



EUROPEAN COMMISSION

DIRECTORATE GENERAL XIII

Telecommunications, Information Market and Exploitation of Research

Directorate C: Telematics Applications

Sector: Telematics Applications for the Integration of Disabled and Elderly people

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Note on Correspondence between Documents -
Telematics Applications Workprogramme (15/12/94)
and the
Background to the Workplan (21/3/95)

Please note that **Tasks** in the document *Telematics Applications Workprogramme* of 15th December 1994 (Sector 8, pp 99-107) correspond to Sub-Areas in the document *Background to the Workplan* of 21st March 1995 (XIII/1364/95-EN).

Tasks in the *Background to the Workplan* of 21st March 1995 (XIII/1364/95-EN) are detailed descriptions of possible research activities within sub-areas and are not explicitly shown in the *Telematics Applications Workprogramme* of 15th December 1994.

European Commission - DG XIII
Telecommunications, Information Market
and Exploitation of Research

Telematics Applications Programme
(1994-1998)

WORK-PROGRAMME

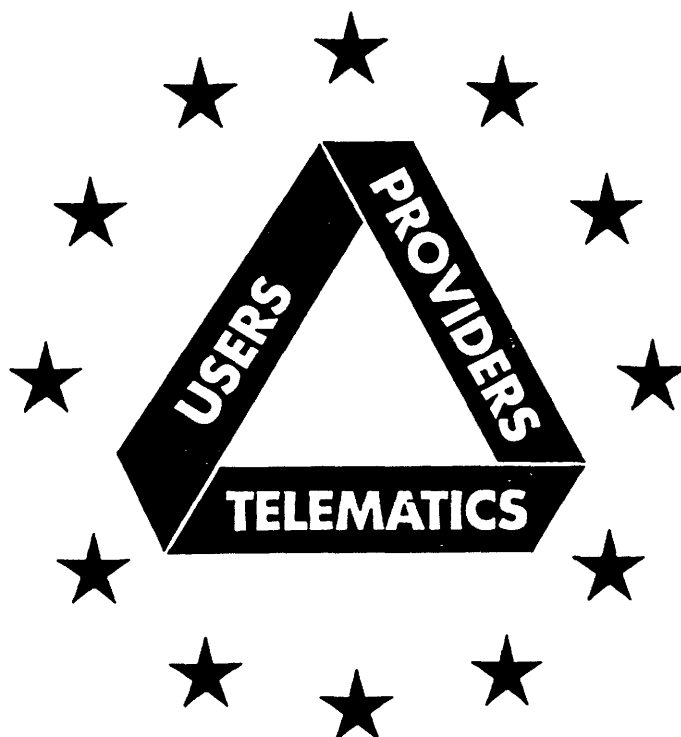
15 December 1994

Work-programme

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Disabled and Elderly People

The objective of work in this sector is to use information and communications technologies to improve the autonomy and quality of life of disabled and elderly people and to facilitate their integration into society. Two main topics will be addressed. The first, access to telematics services, aims to help the disabled and elderly (particularly those with cognitive and sensory impairments) to access information and communications technology; here work will concern the development of appropriate equipment and interfaces to help them use telematics systems and services, and the development of systems for managing work and home environments. The second topic, compensation for functional disabilities, involves developing applications with a view to restoring functional capabilities. This work will focus on systems for improving mobility, interpersonal communication and the ability to cope with the immediate environment. All work in this sector should pay particular attention to the identification of users' needs through user requirements studies, and to the validation by users of the applications developed.

Users

The first group consists of the professional service providers in the field. These professional service providers can offer advice on structuring needs assessments, on potential assistive technologies and their adaptation, on motivation and training, on follow-up, on financing, etc. The professionals include therapists, nurses, social workers, psychologists, special teachers, medical doctors, engineers, and other groups, including carers.

The second group are the end-users, the individual disabled or elderly people. The end-users comprise those having one or several different types of disabilities affecting mobility, sight, hearing, speech and communication, cognition, and causing other medical problems; and also elderly people who require some support with the activities of daily living. Most often the end-users need professional advice on solving their practical and functional problems through the use of assistive technologies.

Research tasks

Access to Technology and Services

GENERAL OBJECTIVES: Enable access to technology and services for disabled and elderly people and use 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.

1. Access to Communications and Information Technologies

OBJECTIVES: 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.

Tasks**DE 1.1 ACCESS TO TELECOMMUNICATIONS SERVICES AND IT PRODUCTS**

Develop and validate prototype interfaces and adaptations to current and emerging services, applications and equipment thereby achieving the widest practicable accessibility and usability. *PARTICULAR OBJECTIVES:* improve the usability and accessibility of current and emerging services and equipment for interpersonal telecommunications by disabled and elderly people; improve the accessibility and usability of current and emerging services and equipment for access to information and other resources; and to improve the accessibility and usability of computer-supported group activities and consider new uses of this technology that will be of particular value to disabled and elderly people.

DE 1.2 INTERFACES AND TOOLS

Develop and validate systematic approaches and tools and demonstrate prototype user interfaces that enable designers to also cater for the needs of disabled and elderly people. *PARTICULAR OBJECTIVES:* develop systematic approaches and demonstrate prototype user interfaces facilitating multimodal user interaction by different user categories; develop systematic approaches and demonstrate prototype intelligent user interfaces which are adaptive to individual user requirements; develop systematic approaches and demonstrate prototype dialogue control structures that facilitate the definition of flexible interaction techniques in order to meet the needs of different user categories; and develop and demonstrate methods and tools that enable the elicitation and description of user requirements and the design, prototyping and evaluation of user interfaces accessible by different user categories.

DE 1.3 NEW ICT-BASED SERVICES AND PRODUCTS

Develop, validate and pilot new specific services, applications and equipment to address the telecommunications and information-handling needs of elderly and disabled users. *PARTICULAR OBJECTIVES:* develop innovative input/output devices and techniques in the application of information and communication technology for disabled and elderly people; develop and demonstrate new relay and mediation services for interpersonal telecommunications and access to information and other services; and develop and demonstrate new special applications and services for the distribution of information to elderly and disabled people.

2. Integrated Systems Supporting the Activities of Independent Living, Education, Work, Leisure, Mobility and Training

OBJECTIVES: Develop and demonstrate systems that integrate different devices and systems that support daily living and promote wider involvement of users in society.

Tasks**DE 2.1 INTEGRATED SYSTEMS FOR DAILY LIVING**

Develop and validate technically and functionally integrated systems for the home with common operational procedures and presentations that are adaptable to the needs of individual users and enhance or enable daily living. *PARTICULAR OBJECTIVES:* develop and validate integrated systems and services to support the activities of daily living which combine information technology, home systems and telecommunications; integrate different teleservices to support the activities of daily living; develop appropriate human/machine control interfaces that take into account issues of cognitive overload and consider the user's abilities and changing needs; integrate devices, including sensors and actuators, within systems for daily living; develop systems that help elderly and disabled people to maintain their health and to obtain advice for self treatment; and develop and validate tools that support the training of elderly and disabled people in daily living skills.

DE 2.2 INTEGRATED SYSTEMS FOR PROMOTING INVOLVEMENT IN SOCIETY

Bring together latent human resources and state-of-the-art technologies to develop new, or adapt existing, integrated systems so that the integration of disabled and elderly people in society will become a reality. *PARTICULAR OBJECTIVES:* develop systems that enable people to move freely and safely around the European Union and elsewhere; develop services that allow communication with people and services outside their home, including vocational, educational, leisure and cultural activities; identify the specific requirements for elderly and disabled people for the emerging systems, services and underlying infrastructures; develop and validate tools which support the training of elderly and disabled people in order to increase their involvement in society; and develop and validate systems that provide accessible and adaptable environments encompassing vocational, educational, leisure and cultural activities.

DE 2.3 SPECIFICATIONS, STANDARDS AND PRINCIPLES FOR SYSTEMS INTEGRATION

Develop and validate a set of design principles that will form the foundation for the integration of rehabilitation systems. These principles will cover issues such as user needs, interface design and standardisation for system integration. *PARTICULAR OBJECTIVES:* form common interest groups to develop and validate common specifications, standards and principles for systems integration taking

into consideration user requirements and all relevant technologies; adapt modelling and simulation tools which allow the rapid prototyping and emulation of integrated systems and environments according to user requirements and their demonstration to prospective users; explore the issues of isolation and human contact that underline the provision of remote services in order to better involve people in society; and explore the incompatibilities between systems in the EU member states and develop bridges and gateways between such systems at the device and infrastructure levels.

3. Information and Communication Systems for Enhancing the Efficiency and Effectiveness of Service Organisations Supporting Independent Living

OBJECTIVES: Improve the quality of services supporting autonomous living by using information and communications technologies to improve their efficiency and effectiveness.

Tasks

DE 3.1 SOCIAL INFORMATION NETWORKS

Introduce logical or physical connections between people and organisations within the same service activity in order to enhance active social coordination and communication through the use of information and communication technologies by and for disabled and elderly people. *PARTICULAR OBJECTIVES:* increase the benefits of existing databases and knowledge-based systems by facilitating and improving access to them; integrate database technology and knowledge-based systems into service delivery to provide gains in the quality of service provided to the client; provide information and communications technology applications for the development of "virtual teams" on public networks that provide services to support autonomous living, and enable people with mobility restrictions to enjoy active membership of these service provision teams; develop information and communications technologies applications that provide flexibility in service delivery by enabling mobile staff to maintain contact with their core service organisation while working in the field; identify opportunities for using information and communications technologies to support the provision of intelligently linked services, so allowing an improvement in the processing of complex administrative operations; and identify opportunities for using information and communication technologies for supporting the management of care services.

DE 3.2 REMOTE SERVICE PROVISION

Improve the quality of services supporting autonomy and quality of life by using information and communications technologies to deliver services remotely where appropriate. *PARTICULAR OBJECTIVES:* identify new opportunities for using information and communications technologies in the management and provision of social support services and demonstrate and validate these; identify

opportunities for using information and communications technologies in the provision and management of activities of daily living support services and demonstrate and validate these; identify opportunities for using information and communications technologies in care services and demonstrate and validate these; identify opportunities for using information and communications technologies in personal security services and demonstrate and validate these; and identify and demonstrate the opportunities for using information and communications technologies in services to support client-managed care packages.

DE 3.3 VALUE-ADDED NETWORK SERVICES

Develop and validate methods and technologies that enable service providers to transport their services across different technological platforms and support organisations that provide services to disabled and elderly people. *PARTICULAR OBJECTIVES:* incorporate available network services into other modes of communication such as text telephony and fax-and-image communication; develop methods and techniques to make information and service provision transportable across multiple technological modes, including those specifically developed for elderly and disabled people; develop methods and techniques enabling the service providers to integrate interactions from people using special devices into their services, and ensure that consumer needs are recognised in the provision of new services; and identify opportunities for using information and communications technologies to improve the efficiency and effectiveness of relay and mediation services and demonstrate and validate these.

Compensation for Impaired Functions

GENERAL OBJECTIVES: Apply new technologies, including information, communication and control technologies, to the assessment of functional impairment and to providing technical aids to compensate for impairment.

4. Applications of Manipulation and Control Technology

OBJECTIVES: Enhance personal mobility and transportation, control of the immediate environment, and assistance with manipulation and carrying.

Tasks**DE 4.1 PERSONAL MOBILITY AND TRANSPORTATION**

Enhance access and safety in transportation in order to develop and validate self-help facilities for improving mobility both indoors and outdoors. *PARTICULAR OBJECTIVES:* provide improved access to the public transport infrastructure through the application of intelligent, safe control technology; provide new solutions and devices for people with restricted walking abilities to move about in public areas; provide increased mobility for wheelchair users

through the use of intelligent drives, actuators and controllers; and develop a robotic transfer aid to assist in the collection, lifting, posture adjustment, transport and transfer of a disabled person within residential buildings.

DE 4.2 CONTROLS FOR DEVICES AND FACILITIES

Develop and validate improved controls for devices and facilities used by disabled and elderly people, with an emphasis on the interoperability and compatibility of several home and work systems. *PARTICULAR OBJECTIVES:* develop an improved personal device controller and control technology with multifunctional capabilities; develop assistance and safety systems giving people on the move greater independence and control; and provide the user with self-controlled dynamic postural support.

DE 4.3 ASSISTANCE IN MANIPULATION AND CARRYING

Increase and prolong the independence of elderly and disabled people through the provision of cost-effective intelligent devices for manipulation and carrying. *PARTICULAR OBJECTIVES:* enhance the usability and affordability of existing intelligent manipulators for rehabilitation; extend the use of mobile platforms and manipulators by developing safe navigation and docking systems; and improve and extend the independence of people with low to medium dependency by developing intelligent systems to assist in a range of activities of daily living.

5. Technology Supporting Assessment, Restoration and Enhancement of Function

OBJECTIVES: Develop and improve technology for functional assessment and training, for restoring or enhancing sensory, motor and mental abilities, and for augmentative communication.

Tasks**DE 5.1 ADVANCED SOLUTIONS FOR THE ASSESSMENT OF PEOPLE WITH DISABILITIES AND THEIR SKILLS TRAINING**

Develop technology solutions supporting the assessment of the ability and the skills training of persons with motor, sensory, communication, and cognitive disability. *PARTICULAR OBJECTIVES:* simplify and consolidate approaches to the assessment and training of people with motor disability through the exploitation and adaptation of available technologies and through the development of a pan-European network; develop, demonstrate and evaluate methods, devices and systems to support the assessment, rehabilitation and training of people with communication or sensory disabilities; and to develop, demonstrate and evaluate methods and technology support for the assessment and training of people with learning and affective difficulties and disabilities arising from other cognitive impairments.

DE 5.2 ALTERNATIVE AND AUGMENTATIVE COMMUNICATION SYSTEMS

Develop and adapt technologies to provide alternative and augmentative communication strategies applicable in multicultural contexts for people with communication disabilities, such as in oral and written expression. *PARTICULAR OBJECTIVES:* provide technology solutions for interactive personal communication systems for people with communication difficulties that are portable, easy to use, applicable in real-world contexts, and that enable user control of communication; and develop technical strategies for personal information and communication management systems offering multimodal acquisition and expression of information.

DE 5.3 COMPENSATION BY SUBSTITUTION OR ENHANCEMENT OF SENSORY FUNCTION

Develop and adapt technologies for compensation for sensory disability by substitution or enhancement of sensory function, such as hearing and vision. *PARTICULAR OBJECTIVES:* develop and evaluate systems to assist visually disabled persons to receive visual information, including text, in real time; and enhance or enable access to speech information and other acoustic events.

DE 5.4 RESTORATION AND ENHANCEMENT OF MOTOR ABILITY

Develop and adapt technologies to assist in the restoration and enhancement of motor ability, including functional electrical stimulation, prostheses and orthoses. *PARTICULAR OBJECTIVES:* develop telematic systems for supporting the restoration of motor ability, including the integration of existing technology and evolving technology, along with the establishment of agreement on the interpretation and presentation of assessment and monitoring information; develop and integrate informatics tools to assist in the planning of rehabilitation of motor function; and develop tools for simulation, forecasting and the selection and adaptation of assistive devices; and develop information systems for design, fitting and maintenance of devices for the restoration of motor function.

DE 5.5 TECHNOLOGICAL SUPPORT FOR ENHANCING MENTAL ABILITIES

Develop, apply and demonstrate the use of technology for the enhancement of mental abilities. *PARTICULAR OBJECTIVES:* develop a strategy and technical solutions for combining state-of-the-art technology devices in a coherent structure that facilitates meaningful interaction with information technology by people with learning disabilities; and develop technical solutions whose availability will significantly reduce the extent to which people with cognitive disabilities must depend on direct supervisory care for the activities of daily living.

6. Support Issues Specific to Telematics for Disabled and Elderly People

This section refers to activities specific to the Telematics for Disabled and Elderly People sector that are not covered by the actions described in the chapter on Programme Support Actions (which deals with, for example, telematics watch and assessment, trans-sector consensus development and coordination, awareness, dissemination of results and promotion of telematics, international cooperation, and training). Those actions include practical measures to ensure that the applications developed will ensure, in the most cost-effective way possible, that the needs of disabled and elderly people are taken into account in all sectors of the TELEMATICS APPLICATIONS Programme.

The RTD tasks in this sector will be accompanied by a set of specific measures tailored for the assistive technology domain, supplementing those provided in the general chapter on Programme Support Actions. These measures can be associated with a specific task or may add value and impact to a group of projects in a particular subsector or across the assistive technology area as a whole. GENERAL OBJECTIVES: raise the level of knowledge and awareness across the fragmented industries and markets in the assistive technology field: develop and support new standards: get users involved in developments and validation; facilitate the interaction between sector actors, especially involving SMEs: and develop measures of the cost-effectiveness and cost-utility of assistive technology.

• Education, Information, and Awareness

OBJECTIVE: Raise the level of knowledge and awareness of assistive technology within Europe.

Tasks**DE 6.1 EDUCATION**

Promote the availability of educational materials appropriate for different European cultures to professionals and disabled and elderly people

DE 6.2 ASSISTIVE TECHNOLOGY AWARENESS

Stimulate the dissemination of awareness of research and development between the actors of the highly fragmented assistive technology subsector and to decision makers, sector actors and end users through focused workshops etc.

• Methodologies, Innovation Strategies and Future Perspectives

OBJECTIVE: Provide methods to fully involve end-users in the process of bringing innovative assistive technology to the market.

Tasks**DE 6.3 ETHICAL METHODS FOR USER INVOLVEMENT**

- Provide methods for involving end-users of assistive technology and their user organisations throughout the process of developing technical solutions, ensuring

processes to overcome the special ethical problems that can result when working with these users.

DE 6.4 METHODS FOR VALIDATION

Provide methods for the implementation and validation of assistive technology solutions.

DE 6.5 FUTURE PERSPECTIVES IN ASSISTIVE TECHNOLOGIES

Guide research and technological development in assistive technologies in the medium and long term.

• Standardisation

OBJECTIVE: Ensure that assistive technology and other products are designed to appropriate standards.

Tasks**DE 6.6 FACILITATING THE STANDARDISATION PROCESS**

Ensure that the potential standardisation aspects of all assistive technology projects and studies are handled effectively.

DE 6.7 INCLUDING ELDERLY AND DISABLED PEOPLE IN THE STANDARDISATION PROCESS

Ensure that all relevant standardisation bodies and activities take account of the requirements of disabled and elderly people.

• Market Development and Technology Transfer

OBJECTIVE: Encourage the development of the market in assistive technology products and services and the transfer of research results into products and services on the market.

Tasks**DE 6.8 ASSISTIVE TECHNOLOGY MARKET DATA AND DIFFUSION**

In addition to the market watch carried out by task SU 1.1 (see the chapter on Programme Support Actions), there is a need to develop structures and methods to analyse and collect data at the subsector levels, due to the extremely fragmented nature of the assistive technology market, and so support the emergence of a coherent internal market and sector.

DE 6.9 COST EFFECTIVENESS AND COST UTILITY ANALYSIS

Measure the impact of assistive technology on the quality of life of disabled and elderly people, and measure the "value for money" that society receives from the deployment of assistive technologies.