Chapter 14

Personas and Scenarios Based on Functioning and Health Conditions

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ABSTRACT

This chapter presents how the concepts of the International Classification of Functioning, Disability, and Health (ICF) can be used to optimize the role of personas and scenarios in the development and evaluation of Ambient Assisted Living (AAL) systems and services, especially in aspects related to human functioning and health conditions.

INTRODUCTION

The development of technological solutions with natural and effective user interaction mechanisms can facilitate the daily lives of older people, decrease isolation and info-exclusion, promote the ability to work, as well as independence and wellbeing. The ageing population, the increase in caregiver burden and the importance of living independently motivate the development of Ambient Assisted Living (AAL) systems and services (Cook & Das, 2007). AAL solutions must have a broad range of intelligent functions in terms of user interaction, supported by usable and accessible interfaces with adaptive mechanisms (Cook & Das, 2007).

A recent systematic literature review (Queirós, Silva, Alvarelhão, Rocha & Teixeira, 2013) shows that usability and accessibility issues are not sufficiently considered within the AAL domain. Furthermore, AAL systems and services have complex interaction mechanisms, including explicit and implicit interactions, and multimodality is a fundamental aspect. Therefore, more discus-
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A close involvement of the end-users is crucial to improve usability and accessibility. However, this is less successful when the user population is heterogeneous and, for example, the involvement of older and disabled people introduces additional difficulties (Astell, Alm, Gowans, Ellis, Dye & Vaughan, 2009; Newell, Gregor, Morgan, Pullin & Macaulay, 2011). Moreover, procedures to identify requirements and collect evaluation data from older and disabled people are not straightforward and monitoring and interacting with them in their home environments, rather than in a workplace, have additional challenges (Goodman-Deane, Keith & Whitney, 2008; Zajicek, 2004).

Considering that potential end-users of AAL systems and services are older people, health conditions are important factors. Furthermore, AAL aims to increase the autonomy of older people, to assist in their day-to-day activities and, consequently, to improve their functioning and quality of life. Therefore, the use of systematic mechanisms to characterize issues related to functioning and health conditions and their impact in terms of quality of life should be a major concern.

This paper presents how the conceptual framework of the International Classification of Functioning, Disability and Health (ICF) (WHO, 2001) of the World Health Organization (WHO) can be used to optimize the role of personas and scenarios in the development of AAL solutions. Special attention is given to aspects related to human functioning and health conditions.

In addition to Introduction, the paper is composed of more five sections: Background, Related Work, Methods, Results and Discussion.

BACKGROUND

AAL is being considered one of the important concerns for applied engineering (Kleinberger, Becker, Ras, Holzinger & Müller, 2007) where safety, contextualization, transparency, accessibility, usability and artificial intelligence play a major role. The general goal of AAL solutions is to apply the Ambient Intelligence (AmI) concepts and technologies to enable older adults, or other people with specific demands, to live longer in their natural environment. In technological terms, the AAL comprises a heterogeneous field of applications ranging from quite simple devices such as intelligent medication dispensers, bed sensors or falls detectors (Lombardi, Ferri, Rescio, Grassi & Malcovati, 2009) to complex systems such as the combine use of different technologies to predict user’s affective and cognitive states (Kapoor, 2010; Leon, Clarke, Callaghan & Doctor, 2010).

The AAL concerns and developments are in line with the WHO active ageing framework (WHO, 2002). To overcome the pressures resulting from the demographic ageing, WHO argues that governments, international organizations and civil society should promote active ageing policies and programmes. Active ageing depends on a variety of influences or determinants that surround individuals, families and nations related with personal characteristics, culture and gender, but also with societal characteristics and infra-structures (e.g. physical environments, support services or social and economic contexts).

In terms of individual perspective, the three basic pillars of active ageing are (WHO, 2002):

- The full participation in socioeconomic, cultural, spiritual and civic affairs, according to basic human rights, capacities, needs and preferences.
- The access to the entire range of health and social services that address the needs and rights of the older adults.
- The protection, dignity and care in events that older adults are no longer able to support and protect themselves.

Therefore, the implementation of active ageing emphasizes the rights of people to equality of opportunity and treatment in all aspects of life as they grow older and also a positive thinking about