

Providing Access to Social Networking Services for Elderly People

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Abstract. The aim of the Ambient Assisted Living Project Social Interaction Screen is to support social interaction of elderly people by easing access to existing Social Networking Services. In this paper, we present the solution that was developed in the project, the elderly interaction and service assistant (elisa). We discuss the design of the prototype and present first results of its evaluation in Germany and Spain. In general, the results showed that elderly participants with different social activeness and technical affinity enjoyed the social interaction with family and friends through a user-oriented tablet interface. Nevertheless, we were unable to convince members of social networks to share their activity streams due to privacy concerns.

Keywords: Ambient Assisted Living, Social Networking Services, Social Interaction Screen, elderly people.

1 Introduction

Research suggests that Social Networking Services on the Internet foster social interaction and awareness of individual activities resulting in a feeling of connectedness that could eventually lead to real-life meetings and new relationships [1]. In Germany 88% of persons aged 14-19 already use private online communities, but only 10% of people 60 years and above [2]. Based on our findings in the Ambient Assisted Living (AAL) project Social Interaction Screen (SI-Screen), we propose that the reason for the low presence of older people in Social Networking Services (SNS) is that older people encounter existing user interfaces of computer hardware and Internet platforms as usage barriers [3]. Elderly people with low technical affinity seem to have more difficulty learning to use computers [4]. As an alternative to requiring computer training, we focused on developing a simpler user interface and interaction paradigm suiting their personal needs. In our holistic approach, we recombined existing hardware components, applied new graphical user interface concepts and created a new way of accessing different SNS. In this paper we will present the solution we developed to make access to SNS easier and discuss the results of the first evaluation of the elderly interaction and service assistant (elisa).

2 Related Work

Several approaches exist to address user interface barriers and make SNS accessible for elderly users. Particular contributions can be found in projects on Ambient Displays and in the field of AAL.

The CareNet Display by Consolvo et al. [5] and the ePortrait by Tentori et al. [6] use digital displays to enable social interaction by connecting elderly people with SNS. With ePortrait Tentori et al. [6] developed a digital picture frame enabling elderly people to stay aware of the activities of their kin network. In their study elderly people tested ePortrait at home watching family photos of their relatives on the digital picture frame supplied by SNS. They found that elderly people in their tests began to integrate the ePortrait device in their daily life routine. In addition, family members started to upload photos and status messages more than usual. Even though the presented digital photo frames offer access to activity streams including awareness support, the devices' social interaction capabilities for the end users are rather limited. The Go-myLife AAL project¹ uses a web interface customized for elderly users to consume aggregated content from various SNS. However, computer skills are mandatory for using these advantages. Similar to our effort, InclusionSociety² develops a comprehensive solution supporting the elderly person with a tablet device. In contrast to our solution they require communication partners to use a dedicated web portal. A holistic approach comprising of dedicated hard- and software, relying on touchscreens was followed by Doyle et al. [7]. A commercial product focusing on fostering social interaction of elderly people is the Doro Experience³ offering applications for desktop and tablets. Instead of integrating SNS they rely on email communication.

3 Social Interaction Screen

The core innovation of the SI-Screen project is the creation of an easy to use digital device supporting social interaction of elderly people via the Social Web motivating the participation in real-life activities. Elisa is a portable tablet computer with customized graphical user interface and a server-based social middleware. Essential part of the solution is an innovative middleware that simplifies access to different SNS.

3.1 Overview

The basis of the hardware design is a 10.1-inch Android tablet. It is surrounded by a leather-covered frame, has a softly shaped back part that improves the grip and a solid stand for a safe two-hand operation for touch interaction. Hardware shape, user interface colors and tablet materials were evaluated by elderly people.

¹ <http://www.gomylife-project.eu/>

² <http://www.inclusionsociety.com/>

³ <http://www.doro.com/>

The graphical user interface of elisa (elisa UI) is a replacement for the classical Android home screen that hides apps and technical details. The front end is dedicated to visualize activity and content streams of SNS using a consistent card layout. The card layout is designed as simple and comprehensible metaphor for an information unit, abstracting from the appearance of underlying web platforms. For instance, a card resembles an article, a friend's status or an event summary.

The Social Software Integration Layer (SSIL) middleware enables elderly users on their portable elisa devices to individually access various SNS in a unified way while technical details remain opaque to them [3]. For this purpose the SSIL uses CommunityMashup [8] to unify profile data, activity streams (status updates) and content streams (comments, recommendations, photos) of existing social networks (e.g. Facebook, Google+), content sharing platforms (e.g. Flickr, Picasa), contact management (e.g. Google Contacts) as well as emails, website feeds, and personal blogs. The combination of the SSIL and the elisa UI enables the homogenous presentation of content from different sources in the front end. New information is frequently collected for each user from various SNS sources and synchronized for visualization.

3.2 User Interface Views

The elisa UI is divided into three main views offering information according to personal interests of the user: 1. Interests view presenting articles and news, 2. Friends view combining activity streams from different online communities, and 3. Activities view proposing daily events in the user's neighborhood.

The Interests view enables internal and external publishers to provide articles and news for elderly readers either through their proprietary web interfaces or using a content management system (CMS). We also introduced a photo of the day article taking high-quality photos from Flickr.

The Friends view promotes awareness of the family's and friend's activities. Users see one aggregated activity stream of emails and status messages from members of online social network services (Facebook and Google+). To achieve the homogenous presentation of the elisa UI we avoided to visually differentiate between direct messages (e.g. email) and status messages from different SNS. Instead we abstracted from the technical platform and ensured that every comment or reply from the elisa user is forwarded to the originating email server or SNS.

The Activities view is about the discovery of daily events to facility social activity within the near environment according to the interests of the elderly person. The elisa user is able to participate in any event and invite their acquaintances to join in the activity. In preparation for the field test we used predefined activities supplied by the SSIL. In Germany we were also able to integrate the web feed of a cultural center.

3.3 Limitations

The implementation of elisa and the integration of external SNS for the field test revealed several organizational and technical obstacles.

Articles view: Existing web content is semi-structured and cannot be easily extracted and presented in our layout. Due to copyright issues, reusing articles from publishers like newspapers would require a license agreement. As articles might be shared by elisa users publishers refrained from supporting the field test.

Interests view: The integration of members of family and friends was challenging due to privacy concerns. In order to protect the privacy of our elderly test persons, we tried to setup anonymous Facebook accounts, which were against the Facebook guidelines resulting in blocked accounts. Furthermore family and friends of test participants denied the integration of their personal Facebook accounts. Consequently, we were not able to integrate activity streams for the duration of the field test. Moreover it was difficult to convince family and friends to share their email addresses and Skype usernames for communication purposes.

Activities view: Integrating content on web feed basis had additional limitations. Most of the tested websites did not provide structured web feeds on RSS or Atom basis. For every remaining web feed we tested no images were available and the description text was cut off after a specific character length, requiring the user to visit the corresponding website. However, using a web browser broke with our card layout.

4 Evaluation

For verifying our concept we built and evaluated three evolutionary prototypes based on requirements gathered from end users. We followed a user-centered design process in order to assure a usable solution for our target group. Involvement of elderly people was archived by focus groups, interviews and user studies.

The first prototype was realized as clickable mockup application to evaluate the comprehensibility of our graphical layout designs. For the second prototype, we concentrated on testing the user's acceptance of the elisa UI with horizontal navigation and animated transitions. The evaluation revealed a high acceptance rate for applied usability concepts [9]. Finally, for the third prototype, we improved the usability of elisa and introduced the SSIL back end system to synchronize data from SNS.

The third prototype was tested during field studies in Spain and Germany over a period of 12 days. For every country we selected ten elderly participants differing in social activeness and technical affinity. The aim was to evaluate the effectiveness of elisa with different types of elderly people and if our solution achieves our goal to foster social interaction and activity. During the first week the test persons had to solve three tasks every day, for example to find and participate in an interesting event. In the second week, no specific tasks were assigned and the users had to use elisa on their own. Besides automatic logging in back end and front end, the user had to fill in a prepared diary every day, noting down difficulties, duration and location of use.

First results seem promising and qualitative data from the German field test [10] is provided in the following. The data was collected during a focus group at the end of the field test. All participants stated that the system is user-friendly and met their personal needs. Elisa was perceived suitable for people with low technical affinity. Test persons with prior no or little technical experience required guidance during the first week but they used the application confidently during the second week and finally enjoyed the advantages of elisa.

5 Conclusion

In this paper we presented the third prototype of the elderly interaction and service assistant with its three user interface views. We highlighted our limitations for integrating existing SNS during the field test and concluded with our initial findings. Although we were not able to test the integration of activity streams of members of social networks, elderly participants irrespective of their prior technical knowledge enjoyed the ability to communicate and stay aware about the activities of others using email. For a future product, we have to convince publishers to use elisa as platform for publishing articles or at least to make articles published elsewhere available for elisa with all the meta information. Apart from technical challenges, we still have to overcome social barriers in order to fully take advantage of online communities to foster social interaction for elderly people.

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