

# Everyday Technology for Senior Households

An interdisciplinary research group  
with funding from the  
Deutsche Forschungsgemeinschaft



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Institute for Ergonomics  
Institute for Medical Engineering  
Mechanical Engineering Department  
Center for Technology and Society

**Brandenburg Technical University Cottbus**  
Chair for Communication Engineering

**Berlin Institute for Social Research/  
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[www.sentha.udk-berlin.de](http://www.sentha.udk-berlin.de)

In the year 2000, the share of senior citizens within the overall population will climb to about 25 percent and reach roughly 35 percent in 2030. With the sharp rise in the average life expectancy over the last decades, old age has come into its own as a period in the life-span.

Our society places high value on the ability of individuals to design their lives on their own terms. To maintain one's own household is the number one wish. Especially in old age, however, physical and mental limitations can make it difficult or even impossible to live independently at home.

Household appliances specially suited to older people can help us meet our everyday needs at home for years to come. For all its significance in the future, however, there has been little work in this field. Indeed common appliances for seniors tend to encounter rejection because they cannot disown their origins in rehabilitation technology or as technical aids for the handicapped. Another problem is that product development is often keyed towards internal technical issues such as optimizing the manufacturing process rather than the needs of older technology-users.

In light of this situation, the research team *sentha* has selected an innovative approach. We focus on older people in the development of household technology and appliances in order to combine both the user and product issues. Each subproject is designed with an eye to the overall matrix, and thus differs only in its respective procedures. Not the addition of disciplinary perspectives, but rather an overarching synthesis is our goal.

Precisely which everyday household tasks and areas present difficulties for older people

will be identified and analyzed in our interdisciplinary research program with its emphasis on scholarly cooperation. This exchange provides the basis for optimizing existing appliances in household technology, as well as developing innovative products and testing prototypes. Within a 'design for all' concept, our goal is to come up with products interesting to people of all ages through their promise to contribute to greater security and comfort in our daily needs at home.

**Start** September 1, 1997

**Funded** by the Deutsche Forschungsgemeinschaft (DFG) for an initial three-year period (extension possible)

#### Spokesperson for the research team

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Sociology

#### User-perspektive, analysis of user requirements, and consequences of technology

This subproject analyzes the problems faced by older people in maintaining an independent lifestyle, and the resulting requirements that arise for new technological solutions. The following central research issues

- how to assist older people through the implementation of modern technology so that it can improve their quality of life
- how to encourage the acceptance of older people for appliances and technological systems
- how to design technological appliances so that they meet the needs and requirements of older people

will be studied using both qualitative (case studies) and quantitative (representative surveys) methods.

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Ergonomics

#### Human dexterity and physical abilities

In this subproject, the research team is compiling a range of design and assessment standards, independent of the technical products themselves, for fashioning technology appropriate to the needs of seniors at home. How can we design technology that adequately meets the needs of users, including the possible physical and mental changes they might experience in the future?

By means of semi-standardized interviews ('critical incident' method), the study will identify deficits in how the participants fulfill their everyday tasks according to both age and gender. In subsequent experiments, seniors' handling and operation of selected appliances will be examined in comparison to younger people (18 years and up).

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**Systematic design process**

The subproject will both prepare a systematic design process to assist the development of products suited for elder people and develop prototypes of concrete product ideas. Emphasis here is on the refitting of household appliances as well as on the development of new household appliances.

For that purpose, the study will draw together the needs of elder people into lists of requirements, and convert them into product features by means of Quality Function Deployment. An additional goal is the integration of guidelines for embodiment design into the existing systematic design process.

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**Design and market positioning of senior-friendly products**

The subproject develops both new senior-friendly product concepts and corresponding market positioning. Special emphasis is put on the usage of non-stigmatizing semantics and a wider cultural acceptance.

Steps include analyses of product representation (advertising materials, sales settings) as well as design analyses (functionality and aesthetics of existing products). The study envisions the creation of pilot designs, to be evaluated in user-tests.

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**Security and support functions**

The focus of this subproject is on possible ways of providing support for reduced physical functions and aspects of security and safety technology in the everyday household. In this context, selected universal assistance modules are being developed.

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**Smart home applications (communication and networks)**

This subproject is developing an internal communication network for the home with an integrated alarm system including emergency call facilities. The network will enable the centralized control of household devices and environmental factors (for example, lighting).

Our aim is the optimal adaptation of technical systems to the everyday needs of elderly persons. The reliability of the system and its operating simplicity thus pose special requirements for communication systems and networks.

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**Coordination and architecture**

The subproject (1.) coordinates the joint efforts and (2.) brings together the results of the projects from the perspective of (interior) architecture.

About (1.): The various deficit analyses and requirement lists compiled in the subprojects will be compared and discussed; in addition, regular team meetings, workshop papers, and conferences will be organized and prepared.

About (2.): Requirements for architects will be formulated that reflect the insights prompted by the development of new kinds of household technologies appropriate for senior citizens.

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