mobile workers is impressive.

Decision makers expect an increased service quality from equipping mobile workers with such devices with respect to the speed to respond to emergencies, service delivery to rural areas and overall quality assurance. As to actual care applications of IST, social alarm services have gained a considerable market penetration with almost half of the establishments offering such services. Passive sensor alarm systems, electronic transfer of vital data, smart home technology and picture based tele-services have roused awareness of over half of the European decision makers, but uptake is merely in its initial phase.

Those who deploy advanced applications or offer advanced services are usually the large players in the home care market with many branch establishments, an above average number of staff and a geographically wider market. Public enterprises are forerunners as regards the deployment of innovative care support applications, whereas private enterprises and non-profit organisations more often use web-based e-commerce applications, and the latter also lead as regards electronic mobile staff support.

Decision makers' attitudes towards IST implementation in care delivery processes as well as their expectations as to where the industry is moving in the field of IST are very positive. The care sector can today be described as very open-minded towards the implementation of innovative, IST-based care applications. Decision makers expect better and broader services that are empowering older people to lead an independent life for a longer time. They are sceptical, however, about the acceptance of IST-based services by their clientele (which is in considerable contrast to the attitudes of the majority of older people, see chapter above), and about knowledge and skills among their staff. Nevertheless, they see that the road leads towards more intensive and widespread IST adoption within the European care sector. And a mid-term assessment of trends shows wide recognition of IST potentials.

4.2 Global perspective

Taking a global view, the SeniorWatch study juxtaposes and analyses the European Union situation with that in the United States of America and in Japan. These two countries have been chosen because they are the two of the largest economies in the world; furthermore, the USA is leading in many areas of development and application of ISTs, and the same applies - with respect to general IST applications - to Japan as a prime competitor to the EU in the global market. Also, Japan is faced with challenges similar to Europe regarding the ageing of its society (whereas in the USA the forecasts are less dramatic). For this global comparison, it was however *not* possible to draw on primary market survey data comparable to those collected for all Member States and instead SeniorWatch relied on secondary sources of data and information: We were able to commission national reports for these two countries similar to the ones collected for all Member States, but otherwise data published by the OECD, those available from national sources or published on the WWW was relied upon.

Socio-economic impact of population ageing

Population ageing has profound implications and consequences for all facets of human life. In the economic area, it will have an impact on economic growth, savings, investment and consumption, labour markets, pensions, taxation and intergenerational transfers. Here, forecasts for the European Union, the USA and Japan are all going in the same direction. However, from the three regions investigated, the USA appears likely to experience the slowest ageing process, and the respective economic indicators suggest that its economy may be in the best position to cope with the challenges imposed by its population ageing. Japan seems likely to face the strongest economic pressure as its population is ageing at a faster pace compared with the USA and Europe.

In the social sphere, population ageing affects health and health care, family composition and living arrangements, housing and migration. It is currently under scientific dispute whether or not population ageing as such really results in increasing health care costs. However, undisputed is the fact that changes in the age distribution as measured by dependency ratios will indeed dramatically affect the health systems' burden of health care costs via the dramatically decreasing relative proportion of the population earning an income and paying taxes/social security contributions. In addition, it is expected that the extraordinary growth of the proportion of people aged 80 and over will significantly contribute to the growth of the demand for other social services. The sharp increases in the absolute number of disabled will push up spending on publicly-financed long term care as a portion of each nation's

GDP[15]. Here again, Japan is expected to face the strongest pressure with the strongest increase in spending for long term care. In the U.S. the increase of long-term care spending is expected to be lowest while the picture for the EU is quite diverse.

Trends in utilisation of IST

Economic growth due to technological progress, and in particular IST economy growth, may impact positively on the challenges described above. It has been estimated that more than 70% of the dramatic growth in productivity of the US economy over the last decade can be attributed to Information and Communications Technology (ICT) and the spread of these innovations throughout the economy.[16] Whether this marks a historic trend remains to be seen, and its impact on Europe, at least up to now, has been considerably less. The role IST currently plays - and may play in future – in coping with some of the challenges described above has however many more facets and is not just challenging from the view point of macroeconomic and social concerns. Also, they are challenging from a business point of view. As older people compose a larger proportion of the world population, their role as consumers will gain in importance for IST service and equipment providers. The so-called “senior market” is growing world wide and a “new” senior generation with powerful economic influence is rapidly emerging. European industry will miss a huge business opportunity if these market segments are not adequately addressed. At the same time, older people can be expected to become increasingly influential in lobbying for legislation and regulation relating to IST markets.

The extent to which older people ultimately utilise IST for their purposes is not at least influenced by the extent to which IST has penetrated within their general living environment. As for instance revealed in the earlier analyses of the SeniorWatch survey data[17], PC penetration among European 50+ households basically follows the same distributions across the Member States as penetration within the general public. Here, the USA has a slight head start with respect to PC and Internet penetration compared with the EU and Japan, and also costs involved in IST usage tend to be lower than in Europe and Japan. However, PC penetration among private households as well as Internet penetration vary considerably across the European Union, and in some Member States penetration levels have been reached that are comparable with those in the US. As regards the mobile arena, mobile telephony is rapidly becoming a complementary access mode in the European Union while Japan and the USA in particular lack behind. Despite the dynamic development of the Japanese market for mobile Internet access which has been driven through the launch of NTT DoCoMo's mobile Internet access system "imode" since the late 1990s, it should not be underestimated that in some European Member States mobile telephony has gained even more in importance than the average penetration figure for the entire European Union suggests. For instance, in Finland and in Portugal households equipped with *only* mobile telephony are rapidly becoming a significant proportion of all households with a telephone connection

When it comes to IST utilisation among older people, again the USA set the benchmark as regards penetration figures for PCs and the Internet. However, some EU Member States show penetration figures that are indeed at the same level than those in the US, and others are expected to catch up according to the SeniorWatch survey results. All in all, European

[15] Gross Domestic Product (GDP) defined as the total market value of all final goods and services produced in a country in a given year; equals total consumer, investment and government spending, plus the value of exports minus the value of imports.

[16] For a broader discussion, cf. Varian, Hal et al. (2002): *The Net Impact Study - The Projected Economic Benefits of the Internet in the United States, United Kingdom, France and Germany* (V.2.0) at http://www.netimpactstudy.com/.

[17] See SeniorWatch deliverable no. 5.1: Older People and Information Society Technology – A Comparative Analysis of the Current Situation in the European Union and of Future Trends. April 2002, p. 53.

elders already make up a considerable proportion of the overall market for IST applications and devices, and this market segment will grow considerably. Overall, some 32 million Europeans who are today 50 years and older will be on the Web by the end of 2003. Japan in particular lags behind as regards Internet access among its elderly population.

In all three regions, IST utilisation among older people appears strongly connected with socio-economic factors, i.e. it follows the commonly known characteristics of social stratification such as gender, education, income, etc. Also, the prevalence of functional restrictions among older people appears to hamper IST utilisation among this population group in all three regions investigated. In other words, it appears not just as a matter of age as to whether older people want or are able to get involved in IST, rather it is a matter of an overall "social divide". Since the use of digital technologies will continue to play a key role in future Information Society developments there is however a danger of mutual reinforcement. People from disadvantaged social groups who cannot afford access to and usage of ISTs or who do not want to get involved in ISTs are threatened to fall further behind and to become excluded from Information Society opportunities. This can be understood as an interconnected social process which can be observed in all three regions investigated. However, the cost factor appears to play a lesser role in the USA when compared with Japan and the European Union.

Policies concerning older people and IST

There are signs that the 'digital divide' is growing rapidly in Japan and will continue to do so because there is a lack of policy in this area. One measure of this is based on Internet penetration, which has been shown to be dependent on annual income and area of residence. In particular, senior citizens and disabled people are a population with very little interest/opportunities or few incentives to become involved in IST. In contrast, most of the population under the age of 50 is obligated to use the Internet and therefore to learn to use the computer. Moreover, the country is in crisis in terms of its rapidly increasing older population and lack of support to care for this growing group. In principle, there is a considerable market potential for care-related IST applications, but the realities of current home care delivery appear to hamper broader uptake of advanced ISTs in this context. The problem of senior care is now one that confronts Japanese society as a whole and introduction of the new public long-term care insurance scheme does not appear to be effective. The government lacks any significant policy that adequately deals with the problems occurring in homes where family members are caring for their older relatives and under the current situation, the introduction of the new long-term care insurance system does not promote home-based care.

In terms of policy, the USA is the most progressive of all the nations reviewed in this report and the legislative strength and impact on the development of general purpose ISTs and care-related IST (particularly telehealth, tele-homecare, telemedicine, etc.) has been very significant. Several pieces of legislation have highlighted the needs and demands of the senior market, especially those with disabilities, and have persuaded private sector businesses to meet these demands. A further driving force for the implementation of IST among the senior population has been the work of strong lobby groups such as the American Association of Retired Persons. However, despite a superior and highly developed legislative system in terms of provision and access to ISTs and assistive technology (AT) in particular the US public sector appears not to fare as well as its European counterparts. Currently, the greatest impediment is the lack of financing to fund basic devices for older people at home. In relation to Assistive Technology (AT), existing laws and policies that fund AT present many gaps that fail to address the needs of many older people and individuals with disabilities. In addition, the laws and policies are frequently misinterpreted or implemented inappropriately by those charged with service delivery. It was reported that Federal agencies and others that implement federal policy (such as states and local agencies) commonly lack the expertise and resources necessary to implement existing AT laws and policies. Consumers are left with the daunting task of learning each system's policies to be able to advocate for the AT they need.

There is a distinct need for a Federal policy that is comprehensive, co-ordinated, and consistently implemented at state and local levels to ensure equitable delivery of AT to all individuals who are eligible for services.

Since the mid-1980s onwards, significant political effort has been put into developing strategies and policies in relation to developing a European Information Society, both on the level of the European Union as well as on the level of the individual Member States. One of the objectives of the European Union's strategy is to make sure that Europe's business, governments and citizens continue to play a leading role in shaping and participating in the global knowledge and information based economy. The objective of social inclusion, at least the e-inclusion aspect, is also an integral part of the eEurope Initiative, which was launched by the European Commission in December 1999. A closer look at the general Information Society policies pursued within the individual EU Member States shows that older people are addressed in these policies in different ways, and two countries specifically address and make reference to older people in their general IST policies. Countries without specific policies include older people in other policy areas in particular ensuring access to ISTs through lifelong learning or in relation to the so-called 'digital divide'. Once again e-Europe appears to be a dominant driving force and older people are included as a target group for e-Government initiatives and measures. Other countries have plans in place to close "the digital divide", which include specific targeting of older people, and some refer directly to ISTs in social and/or welfare policy for older and/or disabled people.

European assistive service delivery systems are quite well developed compared with the USA and with Japan in particular. However, the range of equipment covered, eligibility criteria and other aspects vary widely across the European Member States, and recent research[18] revealed that an oligopolistic structure of national AT markets tends to keep prices high and facilitates a situation were AT providers are not very sensitive towards new technological developments. In relation to care-related policy, there is a considerable amount of positive activity in this area on the level of the Member States, with existing and recent policies that address ISTs in general healthcare policy. For those countries that do not directly address ISTs in general healthcare policy, IST-based concrete measures and initiatives exist. However, the picture appears less positive in relation to IST policy in this area addressing older people or family carers. Most countries have no explicit policy or initiatives in relation to the use of ISTs as an empowering tool for family carers, i.e., only two EU Member States make specific reference to the use of ISTs in policy documents empowering family carers

European strengths and weaknesses

A SWOT analysis[19] revealed diverse strengths, weaknesses, opportunities and threats with respect to accelerating utilisation of ISTs by older Europeans and by organisations providing care to this population group. Taking into account the three different research perspectives[20] pursued within the SeniorWatch project (demand perspective, supply perspective, policy perspective) these can briefly by summarised as follows.

Strengths European strengths - from a demand perspective – concern for instance the general open mindedness towards IST among the older population segments. Overall, about two third of the current 50+ population has positive attitudes in

[18] Price Partnership Limited and Institute for Rehabilitation Research: Study on Technology Trends and Future Perspectives within Assitive Technology, 2000 (available at: www.cordis.lu/ist/ka1/special_needs/library.htm)

[19] For details see SeniorWatch deliverable no. 5.2: Older People and Information Society Technology - A Global Analysis, July 2002.

[20] For details see SeniorWatch deliverable no. 1.2: Analytical and Methodological Framework – Final Version, Jan 2002

this regard and is interested in learning about new technologies. Moreover, a large proportion (40%) of the current 50+ population has already gained some hands-on experiences with a computer, although the majority may still possess rather rudimentary computer skills. Also, in the care sector decision maker's attitudes towards IST implementation in care delivery processes as well as their expectations as to where the industry is moving in the field of IST are very positive. In general, the European care sector can today be described as very open-minded towards the implementation of innovative, IST-based care solutions.

From a supply perspective, Europe can capitalise on a well developed telecommunications infrastructure and on its technology leadership in key technology areas, e.g. within the mobile arena. Particularly with respect to IST solutions targeting older and disabled people, an abundance of scientific and technological expertise is available for being exploited for the purpose of developing innovative IST-based systems and services. In some "forerunner countries" the 50+ market has already matured to a considerable level, and these markets can be utilised by industry for developing the EU-wide market place. Here, ageing organisation can play an important role through making the demand for adequate products and services visible to industry and by organising market power.

As regards a policy-oriented perspective, the EU-wide knowledge base has significantly been strengthened over the last decade through extensive public funding of RTD projects, awareness rising measures, etc. targeting older and/or disabled people in particular. This includes activities pursued on the EU level, e.g. within subsequent RTD programmes of the Commission of the European Union, but also a range of national initiatives. In general, pan-European policy such as the eEurope initiative is driving national policies concerning participation of older/disabled people in current Information Society developments. Consequently, there is increased political awareness and reform of domestic legislation/regulation concerning older people and ISTs. The public sector is going to lead the way particularly in eAcessibility initiatives and, thus, sets a stimulus for the private sector. As regards care-related ISTs, well developed health care insurance systems are in place which – in principle – offer a framework (e.g. regarding regulatory aspects or with respect to funding/re-imbursement issues) to implement IST-based solutions within this arena.

Weaknesses

There are several constraints that – at least up to now - hamper acceleration of IST uptake among older people and their carers from a demand perspective. These concern for instance, the lack of advanced computing skills among older people and the lack of opportunities to improve their skills compared with younger age groups. This situation considerably impedes older Europeans to fully exploit the potentials IST may generally hold for them. Overall, the EU-wide relative growth rate of first time Internet usage among the 50+ population has been declining during recent years, and this indicates that the pace of Internet uptake among older Europeans is slowing down. Moreover, involvement of older people in ISTs is quite unevenly distributed across the European Union. There is a considerable north/south gradient in this regard, and the lack of interest/awareness in/of ISTs according to socio-economic stratification fosters the development towards a two tiered society in all Member Sates. Not at least relatively high telecommunications costs – compared with the USA - tend to prevent many older Europeans from utilising IST-based services for their purposes.

As regards the supply side, market potentials have not yet been adequately addressed by industry. Older people do, for instance, not feel adequately considered by industry as regards their interest in adequate design, and they perceive ISTs merely connected with younger people in the media. Overall, the design-for–all philosophy has not yet gained enough recognition among IST manufacturers and service providers. Moreover, fragmented target markets make it difficult to address the EU-wide market potential for both, general purpose ISTs and care-related ISTs. This concerns for instance cultural and language barriers but also the diversity of care and social systems currently in place. As regards publicly funded RTD projects that have targeted older and disabled people as a specific user group, research findings have in many cases not been successfully transferred into marketable products and services. Within the assistive technology sector in particular, structural deficits appear to facilitate a situation were suppliers are not very sensitive to technical innovations.

From a policy perspective, lacking co-ordination between different policy lines concerned when aiming at improving IST access/usage among older/disabled people (e.g. telecommunications policy, social policy, health care policy) hampers effectiveness of individual policies pursued in this regard. Moreover, there is lack of co-ordination between EU policies and national policies, and absence of legislation to enforce the private sector to adopt universal design principles has left the issue of accessibility of ISTs to market forces exclusively. Also, procurement and use of accessible ISTs is not considered as a public issues in all Member States. As regards the care sector, the potentials IST generally holds with regard to empowering family carers has not yet been sufficiently recognised within care-related policies pursued within the individual Member States.

4.3 Options for strategic actions

As revealed by the previous analyses, a range of factors facilitate or constrain broader uptake of IST-based services and systems among older people in the European Union. These concern personal needs and attitudes of older Europeans, but also the socio-economic circumstances they live in. Apart from this, more environmental factors such as structural characteristics of the care sector and policy related aspects are concerned. With respect to identifying options for strategic actions aiming at accelerating IST uptake among older Europeans, a number of conclusions can be drawn against this background. In the following, these are presented in terms of strategic recommendations[21]. These include recommendations with direct relevance for EU policy/actions (section 4.3.1) but also for other actors groups (section 4.3.2).

4.3.1 Recommendations with direct relevance for EU policy/actions

The optimal take-up and utilisation of ISTs by older people and by care services in Europe is of considerable relevance for the achievement of important aspects of EU economic, social and health policy. The results of the SeniorWatch study clearly demonstrate that there is a high level of potential demand amongst older people and their families and amongst the organisations providing home care services for older people. However, there are a range of

[21] Each recommendation mentioned here is discussed in detail within deliverable 5.4: Older People and Information Society Technology – Policy Recommendations, July 2002.

supply-side, demand-side and environmental factors impeding the conversion of this potential demand into actual demand, take-up and usage. As outlined later in this section, there are a number of ways that these impediments can be addressed in current and future actions at the European level. The demographic imperative posed by the rapid ageing of the European population means that these actions should be progressed as a matter of urgency. The main high level recommendations from SeniorWatch are the following.

Benchmarking

- Monitor and benchmark on an on-going basis the utilisation of ISTs by older people and care services in Europe

Supply side measures

- Raise awareness in industry of the importance and characteristics of the market amongst older people
- Encourage industry to ensure that IST products and services are designed to usable by older people
- Promote and support RTD in new products, services and applications
- Encourage the development of high quality assistive technology supply services in all member States
- Promote and support the appropriate incorporation of ISTs in care service delivery throughout Europe (this is also a demand side issue as care services can be both purchasers and suppliers of ISTs)

Demand side measures

- Promote awareness and skills in relation to IST amongst older people in Europe
- Promote awareness and skills in relation to ISTs amongst care services and care professionals in Europe
- Consider ways of reducing financial barriers to access to and usage of ISTs by older people.

In formulating more specific recommendations for EU-level actions, there are two aspects of the SeniorWatch results that need to be given particular attention. These are:

- The segmentation of the older population in relation to IST needs, interest, access and utilisation
- The analysis of the strengths and weaknesses of the current European situation (for details see D5.2), both in relation to its own internal market and social potential and in the context of global benchmarking and competitiveness.

In the following, recommendations for EU-level action are according to these two aspects, respectively. In relation to the first point - the segmentation of the older population - it is clear that whilst the population of people aged 50 years and over in Europe is a very heterogeneous one, large sub-groups can be identified that share particular characteristics in relation to ISTs and consequently present indications for specific types of targeted action at the European level. Table 1 below gives an overview of some of the main groups, types of European-level action recommended and the programmes/action lines under which they could be implemented.

Table 1 Recommended EU-actions by target group

Type of segmentation	Sub-group	Type of action recommended	Implementation of action
IST orientation and access	Experienced front-runners (27 % of the EU 50+ population, i.e. some 32 million people)	• Valorise their experiences (role models, mentors…)	Incorporate into awareness-raising, promotional and educational initiatives, such as: • IS promotion and awareness-raising initiatives • ECDL (encouraging take-up amongst older people) • EQUAL (awareness, access, skills) • Life-long learning and eLearning programmes
	Old age beginners (13% of the EU 50+ population, i.e. some 15 million people)	• Encourage development of skills	
	Technology open-minded (29% of the EU 50+ population, i.e. some 35 million people)	• Encourage interest and development of skills	
	Digitally challenged (31% of the EU 50+ population, i.e. some 38 million people)	• Encourage interest and development of skills	
Labour-market relationship	Working age (49% of the current EU 50+ population, i.e. some 60 million people)	• Encourage and support workability and employability	• Employment Guidelines • Public Health programme
	Post-retirement age (51% of the current EU 50+ population, i.e. some 62 million people)	• Encourage and support active ageing (participation and contribution)	• Active ageing actions • Public Health programme

Table 1 Recommended EU-actions by target group (continuation)

Type of segmentation	Sub-group	Type of action recommended	Implementation of action
Care needs	Those needing/receiving self-care and/or family care (19% of the EU 50+ population have problems with activities of daily living, i.e. some 23 million people[22], from which only 5% receive care on a regular basis) Providers of family care (16% of the EU 50+ population, i.e. some 19 million people)	• Encourage development, take-up and utilisation of IST-based solutions	• IS promotion and awareness-raising initiatives • 6th Framework (RTD and Support actions) • Public Health programme
	Those needing/receiving care services (1 % of the EU 50+ population receives professional care, i.e. some 1 million) Providers of care services	• Encourage development, take-up and utilisation of IST-based solutions	• IS promotion and awareness-raising initiatives • 6th Framework (RTD and Support actions) • Public Health Programme
	Those needing care-related Assistive Technology (AT) Providers of care-related Assistive Technology (AT)	• Awareness of IST-based AT • Availability of IST-based solutions • Encouragement of good practice • Harmonisation of services	• IS promotion and awareness-raising initiatives • 6th Framework (RTD and Support actions) • Public Health Programme • Modernisation of Social Protection systems • Innovation/enterprise development programmes and supports
Accessibility needs	Design-for-All (64% of the EU 50+ population suffer from severe or slight restrictions in accessing ISTs, i.e. some 78 million people[23])	• Raise awareness • Provide incentives • Regulate	• EEurope actions • eContent programme • Public procurement • Anti-discrimination measures • Universal service requirements (telecommunications and broadcasting) • Corporate social responsibility actions • IST standardisation actions

[22] According to our operationalisation, this figure includes those who stated that they have difficulties with going shopping or with having a bath/shower or with getting dressed/undressed

[23] According to our operationalisation, this figure includes those who have problems with hearing or seeing fine detail or using their finger when using ISTs, e.g., for manipulating a key board or using a touch screen.

Table 1 Recommended EU-actions by target group (continuation)

Type of segmentation	Sub-group	Type of action recommended	Implementation of action
Accessibility needs (continued)	Those needing accessibility-related Assistive Technology (AT) Providers of accessibility-related Assistive Technology (AT)	• Awareness of IST-based AT • Availability of IST-based solutions • Encouragement of good practice • Harmonisation of services	• IS promotion and awareness-raising initiatives • 6th Framework (RTD and Support actions) • Public Health Programme • Modernisation of Social Protection systems • Innovation/enterprise development programmes and supports

Defining the specifics of the actions that need to be undertaken should also be informed by the results of the SeniorWatch SWOT analysis of the current situation in Europe performed within work task 5.2 (see D5.2). Table 2 outlines the recommendations from SeniorWatch that relate to the main conclusions of the SWOT analysis.

Table 2 Recommended EU-actions in relation to SWOT analysis

European situation	Target areas	Recommended actions
Strengths	• Significant RTD activity and accumulated skills and knowledge in care- and accessibility-related ISTs	• Stimulate and support exploitation and technology transfer through RTD programmes and innovation/enterprise support programmes
	• Technology leadership in some technology markets (e.g. mobile)	• Encourage and support RTD and product/service development for the older market by European industry
	• Some countries (e.g. Nordic) provide models of good practice in the provision/utilisation of ISTs for care and accessibility purposes	• Raise awareness across Europe and encourage all Member States to follow the good example
	• Increasing political and policy attention to accessibility issues	• Promote industry awareness, interest and activity though demonstration of the business-case and regulatory actions where appropriate
	• Generally well-developed telecommunications infrastructure	• Encourage service providers to develop and deliver general-purpose, care-related and accessible services for older subscribers

Table 2 Recommended EU-actions in relation to SWOT analysis (continued)

European situation	Target areas	Recommended actions
Weaknesses	• Digital divides - North-South, and by demographic and socio-economic circumstances	• Target initiatives and resources towards countries, regions and groups lagging behind
	• Relatively high costs and lack of public supports in some countries	• Encourage adoption of good practice and harmonisation, where appropriate, of financial support mechanisms under social protection, universal service and assistive technology delivery systems
	• Lack of direct regulatory requirements on IST industry to provide accessible ISTs (in comparison to US)	• Consider the implementation of direct regulatory requirements within anti-discrimination, public procurement, and/or universal service frameworks
	• Lack of attention to the older market by IST industry	• Provide market information and other supports to stimulate industry attention and activity
	• Poor technology transfer and exploitation of results of RTD in the area	• Encourage and provide supports for exploitation and technology transfer under RTD and enterprise/innovation programmes
	• Underdeveloped assistive technology services in many countries	• Encourage adoption of good practice and harmonisation, where appropriate, of assistive technology delivery systems
	• Oligpolistic structures in assistive technology supply	• Develop measures to open up the Member State markets for assistive technology supply and make them more efficient and competitive
	• Diversity of health and social care systems and players	• Provide information and supports to encourage industry to enter the health and social care markets of other Member States
	• Challenges posed by linguistic and cultural diversity amongst Europe's older population.	• Provide supports to encourage the provision of all key online information services in all European languages
Opportunities	• Exploitation of IST to meet labour market and care challenges of ageing population	• Support research, RTD and technology utilisation to improve workability/employability of older people and cost-effective care for those that need it.
	• Development of well-functioning internal market and global leadership in care- and accessibility-related IST products and services	• Promote and support RTD, technology transfer, internal market openness and global market penetration for European industry in care-related and accessibility-related products and services
Threats	• Potential US dominance in IST market amongst older people	• Mobilise and support European industry to become competitive in the European and global markets

4.3.2 Recommendations with relevance for diverse actors groups

For the purposes of SeniorWatch, we can distinguish four generic categories of actors to be considered here, as follows:

- IST providers: including all types of players which offer IST devices and services on the market such as telecoms, online service providers, software/hardware industry, traders, assistive technology manufacturers, etc.
- policy makers: including national policy makers/bodies as well as policy makers/bodies at the EU level,
- ageing organisations: including older people's organisations, carer's organisations, occupational unions from the care sector, etc., and
- care service providers.

The following Table 3 presents a summary overview of each of the individual recommendations directed towards these groups as discussed in detail within deliverable 5.4.

Table 3 Overview of recommendations by actor

Recommendations by actor		Industry	Policy	Aging organisations	Care providers
General purpose IST	***Issue I: Market potentials are not yet adequately addressed***				
	1. Gain competitive advantages from developing products and services for the widest possible range of users	●			
	2. Target older customers through dedicated marketing strategies	●			
	3. Cater for those who do not understand "cyber jargon"	●			
General purpose IST	***Issue II: The design-for-all philosophy has not yet received enough recognition among IST manufacturers and service providers***				
	4. Take advantage of guidelines, product development methodologies and tools available for supporting the design process of accessible mainstream IST	●			
	5. Apply a comprehensive approach when assessing cost – effectiveness of the design-for-all approach with regard to a particular product line	●			
	6. Direct resources towards the generation of information and tools required by industry to adopt the design-for-all philosophy		●	●	
	7. Promote the implementation of a comprehensive public procurement strategy relating to accessible IST products and services		●		
	8. Pressure IST manufacturers and service providers to recognise the market potential for IST-based products that meet the needs and requirements of older users		●	●	

Table 3 Overview of recommendations by actor (continued)

Recommendations by actor		Industry	Policy	Aging organisations	Care providers
General purpose IST	***Issue III: A lack of skills hinders older people to fully exploit ISTs for their purposes***				
	9. Consider IST training for older people as a business activity which can add millions of seniors to the pool of e-business customers and not only as a social contribution	●			
General purpose IST	***Issue IV: The "digitally challenged" are at risk of being left behind***				
	10. Promote "e-inclusion" as a distinct target within national Information Society policies		●	●	
	11. Promote "e-inclusion" as a distinct target within national Information Society social and welfare policies		●	●	
	12. Explore diverse options for enabling the "digitally challenged" to learn about the benefits ISTs may hold for them		●	●	
	13 Monitor participation of older people in the Information Society and related social impacts		●		
	14. Ageing organisations should give ISTs higher priority on their agenda			●	
General purpose IST	***Issue V: Non-affordability hampers IST uptake among lower income groups***				
	15. Encourage affordability of IST services and devices by specifying the provision for financial accessibility of basic services that should be included within universal service obligation		●		
	16. Include telecommunications costs within social protection and income policy		●		
Care-related IST	***Issue VI: Despite considerable potential demand, the actual market for care-related applications is still in its infancy***				
	17. Explore market opportunities for demand-driven e-health and telecare applications of practical relevance	●			●
	18. Consider IST as an empowering tool for family carers when developing care-related policy		●		
	19. Promote financial provision for IST-based solutions within home care delivery schemes		●		
	20. Beware the danger of a "medical divide"		●		●

Table 3 Overview of recommendations by actor (continued)

Recommendations by actor		Industry	Policy	Aging organisations	Care providers
Care-related IST	***Issue VII: Structural problems internal to the home care sector hamper broader uptake of IST-based care solutions***				
	21. Pursue an integrative approach when developing IST-based solutions for the care sector	●			
	22. Encourage experimentation with IST applications within day-to-day care practice	●	●		●
	23. Recognise IST as a strategic issue for your business				●
Accessibility-related IST	***Issue VIII: Mainstream services – even if designed in accordance with the "design for-all" philosophy - are not capable of catering for all functionally restricted***				
	24. Accept and encourage technical standards facilitating access to ISTs for people with functional restrictions	●	●		
	25. Explore opportunities for providing more services for functionally restricted and/or vulnerable people	●	●	●	●
	26 Promote the implementation of a comprehensive anti-discrimination legislation		●		
	27. Put accessibility of the emerging Information Society as an explicit topic on the national policy agenda		●		
Accessibility-related IST	***Issue IX: Structural characteristics of the assistive technology (AT) sector hamper uptake of innovative IST solutions for older people with functional restrictions***				
	28. Promote structural changes and harmonisation of current national AT delivery schemes		●		
	29. Promote needs-oriented financial support for purchasing/maintaining IST equipment within AT provision schemes		●		
	30. Explore options for more effective exploitation of publicly funded RTD within the AT sector		●		
Cross sectoral	***Issue X: The lack of integration of national and EU RTD/policy strategies hampers broader implementation of IST solutions for older people and their carers***				
	31. Encourage EU-wide consensus building and better co-ordination of national and EU strategies to accelerate IST uptake among older people and their carers		●		

Table 3 Overview of recommendations by actor (continued)

Recommendations by actor		Industry	Policy	Aging organisations	Care providers
Cross sectoral	***Issue XI: Further research is required to understand how emerging IST-based environments can be made accessible for all citizens including those who have particular user requirements***				
	32. Reactive RTD strategies aiming at ensuring access ability of ISTs should be replaced by proactive strategies	●	●		
	33. Direct RTD effort towards the investigation of non-pathological age-related user requirements	●	●		

5 Deliverables and other outputs

As summarised by Table 4 below, a range of project reports has been produced within the overall project. Those who have been categorised as publicly available can be downloaded from the SeniorWatch web site (www.seniorwatch.de).

Table 4 Overview of deliverables produces within the SneiorWatch project

Del. no.	Title	Type	Security level
D1.1	SeniorWatch Analytical and Methodological Framework	Report	Internal
D1.2	Refined and Revised Analytical Framework	Report	Public
D2.1	Survey Designs & Questionnaires	Report	Public
D2.2	Raw Survey Data	Report	Internal.
D2.3	Descriptive Results: European IST Markets and Services for Older and Disabled People	Report	Restricted
D3.1	Technology Watch - Preliminary Report - incl. preliminary dissemination and exploitation plan	Report	Internal
D3.2	Technology Watch - Final Report	Report	Public
D4.1	Country Reports	Report	Public
D4.2	Preliminary Case Studies	Report	Public
D4.3	Final Case Studies & Website Data Base	Report	Public
D5.1	Comparative Analysis of EU Situation and Trends	Report	Public
D5.2	Global Comparative Analysis and Trends	Report	Public
D5.3	Policy Analysis of Constraining and Supporting Factors	Report	Public
D5.4	Policy Recommendations and Summary Final Report	Report	Public
D6.1	Exploitation Report	Report	Restricted
D6.2a	Dissemination Report	Report	Public
D6.2b	SeniorWatch Website	Web-Site	Public
D6.3	Media Partnership Report	Report	Restricted
D7.1.a - D7.1.f	Quarterly Management Control and Activity Reports	Report	Restricted
D7.2	Final Project Report	Report	Public

6 Project management and co-ordination aspects

The SeniorWatch project has been set up in view of a fundamental need for a European-level description and analysis of the current and future demand and supply sides in Europe as a whole and across each of the Member States, and to benchmark this against the situation in the US and Japan. The only way to do this is through large-scale, comprehensive and representative surveys of the demand side, description of the technological on the supply side, and description of the environmental factors that affect both demand and supply and the extent to which these match. Such an exercise is clearly beyond the scope of individual national studies and required European-level perspective and approach. In particular, there is a is a major European value-added dimension to the project team:

- All countries of the Union are represented by the team
- It clearly has the experience and managerial and technical expertise to complete a task of this scale at the European level.
- It brings together contacts to major European umbrella organisations from both perspectives, users and industry, which provide the necessary prerequisites for the widest possible dissemination and exploitation of results across all Member States.

Overall, the study team assembles partners from all EU member states, the USA and Japan with a wide variety of expertise. They thereby complement their respective qualifications and provide insights and perspectives from all fields of relevance for such a comprehensive study. Thus the project has unique access to high level industry experts, citizens and policy knowledge both within national networks and through involvement in related EU initiatives.

The coordination of the SeniorWatch user surveys imposed a particular challenge to the project team. Under the overall responsibility of INRA - an international survey organisations which has also conducted recent Eurobarometer surveys - field work was carried through by national field organisations in each Member State. In each country widely recognised research standards were applied with regard to sampling and interviewing. The survey instruments applied were developed within an iterative process including the following stages:

- development of a draft version of the questionnaires,
- pre-testing internal to the project consortium according to a pre-defined testing and reporting procedure,
- refinement of the draft questionnaires according to the results of the internal pre-testing,
- transformation of the final draft questionnaires into the survey organisation's CATI (Computer Aided Telephone Interviews) system,
- pre-testing of the refined draft questionnaires by the professional survey organisation in the field,
- finalisation of the questionnaires according to the results of the field test,
- translation of the final questionnaires into the respective national languages by the survey organisation,
- checking of the translated questionnaires by independent translators,
- in parallel, checking of the translated questionnaires by the consortium partners (for their countries),
- refinement of the translations according to the results of the checking procedure,
- application of the final questionnaires in the field after a formal release.

7 Conclusions and Outlook

The results of SeniorWatch indicate in a convincing manner that there exist significant untapped market opportunities both for general purpose IST products and services, and for care related and assistive technology applications - both among older people and care service providers. Like in any other age group, the European 50+ population covers the whole range of involvement in IST applications, of relevant skills, attitudes, and usage patterns.

A quite considerable part of the older population is involved in IST-related activities. IST users - even at an experienced and advanced level - are not as rare among them as public discussion often suggests. Among non-users, there is eminent interest in various products, services and applications. Already today, many households are well equipped with computer and internet connections and comparison with other earlier surveys reveals a considerable growth in recent time. 36% of the 50+ population in Europe have access to a computer at home, 22% can access the internet, and 48% own a mobile phone. A quarter of the older population are regular computer users and one sixth regular internet users.

As expected, the adoption of IST products and services among the older population is largely correlated with a variety of socio-demographic characteristics. However, SeniorWatch found also evidence that uptake is not only a matter of vertical social stratification but also of horizontal differentiation, i.e. of lifestyles, habits and health status.

With respect to further accelerating utilisation of IST based products and services among older Europeans following main conclusions can be drawn.

The EU wide 50+ market - considerable untapped market potentials for IST industry

Older Europeans currently do not utilise IST services and devices to the same extent as younger age groups do. However, the SeniorWatch data show that this population group represents a market segment that - if adequately addressed - offers tremendous market opportunities for the telecommunications industry, equipment manufacturers and service providers. About two thirds of the European current 50+ population is generally open-minded towards IST (over 80 million people), and the EU-wide market for computers, the Internet and mobile phones is expected to grow by 10 to 13 million new customers respectively from 2001 to 2003. The Internet market within the 50+ age group is heading for a 60% growth rate and even more people now show an interest in activities that can be done online, although they may not be interested in the Internet as such. Overall, 61% of the 50+ population in the EU either use the Internet already or are at least interested in certain online applications. Together this data represents 74 million potential customers for online services.

However many older Europeans have functional restrictions, which are most commonly associated with vision, hearing, and/or use of their fingers. Overall, 25 million (21%) 50+ are severely restricted in this regard while another 50 million (43%) suffer from slight restrictions, and this is not restricted only to the older age cohorts. The prevalence of functional restrictions among older Europeans in all age groups requires ubiquitous design-for-all solutions if this market segment is to be adequately addressed. However, more than half of the current 50+ population in the EU do not see their interests adequately reflected in the designs considered by IST manufacturers and more than 70% say that the media only target younger people when it comes to such technology.

Many older Europeans – despite their general interest in IST – lack the necessary skills to utilise IST products and services, which they may principally be interested in. For instance, only 40% of those 50+ who have hands-on experience with a computer state they possess advanced computing skills, 50% possess very basic skills, and 10% say that they ‘virtually do not have a clue’. Training initiatives specifically targeting older people have been conducted in the USA but also in some European Member States during recent years by both voluntary organisations and private companies. Millions of seniors have, for instance, received training

through initiatives such as SeniorNet, Seniors-Online-SOL and the “Senior-Info-Mobil”. This illustrates the huge demand for appropriate training measures among older people.

The inclusive Information Society - still more of a vision than reality

Although there is a huge market potential among the European older population, SeniorWatch results also indicate that there is a considerable share of older people - about one third of the older population (nearly 40 million people) - who are not at all involved in the Information Society, and who do not even express any interest in it yet. In the discussion of the digital divide these have occasionally been called 'the want-nots'. A more detailed analysis of our survey data revealed that the likelihood that older Europeans will become involved in IST is directly related to the commonly identified factors associated with those included in the digital divide, i.e. these factors include socio-economic stratification such as gender, education, occupational background and derived from these is socio-economic status. In other words it is not just a matter of age as to whether older people want or are able to get involved in IST. Rather it is a matter of an overall “social divide” and - since the use of digital technologies will continue to play a key role in the future Information Society developments - there is a danger of mutual reinforcement.

This part of the population calls for special policy attention if indeed the European Union wants the inclusive Information Society - an *Information Society for all* - to become a reality. Inclusion of older people is mandatory from the viewpoint of social and ethical concern as well as from an economic policy point of view: If an increasing number of day-to-day transactions is performed over digital networks, people who do not have access to these networks - or who due to disabilities cannot access them properly - will (in the longer run) experience fundamental disadvantages for activities of daily living, health, communications and social well-being.

Also, IST uptake is considerably lower in the southern European Member States than in the northern part of the EU. Lower uptake rates are still statistically significant when controlling for different demographics and thus cannot merely be ascribed to a different population structure. This indicates that there are national peculiarities concerning the IST involvement of older people (north/south gradient) which are environmentally rather than individually determined. From the consumer market demand side perspective, on-liners foster the development of e-commerce which is commonly seen as a competitive advantage of a region's economy, and which thereby helps to retain present and provides new jobs. And not the least, IST skills enhance employability which must not be neglected for (younger) old people regarding European labour market policy.

Older European’s needs related to care and independent living – potential demand for advanced IST solutions

Another dimension of an inclusive Information Society policy is to support care needs and enable an independent living for frail older people. This can in an efficient, cost-effective way be achieved through the wider usage of information technology mediated services. SeniorWatch offers a unique source of information about the health conditions of the older population and opportunities of relating this information to IST product and services attitudes, skills and usage. 13 percent of the older population are in need of some care because they need help with basic activities of daily living. The number increases if one takes account of those who suffer from severe mobility, sensory or health restrictions. Few of these people actually receive care, in fact only five percent of the respondents.

Those suffering from severe restrictions are also those who are least likely to avail themselves of IST applications, a finding of course also (if not most importantly) relating to their older age. But also among those with severe restrictions and disabilities there are advanced technology users and a great share of people wishing to become involved in and get started

with IST products and services. These positive attitudes towards technology underline the importance to continue to follow inclusive policies referring to accessibility standards and assistive IST interfaces and devices to enable participation in the information society, and they point to a market potential hardly exploited as yet.

Another group involved in the care process are family carers. About 16% of the European older population care for another adult. Our analysis indicates that family carers are not different from the rest of the older population as regards involvement in technology or perceived need for IST-based support.

When it comes to eHealth applications, it is not useful however to only consider those with serious physical restrictions when assessing the potential demand. Within the whole older population there is widespread interest in various eHealth applications. Analysis of the on-line behaviour of internet users also reveals that even a basic service like using the internet as health information source is largely unexploited if one relates expressed interest with actual on-line search behaviour. But also for more sophisticated services like tele-monitoring services and active involvement in one's own treatments via electronic care and health data records meets with wide interest, and especially those who are already well used to utilising IS technologies express the greatest interest.

The European home care sector – despite general open mindedness towards advanced IST solutions lack of implementation within day-to-day care practice

Like the older population, also professional home care service providers differ considerably across Europe as well as within Member States with respect to structural characteristics like size, ownership, funding, scope of services and service profile, and usage of IST products and services. Among European care establishments, usage of IST products for *internal purposes* is becoming a routine application, whereas the support of service processes or the supply of IST-based services in care delivery is only in its initial stage. Internal and office applications are used in virtually every care enterprise today. Access to the internet is also rapidly approaching full coverage. *Mobile staff* are more and more equipped with IST products such as mobile phones and laptop or handheld computers. As to care supporting applications, awareness of more sophisticated applications is well known - actual usage of these applications, however, is still in its infancy.

Decision makers in care establishments on average are amazingly optimistic about future *trends* regarding the deployment of IST products and services in the context of home care delivery. Especially internet supported processes, passive alarm systems and on-the-spot data transmission by mobile staff are expected to become common within the next five to ten years. High rates of IST usage in the internal and administrative context on the one hand and as yet considerable hesitation as regards care delivery-related IST applications on the other indicate that there exist barriers that prevent full scale deployment in the latter context which deserve further investigation. But there is amazing agreement about the potential benefits, and optimistic assessment of the future.

Accelerating IST uptake among older Europeans and their carers – poorly coordinated national policies and lack of continuous monitoring

On an EU level, older and disabled people have been explicitly targeted within RTD programmes over the last decade. For example, an important goal of the current IST programme is to ensure that all EU citizens benefit from the opportunities presented by new research and emerging technologies. To this end, the "Applications relating to Persons with Special Needs Unit including the Disabled and the Elderly" of the European Commission (Directorate General Information Society) coordinates projects to facilitate research and technological development that allow the target population to live independently, move freely, and to have access to a wider range of services and facilities. To this end, the EU-wide

knowledge base has significantly been strengthened over the last decade through extensive public funding of RTD projects, awareness rising measures, etc. targeting older and/or disabled people in particular.

On the level of the individual Member States, our analysis shows that most Member States have indeed recognised that IST can play an important role for older citizens. However, each Member State seems to follow its own policy agenda with particular priorities (e.g. "digital divide", elderly care) to be addressed under different policy lines (e.g. general Information Society policy, social policy, health/care policy). Due to the lack of consensus on underlying policy/RTD principles, current approaches to promote participation of older citizens (and their carers) in the emerging knowledge based society are less than optimal. Concrete measures initiated to accelerate a broader implementation of relevant IST applications and systems (e.g. general purpose IST, care-related IST, so called assistive technology or enabling technologies) are not guided by any comprehensive strategy. Both consensus building and better co-ordination of national and European strategies would be required to ensure that older people and their carers can take full advantage of the emergence of a knowledge-based society.

To measure the success of past and present policies (e.g. that the e-Europe target of an accessible Information Society is met) and to help formulate new policy initiatives, policy must be able to keep track of the participation of older people in the Information Society. However, because the nature of IST as an underlying driver of societal development that fosters change in the structure of economic activity as well as its interdependencies with social life, available statistical data from official sources is currently not sufficient to measure the shift towards the Information Society. All major national as well as supra-national statistical agencies have therefore begun to address the problems that arise from the shortcomings of available statistical data to shed light on the New Economy and the Information Society. For example, the OECD has created a “Working Party on Indicators for the Information Society” in March 1999. EUROSTAT is participating in these efforts and also has working groups dealing with these issues. Other activities include those of the Eurostat Task Force on “Information Society Statistics” which is part of the Eurostat IS Statistics Work Programme 2002/2003 or the Enterprise survey on ICT usage (pilot surveys in 2001) by Eurostat and DG ENTR. It needs to be assured that such activities adequately consider older and disabled people when statistically monitoring Europe's progress towards a knowledge-based society. To our knowledge, older people and people with disabilities are currently not targeted as specific user groups by any of these monitoring activities.