The simplification of complex interactions for more inclusive social communication technologies (position paper)

Conference or Workshop Item

The simplification of complex interactions for more inclusive social communication technologies.

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ABSTRACT

New technologies, especially smart homes and mobile and ubiquitous technologies have the potential to foster improved quality of life in the older population. Some anticipated benefits are linked to specific applications in areas such as home automation, communication, shopping and health. However, some valuable potential benefits lie in building and sustaining relationships with remote extended family, particularly children and grandchildren, as well as with carers, neighbours and friends. Communication with geographically remote family can play an important role in helping to sustain autonomy, inclusion and independence. Reduction in isolation and improved participation have the potential to improve or sustain quality of life, but in addition they can lead to a reduction in vulnerability and sustained physical health. Another benefit can be to reassure adult children about the viability of their parent's independent living.

Broadband "always-on" communications are potentially particularly useful tools in sustaining geographically remote relationships with extended family, as they can support many useful kinds of interaction, using modalities such as voice, video, pervasive annotation, selection, and remote concierging. Unfortunately, many possible new interactions are currently complex to manage, ruling them out on grounds of poor acceptability, accessibility and usability. However, our hypothesis is that a new interaction framework that combines social and technical components could be used to simplify many interactions of the kinds noted above sufficiently to the point where they would be rendered acceptable, accessible and usable. This paper outlines plans to test such a framework.

INTRODUCTION

In using technology to support the independence of older people, one key goal is to promote and enhance interaction, participation, and the avoidance of social isolation [1]. This involves the development and adaption of communications devices and systems that are simple, useful, usable, accessible, acceptable and valuable to potential users [2]. While much work has already been done in this area, from high-tech smart homes [3,4,5,6] to small-scale design issues [7], the concentration has tended to be upon the needs of the most highly dependent older people and their carers [8] The majority of older people do not fall into this category, but they can also benefit greatly from an inclusive approach to communications technology to sustain and maintain important relationships [2]. Indeed, many older people currently use electronic communications technologies such as mobile telephones, SMS, email, the web, and could potentially benefit from appropriately designed future communications technologies such as ubiquitous one-way video links and two-way audio links.

However, some of these technologies can be highly problematic for novice/casual users in many circumstances, for example, when initiating and managing more complex or less frequently performed interactions; when technologies or user interfaces change; and when dealing with several demands at once [9].

EXISTING STRATEGIES

One response to this problem is to simplify functionality to the bare minimum. A related strategy is to focus solely on functionality that can be provided "transparently".

These can be valuable strategies, and are used well by many designers, but are not without problems and costs, particularly as technologies and user interfaces continue to change and proliferate. The principal cost is that these strategies inevitably rule out the more complex kinds of interaction and opportunities for interaction enjoyed by the wider community. In many cases, older people might be those most able to benefit from such kinds of technically-mediated social support.

Thus, in the design and use of systems and devices intended to meet these challenges, there is a tension between two forces:

a) the potential of new and future mass market communications technologies to provide ever richer,

multi-modal, individually-tailorable interactions of kinds well-suited to maintaining and sustaining relationships with remote extended family and friends; b) the need for simplicity of operation, reliability, affordability, and acceptance by older people.

PROPOSED APPROACH

Our aim is to investigate an approach that enables richer, more complex interactions, but retains simplicity of use. The goal is to allow older people in general to benefit from participating in rich technologically mediated social interactions, but with minimal or no technical demands made on those who prefer simplicity.

This approach combines both social and technical components.

The *social component* involves an enhanced integration of the in-home and mobile devices of older people and family and friends living or working elsewhere, in a way that reduces and distributes, or shifts, the management of more complex interactions.

The *technical component* involves the adaptation of an existing general-purpose software architecture for mobile and ubiquitous computing [10,11]. This architecture is particularly well suited to making complex interactions relatively easy for novice or casual users to control and configure, and for tailoring to particular kinds of user [12,13,14]. It also allows the management of complex interactions to be distributed or shifted.

The software elements involved have the potential to be retrofitted to, or wrapped around, existing communication technologies - thus making this work widely applicable.

This approach thus has the potential to increase the usefulness, while reducing the technical complexity, of existing and future communication facilities, including mobile telephones, SMS, email, the web, ubiquitous one-way video links and two-way audio links.

Although our principal emphasis is on communication, there are related applications in other areas with a communication component, such as security, shopping and health which could be pursued in future studies.

METHODOLOGY

The methodology we propose to test this framework will involve two principal strands.

The first strand will be led by social gerontologists with particular skills in accessing and sampling diverse groups [15], and in devising and applying participative qualitative methods [16,17]. This strand will use participative methods including focus groups, adapted versions of the technology biography [6] and of the cultural probe [18,19,20], and paired testing, to generate and critique a wide range of scenarios seen as valuable by end users, and then to generate and critique a possible designs and solutions.

The second simultaneous strand will involve Human Computer Interaction Specialists and Computer Scientists specialising in architectures for mobile and ubiquitous interaction. The HCI specialists will work participatively with the social gerontologists and end users to produce designs and prototypes to be tested iteratively throughout design and development. As well as producing stand-alone prototypes, we aim to produce prototype software wrappers, to be retrofitted to, or wrapped around, existing communication technologies.

The outputs would include working prototypes and rich data on the preferences and responses of the older population. Special attention will be paid in collaboration with industrial collaborators to the production of guidelines for the development of future integrated communications software, systems and standards, in the context of realistic business models, to ensure age-inclusivity.

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