Original article

Practical issues related to the implication of elderlies in the design process – The case of a Living Lab approach for designing and evaluating social TV services

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Abstract

Ageing well at home cannot be reduced to the management of physical and cognitive frailties and technologies should also tackle the quality of life of the elderly by fostering their social interactions especially for those who are living alone. The Internet could play a role in alleviating elderly loneliness, in order to cope with their social frailty. But designing appropriate services and ensuring their adoption by the elderlies remain open questions. We try to provide answers at the methodological and practical levels by reflecting on an approach based on the participation of the future users as part of a "Living Lab". For so doing, we report feedback from our work in a European project aiming at developing and evaluating social TV services. Our return on experience contributes to recommendations for an effective implication of elderly people in the design and evaluation process.

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1. Introduction

Taking care of elderly people is a major challenge for Western society. Many of them prefer to age at home in their family environment rather than being at a nursing home [1]. Indeed, the social network plays an important role for the well-being of the elderly; it represents a source of support and has a positive impact on their physical and mental health. However, with the lack of qualified personnel and the significant increase in the average age, ageing within her/his community and remaining with her/his family can be problematic for an elderly in her/his later life. This may lead to depression and negatively impact their health status.

To address this issue, approaches based on assistive technologies for independent living are proposed for elderly to stay safe at home as long as possible without considering their self

as a burden for their families. The most common approach consists in providing continuous monitoring of the behaviour and vital signs of the elderly and reporting any discrepancies to a remote informal or professional caregiver.

Although this surveillance appears to be necessary for people living alone, it raises ethical [2,3], psychological and social issues [4,5]. In addition, monitoring cannot be considered as a complete solution for ageing well at home, because it does not support the psychological problems related to isolation or loneliness caused by reduced mobility and/or the loss of friends and/or relatives [6].

A means of fostering social interactions and enhancing social connectedness is to make use of new technologies that enable individuals to access information and to communicate with others. In particular, providing individuals with the opportunity to use the Internet may be one means of reducing social isolation. It offers the opportunity to increase contact with others, to communicate with new social groups and to pursue old or new interests – in essence, to reconnect with the world in a

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new way. This, in turn may have a positive impact on psychological health [7]. Research results emphasise the potential of modern technology to help reducing the risk of social isolation and compensate disabilities [8,9]. This body of work has shown the potential of these services to enable older adults to keep in touch with their social network and improve their quality of life.

But designing appropriate services and ensuring their adoption by the elderlies remain open questions, to which we are trying to provide answers at the methodological and practical levels. In the framework of a European project aiming at developing social TV applications (FoSIBLE), we have defined and tried out an approach to design services based on the participation of the future users as part of a "Living Lab".

In this paper, we start by contextualising our work, emphasising the issues raised by an ageing society and the opportunities provided by social TV. We then describe the Living Lab approach we have defined and adopted in the FoSIBLE project in order to tackle the open questions related to the design and the evaluation of technologies supporting the well-being of elderly people at home. We finally discuss our return on experience and provide recommendations.

2. Context

Nowadays, the proportion of people aged 60 and over is very high in Europe. In France, they represent 22.6% of the entire population (2010[1]). In the next forty years, it is estimated that one in three persons will be considered as old in France [10]. According to Godet and Mousli [11], there is a relative consensus that the threshold of 75 marks the onset of old age. It is defined by the increase in the prevalence of disease and disability. However, most of the French researches set the bar at 60, likely to respond more readily to questions related to administrative procedures defined with a threshold of 60. European statistics, for the same reasons, retain the limit of 65.

The ageing process is defined as "all developments and changes over time of body functions and perception resulting from these mutations" [12]. Changes faced by individuals as they advance in age can lead to fragility in three dimensions [13]: Physical (reduced vision, hearing, dexterity, arthritis, deafness, loss of balance...) [14], cognitive (downward trend in intellectual performances and memory...) and social (loneliness, depression, withdraws into oneself...). These changes are highly variable from one person to another, but they will however affect their attitudes and behaviours.

The representation that a person has of his own ageing also plays a role in the ageing process [15]. Psychologically and emotionally, awareness of the ageing by the elderly translates into a limited perception of the future because of the perceived proximity of the end of life. This changes their priorities, motivations and behaviours, including the relationship with their social network. Several researchers in social psychology and gerontology have established different theories to better understand and analyse the social engagement of elderly people. The theory of "socio-emotional selectivity" [16] provides a conceptual framework to better understand and explain the motivations and behaviours of the elderly. This theory explains the influence of the perception of time on the goals and motivations of human behaviour. It postulates that, in life, different goals compete with each other based on the individual's perception of the remaining life time: objectives related to knowledge (ex. acquisition of new information, personal development...) and the objectives related to emotions (ex. regulating emotions, seeking pleasure...). For elderly people, the emotional goals prevail because they become more important when time is perceived as limited [17]. Therefore, elderly people will tend to be more selective in their social relationships.

The decline of the social ties of the elderly is a loneliness and depression factor, which can hinder their autonomy. In 2007, 74% of elderly in France suffer from loneliness related to relational and/or geographic isolation. Recent studies have even shown that social isolation affects mortality risk of elderly [18]. Taking care of the elderly while taking into consideration their concerns about their privacy and social isolation they suffer from with age is a major challenge for society as illustrated by the definition of the European issue around the active ageing.

Television is perceived by elderly people as a way to feel less lonely [19]. According to "Le Figaro" journal[2] in 2013, older people are the ones who watch the most the television in France. Time spent watching television has increased for older people aged 70 or more, who spend more than four hours per day in front of their TV set.

The latest addition to the TV experience is viewers' use of web-enabled devices while watching television. However, studies show that reading on the TV screen can be complicated, the remote control use is not collective and the interface of applications can be intrusive on the TV screen [20]. When the remote control was developed it was for a television that worked as a unidirectional communication device, where the viewer would only consume the information sent. Since digital TV started offering interactive services, the remote control has been adapted and several buttons were added, making it difficult to use, especially for the elderly [21]. To cope with this problem, researches proposed improvements to interaction using alternative devices such as smartphone, tablet, and laptop or pointing devices. This new user experience is referred to as the "second screen" (an additional electronic device that allows the TV audience to interact with the content they are viewing). This model offers an opportunity to transfer the application to the second device, making the user experience more pleasant and personalised. The main program is shown on the television (primary screen) and the interactive content in a second screen, synchronised and contextualised [22]. Watching television in conjunction with the use of a second screen has become increasingly popular because these devices are more and more accessible and disseminated. Studies conducted in 2012 by The Nielsen Company, Yahoo! Inc, Deloitte, Thinkbox, BSkyB and others show that

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[1] Source: http://www.france24.com/fr/20100119-647-millions-fran-ais-plus-500-millions-deurop-ens.

[2] http://www.lefigaro.fr/actualite-france/2013/03/12/01016-20130312ARTFIG00284-la-tele-un-loisir-que-40-des-francais-pratiquent-en-solo.php.