T. LINNER, C. GEORGOULAS, T. BOCK . **A Multi Robotic Assistant System (MRAS): A development approach with application to the ageing society.** *Gerontechnology 2012;11(2):381;* doi:10.4017/gt.2012.11.02.129.00 **Purpose** Our purpose was to develop, by combining architectural and robotic elements, a system that assists elderly people to live self-sufficiently at home. Unlike many other assistance systems our system exploits the ceiling space in order to avoid collisions with conventional living functions. **Method** Elderly people face numerous limitations in their everyday life. The simplest regular tasks a healthy individual performs appear quite different from the perspective of the ageing adult. Healthcare and mobility usually appear as distant services in cases of isolated individuals or lack of transportation due to disability. This paper deals with the development of a novel multi-robot assistant system (MARS), which can be used to provide indoor quality services to the ageing society[1]. In order to realize the MARS concept the following development approach was used: (i) research and identification of needs; (ii) definition of requirements; (iii) identification of technologies and processes; (iv) initial concept; (v) experiments in real environment; and (vi) final concept and further development roadmap. **Results & Discussion** A ceiling suspended robotic system is proposed, navigating with the aid of a grid-type rail system among various rooms within a residence. This enables efficient space utilization since it occupies the redundant area of the ceiling. Various types of services can be provided by the proposed system such as health monitoring, infotainment, communications, problem solving, movement assistance, etc. A vision system aids in obtaining accurate information on the location of the individual within the residence, and in guiding the whole system during the operation of the required tasks[2]. A series of experiments were conducted in order to define the proposed system specifications. Verification experiments in a real residence with three different individuals were performed, in order to calculate the forces applied to the human body while sitting and standing up (*Figure 1*). This type of movement is the most awkward and laborious for elderly people. MRAS can assist elderly people by using a flexible pulling wire which can be easily either grabbed by the user or fastened onto.

References

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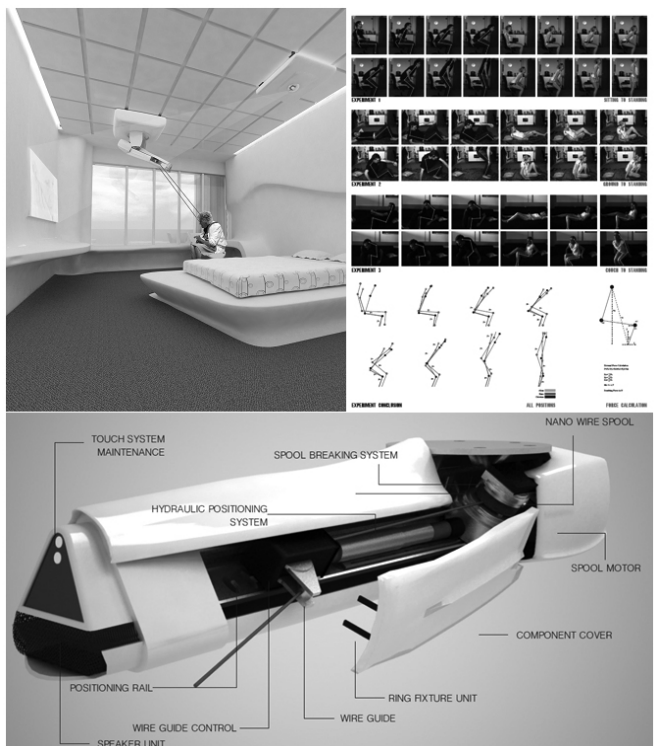
Figure 1. Concept and verification experiment of the MRAS