Purpose Human like computer-animated characters, also known as Embodied Conversational Agents (ECAs)[1] have attracted a lot of attention over the past years in the field of user interaction. The main aim of the Miraculous-Life project[2] is to design, develop and evaluate a Virtual Support Partner (VSP) for older adults (65+) to assist daily activity and safety needs. The VSP provides implicit daily activities support which is based on behaviour and emotional understanding and a human-like response exhibiting distinctive emotions. The VSP fuses together user's facial expressions, voice intonation, gestures and other contextual information of the environment. Through an intelligent dialogue and ICT services for elder home daily activities support and safety, the VSP stimulates and motivates the elder to act. **Method** A prototype system has been developed which consists of (i) input devices for real-time inputs from different modalities and sensors installed in the living environment. 3D depth sensors (Kinect), microphones and touch screens collect necessary inputs for the multimodal interaction. (ii) Real-time multimodal processing recognizes and interprets the input data to generate a coherent emotional response. (iii) Reasoning and decision making determines what the system should communicate to the user through the avatar or the different services. An (iv) application layer contains a set of ICT services to support the user and a social network to exchange information with others (especially with formal and informal caregivers). The (v) output generator visualizes the VSP (3D graphics rendering and speech synthesizer). Finally the (vi) knowledge base serves as data management server. **Results & Discussion** Three testing phases were performed aiming to evaluate robustness and to assess the users' acceptance. Seniors and caregivers were asked to perform specified tasks in a controlled environment. Three questionnaires[3] were administered in order to measure perceived usefulness, user satisfaction and the motivation in using the system. Results suggested that the solution is appreciated and accepted by both end-users populations. The full-scale trials are currently running in two well selected use cases in The Netherlands and Switzerland involving 21 end users (mean age: 85±3.5; 10 females, 6 males; 5 more users are currently recruited) over a 6 months period. First results suggested that a speech-based system could reduce the gap between seniors and technologies. The potential of the system in increase quality of life, prolong the autonomy of seniors and reduce the care stress will be further investigated.

References
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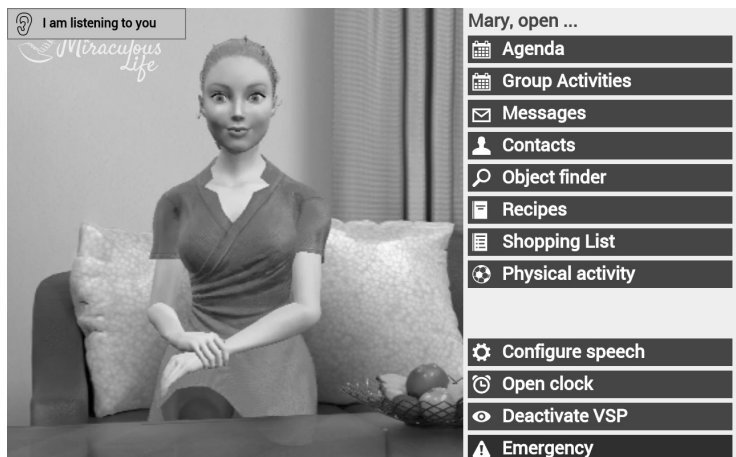
Figure 1. Screenshot of the final Miraculous-Life prototype used in field trials