

A. BADI, C. HUIJNEN, H. VAN DEN HEUVEL, D. THIEMERT, H.H. NAP. **CompanionAble; An integrated cognitive-assistive smart home and companion robot for proactive lifestyle support.** *Gerontechnology* 2012;11(2):358; doi:10.4017/gt.2012.11.02.575.00 **Purpose** The CompanionAble project has conceptualised, developed, and evaluated a novel type of assistive environment for people with mild cognitive impairments (MCI) that exploits synergies of social robotics and ambient assisted living (AAL) technologies primarily to support and engage MCI-care receivers. The implemented system focuses on monitoring care received in terms of well-being, life-style management, home care, and social inclusion for persons suffering from chronic cognitive disabilities. A social robotic companion that collaborates with a smart home environment provides for intelligent day-time activity planning and management, cognitive training, engagement and entertainment, analysis of emotional states, monitoring and prevention of dangerous situations including fall detection and distress signal recognition and video communication with friends, family, and care givers. A key goal of the project has been to examine the impact of social robotic companions on the usefulness and user acceptance of assistive environments. **Method** Research efforts in CompanionAble have been driven by the UI-REF participatory and inclusive co-design and scenario validation approach¹. Development and validation of the developed system involved care receivers and their close carers as well as wider stakeholders, and were carried out at four specialist AAL-trial sites in Spain, France, Belgium and the Netherlands. Several evaluation-design iterations were carried out in order to evaluate and refine both the services provided to care receivers and other stakeholders, and to evaluate and refine the role, acceptance, and perception of the social robotic companion as part of an AAL- environment. Both quantitative and qualitative measures were collected during these iterations. A close collaboration of gerontologists, specialist elderly care institutions, and technical industrial and academic research partners, has been exploited for the evaluation and iterative co-design of the CompanionAble system². **Results & Discussion** Several user-centred design cycles with 2-hour evaluation sessions involving MCI-patients followed by re-design cycles and prototype updates have resulted in a number of key findings regarding provided functionalities and the role of the social robotic companion; final 3-day 24-hour full experience user trials are currently in progress. From a technical perspective, major findings concern the need for seamless integration of robotic companion, smart environment, and external services to create a truly supportive system. Another aspect of major importance is the robot's character³, which, rather than the physical embodiment of the robot, has been found to be the most important determinant of the degree of user acceptance in terms of perceived reliability and satisfaction. This relates to the degree of pro-activeness of the system, tone of voice, the robot's attentiveness, proactive physical behaviour and the use of different companion personas (e.g. slave vs. guardian angel vs. active entertainer). Overall, MCI-patients value the experience of living with a companion robot with autonomous capabilities, experiencing natural and empathic interaction, and having such life-style support provided in a trusted manner.

References

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Keywords: companion-social robotics, cognitive impairment, independent living, UI-REF

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Full paper: No