Telematics for Disabled and Elderly Sector

Working towards knowledge society telematics applications ...

AN ASSESSMENT OF THE RESULTS OF THE FOURTH FRAMEWORK
TELEMATICS APPLICATIONS PROGRAMME PROJECTS

ASSENT PROJECT - SU2101
DELIVERABLE D09.02, PART B (6) PREPARED FOR EUROPEAN COMMISSION DG XIII/E
Acknowledgements:
ASSENT partners are very grateful to all those participants in the Telematics Application Programme who completed our survey questionnaire.

Results of the first ASSENT Survey:
‘Executive Summary: Assessment of the Results of the Telematics Applications Programme Projects (First Information Collection Campaign)’ ASSENT Project SU2101, European Commission DGXIIIC/E, 3 February 1999, and Part A of Full report April 1998, Deliverable D09.01 are available by contacting: r.e.mansell@sussex.ac.uk or the European Commission DGXIIIC/E. Note that no DE Sector projects were included in the first survey as none were completed by the end of December 1997.

Prepared by: The ASSENT Project Consortium
This programme level report on the Telematics Applications Programme has been prepared as the principal responsibility of Fraunhofer-Institut fuer Systemtechnik und Innovationsforschung (FhG-ISI), GER.

ASSENT was made up of the following organisations:

- Expertel Consulting, FR
- Fraunhofer-Institut fuer Systemtechnik und Innovationsforschung (FhG-ISI), GER
- Fundesco, SPA (1 January 1996 to 28 February 1998
- MERIT, Maastricht University, NL
- Open Services c.v.b.a, BEL
- The Smith Group, UK (Coordinator 1 January 1996 to 31 October 1998)
- SPRU, University of Sussex, UK (Coordinator 1 November 1998 to 30 April 1999)
- ZEUS E.E.I.G, GRE

For further information:
About this Sector report: pcs@isi.fhg.de
About the ASSENT project: email: r.e.mansell@sussex.ac.uk
Date prepared: 18 April 1999 (revised 30 June 1999)
Executive Summary

In the next decades Europe will have to face the challenge of a rapidly ageing society. The share of older people in society will continue to increase while the share of young people decreases. There is a strong relationship between advancing age and disability. This means that an increasing proportion of the European Union’s population will experience functional problems, as life expectancy improves. However, the exclusion of disabled and elderly people from society is ongoing. At the same time the spending on care is increasing with the share of the disabled and elderly people in society.

Telematics Applications can offer opportunities to alleviate some of these problems. They have the potential to assist the elderly and disabled as well as their carers in their daily activities, restore impaired functions and allow the disabled and elderly to enhance their capacities. Thus the usage of Telematics Applications can make a contribution to the integration of the disabled and elderly into the society and also potentially lowers the amount of resources that have to be spent on caring and assistance.

In order to address these challenges the European Commission has devoted a sector in its Telematics Applications Programme (TAP) to Telematics for Disabled and Elderly People. The sector comprised 54 projects and a budget of about 64 MECU.

The ASSENT project conducted a self-assessment survey of the projects in the TAP in order to examine their results and outputs and their techno-economic, industrial and socio-economic impacts. The assessment was designed to provide information for the European Commission (EC) concerning the results of the TAP and to facilitate future assessments of its impact. In the Disabled and Elderly sector of the TAP the ASSENT project sent 398 questionnaires to coordinators, partners and user partners. 139 questionnaires were returned, resulting in a 35% response rate for this sector. According to the self-assessment given by the participants from the Disabled and Elderly sector the following key messages appear:

Outstanding degree of user involvement: The TAP goal of being user oriented has been met impressively within the Disabled and Elderly Sector. All coordinators surveyed reported that users have been directly involved in their projects either as partners or in validation sites. A number of coordinators indicated that their project had a formal user advisory group or an expert user panel. On these grounds the majority of coordinators from the Disabled and Elderly sector believe that their projects provide best practice lessons on the involvement of users.

Strong market orientation: According to the coordinators 72% of projects from the Disabled and Elderly sector intend to commercialise a system or service after the end of the project. This shows a very strong market orientation in the sector as the TAP average (44%) is considerably lower. By the same token the majority of DE sector projects (60%) responding in the survey intended to continue the project team up to the market delivery of the results. Across the TAP only 41% of coordinators had this intention.

Problems with commercialisation: Despite the clear intention of the projects to bring their results to the market there remain certain problems with commercialisation. TAP participants from the Disabled and Elderly sector perceive costs and problems of marketing the project

---

1 The method of calculating the response rate that has been adopted in the DE, HC, RE and TR sector reports differs marginally from that adopted elsewhere in D09.02.
results as the most important factors influencing the future commercialisation. This is obviously due to the fragmentation of the market for Assistive Technology. It seems that it is not easy to find channels to reach the market for a particular Assistive Technology (AT) application.

The analysis of the survey shows that RTD&D projects dealing with Assistive Technologies require support in the area of market development and awareness creation. Recommendations for the IST Programme therefore include that support projects conducting research on subsectors in the highly fragmented market as well as projects creating awareness among users, decision makers as well as potential producers of AT are urgently needed in order to help to create a viable market for the results from RTD&D in this area.
Table of Contents

Executive Summary i
Table of Contents iii
List of Tables iv
List of Figures v
The Telematics Applications Programme 1
Assessment of the Telematics Applications Programme - The ASSENT Project 1
The ASSENT Project Consortium 3
1. Aims and Objectives of the TAP Sector Disabled and Elderly 4
2. Results and Achievements 5
   2.1 Conclusions 10
3. TAP Contributions to the Disabled and Elderly Sector in Europe 11
   3.1 The General Role of the Sector in Europe 11
   3.2 Overview of Types of Projects Funded by the TAP in the Disabled and Elderly Sector 13
   3.3 Disabled and Elderly People in the Context of Wider Commission Activities: 15
   3.4 Conclusion and Prospects with Regard to the 5th Framework Programme 16
4. Economic and Social Impacts of the Disabled and Elderly Sector 17
   4.1 Enhanced Competitiveness of European Industry 17
   4.2 Increased Generation and Diffusion of Techno-economic Knowledge 27
   4.3 Widespread Socio-economic and User Benefits 32
5. Conclusions 35
   5.1 Key Messages 35
   5.2 Recommendations 37
ANNEX 1: Results of the Second ASSENT Survey 40
ANNEX 2: Sector Participation and Goals 41
   1. Respondents' Type of Organisation 41
   2. Market Segments of Respondents 42
   3. Financial Dimension of Respondents/Number of Employees 42
   4. Reported Progress on the Project 43
   5. The Principal Goals of Sector Participants 43
   6. How Did Respondents Get Involved in the TAP? 44
   7. Conclusions 45
Annex 3: List of Projects Included in the Survey 46
List of Tables

Table 2-1  Short-term Benefits 7
Table 4-1: Short term Benefits 18
Table 4-2: Perception of Standards as a Technical Problem for DE Projects 20
Table 4-3: Best Practice Lessons Emerging from the DE Projects 20
Table 4-4: Centrality to Business and Technology Strategies (absolute figures) 21
Table 4-5: Important Factors for Future Commercial Prospects of TAP Results (coordinators only) 23
Table 4-6: Most Important Factors for Future Commercialisation in the DE Sector 24
Table 4-7: Coordinator Ranking of Legal and Regulatory Issue Importance for Commercialisation 25
Table 4-8: Non-technical Factors Contributing to Problems with Project 25
Table 4-9: Importance of Factors for Future Commercial Prospects (coordinators only) 26
Table 4-10: Results of the TAP RTD&D in the Medium term 29
Table 4-11: Distribution of Project Resources: Percentage of Person Months 30
Table 4-12: Expected Users of Project Results within One Year of Project Completion 34
Table B-1: DE Sector Organisation Size by Financial Dimension 42
Table B-2: DE sector Organisation Size by Number of Employees 42
Table B-3: Total Person Month Available for Project Expended so far 43
Table B-4: Employees Working on Projects 43
List of Figures

Figure 2-1: Coordinator Objectives 5
Figure 2-2: Principal Outputs Already Achieved 6
Figure 2-3: Medium-term RTD&D Results: Answers of Likely, Highly Likely and Certain 7
Figure 2-4: Dissemination Activities that have been Undertaken 8
Figure 2-5 Dissemination Activities that Remain to be Undertaken 9
Figure 2-6: Coordinator Intentions after the End of the Project 10
Figure 4-1: Principal Outputs Already Achieved by Projects 18
Figure 4-2: Integration of Users into the Project 19
Figure 4-3: Relationship of TAP Project to other RTD&D Activities in their Organisation 22
Figure 4-4: Coordinator Objectives 28
Figure 4-5: Main Sources of Knowledge Used in the Project 31
Figure 4-6: Regular Cooperation in Non EC-funded Projects 32
Figure 4-7: Social Objectives Incorporated in Project Work Plans 34
Figure B-1: Respondents’ Type of Organisation 41
Figure B-2: Market Segments Reported by DE Participants 42
Figure B-3: Aims and Goals of DE Participants 44
Figure B-4: Contacts that led to Participation in Project 45
The Telematics Applications Programme

The Telematics Applications Programme was one of the 19 Specific Programmes supported under the European Commission’s Fourth Framework Programme of RTD&D. With a total budget of 937 MECU from 1994 to 1998 it accounted for about 7% of the total Framework budget.

The TAP had three main strategic aims: 1) to promote the competitiveness of European industry and the efficiency of services of public interest; 2) to stimulate the creation of employment through the development of new telematics systems and services; and 3) to promote research activities necessary to support EU policies, such as improving the quality of life and of the environment. There was an emphasis on multimedia applications and on accessible, affordable, user-friendly telematics solutions.

The TAP was composed of thirteen ‘sector’ applications areas. To achieve its aims the projects funded under the TAP were expected to produce results that would: 1) contribute to the production and diffusion of knowledge; 2) encourage cooperation resulting in economic value leading to the production of innovative products, services and improvement in processes; 3) contribute to the competitiveness of European industry; 4) enhance the appropriation of knowledge and encourage learning that impacts beneficially on society and the economy; and 5) support the dissemination of RTD&D results in a simple and accessible way.

This report focuses on the Disabled and Elderly Sector of the Telematics Applications Programme.

Assessment of the Telematics Applications Programme - The ASSENT Project

The ASSENT project was designed to elicit TAP participants’ own assessments about how far, and in what ways, their projects were successful in meeting the aims and objectives for the programme. The ASSENT Project was launched in January 1996 as a TAP Support Action. It was a three year project that enabled ASSENT partners to monitor the evolution of the TAP, design a project self-assessment methodology and questionnaire survey instruments, and prepare the tools necessary to conduct two large-scale surveys of the TAP projects in September 1997 and November 1998.

The first survey included TAP projects that were due to be completed by the end of December 1997. This report provides an analysis of the responses to the second survey covering the other projects supported by the TAP in the Disabled and Elderly Sector. A

---

4 See ‘Executive Summary: Assessment of the Results of the Telematics Applications Programme Projects (First Information Collection Campaign)’ ASSENT Project SU2101, European Commission DGXIIC/E and the Full report. These are available from the European Commission DGXIIC/E. The Executive Summary is at http://www.sussex.ac.uk/spru/ink/assent.html and the full report can be obtained by contacting c.m.little@sussex.ac.uk
Programme-wide report covering all TAP Sectors is available, as are separate reports for each of the other TAP Sectors. The surveys were conducted on a confidential basis and the anonymity of the respondents was assured as a condition of their participation.

The survey instruments were designed to enable respondents to report on the performance of their projects, to point to strengths and weaknesses in their projects and to highlight opportunities and barriers encountered in the process of carrying out their RTD&D work. The results of the surveys provide insights that should be regarded as being complementary to those produced by evaluation tools and methods explicitly designed to provide ‘objective’ measures of project performance.

The surveys focused on four main areas: 1) the relationship between TAP goals and reported results; 2) the formation and strengths of European networks for the generation and distribution of technological and economic knowledge about telematics applications; 3) the contributions of the results to European industrial competitiveness; and 4) the contributions to social and economic benefits for users of telematics applications.

The second survey in November 1998 involved the delivery of over 4,000 questionnaires to TAP project coordinators, partners, and ‘user’ partners. Over 1,200 responses were received representing an overall 30% response rate from individual TAP project coordinators, partners and ‘user’ partners. Within the sample of responses, over 200 of the total 457 projects surveyed are included.

The ASSENT analysis of the experiences of TAP participants shows that, on their own assessment, participants had made significant progress. Participants reported that the TAP had encouraged the formation of European-wide networks of collaborating institutions that were sensitive to the need to involve users. They also reported that considerable attention was given in most cases to the prospects of commercialising and diffusing the knowledge generated during their RTD&D work.

The ASSENT results highlight key areas where participants in RTD&D Actions in the Fifth Framework Programme, including the Information Society Technologies programme, can learn from the experiences of the consortia that were involved in the Fourth Framework telematics projects. This report highlights the key issues and recommendations that come out of the Disabled and Elderly Sector of the TAP.

This sector report has been prepared as the principal responsibility of Fraunhofer-Institut fuer Systemtechnik und Innovationsforschung (FhG-ISI), Germany.

---

5 For the TAP Programme level report, see ‘Working Towards Knowledge Society Telematics Applications...An assessment of the results of the Telematics Applications Programme projects (second assessment), Part A, ASSENT Project – SU2101, Deliverable D09.02, prepared for the European Commission DG XIIIC/E. The separate TAP sector reports comprise Part B of Deliverable D09.02.
The ASSENT Project Consortium

ASSENT was made up of the following organisations:

- Expertel Consulting, FR
- Fraunhofer-Institut fuer Systemtechnik und Innovationsforschung (FhG-ISI), GER
- Fundesco, SPA (1 January 1996 to 28 February 1998)
- MERIT, Maastricht University, NL
- Open Services c.v.b.a, BEL
- The Smith Group, UK (Coordinator 1 January 1996 to 31 October 1998)
- SPRU, University of Sussex, UK (Coordinator 1 November to 30 April 1999)
- ZEUS E.E.I.G, GRE

This sector report presents the results of the assessment of the Telematics for Disabled and Elderly sector of the Telematics Applications Programme (TAP). This assessment is based upon data and information drawn from a range of sources, including:

- the questionnaires completed by the participants in the sector’s RTD&D projects;
- the work programme of the Telematics for Disabled and Elderly sector as described in the TAP work programme, which identifies major aims, objectives, tasks and other strategic features of the TAP;
- a compilation of project summaries published by any up-to-date source;
- a number of documents obtained from the European Commission (DG V, DG XIII), IMPACT and CONCORD.

---

8 European Commission, DG XIII, Telematics Applications Programme website: http://www2.echo.lu/telematics/disabl/projback.html
European Commission, DG XIII, Research and Technological Development for the Integration and Independence of Disabled and Elderly People, Strategic Requirements Board for the Fifth Framework Programme (Disabled and Elderly sector), Final Report, June 20, 1997.
Egidio Ballabio/Rosalyn Moran, Die Beduerfnisse und Faehigkeiten von aelteren und behinderten Menschen in der Informationsgesellschaft, Ein F&E Konzept fuer die Europaesche Union, European Commission, DG XIII
EC, Five Year Assessment of the Specific Programme: Telematics Applications, EUR 17603
9 DE 4101 IMPACT: Newsletters on the Disabled and Elderly sector: various issues.
1. Aims and Objectives of the TAP Sector Disabled and Elderly

In the European Union there are about 80 million people who are elderly (65+) or disabled, thus this group makes up more than 20% of the entire EU population (375 million). There is a strong relationship between advancing age and disability. This means that an increasing proportion of the European Union’s population will experience functional problems, as life expectancy improves. By 2020, more than 25% of the population will be over 65, a growing proportion of whom will be over 80, and at risk from frailty and disability, and thus increasingly dependent upon relatives, carers and social services.11

In order to address these challenges the Commission initiated the TIDE (Technology Initiative for Disabled and Elderly people) action in 1991 with a pilot phase of 21 technology development projects and a major study of rehabilitation technology in Europe. In 1993 the Council approved a further phase of TIDE12 to bridge between the pilot phase and the 4th Framework programme. With a budget of 42 MECU the TIDE bridge phase supported some 55 additional projects, horizontal actions and accompanying measures.

The Telematics Applications for the Disabled and Elderly sector of the TAP is developing applications that provide support for independent-living, autonomy and social integration opportunities. These applications can be summarised under the term Assistive Technology (AT). AT is technology that can help compensate for functional limitation and facilitate independent living allowing older people and people with disabilities to improve control and exercise choice in their own lives. The Disabled and Elderly sector of the TAP has a financial dimension of about 64 MECU and covers some 54 projects.

During the Pilot and Bridge phases most projects addressed the development of specific solutions or assistive devices. In the Telematics Phase, two other types of activities have been added: the development of systems and services as well as projects that take into account the ‘Design for All’ approach. The ‘Design for All’ principle aims to encourage the design of products and services in such a way that they become accessible to and usable by as large a grouping of users as feasible including disabled and elderly persons. This involves taking into account the needs of disabled and elderly persons early in the development of new generations of equipment and services in order to make them accessible to a wider sector of the population.

The workplan had 5 lines of work and a set of horizontal actions and accompanying measures:13

- Access to information and communication technologies to improve the quality, effectiveness and efficiency of services, which support the independent living and integration in society of disabled and elderly people.
- Integrated systems supporting the activities of independent living, education, work, leisure, mobility and training

---

11 EC, DG XIII: RTD for the Integration of Disabled and Elderly People, Strategic Requirements Board for the 5th FWP, Final Report, June 1997
13 TAP website: www2.echo.lu/telematics/disabl/projback.html; TAP work-programme.
• Information and communication systems for enhancing the efficiency and effectiveness of services supporting independent living
• Applications of manipulation and control technology enhancing personal mobility and transportation, control of the immediate environment, and assistance with manipulation and carrying.
• Technology supporting assessment, restoration and enhancement of physical, sensory and cognitive function.

2. Results and Achievements

Figure 2-1 shows the objectives that DE coordinators indicated for their projects. Eighteen (72%) of the DE coordinators (n=25) intended to commercialise a system or service after the project. This figure is considerably higher than the TAP average (44%) and despite the small size of the DE sample it can be said that there is strong market orientation in the DE sector. In addition, 60% of DE coordinators indicated that they intended to create an entirely new telematics application while only 36% intended to create an enhancement of existing applications. This reflects a high degree of efforts to make innovations in the Disabled and Elderly sector.

Figure 2-1: Coordinator Objectives
Figure 2-2 illustrates the outputs that have already been achieved by projects. In the DE sector there are 12 coordinators reporting outputs that had already been achieved.

The most frequent answers were demonstrators or prototypes, models and simulators and technological subsystems. A new or improved product has been reported as an achieved output by 2 DE coordinators. Other outputs already achieved were an ‘approach to user integration’, and an ‘educational course’. When interpreting these figures it has to be kept in mind that most DE sector projects were still running at the time of the survey. In particular only 5 (20%) of the surveyed coordinators had spent 76-100% of their available person month already. Across all sectors 49% of the surveyed coordinators had spent this much time on their projects at the time of the survey (see Annex B). Thus it was to be expected that outputs already achieved would only be reported by a relatively small number of DE projects.

Table 2-1 shows the expected short term results as reported by DE coordinators and partners.
Within one year after completion of the project users of the results will

<table>
<thead>
<tr>
<th>Benefit</th>
<th>unlikely %</th>
<th>Somewhat likely or likely %</th>
<th>highly likely or certain %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase turnover or profits</td>
<td>30</td>
<td>43</td>
<td>15</td>
</tr>
<tr>
<td>Increase quality of goods or services</td>
<td>8</td>
<td>10</td>
<td>45</td>
</tr>
<tr>
<td>Improve productivity</td>
<td>29</td>
<td>36</td>
<td>47</td>
</tr>
<tr>
<td>Produce new systems or services</td>
<td>14</td>
<td>24</td>
<td>41</td>
</tr>
<tr>
<td>Save time</td>
<td>27</td>
<td>21</td>
<td>36</td>
</tr>
<tr>
<td>Save lives or improve health</td>
<td>33</td>
<td>27</td>
<td>29</td>
</tr>
<tr>
<td>Improve EU citizens’ participation in political decision making</td>
<td>53</td>
<td>52</td>
<td>32</td>
</tr>
<tr>
<td>Increase safety</td>
<td>30</td>
<td>37</td>
<td>35</td>
</tr>
<tr>
<td>Improve privacy or security of information services</td>
<td>77</td>
<td>69</td>
<td>18</td>
</tr>
<tr>
<td>Improve environmental quality</td>
<td>56</td>
<td>53</td>
<td>33</td>
</tr>
</tbody>
</table>

Table 2-1  Short-term Benefits

The most likely benefit that users will have according to DE participants is an increase in the quality of goods and services (48% of coordinators and 48% of partners think that this result is highly likely or certain). Furthermore, 46% of coordinators and 29% of partners believe that users of their results will produce new systems or services. Especially in this case coordinators seem to be more optimistic than partners. According to the DE participants, users of their systems will also benefit from increased safety (35% of coordinators and 31% of partners) and improved health and life saving (38% of coordinators and 23% of partners).

Figure 2-3: Medium-term RTD&D Results: Answers of Likely, Highly Likely and Certain

Figure 2-3 shows the expected medium term (in 3-5 years from project completion) results of the projects as reported by DE coordinators and partners. The figure illustrates that none of the coordinators and only 17% of the partners believe that their results will be superseded or replaced by new or different approaches than those used in their projects. This optimistic view might be explained with the relatively high degree of innovation in the Disabled and
Elderly sector (see Figure 2-1). By the same token, 75% percent of coordinators (62% of partners) believe that their results will be widely used in developing new systems or services and 59% of coordinators (52% of partners) think that their results will be widely recognised as key breakthroughs in the field. Naturally, 85% of coordinators and 82% of partners believe that their results will be incorporated in a system or service for a ‘niche’ market rather than for a mass market.

Figure 2-4 illustrates dissemination activities that have already been undertaken according to DE coordinators (n=23). 91% of the responding coordinators reported that they had attended workshops, seminars or conferences.

87% had used a project web-site and 65% have made project related publications. 48% have had project related articles in newspapers, magazines or in the trade press. Considering the small size of the DE sample cross sectoral comparisons are of limited value.
Figure 2-5 shows dissemination activities that remain to be undertaken. The figure shows that most coordinators (60%; n=20) intend to further present the outputs of their project in demonstrations. Equally important are business (60%) and market (55%) plans. Only 20% name technology transfer activities and 10% indicate that knowledge or skill transfer activities remain to be done. This clearly shows that DE sector projects have produced outputs that are close to the market. The projects obviously intend to exploit market opportunities in the foreseeable future and are planning to focus their future project related activities on issues related to commercialisation. Again the size of the sample does not allow a cross sectoral comparison. However, it seems that in comparison with the average across all sectors the DE sector has a strong orientation towards the market.

The coordinators’ answers to the question about their intentions after the end of the project confirm the strong market orientation of DE sector projects (see Figure 2-6). 60% (n=25) of coordinators responding in the ASSENT survey indicate that they intend to continue the project team up to market delivery of the results. Despite the small size of the DE sample, this figure is still significantly higher than the average of all surveyed TAP participants: across all sectors only 41% (n=195) reported that they intended to continue towards commercialisation. This emphasises again the strong market orientation and the success of RTD&D activities in DE sector projects. By the same token none of the DE coordinators indicated that they intended to stop RTD&D in the area or to dissolve the project team.
Furthermore 44% of coordinators indicated that they intended to answer another call for tender/proposals in the same project area. 32% wanted to continue the RTD&D activity with non-EC funding. A relatively small number of DE coordinators indicated that they wanted to continue RTD&D with EC funding in another programme (16% or 4 answers). Together with the high number of ‘market delivery responses’ this might suggest that DE sector results are, to a relatively high degree, already close to a marketable state.

2.1 Conclusions

Due to the relatively late start of the projects in the DE sector relatively few outputs have already been achieved. However from the analysis the following key messages can be extracted:

- **Strong market orientation:** A high number of DE coordinators (72%) intended to commercialise a system or service after the end of the project. A high number of coordinators (60%) also wanted to continue the project team up to market delivery of results after the end of the project.

- **High degree of innovation:** According to the DE coordinators most projects intended to create an entirely new telematics application (60%) rather than just enhancing an existing application (36%). Across all sectors 51% of TAP coordinators wanted to create a new system and 49% intended to enhance an existing system. Furthermore 46% of coordinators and 29% of partners thought that it was highly likely or certain that users of their results will produce new systems or services.
• **Key breakthroughs for a ‘niche’ market:** Coordinators and partners from the Disabled and Elderly sector felt that they have created key breakthroughs that will be widely used in new systems and services for a ‘niche’ market.

• **User benefits:** According to DE sector participants the users of their results will benefit from improved systems and services and improve their health and safety.

3. TAP Contributions to the Disabled and Elderly Sector in Europe

3.1 The General Role of the Sector in Europe

In recent years the importance attached to the Disabled and Elderly issue on the European agenda has clearly increased. This is mostly due to the demographic developments of the past and particularly the developments prospected for the future (see Section 1).

At the same time there is a certain connection between age and disability. It is estimated that more than 30% of people who are 80 or older are heavily restricted in their daily activities. About 70% of all disabled persons are 60 or older. By the same token the number of people with disabilities is increasing for a number of reasons. Apart from the fact that the share of older people is growing in society, the progress in medicine gives people with severe disabilities longer life expectancy and people who suffer severe injuries from accidents a better chance to survive. On the other hand the number of accidents is ever increasing. It has been estimated that 10-15% of the total European population is disabled (1992).

These developments will cause enormous problems for the European social security systems in the future. To maintain current standards the need for spending on care will soon surpass the capability of European societies. In 1992, more than 81% of social protection benefits were spent on old age and war service pensions (44.6%) and health care (36.6%). As opposed to this the spending on unemployment accounted only for 7.2% of all benefits.

As the number of elderly and disabled people increases, the goal of achieving their full participation in society is gaining increasing importance in the EU. Ways have to be found to improve the quality of life of this part of the population as well as to enhance their capability to participate in all areas of society. This includes the necessary improvement of employment prospects for disabled and elderly people, as it seems that this group is increasingly excluded from the labour market. According to the 1994 European Labour Force Survey, a total of 50% of all inactive people cite retirement and disability as the reason for their inactivity.

The growing number of disabled and elderly people also provides the basis for new markets and business opportunities. Addressing the specific needs of older and disabled people offers strategic opportunities for the European industry. The market perspectives for assistive

---

14 Ballabio, Moran: Die Beduerfnisse und Fachigkeiten von aelteren und behinderten Menschen in der Informationsgesellschaft, Ein F&E Konzept fuer die europaeische Union, European Commission, DG XIII
15 INCUDE Project: http://www.stakes.f i/include/incc310.html
16 Ballabio, Moran, op. cit.
17 Ibid.
technologies are estimated to be around 10 billion ECU per year with a growth rate of 20% per year.\textsuperscript{19}

Information and Communication Technologies (ICTs) are seen to be an important contribution to the solution of the above mentioned problems. In particular ICTs can help older or disabled people to increase their possibilities to live independently and to enhance their capacities. This can decrease the burden of care of informal caregivers, improve the quality of care, and very importantly, diminish the cost of care. Furthermore, ICTs could also specifically assist in enhancing the active contribution of elderly and disabled people to society, including full participation in the labour market, harnessing their potential which constitutes an enormous untapped resource.

The preceding paragraphs have shown that solutions alleviating the conflict between exploding social and health care costs and the ongoing exclusion from society of the disabled and elderly are urgently needed. Assistive technologies have the potential of being such a solution. However the potential market for such solutions is restricted. Even though the number of disabled and elderly people is increasing and even though the market perspectives are positive in terms of a high growth rate, the market for telematics based Assistive Technologies is still far from being a mass market. This is a fact that has certain implications for RTD&D as well as the exploitation of RTD&D results in this area. There is always a risk involved with investments in RTD&D as it is never certain whether the results will be exploitable. Even if a commercial exploitation is made, it is uncertain, whether the resulting products or services will be successful on the market. Thus a company will only invest if it perceives the prospective return on investment as being high enough to outweigh the risk. However the prospective market for AT is limited to the disabled and elderly who are, despite their growing number, a very fragmented group in terms of their impairments and needs. This means that most AT applications address only a small fraction of the disabled and elderly. Furthermore, especially the disabled do not belong to the wealthiest groups in society. Therefore, without further incentives the industrial interest in this field might be rather limited. However the overall cost for society will be lower if AT is being provided to the disabled and elderly and if this group is included in society. Thus, at least at a societal level, investments in this area will pay in the future.

As a consequence of this there is a strong need for public funding, especially in the Disabled and Elderly sector. The Disabled and Elderly sector of the TAP provides this funding and therefore the incentive for the industry to invest in RTD&D and to create solutions for the empowerment and inclusion of disabled and elderly people. The TAP projects in this area are very likely to give the impetus to further research and development. If this R&D leads to new applications of benefit to users, these benefits may be attributed in whole or in part to the disabled and elderly sector research in TAP.

Thus the TAP has a potential of making a contribution to the alleviation of the financial and social problems involved with the Disabled and Elderly sector in Europe.

\textsuperscript{19} EC, Five Year Assessment of the Specific Programme: Telematics Applications, EUR 17603
3.2 Overview of Types of Projects Funded by the TAP in the Disabled and Elderly Sector

The Disabled and Elderly sector of the TAP can be divided in the following sub-sectors (the boxes provide actual project examples).20

**Access to information and communication technologies and related services**

This work is in the area of telecommunication and telematics including terminals, services and applications in the field of training, education and vocational support. The objectives are to improve accessibility and usability of present and future information and communication technologies products and services for elderly and disabled people through the development and application of ‘Design for All’ principles, through appropriate adaptations, and through the development of special services, applications and equipment.

DE 3009 PRINT: This project aims to develop a cheap, quiet method of producing Braille, Moon and graphics using adaptations to current ink-jet technology on paper or other material. This would give direct access by Blind users to faxes and other IT and communications generated output.

The projects in this area improve the access of disabled and elderly people to Information and Communication Technologies. They enable the utilisation of modern technologies by elderly and disabled people and thus contribute to the enhancement of autonomy, independence and quality of life of these citizens.

**Life at home and remote care**

Activities are grouped in two main areas, technical developments in home systems and accessing remote services from the home environment.

DE 3207 FACILE: Definition and experimental application of support tools for design and management of homes provided with automated telematics systems and external services, dedicated to disabled and elderly people.

The projects in this field focus on technologies that facilitate interaction of disabled and elderly people with their day to day environment at home. Furthermore, they provide assistance to caretakers in providing services to the disabled and elderly. The projects in this area aim to improve home care and alleviate isolation and thus improve the quality of life of disabled and elderly citizens.

**Mobility and transport**

Work in this group covers mobility, orientation, navigational services, tools and devices that enhance access and safety in transportation. The projects in this area for instance provide improved access to the public transport infrastructure through the application of intelligent, safe control technology; provide increased mobility for wheelchair users through the use of intelligent drives, actuators and controllers or develop transfer aids to assist in the transportation of disabled people.

---

20 TAP website: www2.echo.lu/telematics/disabl/projback.html
DE 4206 MOBIL\textsuperscript{21}: The project aims to provide an Intelligent Mobility and Transportation Aid for Elderly People with Combined Motor and Mental Impairment. The specified mobility aid is supposed to support the user in the home environment and includes trays for the transportation of household items.

**Control and manipulation**

This area develops systems and methods for improving the control of the arms and hands of disabled and elderly people.

DE 3216 TREMOR: This project addresses the developments and validation of assistive devices specially designed for patients affected by tremor. It will develop instrumentation systems to characterise tremor in the upper limbs and neck and will develop a joystick control device that compensates for vibration due to tremor.

The projects in this group directly address control disabilities of upper limbs and possibilities to compensate for them by using ICTs. Projects in this area will for instance develop and validate improved controls for devices and facilities used by disabled and elderly people and thus improve their control abilities in the immediate environment.

**Restoration and enhancement of functions**

Different functions are addressed in this group: hearing, speech, communication cognitive and motor. The objectives are to develop and improve technology for functional assessment and training, for restoring or enhancing sensory, motor and mental abilities, and for augmenting communication.

DE 3005 LISCOM: The aim is to develop noise reduction technology, with a particular view to incorporating it into the currently popular ‘in the ear’ hearing aid.

The projects in this area aim to compensate for functional disabilities and impairment using Assistive Technologies.

**Market issues and quality of life**

Most of the activities here are related to support tools for the selection and use of Assistive Technology and technology evaluation.

DE 3205 DAILY: The project aims to develop a CD-ROM multimedia application supplying elderly people, professional and non professional care providers with information and evaluations of Assistive Technologies which are available to improve quality of life.

The projects in this field especially aim to raise awareness of the availability of Assistive Technologies among disabled and elderly people as well as professional and private carers. The projects will facilitate dissemination and information about activities and products in the field.

To fulfil the aims of the TAP and in particular the ‘Ten Commandments’ of the TAP work programme, the projects in the different sub-sectors of the Disabled and Elderly sector

\textsuperscript{21} MOBIL project description: http://www.fernuni-hagen.de/FTB/artnet/mobil-d.htm
especially have the important priority of taking into account user requirements and user involvement (Commandments 2,3,4,7).

Considering the nature of the sector and in particular the limited target group of Assistive Technology products the projects certainly will not exclusively be focussing on industrial competitiveness but will also focus on other issues like ‘improving the quality of life of the European citizens’ (Commandment 1).

Due to the nature of the specific user group addressed most projects will by their nature focus on multimedia telematics rather than on text-based telematics (Commandment 5). Multimedia applications in Assistive Technology are especially suitable to address the needs of elderly and disabled people while text-based telematics (with the exception of applications for blind users such as Braille printers, etc.) usually seem to be not suitable for this target group.

3.3 Disabled and Elderly People in the Context of Wider Commission Activities:

Related activities in other TAP sectors

Activities in related fields are naturally placed mainly in the Healthcare sector. However certain projects in the Transport sector also address the disabled and elderly.22 These projects mainly focus on people who are restricted in their mobility. Examples are a project focussing on disabled passengers in emergency situations on ships and planes, the development of public transport systems taking into account the needs of the disabled and elderly or a project focussing on accessibility to high speed trains and stations.

ESPRIT:

During the 4th Framework Programme two related projects were funded within ESPRIT23

- a project focussing on the development of advanced testing equipment for hearing aids.
- a project focussing on the development of artificial limbs directly interacting with the human nervous system.

BIOMED:

The BIOMED II programme of the 4th Framework Programme that focusses on biomedicine and healthcare addresses the disabled and elderly issue in a number of areas:24

Area 2: Biomedical technology and technics: This area focusses on the development of tools for rehabilitation as well as compensation for lost body functions.

Area 3: Brain research: Research on the causes of mental diseases.

Area 4: Chronic diseases: Ageing and age-related diseases.

---

22 Ballabio, Moran, op.cit.
23 Ibid.
24 Ibid.
DG-V activities:
Activities of DG V in the area of disabled and elderly people mainly focus on the integration of disabled and elderly people into the workforce. Of particular relevance is a joint US/EU conference on ‘Harnessing the Information Society to raise employment levels for people with disabilities’ in Madrid in October 1998.

3.4 Conclusion and Prospects with Regard to the 5th Framework Programme

Older people and people with disabilities constitute a group in society whose needs will have to be increasingly addressed in the future, and there is a special need in this area for public funding to ensure that possible solutions will be developed and provided. The EU has therefore devoted an important role to the Disabled and Elderly sector in the 5th Framework programme. Two main activities have been proposed so far – a specific activity under the theme of ‘Creating a User friendly Information Society’ (the Information Society Technologies Programme – IST) and a key action under the theme of ‘Ageing in Society’.

The emphasis under the first theme will be on Assistive Technology and access to the Information Society, while the second will focus on demographic concerns and healthcare developments. In particular the IST programme will address the disabled and elderly under key action I (‘systems and services for the citizen’) with the action line ‘systems and services for independent living’. Furthermore the IST focusses on the ‘Design for All’ issue within a cross-programme action;25

The work in the first theme will particularly focus on four issues:26

‘Design for All’

A key requirement for a user friendly Information Society is that the equipment, services and applications are accessible to all citizens, including older people and disabled people. The methods and tools to support ‘Design for All’ will be developed under the specific RTD activities within the disabled and older persons action line of the IST (the follow-on from the ‘Disabled and Elderly sector of the current Telematics Applications Programme) in connection with a ‘Design for All’ cross-programme action.

The ‘Design for All’ goal can be achieved in one of three ways: designing products, services and applications that are readily usable by most of the potential users without any modification, or are easily adaptable to different users (e.g. by adapting their user interfaces), or have standardised interfaces to be compatible with special products (e.g. special interactive devices) for people with disabilities.27

User involvement

The end users of RTD work outcomes need to be actively included in the projects in order to ensure success of the ‘Design for all’ principle. This can happen by involving them directly as partners or as validation sites.

26 Disabled and Elderly newsletter, Issue 2/Summer 1998, IMPACT project.
27 EC, DG XIII: RTD for the Integration of Disabled and Elderly People, Strategic Requirements Board for the 5th FWP, Final Report, June 1997
Encouraging industrial involvement

European industrial involvement in the area of Assistive Technology is underdeveloped and Europe is in danger of falling behind in the expanding global marketplace for AT. Therefore, the 5th FWP needs to identify areas of potential strength in Europe, define ways of attracting significant industrial involvement, and support market development.

Connecting to other aspects of EU policy

The exploitation of results in this sector depends only partially on market factors and relies upon policy developments in other areas. On the social side, national social services play a significant role as purchasers of the technologies in question, either as direct consumers themselves or through the reimbursement of the costs to disabled or older people. On the telecommunications side, regulations on universal services and accessibility requirements can play a major role. On the regional side, there are already significant imbalances in the exploitation of RTD results in this area across the EU.

4. Economic and Social Impacts of the Disabled and Elderly Sector

4.1 Enhanced Competitiveness of European Industry

This section examines the expectations and the actual results of the TAP projects according to the responses of the coordinators, partners and users to assess the ways in which the RTD&D performed within the Disabled and Elderly sector contributes to results that can be exploited by European industry.

4.1.1. EU RTD&D exploitation of effects – technological; outputs and benefits

Table 4-1 illustrates the RTD&D benefits for users that coordinators and partners from the Disabled and Elderly Sector expected within one year of project completion.

The most likely benefit that users will have according to DE participants is an increase in the quality of goods and services (48% of coordinators and 48% of partners think that this result is highly likely or certain). Furthermore 46% of coordinators and 29% of partners believe that it is highly likely or certain that users of their results will produce new systems or services. By the same token only 14% of coordinators and 24% of partners believe that this is unlikely. This shows a high degree of innovation in DE sector results and suggests that these results are very close to a marketable state already.

According to the DE participants, users of their systems will also benefit from increased safety (35% of coordinators and 31% of partners) and improved health and life savings (38% of coordinators and 23% of partners).
Within one year of completion of the project users of the results will

<table>
<thead>
<tr>
<th></th>
<th>unlikely %</th>
<th>somewhat likely or likely %</th>
<th>highly likely or certain %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coordinator</td>
<td>Partner</td>
<td>Coordinator</td>
</tr>
<tr>
<td>increase turnover or profits</td>
<td>30</td>
<td>43</td>
<td>55</td>
</tr>
<tr>
<td>increase quality of goods or services</td>
<td>8</td>
<td>10</td>
<td>44</td>
</tr>
<tr>
<td>improve productivity</td>
<td>29</td>
<td>36</td>
<td>38</td>
</tr>
<tr>
<td>produce new systems or services</td>
<td>14</td>
<td>24</td>
<td>41</td>
</tr>
<tr>
<td>save time</td>
<td>27</td>
<td>21</td>
<td>36</td>
</tr>
<tr>
<td>save lives or improve health</td>
<td>33</td>
<td>27</td>
<td>29</td>
</tr>
<tr>
<td>improve EU citizens’ participation in political decision making</td>
<td>53</td>
<td>52</td>
<td>32</td>
</tr>
<tr>
<td>increase safety</td>
<td>30</td>
<td>37</td>
<td>35</td>
</tr>
<tr>
<td>improve privacy or security of information services</td>
<td>77</td>
<td>69</td>
<td>18</td>
</tr>
<tr>
<td>improve environmental quality</td>
<td>56</td>
<td>53</td>
<td>33</td>
</tr>
</tbody>
</table>

Table 4-1: Short term Benefits

Coordinators were asked about the principal outputs already achieved by their projects. Answers were received from 12 DE coordinators.

Figure 4-1 shows that demonstrators or prototypes are the main outputs of projects that already have achieved outputs (8 answers).
Further outputs that already have been achieved by DE sector projects are models/simulators (3 answers), technological subsystems (3 answers) and new or improved products (2 answers).

User orientation

Regarding the integration of the user-perspective, all DE coordinators (n=25) reported that users are either validation sites or partners in the project. 23 out of 25 (92%) reported that users were validation sites in their project. Across all sectors only 70% indicated that users were validation sites in the project. Most (14 out of 25) DE coordinators reported that users are partners in the project (see Figure 4-2).

By the same token 16 out of 22 coordinators reported that their project provides lessons for ‘best practice’ in use of telematics applications by users (see Table 4-3 below).

Thus the TAP goal of being user oriented seems to be particularly well met in the DE sector.

![Figure 4-2: Integration of Users into the Project](image)

Activities that may help to establish a new formal standard have only been named as a main objective by 4 out of 25 DE-coordinators (see 4.2). No coordinator reported a new or improved standard as an achieved output of their project (see Figure 4-1). In connection with this question, the results of the question if the lack of standardisation contributed to problems with the project should be added (see Table 4-2). 6 out of 14 coordinators and 5 out of 16 partners reported standards to be very or somewhat important. Only 4 coordinators and only 1 partner perceive problems caused by a lack of standardisation as very important.

Therefore standardisation does not seem to be a very important issue in the Disabled and Elderly sector yet. This might be due to the fact that the sector is relatively young compared to other sectors in the TAP and that developments in the sector are at a relatively earlier stage.
Table 4-2  Perception of Standards as a Technical Problem for DE Projects

<table>
<thead>
<tr>
<th>somewhat or very important</th>
<th>Coordinators abs.</th>
<th>%</th>
<th>Partners abs.</th>
<th>%</th>
<th>Sector Total abs.</th>
<th>%</th>
<th>TAP Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>not important</td>
<td>8</td>
<td>57</td>
<td>11</td>
<td>69</td>
<td>63</td>
<td>63</td>
<td>16</td>
<td>63</td>
</tr>
<tr>
<td>total</td>
<td>14</td>
<td>100</td>
<td>16</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4-2: Perception of Standards as a Technical Problem for DE Projects

4.1.2 EU RTD&D exploitation of effects – organisational

Coordinators were asked if their project provides lessons for ‘best practice’ management and administration of RTD&D projects. Table 4-3 shows that ‘best practice’ lessons are emerging from DE projects in the area of usage of telematics applications by users. 16 out of 22 coordinators reported that their project provides ‘best practice’ lessons in this area while 7 of these even indicated that their project provides ‘many lessons’. Further ‘best practice’ lessons to be provided by DE projects are reported on ‘feedback processes’ (16 out of 22), ‘team management’ (15 out of 22) and the ‘use of telematics applications inside organisations’ (12 out of 22). Somewhat surprising is the fact that only 10 out of 22 coordinators report that their project provides ‘best practice’ lessons on training/retraining. A possible explanation to this is the fact that results from DE sector projects are very often meant for systems and services that are completely new (see Table 4-1 and sections below).

Table 4-3: Best Practice Lessons Emerging from the DE Projects

<table>
<thead>
<tr>
<th>best practice lessons for</th>
<th>no</th>
<th>some</th>
<th>many</th>
<th>total answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>use of application by users</td>
<td>6</td>
<td>9</td>
<td>7</td>
<td>22</td>
</tr>
<tr>
<td>team management</td>
<td>7</td>
<td>12</td>
<td>3</td>
<td>22</td>
</tr>
<tr>
<td>use of application inside organisation</td>
<td>10</td>
<td>10</td>
<td>2</td>
<td>22</td>
</tr>
<tr>
<td>feedback processes</td>
<td>6</td>
<td>13</td>
<td>3</td>
<td>22</td>
</tr>
<tr>
<td>Training</td>
<td>12</td>
<td>9</td>
<td>1</td>
<td>22</td>
</tr>
</tbody>
</table>

Table 4-3: Best Practice Lessons Emerging from the DE Projects

The TAP participants were asked to indicate the position of their TAP project within their organisation’s business and technology strategies.
Table 4-4 shows the coordinators’ and partners’ answers to this question. It can be expected that the project results will most directly lead to commercially exploitable results if the work done in the projects is related to a present core technology and to an existing business line of the participating companies (27% of all DE sector respondents are from private enterprises – see Annex B). One half, 10 out of the 20 DE coordinators responding to the question stated that the work done in the project is related to an existing core business line. However, only four of these 10 coordinators responded that the project work is also related to a present core technology. For 10 coordinators, a potential core technology is involved and for 6 coordinators, the project work is related to an important non-core technology. Five coordinators stated that the project work represents a diversification within existing business lines and for another five the project work represents a new activity. None of the coordinators stated that a peripheral technology was concerned.

For 32 out of 85 partners the work in the project was/is related to an existing core business line. For 31 it represents a diversification and for 18 a new activity. Present core technologies are concerned for 32 partners, potential core technologies for 24, important non-core technologies for 20 partners and 11 partners stated that the work done in the project concern a peripheral technology for them.

The results show that the work done in the projects concerns core business lines or diversifications in existing business lines, on the one hand, and present or potential core technologies, on the other, for most of the DE coordinators and partners. New business activities or peripheral technologies are concerned in only a few cases. Therefore, the projects in the DE sector are well integrated in the participants’ organisations and it can be expected that the participants can contribute considerable know-how to the projects from the DE sector. Furthermore, the high centrality to business and technology strategies suggests
that the RTD&D results from the DE projects will be commercially exploitable to a very high degree.

Coordinators and partners were asked about the relationship of their TAP project to other R&D activities in their organisation. Figure 4-3 shows that for 72% of DE coordinators the project is part of an existing research line. For 32% it is related to the principal research activity of their organisation or department. By comparison, only 52% of all TAP coordinators surveyed report that their project is part of an existing research line, however 49% indicate that it is related to their principal research activity. When interpreting these figures one has to bear in mind that there were only 25 answers by DE coordinators and 181 from all TAP coordinators.

In the case of the partners (DE n=109, TAP n=1036) the picture is very much in line with the average across all sectors. 51% of all partners report that the project is part of an existing research line (46% across the TAP) and 40% indicate that their project is related to the principal research activity of their organisation or department (39% across all sectors).

![Figure 4-3: Relationship of TAP Project to other RTD&D Activities in their Organisation](image)

4.1.3 EU RTD&D exploitation of effects – commercialisation

Several questions give information about the results of exploitation activities or exploitation intentions respectively. As can be seen in Figure 4-1 above, most outputs already achieved in the DE-sector concern prototypes, demonstrators, models or simulators. Coordinators and partners were also asked if they intended to develop a commercial system or service after the TAP project. Taken together 38% of DE respondents (n=125) indicated that they intend to develop a commercial system or service. Across all sectors 35% (n=1097) intended to do so.

Coordinators were asked to give an indication of factors that may be expected to affect the prospects for the commercialisation of RTD&D results. An overview is given in Table 4-5.
According to DE coordinators, the most important factors for the future commercialisation of an application are the costs and problems of marketing as well as the costs of system and service development (all coordinators found these factors somewhat or very important). In the case of costs and marketing problems 13 out of 20 coordinators responded that this factor is very important, in the case of system and service development costs 8 out of 20 responded very important. Another factor that is seen to be important for the future commercialisation of DE sector results is the interest of the company/organisation management: 18 out of 19 DE coordinators deemed this to be important in some way, and, of these, 7 said very important. However this does not seem to be sector specific as 105 out of 116 total TAP respondents indicated importance and 57 great importance for this factor.

Further important factors for the future commercialisation of DE applications are the strength of competition (17 out of 18 answers, with 5 indicating ‘very important’) and the access to finance (18 out of 20, with 8 indicating ‘very important’).

Due to the smaller size of the DE sample it is sometimes inappropriate to compare the DE sector with the TAP. However, it seems that the costs and problems of marketing are particularly important in the DE sector. Table 4-6 sheds more light on the factors that were found to be most important.

### Table 4-5: Important Factors for Future Commercial Prospects of TAP Results (coordinators only)

<table>
<thead>
<tr>
<th>Factor</th>
<th>DE</th>
<th>DE Total answers</th>
<th>DE % ‘important’</th>
<th>TAP Total % ‘important’</th>
<th>Total answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest of the company/organisation management</td>
<td>18</td>
<td>19</td>
<td>95</td>
<td>83</td>
<td>116</td>
</tr>
<tr>
<td>Strength of competition</td>
<td>17</td>
<td>18</td>
<td>94</td>
<td>75</td>
<td>114</td>
</tr>
<tr>
<td>Costs and problems of marketing</td>
<td>20</td>
<td>20</td>
<td>100</td>
<td>91</td>
<td>118</td>
</tr>
<tr>
<td>Cost of system or service development</td>
<td>20</td>
<td>20</td>
<td>100</td>
<td>92</td>
<td>113</td>
</tr>
<tr>
<td>Financial risk</td>
<td>14</td>
<td>19</td>
<td>74</td>
<td>91</td>
<td>113</td>
</tr>
<tr>
<td>Access to finance</td>
<td>18</td>
<td>20</td>
<td>90</td>
<td>73</td>
<td>116</td>
</tr>
<tr>
<td>Export possibilities</td>
<td>16</td>
<td>18</td>
<td>89</td>
<td>83</td>
<td>105</td>
</tr>
<tr>
<td>Suitable partners to help in commercialisation</td>
<td>16</td>
<td>18</td>
<td>89</td>
<td>72</td>
<td>116</td>
</tr>
<tr>
<td>Time to achieve profitability or level of profits compared to alternatives</td>
<td>15</td>
<td>18</td>
<td>83</td>
<td>66</td>
<td>111</td>
</tr>
<tr>
<td>Availability of appropriate user skills</td>
<td>10</td>
<td>17</td>
<td>59</td>
<td>79</td>
<td>109</td>
</tr>
<tr>
<td>Support services</td>
<td>15</td>
<td>19</td>
<td>79</td>
<td>69</td>
<td>105</td>
</tr>
<tr>
<td>User access to appropriate network services</td>
<td>11</td>
<td>19</td>
<td>58</td>
<td>78</td>
<td>110</td>
</tr>
<tr>
<td>Ability of others to copy our product or services</td>
<td>12</td>
<td>17</td>
<td>71</td>
<td>88</td>
<td>109</td>
</tr>
</tbody>
</table>

Note: *Answers reported for ‘somewhat’ or ‘very important’
Despite the smaller size of the DE sample it can be seen that costs and problems of marketing are more important for DE sector projects than for the average across all sectors.

This result is also reflected by the views that have been expressed during the 3rd Disabled and Elderly Sector concertation meeting in Helsinki in June 1998. The meeting focused on problems and strategies of marketing Assistive Technologies in Europe. One presentation as well as some of the comments from the audience reflected the problems especially faced by SMEs in entering the market with AT products. In particular one of the speakers stressed that it was not possible to become rich by selling AT products. Another problem with the AT market that had been mentioned during the meeting is that AT users and the people who pay for AT are often not the same. Thus it seems to be particularly hard to find marketing channels for AT products.

The pessimistic views expressed by some of the meetings’ participants reflect the fact that the market for AT products is very fragmented and that especially SMEs have problems to compete with global players in market segments that are more interesting due to a bigger size (e.g. hearing aids, etc.).

Coordinators were also asked to indicate the importance of the legal and regulatory framework for the commercialisation prospects of their application. The responses are shown in Table 4-7.

It seems that DE projects attach even less importance to regulations than TAP projects in general. By the same token, when asked about activities to identify and monitor regulatory assumptions associated with their project only 4% of DE participants responded that they had identified such assumptions, while across all sectors 14% of participants have done so. In case of efforts to monitor regulatory assumptions only 8% of DE participants indicated such activities while across all sectors 20% of participants have made such efforts.

This is most likely due to the fact that the majority of Assistive Technology applications are completely new and therefore less affected by any kind of regulation. Furthermore DE projects are in general less affected by regulations and standards than for example the projects from the Transport sector.
Table 4-7: Coordinator Ranking of Legal and Regulatory Issue Importance for Commercialisation

<table>
<thead>
<tr>
<th>Factor</th>
<th>Very important</th>
<th>Somewhat important</th>
<th>Not important</th>
<th>Total answers</th>
<th>Not important %</th>
<th>TAP Not important %</th>
<th>TAP total answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in legal frameworks</td>
<td>3</td>
<td>6</td>
<td>10</td>
<td>19</td>
<td>53</td>
<td>47</td>
<td>111</td>
</tr>
<tr>
<td>Changes in national regulations</td>
<td>3</td>
<td>5</td>
<td>9</td>
<td>17</td>
<td>53</td>
<td>43</td>
<td>107</td>
</tr>
<tr>
<td>Changes in European regulations</td>
<td>6</td>
<td>1</td>
<td>11</td>
<td>16</td>
<td>69</td>
<td>43</td>
<td>111</td>
</tr>
</tbody>
</table>

Table 4-7: Coordinator Ranking of Legal and Regulatory Issue Importance for Commercialisation

4.1.4 EU RTD&D exploitation of effects – employment, training and skills development.

As already mentioned under point two somewhat surprisingly only 10 out of 22 DE coordinators indicated that their project provided ‘best practice’ lessons in training and retraining. The TAP participants were also asked about problems related to skills of individuals. Table DE 4-8 depicts the skills related answers of coordinators and partners who had experienced any kind of problems with their projects. Unfortunately the sample of DE users was too small for any useful interpretations on that item.

### Table 4-8: Non-technical Factors Contributing to Problems with Project

<table>
<thead>
<tr>
<th>Factor</th>
<th>Coordinators %</th>
<th>Partners %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost control</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>not important</td>
<td>important</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>Difficulties in assessing individual skills</td>
<td>3</td>
<td>77</td>
</tr>
<tr>
<td>Over-ambitious initial objectives</td>
<td>43</td>
<td>57</td>
</tr>
<tr>
<td>Difficulties in managing the RTD&amp;D elements</td>
<td>29</td>
<td>71</td>
</tr>
<tr>
<td>High costs of skilled individuals</td>
<td>57</td>
<td>43</td>
</tr>
<tr>
<td>Inadequate prior development in own organisation</td>
<td>77</td>
<td>23</td>
</tr>
<tr>
<td>Lack of appropriate skills in the partner organisation</td>
<td>62</td>
<td>39</td>
</tr>
<tr>
<td>Lack of information on other inputs for the project</td>
<td>43</td>
<td>57</td>
</tr>
<tr>
<td>Lack of information on technology</td>
<td>53</td>
<td>47</td>
</tr>
<tr>
<td>Unavailability of skills in the market</td>
<td>58</td>
<td>42</td>
</tr>
<tr>
<td>Problems with IPR</td>
<td>73</td>
<td>27</td>
</tr>
<tr>
<td>Problems with registering patents</td>
<td>100</td>
<td>0</td>
</tr>
</tbody>
</table>

n=number of responses to respective item.

Table 4-8: Non-technical Factors Contributing to Problems with Project
Table 4-8 shows that a relatively large share of DE coordinators report difficulties in assessing individuals’ skills (69%). However ‘high costs of skilled individuals’ (43%), ‘unavailability of skills’ (42%) and ‘lack of appropriate skills in partner organisations’ (39%) were complained about by surprisingly ‘few’ coordinators. Given the high demand for skilled IT personnel in recent times one would certainly expect higher figures here.

Looking at the partners, the picture is even more surprising: Only 32% complain about ‘unavailability of skills’, 37% about ‘high costs of skilled individuals’. However 68% report ‘over-ambitious initial objectives’ and 61% are not satisfied with skills in partner organisations. Altogether it seems that the availability of skilled personnel does not seem to be as severe a problem for DE project participants.

Coordinators were also asked about the importance of knowledge, capabilities and skills issues for the future commercial success of RTD&D results. An overview is given in Table 4-9.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Somewhat or very important</th>
<th>Total answers</th>
<th>%</th>
<th>TAP Total in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved contact with users</td>
<td>13</td>
<td>18</td>
<td>72</td>
<td>90</td>
</tr>
<tr>
<td>Stronger applied RTD&amp;D</td>
<td>15</td>
<td>18</td>
<td>83</td>
<td>83</td>
</tr>
<tr>
<td>Stronger basic RTD&amp;D</td>
<td>10</td>
<td>17</td>
<td>59</td>
<td>45</td>
</tr>
<tr>
<td>Stronger producer capabilities</td>
<td>13</td>
<td>17</td>
<td>76</td>
<td>71</td>
</tr>
<tr>
<td>Stronger user capability</td>
<td>10</td>
<td>17</td>
<td>59</td>
<td>70</td>
</tr>
</tbody>
</table>

Table 4-9: Importance of Factors for Future Commercial Prospects (coordinators only)

Table 4-9 shows that most importance was attached to stronger applied RTD&D (15 out of 18 answers) while only 10 out of 17 respondents demand stronger basic RTD&D. Improved contacts with users are important for 13 out of 18 respondents. In this case 8 respondents indicated ‘very important’. By the same token 13 out of 17 responding coordinators believe that stronger producer capabilities are important for the future success of their application. Stronger user capabilities are demanded by 10 out of 17 coordinators.

Assistive Technology products are not mass market products and in a lot of cases they are completely new. In fact as Figure 5-4 shows that in the DE sector the percentage of projects intending to create an entirely new telematics application is considerably higher than the TAP average. By the same token the percentage of projects aiming to enhance existing applications is lower than the average across all sectors (see Figure 5-4). Thus the commercial success of such applications especially relies on strong applied RTD&D and on good contacts with users. By the same token if an application is entirely new the producers will naturally not have had much opportunity to gain skills. Therefore, the commercial success of AT has to rely on the fast acquisition of capabilities by producers.

User contacts are naturally strong in the DE sector as design of AT is usually not possible without the involvement of users.
4.1.5 Conclusions

The following key messages appear from this section:

- **Strong involvement of users:** In the DE sector users are integrated especially well into the projects and user requirements are of central concern to the projects. All surveyed DE coordinators reported that their projects had integrated users in validation sites or as partners. 92% had integrated users as validation sites, while across the TAP only 70% of projects did so. By the same token 16 out of 22 responding DE partners indicated that their project provides best practice lessons on user involvement.

- **Strong market orientation:** In the DE survey 38% of respondents indicated that they intend to develop a commercial system or service after the project. According to the participants the projects will most likely contribute to user benefits through new systems or services or the enhancement of existing systems or services. The most frequent outputs that have been reported by DE projects are demonstrators, prototypes and models.

- **Exploitation problems:** It seems to be particularly hard to enter the market with results from the DE sector. Thus the most important factor for the future commercialisation of DE results are marketing problems and costs. The market for Assistive Technology is highly fragmented and the market fragments are sometimes very small. In the case of the market sections that are easier to access. SME’s have to compete with the global players in the field.

- **Need for applied RTD&D/Producer Capabilities:** In the DE sector the projects result in more applications that are entirely new than in other sectors (see Figure 4-4). Therefore strong applied RTD&D and good user contacts are especially important in this sector. Furthermore the high degree of innovation in the sector leads to potential problems with producer capabilities.

- **Regulations and Standardisation:** Relatively little importance is attached to regulations and standardisation issues in the DE sector. AT is too new to be affected by regulations and standardisation requirements. Furthermore AT is in general less affected by standards and regulations than results from other TAP sectors.

4.2 Increased Generation and Diffusion of Techno-economic Knowledge

4.2.1 Knowledge generating aims of the Disabled and Elderly sector.

TAP coordinators identified their intentions for the scope of innovation in the projects through their answers to two questions on the ASSENT questionnaire. The first focussed upon the innovative intent of the project: The coordinators were asked about the objectives that applied to their projects.
Figure 4-4 shows the objectives of the DE projects covered by the second survey according to the responses of the coordinators (n=25). For the analysis of these objectives one has to bear in mind that with 25 responses the size of the sample is rather limited for the DE part. Thus comparisons made with the overall TAP sample (193 responses for this question) are limited in their meaningfulness.

The main objective of the projects was to commercialise a telematics system or service after the project (72%). While 60% indicated that they intended to create an entirely new telematics application, only 36% wanted to create a telematics application that was an enhancement of existing applications. Despite the small size of the DE sample it is interesting to compare these figures with the average across all sectors: The comparison shows that as opposed to the 72% of DE projects only 44% of all TAP projects intended to commercialise a telematics system or service after the project. On the other hand, across all sectors, 49% of all projects intended to produce an enhancement of existing applications while in the DE sector only 36% intend to do so. By the same token across all sectors only 51% of all projects intended to create an entirely new application while in the DE sector this share is slightly higher (60%). The majority of applications in the DE sector are entirely new and there seems to be a greater potential to access the market with new products than in other sectors. This seems to reflect the fact that telematics in the field of Assistive Technology is a relatively new area with relatively few existing products. A more traditional sector would be Transport, which is very well reflected in the survey. In the Transport sector only 30% of all projects reported that they intended to create something entirely new.

Further insight on the issue of the knowledge generation aims of the projects is provided by the respondents’ views of the eventual impact of their project. Respondents beliefs about the medium term (three to five years) impacts of the results of their project indicate their level of ambition as well as expectations about the significance of the new knowledge generated by their projects. Responses to the question about the medium term prospects for the project output are summarised in Table 4-10.
As can be seen in Table 4-10, DE respondents were rather optimistic about the widespread use of their project results. 75% of coordinators and 62% of the partners thought that it was likely, highly likely or even certain that their results would be widely used in developing new systems and services. In general it seems that coordinators are slightly more optimistic about the future prospects of the project results than partners. None of the coordinators believed that it was likely that project results would be ‘superseded or replaced by new or different approaches’. As opposed to this 6% of partners thought that this was likely and even 11% thought it was highly likely or certain.

An interesting difference in the views of partner and coordinators can also be seen in their estimation about the recognition of the results by specialists in the field. Only 8% of coordinators thought that it was unlikely or only somewhat likely that specialists would recognise the results as a key breakthrough. As opposed to this 29% of partners thought that this would be unlikely or only somewhat likely.

Naturally participants of the DE sector do not expect that their project results will be incorporated in a system for the mass market. By definition the project results of the DE sector are mostly meant for the disabled and elderly. Nevertheless 10% of all DE partners and even 20% of DE coordinators thought that it was highly likely or even certain that their project results would be incorporated in a mass market product.
Table 4-11: Distribution of Project Resources: Percentage of Person Months

<table>
<thead>
<tr>
<th></th>
<th>Co-ordinator</th>
<th>Partner</th>
<th>Sector Total</th>
<th>TAP Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment of user requirements</td>
<td>10%</td>
<td>18%</td>
<td>17%</td>
<td>17%</td>
</tr>
<tr>
<td>Development of application</td>
<td>38%</td>
<td>31%</td>
<td>34%</td>
<td>30%</td>
</tr>
<tr>
<td>Preparing demonstration plan</td>
<td>3%</td>
<td>8%</td>
<td>9%</td>
<td>8%</td>
</tr>
<tr>
<td>Validation of demonstrator</td>
<td>5%</td>
<td>16%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Dissemination of project results</td>
<td>7%</td>
<td>9%</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>Preparing business plan</td>
<td>5%</td>
<td>3%</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Preparing survey of market requirements</td>
<td>3%</td>
<td>4%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Project management</td>
<td>27%</td>
<td>6%</td>
<td>9%</td>
<td>13%</td>
</tr>
<tr>
<td>Other</td>
<td>1%</td>
<td>6%</td>
<td>5%</td>
<td>7%</td>
</tr>
<tr>
<td>n</td>
<td>21</td>
<td>98</td>
<td>119</td>
<td>1007</td>
</tr>
</tbody>
</table>

More information can be drawn from the distribution of project resources on several activities (see Table 4-11). The greatest share of time has been dedicated to the development of an application (34%). Given the strong user orientation that could be derived from other questions it is surprising that not more time has been spent to assess user requirements (17%). Another important activity is the validation of demonstrators: an average of 15% of the project resources have been spent or assigned for that task. Overall there are no significant differences in the distribution of project resources when comparing the DE sector with the TAP.

4.2.2 Interactive learning between producer and user organisations

The response of users was not very strong (only 12 questionnaires were received from users) and thus only limited conclusions can be drawn about users. However, when asked about their opinion on their participation in the TAP, 9 out of 10 respondents indicated that their participation has led or is likely to lead to an influence on RTD&D activities. By the same token 4 out of 11 user respondents assess the feedback provided by the coordinator as very satisfactory. 3 thought it was satisfactory and 4 indicated that the feedback was adequate. No user was unsatisfied with the feedback provided by the coordinators.
4.2.3 Exchange of knowledge

This section is focussing on the self-assessment of the respondents to issues of cooperation in the knowledge generation process. Participants were asked about the main sources of knowledge, tools or components used in their project. Figure 4-5 provides a picture of the self-assessment given by partners and coordinators.

Coordinator and partner responses about the sources of knowledge indicate that there is substantial knowledge exchange occurring within the DE sector projects. The research group within their own organisation is viewed as the most important source of knowledge for the project with 92% of coordinators and 79% of partners indicating this as a source. A partner within the project is cited as the next most important source by 88% of coordinators and 59% of partners. As opposed to this 32% of coordinators and 20% of partners indicate that they acquired or purchased knowledge from non-TAP participating organisations. Thus DE sector respondents rely slightly more often on knowledge from non-TAP participants than respondents across all sectors: 25% of TAP coordinators and 15% of TAP partners indicated that they acquired or purchased knowledge from outside the TAP. Even though the own organisation and the own project consortium are seen to be the most important sources of knowledge, DE sector participants seem to be a less closed group than the average across the other sectors.

The exchange of knowledge in the field of telematics is also likely to benefit from international cooperation. Therefore TAP participants were asked if they regularly collaborate with partners abroad and at home in projects not funded by the EU.

As can be seen in Figure 4-6 the TAP participants from the DE sector are quite well engaged in international cooperative activities. However, the highest level of activity is reported by the participants in their own countries (84% of coordinators and 78% of partners). Cooperation with partners from other member countries is reported by 56% of DE project participants, slightly smaller than the 64% reported by all TAP participants. Regular cooperation with partners outside the EU is reported by 35% of DE participants and 37% of
all TAP participants. By the same token in the DE sector 17% indicated that they do not cooperate regularly with partners in projects that are not EC funded. Across all sectors only 14% were not involved in regular cooperation. Thus for DE partners there seems to be more scope for collaboration in general.

![Figure 4-6: Regular Cooperation in Non EC-funded Projects](image)

### 4.2.4 Conclusions

- **High degree of innovation:** According to the coordinators DE sector projects more often intended to create telematics applications that are entirely new rather than just enhancing existing applications.

- **Strong market orientation:** In the Disabled and Elderly sector a relatively high share of coordinators intended to commercialise a system or service after the end of the project.

- **Key breakthroughs in ‘niche’ market:** Most DE project participants perceive their results as key breakthroughs, which will widely be used in developing new systems and services. Naturally they aim for a ‘niche’ market.

### 4.3 Widespread Socio-economic and User Benefits

#### 4.3.1 User integration and benefits

The involvement of users as well as the consideration of user requirements are issues of particular importance for the Disabled and Elderly sector. It is clear that Assistive Technology can only be of value if the people that are meant to benefit from it, namely disabled and older persons, have been involved in the development process. The projects funded in the Disabled and Elderly sector of the TAP are very well aware of the paramount importance of users, user involvement and user requirements analyses especially in the field
Disabled and elderly users of DE sector project outputs are not only benefiting directly or indirectly from their participation in the projects, they are also taken care of by DE sector projects without actually participating. Namely, a number of projects in the sub-sector ‘Market issues and quality of life’ are directly aiming to enhance the users’ awareness of available solutions through dissemination and information activities. As an example of a project dealing with such issues the project EUSTAT is described in the box below. Dissemination and information activities are urgently needed in the field not only to enhance the users’ awareness, but also to strengthen the market and to support the producers of Assistive Technology. This is of particular importance as the market for Assistive Technology is extremely fragmented.

<table>
<thead>
<tr>
<th>DE 3102 EUSTAT: The aim of this project is to develop a training model, a set of curricula and basic educational material for the education of the end-users of Assistive Technology. EUSTAT aims to empower people with disabilities to make choices regarding Assistive Technology (AT); it also aims to improve the skills of peer counsellors and professionals and to obtain an attitude of user empowerment concerning Assistive Technology. To such ends, an inventory of examples of good practice will be carried out at an international level, and specific educational material will be prepared in both paper and electronic formats. Part of the project will be devoted to the development of a set of guidelines which will be validated (together with the educational material) at 4 different user centres at different locations. Its main achievements will consist of</th>
</tr>
</thead>
<tbody>
<tr>
<td>- an analysis of critical factors related to transferring knowledge on Assistive Technology directly to end users;</td>
</tr>
<tr>
<td>- an inventory of existing experiences (in the EU and in North America) with examples of good practice of user empowerment through education to AT;</td>
</tr>
<tr>
<td>- a set of guidelines for training curricula able to assist all over Europe:</td>
</tr>
<tr>
<td>- the design of courses for end-users</td>
</tr>
<tr>
<td>- the integration of Assistive Technology inside more comprehensive educational initiatives;</td>
</tr>
<tr>
<td>- a basic educational material package, consistent with the above guidelines, for user education to AT.</td>
</tr>
</tbody>
</table>

Source: TAP website (http://www2.echo.lu/telematics/disabl/eustat.html)

4.3.2 Socio-economic benefits

As depicted in Section 1 Assistive Technology has a very high potential of empowering disabled and elderly people, restoring the loss of functions and thus helping to better integrate them into society. Next to the social benefit for the users of AT there is a definite economic benefit as the empowerment of users and their integration into societal life decreases the need for assistance by carers and thus helps to relieve the burden on the European health and social care spending. However, as has been described, AT is not likely to be provided by the industry without further incentives, as the expected market prospects are not encouraging for large investments. Therefore, the TAP projects in this area initiated the development of applications that would most likely not have been provided to the users without the availability of public funding.

Thus TAP projects in the Disabled and Elderly sector directly create socio-economic benefits, as their results help to improve the quality of life of disadvantaged groups in society. Furthermore there is likely to be a long term positive impact of EU supported
RTD&D in the field of Telematics for Disabled and Elderly, namely on the social and health care budgets in Europe.

Both, coordinators and partners were asked who the expected users of their results would be one year after the projects finalisation. Their answers are shown in Table 4-12.

<table>
<thead>
<tr>
<th>Expected users</th>
<th>Unlikely</th>
<th>Somewhat or very likely</th>
<th>Highly likely or certain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coordinator</td>
<td>Partner</td>
<td>Coordinator</td>
</tr>
<tr>
<td>larger enterprises</td>
<td>40</td>
<td>37</td>
<td>50</td>
</tr>
<tr>
<td>government, administrations</td>
<td>45</td>
<td>31</td>
<td>35</td>
</tr>
<tr>
<td>SME’s</td>
<td>9</td>
<td>21</td>
<td>52</td>
</tr>
<tr>
<td>individual citizens</td>
<td>4</td>
<td>18</td>
<td>38</td>
</tr>
<tr>
<td>schools, hospitals or similar organisations</td>
<td>5</td>
<td>2</td>
<td>29</td>
</tr>
</tbody>
</table>

Table 4-12: Expected Users of Project Results within One Year of Project Completion

As expected, the DE project participants mostly believe that the users of their results will be individual citizens and schools, hospitals or similar organisations. Naturally the end users of DE sector results are supposed to be individual citizens, namely the disabled and elderly. In terms of commercialisation of project results the DE sector participants believe that SME’s were more likely than large enterprises to take up their results. Again, this reflects the fact that Assistive Technology products are products for a ‘niche’ market rather than for a mass market.

When asked about the social objectives that have been incorporated in the projects naturally 96% of DE coordinators answered that they wanted to increase the access of disabled people to telematics services or make the access more affordable. By the same token 56% of DE
coordinators intended to provide the same service to the elderly. Thus the projects seem to be more focussed on the disabled than on the elderly. However, as depicted in Section 2, there is a strong correlation between old age and disablement (e.g. loss of functions such as eye-sight or hearing). Applications aiming to improve the quality of life of the disabled will in most cases directly or indirectly also aim to improve the quality of life of the elderly (see Figure 4-7).

When asked whether socio-economic assumptions associated with their project had been identified prior to the project start, 33% of DE participants (n=123) answered that they had been. Across all sectors 22% of TAP participants (n=1080) indicated that they had identified such issues. Even though these figures are not too impressive it is clear that socio-economic issues even if they are not directly affected by the projects play an important role in the Disabled and Elderly sector.

4.3.3 Conclusion

In conclusion it can be said that the projects in the Disabled and Elderly sector are producing direct user benefits. The immediate goal of DE projects is to empower the disabled and elderly and to increase their quality of life. The users of DE sector results will benefit from new and improved products and services that help to improve their health and safety and enhance their capabilities to participate in the daily life of society. Thus the Disabled and Elderly sector is directly contributing to the broader European social policy goal of empowering disadvantaged groups.

From an economic point of view the results of the DE sector are mostly suitable to be commercialised by SMEs rather than by large enterprises. This is due to the fact that most of the results are designed for ‘niche’ markets. Thus the DE sector results have a potential to strengthen the position of SME’s in the economy. It is well known that the potential for job creation is higher in SME’s than in large enterprises. However, looking at the results of the preceding sections it also has to be kept in mind that the markets for Assistive Technologies are highly fragmented and therefore not without problems for companies willing to enter with their products.

5. Conclusions

5.1 Key Messages

The following key messages can be extracted from the analysis of the DE sector of the TAP:

- Strong user orientation
- High degree of innovation
- Key breakthroughs for a ‘niche’ market
- Strong market orientation
- Problems with commercialisation

Strong user orientation

The survey of the Disabled and Elderly sector of the TAP has shown that the projects in the sector are committed to a strong consideration of user requirements and user involvement. While a technology push rather than a user and market oriented approach had been observed
by a review panel for the TIDE pilot phase projects\textsuperscript{28} the Disabled and Elderly sector of the TAP seems to put more emphasis on user and market issues. All coordinators surveyed reported that in their projects users are directly involved as partners or validation sites (see Section 4.1). By the same token the coordinators from the Disabled and Elderly sector believe that their projects provide best practice lessons for the consideration of users (see Section 4.1).

The expected users of the results from the Disabled and Elderly sector – mostly individual citizens, schools, hospitals and similar organisation – will benefit from better quality in goods and services that have a high potential of improving health, safety and quality of life. On the other hand, DE participants believe that SME’s are more likely to take up the results of the DE sector projects and bring new systems and services to the market.

Overall the projects from the DE sector create direct user benefits as, through the involvement of the user perspective, they managed to produce results that have a high potential of improving the quality of life and the societal integration of Disabled and Elderly people.

\textit{High degree of innovation}

The survey showed that in the DE sector more projects intended to create an entirely new system or service than to create an enhancement of existing applications (see Section 4.2). Therefore a lot of projects from the Disabled and Elderly sector provide applications which have not existed before and which are urgently needed by the users. Thus the sectors’ outputs are important contributions to the improvement of the situation of Disabled and Elderly people. However this high degree of innovation also entails certain risks with regard to the commercialisation of the results as there are no marketing experiences with systems and services that are entirely new.

\textit{Key breakthroughs in a ‘niche’ market}

By the same token the participants from the DE sector believe that they have produced key breakthroughs that will be widely used in the development of new systems and services. Naturally these systems and services do not aim for a mass market, as the Disabled and Elderly are a growing but, in terms of their impairments and needs, very fragmented group in society.

\textit{Strong market orientation}

A large part of the projects from the DE sector intended to commercialise a system or service after the end of the project (see Sections 4.1 and 4.2). By the same token the majority of projects that responded in the survey intended to continue the project team up to the market delivery of the results (see Section 2). For the most TAP participants from the DE sector the work done in the projects is to a very high degree central to their business and technology strategies. A strong market orientation of the participating companies is reflected within this centrality (see Section 4.1).

\textit{Problems with commercialisation}

Despite the clear intention of the projects to bring their results to the market there are considerable problems with the commercialisation. Costs and problems of marketing the

\textsuperscript{28} EC, Five Year Assessment of the Specific Programme: Telematics Applications, Annexes to the Report EUR 17603
project results are seen as the most important factors influencing the future commercialisation in the DE sector (see Section 4.1). The market for Assistive Technology is very fragmented and the market for a particular application is therefore very often restricted in size. Thus the risks involved with investments in the exploitation of results is often regarded as being too high given the prospective turnover. Furthermore, due to the fragmented market structure it is hard for the producers of AT to find marketing channels to the potential customers.

A possible solution to this ‘niche markets problem’ is the ‘Design for All’ approach that has been taken up by the sector. The aim of the ‘Design for All’ theme is to design products and services that are accessible to all citizens including the disabled and elderly. To ensure the technical and economic feasibility of this concept the users have to be involved to the greatest extent possible. Nevertheless ICTs offer great opportunities in assistance for the disabled and elderly. It is true, a greater emphasis has to be put on the ‘Design for All’ approach in order to make society more accessible for the Disabled and Elderly, however there will always be a need for Assistive Technologies, designed exclusively for people with special needs.

5.2 Recommendations

The analysis has shown that the key problem for the projects in the Disabled and Elderly sector is the commercialisation of the resulting products and services. The industrial interest in investing into fragmented markets will most likely wane after the funding stops with the end of the projects. The prospective turnover with many AT products is too small in order to make necessary investments seem worthwhile. The risks involved with investments in AT are higher than in other areas. Therefore it is likely that the market will not provide many of the applications that resulted from the DE sector projects. However, their importance and the potential benefits for society, especially considering the demographic development that has to be expected for the future, are obvious. Apart from the benefits for the Disabled and Elderly results from the DE sector have the potential for improving the situation of the health and social care systems in Europe. As AT helps to restore functions, enhances independence and contributes to the reintegration of the Disabled and Elderly into the society, less resources have to be spent on caring and assistance.

Considering the great social importance of results from the DE sector and facing the likely failure of the market to provide these systems and services, there is a need for public authorities to create a market base in order to provide the necessary security for the producers of AT. In particular solutions have to be found that ensure that the demand for AT products is sufficiently high to make investments into the commercialisation of these products attractive for private companies. Without the creation of public demand for these applications there is a risk that the investments made in the funding of RTD&D in this area have been in vain.

For the projects in the DE sector on the other hand it is of paramount importance to demonstrate that through the use of their project results the overall care costs will be reduced in the future. This is the only way to gain acceptance for more spending on Assistive Technologies within the health insurance systems and health and social care authorities of the national states.

With regard to the 5th Framework Programme the following specific recommendations can be made after the analysis of the ASSENT survey in the Disabled and Elderly Sector of the TAP.
Market related issues:

The analysis has shown that marketing problems are a hindrance to the exploitation of results from DE sector projects. This is due to the market fragmentation for AT products. Producers of AT will very likely face problems to reach the target groups for specific AT applications with their marketing activities.

**Recommendation #1:** In the light of significant marketing problems with many Assistive Technology products, it is recommended that supporting projects dealing with market development and technology transfer issues are taken into account to a greater extent within the IST programme. Projects developing structures and methods to analyse and collect data at the subsector level had originally been foreseen for the DE sector in the TAP workprogramme.

An important task in order to ensure the development of a viable market for specific AT products is the creation of awareness among users, producers and decision-makers. This task has been addressed in the Disabled and Elderly sector of the TAP in various projects such as IMPACT, DAILY or EUSTAT. Especially in view of the high degree of innovation in the DE sector and regarding the marketing problems reported by DE sector participants the issue of awareness creation is going to increase rather than decrease in importance in the future.

**Recommendation #2:** Given the high degree of innovation in the Disabled and Elderly sector and in view of the market structure, it is recommended that the IST Programme continue to give high priority to support measures aiming to raise the level of knowledge and awareness of Assistive Technology within Europe.

Innovative products might not only create awareness problems on the user side but also present a potential risk for the producers, as market experiences with products that are completely new usually do not exist. By the same token systems and services that are completely new usually require further enhancements and adaptations until they are fit for the market and commercially viable. Especially in the Disabled and Elderly sector the end of a project might be a critical state where the availability of further funding is one of the factors that can be decisive for the continuation of a development up to the market delivery.

**Recommendation #3:** Given the high degree of innovation in the Disabled and Elderly sector of the TAP, it is recommended that the IST gives high priority to projects aiming at the enhancement of these innovative systems and services in order to ensure that Assistive Technology of high value can be provided to the end users.

User involvement:

All coordinators participating in the DE sector survey reported that they had involved users in their projects either as partners or at validation sites. The coordinators in this sector feel that their projects provide best practice lessons on the involvement of users. In fact some of the projects had the explicit objective to develop an approach to user integration. By the same token a number of coordinators indicated that their projects had a formal user advisory group or an expert user panel.

**Recommendation #4:** Despite the specific nature of the sector and its special need for user involvement, some of the experiences in the Disabled and Elderly sector are of high value for other sectors as user involvement is important in all areas of Telematics Applications. It is therefore recommended that future programmes take into account ‘best practice’ lessons on user involvement that can be learned from the projects in the Disabled and Elderly sector.
Training:

While user involvement had high priority in the Disabled and Elderly sector only a few coordinators reported that their projects provided ‘best practice’ lessons for training/retraining. This might be due to the high degree of innovation in the sector. When dealing with the development of systems and services that are completely new the training of the end users is not an issue yet in many cases. However, training users of Telematics Applications is an important task in order to ensure the acceptance of technology and thus its commercial viability. This is of particular importance in the Disabled and Elderly sector where it seems to be especially important to create awareness of the availability of Assistive Technology products among end users.

**Recommendation #5:** In order to enhance the acceptance of innovative Telematics Applications for the Disabled and Elderly, it is recommended that the IST Programme gives high priority to projects aiming at the training of end-users on the application of Assistive Technologies.
ANNEX 1: Results of the Second ASSENT Survey

Number of projects surveyed

In the Disabled and Elderly Sector 54 projects have initially been surveyed in the second information collection campaign. No projects had been surveyed during the first information collection campaign for this sector. 335 questionnaires and questionnaire packs have been sent out altogether. 281 questionnaires have directly been sent to project partners. Questionnaire packs have been sent to 11 out of the 54 project coordinators. Including the 82 project partners of these 11 coordinators the survey size adds up to 417 questionnaires. However 2 projects (15 questionnaires) have to be subtracted from the survey: In one case the contract had not been signed yet and in another case a project was subject to a red flag procedure. (These two projects are among the 11 projects, which had received questionnaire packs). 4 questionnaires were finally undeliverable (all activities undertaken by ASSENT partners to find the correct address of the partner were futile). In order to reach the user partners a user questionnaire has been added to all partner questionnaires and the partners were asked to fill in and return the questionnaire that met their status in the project. Thus the final survey entails 52 projects and 398 questionnaires.

Response rate for the sector

The final number of questionnaires received for the Disabled and Elderly sector was 139. 124 questionnaires were sent by mail and 15 were entered on the ASSENT web-site. Thus the overall response rate for the Disabled and Elderly sector is 35%. If one only considers the 9 surveyed projects, which had received questionnaire packs, the response rate is 9%. If one considers only the projects where partners had received questionnaires directly the response rate is 41%. This clearly shows that sending questionnaires to partners directly led to a considerably higher response rate.

Despite numerous reminder and follow-up activities undertaken by the ASSENT partners and despite the fact that the deadline for the return of the questionnaires had been prolonged no response at all was received from 9 projects. Among these 9 cases are 6 projects where no partner addresses were available and a questionnaire pack had been sent to the coordinator.

The following picture appears if one looks at the relative strength of coordinator and partner responses: In the DE sector 48% of the surveyed coordinators and 33% of the partners (including user partners) completed the questionnaire. The 139 respondents of the Disabled and Elderly sector included 25 coordinators, 102 project partners and 12 user partners.

---

29 See Annex C of the sector report for a list of projects with Acronyms and descriptions.
30 The ASSENT partners had contacted the project coordinators and asked them for the addresses of their project partners. As opposed to the first information collection campaign where exclusively questionnaire packs were sent out, in the second information collection campaign the goal was to send a questionnaire to each partner. In order to achieve this goal the ASSENT partners had to contact the project coordinators and ask them for the contact details of their partners. In cases where this was not possible other sources were used (e.g. TAP and CONCORD websites) to retrieve the required information. However for 11 projects in the Disabled and Elderly sector no contact details were available for project partners and the respective coordinators failed to provide them or it was not possible to contact the coordinator. In these cases a questionnaire pack was sent to the project coordinator and the ASSENT partners asked the coordinators to disseminate the questionnaires to their partners and user partners.
31 The method of calculating the response rate that has been adopted in the DE, HC, RE and TR sector reports differs marginally from that adopted elsewhere in D09.02.
ANNEX 2: Sector Participation and Goals

The analysis in this Annex looks at the following characteristics of the DE respondents based upon the questionnaire returns:

- their type of organisation
- the market segments in which the organisation participates
- the financial dimensions of their organisation
- their number of employees
- the reported progress on the project
- the principal goals of the sector participants
- how respondents got involved in the TAP

1. Respondents’ Type of Organisation

Respondents were asked about their ‘type’ of organisation from a list devised by ASSENT. Figure B-1 compares the DE sector (coordinator, partner, user) with the whole TAP.

With this classification no single type of organisation accounts for more than 40% of the sample. However the sum of the different kinds of research and education institutions (universities and other institutes of higher education, public and private research organisations) accounts for 39% of the sample. The business enterprises account for 27% of the sample. The share of non-government or non-profit organisations is 21% and the healthcare institutions account for 11% of the DE sample.
2. Market Segments of Respondents

Coordinator, partners and user partners were asked to categorise up to two of the market sectors best describing the principal activities of their organisations.

![Figure B-2: Market Segments Reported by DE Participants](image)

Figure B-2 shows the market segments reported most frequently by DE sector participants. Naturally most frequently reported was ‘services to disabled and elderly’ with 30% of the sector sample. ‘Health and medical services’ were reported by 27%, ‘education and training’ by 24% and ‘non-profit organisation’ by 18 of the sample. Other market segments reported were for example ‘speech processing systems’, ‘media and publishing’, ‘technology management’, ‘contract research’ or ‘software vendor’.

3. Financial Dimension of Respondents/Number of Employees

<table>
<thead>
<tr>
<th>DE Financial Dimension</th>
<th>Co-ordinator</th>
<th>Partner</th>
<th>Sector Total</th>
<th>TAP Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1001 kEcu</td>
<td>33%</td>
<td>31%</td>
<td>31%</td>
<td>23%</td>
</tr>
<tr>
<td>1001 kEcu - 10000 kEcu</td>
<td>40%</td>
<td>27%</td>
<td>29%</td>
<td>28%</td>
</tr>
<tr>
<td>10001 kEcu - 100000 kEcu</td>
<td>20%</td>
<td>27%</td>
<td>25%</td>
<td>26%</td>
</tr>
<tr>
<td>&gt;100000 kEcu</td>
<td>7%</td>
<td>16%</td>
<td>15%</td>
<td>23%</td>
</tr>
<tr>
<td>n=</td>
<td>15</td>
<td>68</td>
<td>83</td>
<td>685</td>
</tr>
</tbody>
</table>

Table B-1: DE Sector Organisation Size by Financial Dimension

<table>
<thead>
<tr>
<th>DE Employees</th>
<th>Co-ordinator</th>
<th>Partner</th>
<th>Sector Total</th>
<th>TAP Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;21</td>
<td>29%</td>
<td>35%</td>
<td>34%</td>
<td>21%</td>
</tr>
<tr>
<td>21-100</td>
<td>33%</td>
<td>17%</td>
<td>20%</td>
<td>23%</td>
</tr>
<tr>
<td>101-500</td>
<td>5%</td>
<td>15%</td>
<td>13%</td>
<td>18%</td>
</tr>
<tr>
<td>501-2500</td>
<td>19%</td>
<td>18%</td>
<td>18%</td>
<td>20%</td>
</tr>
<tr>
<td>&gt;2500</td>
<td>14%</td>
<td>16%</td>
<td>16%</td>
<td>19%</td>
</tr>
<tr>
<td>n=</td>
<td>21</td>
<td>89</td>
<td>110</td>
<td>1017</td>
</tr>
</tbody>
</table>

Table B-2: DE sector Organisation Size by Number of Employees
Table B-1 shows that organisations participating in the DE sector are somewhat smaller in terms of their financial dimension (annual turnover/annual budget) than the average across all sectors. While in the Disabled and Elderly sector 31% of participants indicated a financial dimension below 1001 KECU across all sectors only 23% did so. The same picture appears when looking at the number of employees (Table B-2). In the DE sector 34% of participating organisations have 20 employees or less while across the TAP only 21% report a size that small. This shows that very small organisations are slightly over-represented in the Disabled and Elderly sector.

4. Reported Progress on the Project

The project participants were also asked about the share of person month expended by their organisations for the project. The results are summarised in Table B-3.

<table>
<thead>
<tr>
<th>Person months used so far</th>
<th>DE Coordinators n=25</th>
<th>DE Partners n=96</th>
<th>TAP Coordinators n=184</th>
<th>TAP Partners n=888</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤25%</td>
<td>20%</td>
<td>30%</td>
<td>19%</td>
<td>20%</td>
</tr>
<tr>
<td>26-50%</td>
<td>36%</td>
<td>25%</td>
<td>21%</td>
<td>18%</td>
</tr>
<tr>
<td>51-75%</td>
<td>24%</td>
<td>28%</td>
<td>10%</td>
<td>14%</td>
</tr>
<tr>
<td>76-100%</td>
<td>20%</td>
<td>17%</td>
<td>49%</td>
<td>48%</td>
</tr>
</tbody>
</table>

Table B-3: Total Person Month Available for Project Expended so far

A comparison across sectors shows that DE-projects are at an earlier stage of their project lifetime than the average of all sectors. This is due to the fact that most DE-projects only started in the beginning of 1997 or even later.

The DE-projects examined in the second survey are relatively small in terms of the size of the team. The majority of the projects are engaging two to five employees at a particular organisation.

<table>
<thead>
<tr>
<th>Employees working on projects</th>
<th>DE Coordinators n=25</th>
<th>DE Partners n=96</th>
<th>TAP Coordinators n=184</th>
<th>TAP Partners n=888</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>4%</td>
<td>18%</td>
<td>4%</td>
<td>18%</td>
</tr>
<tr>
<td>2-5</td>
<td>80%</td>
<td>76%</td>
<td>68%</td>
<td>73%</td>
</tr>
<tr>
<td>&gt;5</td>
<td>16%</td>
<td>6%</td>
<td>27%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Table B-4: Employees Working on Projects

The table shows that compared to the rest of the TAP, fewer DE projects engage more than 5 employees. This corresponds with the findings depicted in Table B-4, which shows that compared to the overall TAP results DE organisations are more often very small organisations.

5. The Principal Goals of Sector Participants

Figure B-3 illustrates the coordinator and partner replies to a question about what their organisation aimed to achieve by participating in the TAP project.

The most frequent goals of DE-coordinators are to ‘update existing knowledge or methods’ (68%), ‘develop a strategy for international cooperation’ (64%) and ‘open new research areas’ (60%).
6. How Did Respondents Get Involved in the TAP?

Coordinators, partners and users were asked what contacts or links led to their organisations’ participation in their projects.

The results of the coordinator survey show a strong previous experience of DE coordinators with DG XIII projects (See Figure B-4). 56% of DE coordinators (n=25) report previous EC contracts inside DG XIII. By the same token 64% of DE coordinators report previous business contacts or links.

The partners seem to be less familiar with DG XIII projects. Only 30% of all DE partners (n=102) report previous involvement in DG XIII contracts. The majority of partners (45%) report that contacts to another partner led to involvement with the TAP.
By the same token 67% of the users (n=12) report that they had been introduced or approached by another partner.

7. Conclusions

Compared to the TAP average, participants from the DE sector more often came from ‘non-governmental or non-profit organisations’. In terms of employees and financial dimension they are somewhat smaller than the average across all sectors. Especially DE coordinators seem to be quite experienced with EC projects inside DG XIII. Partners and user partners were in most cases introduced by another partner to the projects and only in very few cases approached the lead partner themselves.
Annex 3: List of Projects Included in the Survey

<table>
<thead>
<tr>
<th>Project Code</th>
<th>Project Name</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE 3001</td>
<td>ACTION</td>
<td>Assisting Carers using Telematics Interventions To Meet Older Persons Needs</td>
</tr>
<tr>
<td>DE 3201</td>
<td>ARIADNE</td>
<td>Access, Information and Navigation Support in the Labyrinth of Large Buildings</td>
</tr>
<tr>
<td>DE 3202</td>
<td>BARRIER</td>
<td>Development of a multimedia Database Providing Information on the Accessibility in Public Buildings for People with Handicaps to their Mobility</td>
</tr>
<tr>
<td>DE 3203</td>
<td>CAPTION LIFE</td>
<td>Access and participation for hearing impaired persons</td>
</tr>
<tr>
<td>DE 3204</td>
<td>CREST</td>
<td>Clinical Rehabilitation using Electrical Stimulation via Telematics</td>
</tr>
<tr>
<td>DE 3207</td>
<td>DAILY</td>
<td>Make Daily Life Easier</td>
</tr>
<tr>
<td>DE 3002</td>
<td>EASYTEX</td>
<td>Aesthetical, adjustable, serviceable and mainstay textiles for disabled and elderly</td>
</tr>
<tr>
<td>DE 3206</td>
<td>ENABLE</td>
<td>Enabler for Access to computer-Based vocational tasks with Language and speech - Project</td>
</tr>
<tr>
<td>DE 3402</td>
<td>EUSTAT</td>
<td>Empowering Users Through Assistive Technology</td>
</tr>
<tr>
<td>DE 3207</td>
<td>FACILE</td>
<td>Support tools for housing design and management, integrated with telematics systems and services</td>
</tr>
<tr>
<td>DE 3208</td>
<td>HATS</td>
<td>Hands assessment and treatment system</td>
</tr>
<tr>
<td>DE 3003</td>
<td>HOME</td>
<td>Home applications optimum multimedia/multimodal system for environment control</td>
</tr>
<tr>
<td>DE 3209</td>
<td>HOMEBRAIN</td>
<td>Design for all</td>
</tr>
<tr>
<td>DE 3004</td>
<td>ISAEUS</td>
<td>Speech training for Deaf and Hearing-Impaired People</td>
</tr>
<tr>
<td>DE 3005</td>
<td>LISCOM</td>
<td>Listening Comfort System for Hearing-Instruments and Telephones</td>
</tr>
<tr>
<td>DE 3006</td>
<td>MORE</td>
<td>Mobile Rescue Phone</td>
</tr>
<tr>
<td>DE 3007</td>
<td>MOSAIC-HS</td>
<td>Modular System for Application Integration and Clustering in Home System</td>
</tr>
<tr>
<td>DE 3008</td>
<td>MULTIPLE</td>
<td>Multimedia education and training system</td>
</tr>
<tr>
<td>DE 3210</td>
<td>PAM-AID</td>
<td>Personal adaptive mobility aid for the frail and elderly visually impaired</td>
</tr>
<tr>
<td>DE 3211</td>
<td>PCAD</td>
<td>Portable Communication Assistant for People with Acquired Dysphasia</td>
</tr>
<tr>
<td>DE 3009</td>
<td>PRINT</td>
<td>Non-impact Printer and Plotter for Braille/Moon Characters and Tactile Graphics</td>
</tr>
<tr>
<td>DE 3010</td>
<td>RISE</td>
<td>Caring for the elderly in the Information Society Era</td>
</tr>
<tr>
<td>DE 3011</td>
<td>SAFE 21</td>
<td>Social Alarms for Europe in the 21st Century</td>
</tr>
<tr>
<td>DE 3213</td>
<td>SERVICE 2000</td>
<td>A one-stop-shop concept providing advice to elderly and disabled with problems and questions</td>
</tr>
<tr>
<td>DE 3012</td>
<td>SPACE</td>
<td>Signal Processing for Auditory Communication in noisy Environments</td>
</tr>
<tr>
<td>DE 3214</td>
<td>TASC</td>
<td>Telematics Applications Supporting Cognition</td>
</tr>
<tr>
<td>DE 3215</td>
<td>TOSAFES</td>
<td>Treatment of Obstructive Sleep Apnea With Functional Electrical Stimulation</td>
</tr>
<tr>
<td>DE 3013</td>
<td>TRANSWHEEL</td>
<td>Transportation wheelchair with high impact safety and advanced sensor comfortability for people with mobility problems</td>
</tr>
<tr>
<td>DE 3216</td>
<td>TREMOR</td>
<td>development and validation of new assistive devices for the treatment of disability caused by tremor</td>
</tr>
<tr>
<td>DE 3014</td>
<td>VISTEL</td>
<td>Visual Impaired Screen Based Telephony</td>
</tr>
<tr>
<td>Project Code</td>
<td>Project Name</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>DE 4001</td>
<td>SEDODEL</td>
<td>Secure Document Delivery for blind and partially sighted people</td>
</tr>
<tr>
<td>DE 4002</td>
<td>SENIOR ONLINE</td>
<td>Use of networks for reducing the isolation of elderly people and people with mobility impairments</td>
</tr>
<tr>
<td>DE 4003</td>
<td>SWIFT</td>
<td>User Oriented and Workflow Integrated Federation of service providers for the elderly</td>
</tr>
<tr>
<td>DE 4101</td>
<td>IMPACT</td>
<td>Increasing the IMPACT of Assistive Technology</td>
</tr>
<tr>
<td>DE 4102</td>
<td>NJORD-TIDE</td>
<td>Methods for User Sensitive Evaluations of Domotic Environments</td>
</tr>
<tr>
<td>DE 4103</td>
<td>TELEmate</td>
<td>Telematic Multidisciplinary Assistive Technology Education</td>
</tr>
<tr>
<td>DE 4104</td>
<td>VOICE</td>
<td>giving a VOICE to the deaf, by developing awareness of VOICE to text recognition capabilities (ACCOMPANYING MEASURE)</td>
</tr>
<tr>
<td>DE 4105</td>
<td>WAI</td>
<td>Web Accessibility Initiative</td>
</tr>
<tr>
<td>DE 4106</td>
<td>ASTRID</td>
<td>A Socio-Technical response to the Needs of Individuals with Dementia and their Carers</td>
</tr>
<tr>
<td>DE 4201</td>
<td>ALDICT</td>
<td>Access of Persons with Learning Disabilities to Information and Communication Technologies</td>
</tr>
<tr>
<td>DE 4202</td>
<td>DISCUS</td>
<td>Distance Information, Support and Communication for European Carers</td>
</tr>
<tr>
<td>DE 4203</td>
<td>DRAMA</td>
<td>Developments for Rehabilitation of the Arm - A</td>
</tr>
<tr>
<td>DE 4204</td>
<td>ICAN</td>
<td>Integrated Communication and control for All Needs</td>
</tr>
<tr>
<td>DE 4205</td>
<td>MANUS</td>
<td>Modular Anthropomorphic User-adaptable Hand Prosthesis with Enhanced Mobility and Force Feedback</td>
</tr>
<tr>
<td>DE 4206</td>
<td>MOBIL</td>
<td>Intelligent Mobility and Transportation Aid for Elderly People with Combined Motor and Mental Impairment</td>
</tr>
<tr>
<td>DE 4207</td>
<td>REACT</td>
<td>Real-time communication terminal</td>
</tr>
<tr>
<td>DE 4208</td>
<td>RESORT</td>
<td>Remote Service of Rehabilitation Technology</td>
</tr>
<tr>
<td>DE 4209</td>
<td>SIGNING BOOKS</td>
<td>Signing Books for the Deaf</td>
</tr>
<tr>
<td>DE 4210</td>
<td>TOMPAW</td>
<td>A Totally Modular Prosthetic Arm with high Workability</td>
</tr>
<tr>
<td>DE 4211</td>
<td>VISIOBOARD</td>
<td>Gaze control system to provide services and applications to severely handicapped citizens</td>
</tr>
<tr>
<td>DE 4302</td>
<td>NATASHA</td>
<td>Network and Tools for the Assessment of Speech/Language and Hearing Ability</td>
</tr>
<tr>
<td>DE 9231</td>
<td>FORTUNE</td>
<td>Forum of user - Organisations Training for Usability and Networking in Europe</td>
</tr>
</tbody>
</table>