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The user-centered design of an ambient technology for preventing falls at home

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M.E BOBILLIER CHAUMON, S. BEKKADJA, F. CROS, B. CUVILLIER. *The user-centered design of an ambient technology for preventing falls at home*. *Gerontechnology* 2014; 13(2):xxx;
 doi:10.4017/gt.2014.13.02.xxx.xx. **Purpose** In the context of the elderly homecare, an innovative and pervasive solution², consisting of a camera and a microphone, is being conceptualized (ANR & CNSA project). This system called CIRDO is based on an intelligent and systematic analysis of the audio and visual environment of the elderly. It could detect risk situations (falls) and therefore give the emergency alert. **Method** The design of the device is based on two levels of analysis. The first is to identify and characterize the falling process⁵ in order to provide system designers with a set of behavioral (key breaks) and verbal (keywords) descriptors (or indicators) required for setting up CIRDO. To do this, various methods have been deployed: semi-structured interviews with 65 aged people, analysis of daily life activities conducted at seniors homes, analysis and falls' script methods (simulation, filmed incidents observations and Personas method¹). The second one was to explore the social acceptance of this new technology into the social systems of the elderly (composed by the person themselves, their family environment, professional and personal caregivers) by interviewing a sample of 62 people (24 elderly, 19 family caregivers and 19 professional caregivers) through a process of triangulation methods (semi-structured interviews, focus groups and activity analyses). **Results & Discussion** From the first set of data, 12 scripts of falls have been elaborated (Fig 1). In a second part, the social acceptance of the future device has been tackled, taking into account the experiences and positions of the various actors confronted to the device. The reading grid offered by Engeström's system of activity³ has shown an ambivalent positioning by these different actors: based on their experiences, their career and needs, each of them (elderly, professional counselors, family) has a different view of the object of their activity (support, help, care, prevention, control), and therefore has specific expectations and fears. The function and purpose of the device are (implicitly) heterogeneous because interpreted differently by the various stakeholders (Fig 2): visions that may be incomplete, conflicting or partially contradictory. The difficulty in the design and implementation of CIRDO is to adjust to a psycho-socio, home embedded system that is different every time given (i) the diversity of activities at risk of the elderly, and (ii) the interests of different actors.

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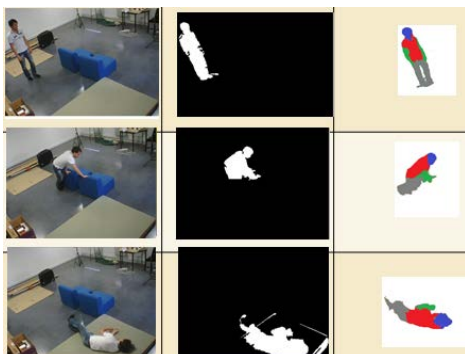


Fig 1. Sample Script of a fall used to set CIRDO

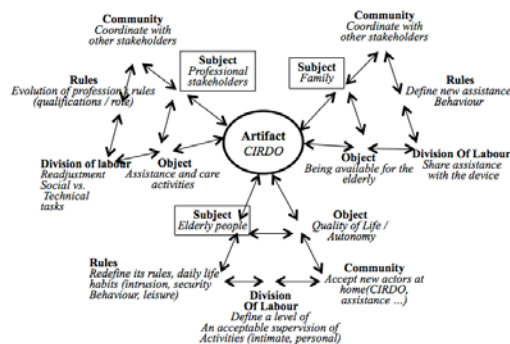


Fig 2. Articulation between the Systems of activity of actors in the home

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