

Analysis of Older Users' Perceived Requests and Opportunities with Technologies: A Scenario-Based Assessment

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ABSTRACT

The HERMES Cognitive Care and Guidance for Active Aging project proposes an integrated approach to cognitive assistance, promoting the autonomy of elderly users through pervasive technology. This work aims to describe elderly people's opinions when they are presented scenarios developed in this project. Two focus groups were organized in Austria and Spain with a view to collecting their impressions about the way in which the technological device can cover their needs; complementarily, a second session was conducted including a quantitative questionnaire. Although some participants were reluctant to use the technology, they welcomed some functionalities of the HERMES system and they considered that using them can help them to become familiar with them. Usefulness, usability, and use of real-life information for functionalities such as cognitive games are considered to be key areas of the project. This evaluation has provided the developers of the system with meaningful information to improve it and it guarantees that the system addresses elderly people's needs.

Keywords: Cognitive Games, Elderly People, Focus Groups, Scenario Assessment, User's Needs

INTRODUCTION

The increase and expansion of Communication Technologies in recent years have led to the

development of a series of new opportunities for leisure and social activities for older people. There are a number of studies attempting to find these applications and the relevance of these opportunities in the everyday life of elderly people (for a review, see Burdick & Kwon, 2004).

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Technology can be used directly by elderly people to enhance mental well-being and expand social engagement. However, older people are often reluctant to accept any technology that aims to reduce their autonomy or minimize their cognitive or functional efforts because it would mean dependency (Buiza, Gonzalez, Etxaniz, Urdaneta, Yanguas, et al., 2008). It has been shown that the assessment of needs in elderly people can improve the functionality of technology (Walters, Iliffe, See Tai, & Orrell, 2000). In this respect, analysis and understanding of the older users' feelings when interacting with technology devices in different scenarios is a key requirement that adds value to assistive technology which could have a substantial impact on the users' daily life.

The HERMES (*Cognitive Care and Guidance for Active Aging*) project is co-funded by the European Commission within the 7th Framework Programme (<http://www.fp7-hermes.eu/>). Its objective is to reduce age-related cognitive decline and facilitate episodic memory, advanced activities reminding and cognitive training. It provides assistance but also promotes the autonomy of users in their daily lives, using pervasive non-obtrusive technology at home and outside the home. Aging is often accompanied by different types of age-related memory changes, especially episodic memory declines (Craik, 2000). This decline implies difficulties with the memory of autobiographical events that can be explicitly stated, such as times or places. Age-related deficits are also present in attention processes, partly because of the increased difficulty of older adults to filter out irrelevant information, to establish clear goals and to inhibit irrelevant information (Mayhorn, Rogers, & Fisk, 2004), and in executive capabilities related to abstraction capabilities, reasoning about unfamiliar problems and self-monitoring (von Hippel, 2007). To sum up, these changes result in a loss of detail of memories, a reduced ability to plan one's own life and a subsequent reduced quality of life. It is explicitly not the goal of the project to make people dependent on the HERMES system, but rather to provide

support, increase the feeling of security and avoid the fear of forgetting.

The first step in this project was to carry out a requirement analysis by means of a questionnaire, focus groups, diaries, cultural probes, interviews and memory assessment (Urdaneta, Buiza, Gonzalez, Facal, Geven et al., 2009). This analysis provided us with relevant information to formulate real scenarios where the HERMES system can be used. According to Carroll (1995), scenarios contain and describe a setting, the agents or actors, their goals and purposes and the things they do. From scenarios we get a context in which the actors act with the product. The use of scenarios not only serves to aid technical development, but they are also useful in communication with the potential end-users to come up with requirements for the tools and applications that are developed within the HERMES project. The scenarios provide an instantaneous vision of a specific setting and its context and they offer a way to imagine design concepts in use (Saffer, 2007). They give us a way of describing an application and, more important, an interaction with an application in words. Because of this they can be used to communicate and transform the findings from the requirements analysis into a prototype.

Five scenarios linked to the HERMES objectives have been developed. The scenarios were composed using the results from the requirements analysis. Based on an overview of the results of the requirements analysis, five scenarios for each of the HERMES objectives have been developed:

- (a) Facilitation of episodic memory, through the capture of content in audio (Petsatodis & Boukis, 2009) and video (Katsarakis & Pnevmatikakis, 2009) including when, where, who, what and why. Advanced intelligent speech and image processing techniques are being developed to index, annotate, and summarize the information captured, based on semantics extraction, events identification and inferences. The

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