Mobile and broadband technologies for ameliorating social isolation in older people
June 2012

Project team
Frank Vetere, Lars Kulik, Sonja Pedell (Department of Computing and Information Systems, The University of Melbourne)
Elizabeth Ozanne (Department of Social Work, The University of Melbourne)
Alan Gruner (Benetas), Brendan Lillywhite (Aged Care Consultant), Roland Naufal (4clivingwell)

Acknowledgements
This project was supported by the Institute for a Broadband-Enabled Society and Benetas. We acknowledge the support of John Downs, who worked on the development of the Enmesh application, and the participants who generously contributed their time to the project.

Further information
Frank Vetere: f.vetere@unimelb.edu.au

Mobile and broadband technologies for ameliorating social isolation in older people
This project examined the use of communication technologies to help ameliorate social isolation for older people who live independently in their own homes.

We provided a group of older people and their care managers with touch tablet devices (iPads), and a new iPad application (‘Enmesh’ – Engagement through Media Sharing), which was purpose-built for this study. Participants used the Enmesh application to exchange photographs and messages. By creating and sharing content, the older people in our study were able to build social connections in order to help alleviate their experience of social isolation. Participants used the application for a period of ten weeks. During that time we conducted interviews and observations to gauge their experiences of using the technology. Overall, the results of the trial were very positive. For the older people in our study, the ability to record and share photographs and messages had a positive effect on participants’ wellbeing and played a role in alleviating feelings of social isolation.

Importantly, this trial involved evaluating the use of technology in a particular social setting. Participants were introduced to each other in a face-to-face setting, and care managers were invited to take part in the trial. These features of the trial were both crucial in ensuring the success of the project. Furthermore, this project was unique in that it:

- Focused on an older age group (most of our participants were aged in their 80s and 90s),
- Involved participants who were genuinely socially isolated, and
- Developed and evaluated a technology application that was designed specifically to meet the needs of socially isolated elders.

Executive Summary

This project examined the use of communication technologies to help ameliorate social isolation for older people who live independently in their own homes.

We provided a group of older people and their care managers with touch tablet devices (iPads), and a new iPad application (‘Enmesh’ – Engagement through Media Sharing), which was purpose-built for this study. Participants used the Enmesh application to exchange photographs and messages. By creating and sharing content, the older people in our study were able to build social connections in order to help alleviate their experience of social isolation. Participants used the application for a period of ten weeks. During that time we conducted interviews and observations to gauge their experiences of using the technology. Overall, the results of the trial were very positive. For the older people in our study, the ability to record and share photographs and messages had a positive effect on participants’ wellbeing and played a role in alleviating feelings of social isolation.

Importantly, this trial involved evaluating the use of technology in a particular social setting. Participants were introduced to each other in a face-to-face setting, and care managers were invited to take part in the trial. These features of the trial were both crucial in ensuring the success of the project. Furthermore, this project was unique in that it:

- Focused on an older age group (most of our participants were aged in their 80s and 90s),
- Involved participants who were genuinely socially isolated, and
- Developed and evaluated a technology application that was designed specifically to meet the needs of socially isolated elders.
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Summary</td>
<td>3</td>
</tr>
<tr>
<td>1 Social isolation, technologies, and older people</td>
<td>5</td>
</tr>
<tr>
<td>2 Home Trials</td>
<td>7</td>
</tr>
<tr>
<td>3 Findings</td>
<td>9</td>
</tr>
<tr>
<td>4 Further research and development</td>
<td>11</td>
</tr>
</tbody>
</table>
1. Social isolation, technologies, and older people

1.1 Social isolation

Social isolation is experienced when people have limited contact with others. Social isolation is often exacerbated by ageing, during which social networks are reduced due to the death or absence of family members and friends. Health problems and frailty, which may limit the opportunities for older people to interact with others, also contribute to social isolation.

Social isolation is associated with a range of physical and mental health problems and is therefore a significant health concern, particularly for an ageing population. In the past, researchers have proposed several interventions to address social isolation for older people, including home visitation, group educational classes, and telephone contact. However, there has been little research examining the possibilities offered by emerging information and communication technologies. While there has been a growing interest in recent years in the design of technologies for older people, much of this research has focused on developing technologies that aim to meet health and safety needs.

1.2 Touch-screen technologies

Communication technologies, such as Internet-based tools and services, offer many opportunities for older people to connect with others and engage with the world. Touch-screen devices, in particular, may offer older users new opportunities to access communication technologies because they are relatively easy to use. Touch-screen interfaces require direct input via touch-based gestures (e.g., tapping or dragging onscreen icons), as opposed to indirect input (e.g., using a mouse or keyboard). In addition, newer touch tablet devices, such as the iPad, have a relatively large screen, which means older users can increase the size of icons and text for better visibility and ease of manipulation. Inbuilt cameras, onscreen keyboards, and mobile broadband connectivity means these devices can be used for capturing and sharing photographs as well as for exchanging text-based messages, furthering their potential as social communication tools.

1.3 Engagement through Media Sharing

We created an iPad application (Enmesh) that enabled older people to record and exchange photographs and messages. Photographs are powerful symbolic expressions of emotion and tools for reminiscing. Sharing digital photographs can provide an opportunity for older people to engage in meaningful creative personal projects.

Although photo sharing usually takes place among existing groups of families and friends, the Enmesh application was designed to help people build new connections. During the design phase, consideration was given to concerns about trust and privacy that older people may have when using communication technologies. The application was developed as a closed platform: photographs and messages could only be shared among a closed social network, consisting of the care managers and participants who took part in the trial.

The interface was designed to be as simple as possible. When opening the application, users were shown a dialog box that enabled them to take a photograph, write a caption, or enter a text message. Captions and messages were recorded using the iPad’s onscreen keyboard. Users could then press ‘send’ to upload the photograph or message to the shared display.
The shared display showed all the messages that had been uploaded: everyone in the group could see everyone’s sent messages and photographs. Images and photographs moved down the screen in a cascading motion, as determined by a display algorithm that showed newer messages more frequently and older messages in a random order (see Figure 1). Users could manipulate the way the messages appeared by dragging them on the screen or using a gesture to rotate them or increase/decrease their size. Whenever participants manipulated an image on the screen the changes could be seen by others who were simultaneously viewing the display.

Figure 1: Screenshot showing cascading display of photographs and messages
2. Home Trials

By trialling the Enmesh application in the homes of socially isolated older people, we aimed to conduct an in situ evaluation of the technology, and to gain a better understanding of the role communication technologies can play in alleviating social isolation for older people.

2.1 Study participants

The study was conducted in collaboration with the aged care provider, Benetas, a Melbourne-based not-for-profit organisation that offers community-based and residential care. The seven older people in our trial were all clients of the Benetas community aged care program. They were considered by Benetas to be (or at risk of being) socially isolated. All were living in their own home, had significant health and/or mobility problems, but were identified by their care managers as having the physical and cognitive capacity to participate in the study.

Seven older people and two care managers took part in the study. Two of the older participants were male; all other participants were female. Five of the participants were aged over 85; the other two older participants were in their seventies (Figures 2 & 3 show participants using the Enmesh application).

2.2 Data collection

We interviewed participants three times during the ten-week trial. The focus of the interviews was on sharing content via Enmesh and using the iPad technology.

We also conducted interviews with the care managers who participated in the trial, which gave insight into the impact of the trial on the relationship between carers and their clients.

Phase 1: Introduction

During the Introduction phase (2 weeks), participants used Enmesh to connect to their care manager only, in order to familiarise themselves with the Enmesh application.

Phase 2: Socialising with other participants

After two weeks, participants met each other at a morning tea, and the Enmesh application was set up so that all participants were connected to each other and could now exchange photographs and messages.

Phase 3: Extending use

At a second morning tea event, participants were introduced to the iPad Internet browser “Safari” and encouraged to use it to look up information to share with the rest of the group.
2.3 Data analysis

The interview transcripts were examined and key themes were identified through a thematic analysis. The analysis focused on identifying the key benefits and challenges that participants experienced when using the technology and taking part in the trial, as well as evidence of the impact the trial had on participants’ experience of social isolation.

Figure 3: Participant using Enmesh application
3. Findings

Below we outline the key findings from participant interviews and observations.

3.1 Alleviating isolation

Using the iPad to exchange messages and access the Internet appeared to be helpful for alleviating feelings of social isolation. This was particularly apparent for one participant, who was the most active in sending messages. He said:

“The study has been very successful with me. I had a very bad time of depression [...] It has made a lot of difference. Not the actual act of taking pictures, but the act of being able to communicate with others who are doing the same thing.”

Taking part in the trial also gave participants something to focus on and this appeared to have a positive effect on their well-being. One participant said:

“I forgot about myself while I was doing this. You forget about yourself and your aches and pains.”

Participants enjoyed interacting with each other. They developed a shared language and used the Enmesh application to engage in activities that were sometimes challenging and fun. For example, one care manager posted a photograph of a flower that she didn’t know the name of. This elicited several responses: participants seemed to enjoy the challenge of solving the puzzle of the unknown flower. There was also a long exchange about food after one participant shared a photograph of her empty fridge with the caption, “What’s for tea?”

The three face-to-face meetings that were held during the study were considered to be particularly valuable for helping participants to build rapport and get to know each other. The meetings also had a positive effect on how participants interacted using the photo-sharing application. As one participant said:

“I think that was quite good [to meet the other people]. It became a person where otherwise it was only a face.”

3.2 Photo sharing provided a “window” into participants’ lives

The photo-sharing activity with Enmesh provided an opportunity for participants to share details about their daily lives and surroundings with other people. This enabled others to view a “window” into their world. Through this window, participants were able to build rapport and find common interests. One participant, commenting on the photographs that another member of the group had uploaded, said:

“He more or less showed his life. And I could relate to him via my husband, because they had a similar life.”

It also meant that the care managers who took part were able to get to know their clients better and gain some insight into their everyday lives. One care manager said:

“It allowed me to get a bit of an idea about how they were without actually having to pick up the phone [...] It captured just a little snapshot, what they were doing during the day [...] If anyone had even a slight lowered feeling or depression or whatever it would just give me a slight better insight into themselves and how they viewed the world and what it was they were looking at.”
3.3 An opportunity to learn and extend interests

Taking part in the trial provided an opportunity for participants to engage in learning activities and extend their interests. This was particularly apparent in the way participants used the iPads to look up information on the internet (e.g., information about plants, books, locations). One participant found information about her husband’s birthplace and shared this with her family:

“I was able to show [where he was born] on Google maps. That was particularly interesting for the family who have never been there. The place does not exist anymore, only a record.”

The photo-sharing activity also provided an opportunity to share and extend interests, and learning to use the iPad itself was seen to be a valuable experience. As one care manager noted, learning to use the technology appeared to build confidence:

“They all seemed to have enjoyed the use of such a new technology. They all thrived on some aspects of it and in particular it gave them a lot of confidence. That was noticeable for all of them.”

3.4 Trust and privacy

Participants did not appear to have great concerns about trust and privacy when using the Enmesh application. Partly this was to do with the nature of the activity – photo-sharing – and the fact that participants needed to share information about their lives in order to gain the social benefits of taking part in the study. It also suggests that the closed platform of the Enmesh application gave participants a sense of security: they knew their photographs and messages could only be seen by other members of the group.

When asked if they had any privacy concerns, some participants said:

“I have no secrets. Not too much worried. I am in control of the content.”

“I don’t really have anything that is important enough to hide anyway – you can wipe this all off can’t you? I don’t worry about those sorts of things so much.”

3.5 Challenges

Participants also faced challenges in taking part in the activity. Some participants struggled to think of photographs and messages to share that they thought would be of interest to others. Sometimes efforts to engage interest did not work, with photographs and messages not eliciting any responses from other participants. Participants also varied greatly in how active they were and how many photographs and messages they shared. In some cases participation waned over time, particularly with disruptions such as illness and family events.

Participants also encountered a number of usability problems with the iPad, particularly due to its weight (it was difficult to lift without using two hands, which then made it difficult to take photographs), and the touchscreen interface, particularly the onscreen keyboard. In addition, some participants misunderstood how the technology worked and were worried about making mistakes (for example, one participant thought she might endanger air traffic when she accidentally set the iPad on ‘airplane’ mode).
4. Further research and development

Our findings suggest that using the Enmesh application to exchange photographs and messages did have a positive effect on participants’ wellbeing and played a role in alleviating feelings of social isolation. The research also identified a number of challenges that participants faced in using the technology.

It is important to recognise that while technologies offer particular opportunities to extend older people’s social networks, social isolation cannot be alleviated by technology alone. This trial involved the development and evaluation of a socio-technical system. That is, the social context in which the technology was used was engineered to ensure Enmesh could be used as a tool for alleviating social isolation. One of the key lessons from this project was that participants felt it was important they had the opportunity to meet face-to-face in order to successfully build and maintain a social network. Furthermore, the two care managers played an active role in encouraging participant interactions. Their involvement was crucial to the success of the project.

Our trial indicates that there are opportunities for further developments in the use of communication technologies to help alleviate social isolation for older people. During the next stage of the project, we will continue to find ways for older people to build connections with each other and with other members of the community through the development and evaluation of socio-technical systems, building on the findings from this trial study.