Social Networks: Technological and Social Aspects of Social Network-Mediated Interaction of Elderly People

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Abstract. Services for the social interaction of elderly persons are here considered here and described. After an initial analysis, the implementation within the framework of an existing Social Network Site, such as Facebook, is proposed.

Keywords: Social network sites · Elderly people · Social interaction

1 Introduction

Social interaction, for combating feelings of loneliness and isolation, is an essential aspect of inclusion for elderly people. A number of services for social interaction based upon ICT solutions have been created in different contexts and tested in different projects, even if they are often not particularly efficient and effective and sometimes even trivial. This contribution starts from an accurate analysis of the main elements involved in this process, considering both social and technological aspects and then describes the set-up of a specific service on an existing platform for Social Network Sites.

2 Social Aspects

Social interactions are one of the fundamental human activities, the features of which have been carefully studied and classified. For example, in the WHO ICF classification (International Classification on Functioning and Disabilities) [1] many references to social interactions can be found in both the Activities and the Environmental Factors sections. Chapter 7 (Interpersonal Interactions and Relationships) describes in detail all tasks and actions required for simple and complex interactions among people.

Even a preliminary analysis of the ICF classification clearly shows the difficulties of the problems connected with social interactions. First, the list of interpersonal communications (d730-d779) is of interest from the perspective of exemplifying the complexity of the social network of each person, as it makes possible the formal identification of how many types of relationships it is necessary to consider and the possible problems of all of them. In a preliminary examination, the d750 (d7500-d7504) and d760 (d7601-d7603) classes can be considered. For example, for the Family Relationships

class (d760), the Parent-child and Child-parent relationships (d7600, d7601), the Sibling relationships (d7602), and the Extended family relationships (d7603) can be examined. These imply relationships between people of different ages, which is one of the points of discussion when network-mediated interactions are considered. Another element in this analysis is the group of Informal social relationships (d7500-d7504). Five different groups of people are considered: friends, neighbors, acquaintances, co-inhabitants, and peers. The groups in the social life of people outside the family are completed with groups that are part of the formal relationships (d740). In this group of particular relevance is the group of service providers. Even if the social interactions of people are probably reduced when they grow old, some of them are important for social integration. One example is the group of service providers, public as the ones dealing with certifications or hospital reservations or private, as shops where e.g. food can be ordered or bought. If people may be kept connected to their social environment, particularly when they leave their home to be recovered in an institution, this can significantly contribute to their well-being [2] (Fig. 1).
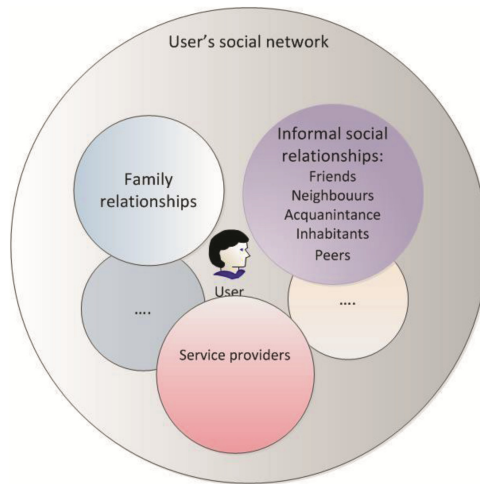

Fig. 1.   User social network representation

The complexity of the interaction can also be considered. For example, in Chapter 7 of ICF, there is a division into General Interpersonal Interactions (d710-d729) and Particular Interpersonal Relationships (d730-d779). In the first group, the interaction elements are structured, considering e.g. Tolerance (d7102) and Criticism (d7103) in relationships. These factors could be particularly critical when dealing with old people, who are often very sensitive to criticisms, particularly when dealing with the use of technology. From this perspective, the presence of a moderator in services dealing with group social interactions should probably be taken into consideration.

Finally, in ICF it is also taken into account that personal interactions involve communication processes that can be defined as [3] "the exchange of information, feelings and meanings through verbal and non-verbal messages including two or groups of people".

Therefore, other chapters in the classification could be relevant, such as Chapter 3, which deals with communications. The definition of d360 (Using communication devices and techniques) "Using devices, techniques and other means for the purposes of communicating, such as calling a friend on the telephone" can also be considered to be a direct link of social interactions with the use of ICT technology.

In modern society, when social interactions are considered, the concept of distance should also be taken into account. The physical distance between people can cause a feeling of loneliness that has an influence on the physical and psychological well-being of people. In addition, health problems, even if minor, or a slight reduction in mobility can reduce contacts including also those with relatives [4]. Therefore, interpersonal communication, even if nor face-to-face but mediated by a telecommunication system, can contribute to individual well-being. An old and simple type of telecommunication equipment, as the telephone, is a testimony to this fact, even if only the audio component is available to transfer information and communicate feelings. The telephone allows a single-synchronous channel. It is very far from the potentials offered by modern computer-mediated communications systems, able to transport synchronously or asynchronously all information components: texts, audios, pictures, videos. An example of advanced systems with the above characteristics is Skype.

The main problem dealing with old people is the acceptability of such systems, including as part of acceptability also the concepts of usability and accessibility. One of the aspects to be discussed is that each of the above outlined social relations can be taken care of independently or can be integrated as uniformly as possible in a common communication platform. The second option can give to the person the idea of being really part of a social network and can favor the use of the available services due a coherent approach and interface.

As a preliminary conclusion, it can be observed that:

- The set of relationships that constitute the social network of people is very extensive, much more so than can be identified simply by focalization on a specific angle;
- The concept of community in a physical space is progressively being replaced by the concept of an on line community;
- The use of technology to cancel out physical distance at an interpersonal communication level is positive. It has also been widely used in the past (telephone);
- The adoption of a common platform that unifies access and interaction procedures may be in principle useful in facilitating its use.

3   Technological Aspects

Technological aspects require a careful analysis. In the previous section a number of preliminary observations have already been offered. Examples are the use of telephone as an existing device for technology-mediated communication between people, and the advantage of a uniform platform and interface for the social network of any person, extending from relationships with family and friends, up to the ones with service providers. However, additional analyses are necessary about modifications of

interpersonal communication processes, due to the recent technological developments. A first crucial aspect is the different role that Internet is assuming in the Information Society. Internet is no longer solely a source of information, but more and more an interpersonal communication platform and a channel for social relationships. Moreover, the increasing use of Social Network Sites (SNS) is leading a new definition of community, no more limited by proximity, but also including distributed networks of people, which offer new opportunities for social connections.

From the point of view of technological implementation, for the design of a social network service at least two different approaches can be adopted:

- The development of specific product;
- The Use of currently available platforms according to the specific requirements of the service.

The first solution implies, for example, the addition of a specific chat channel for interpersonal communication in an application where other service components are already available. An example is the food application developed in the FOOD (Framework for Optimizing the prOcess of feeDing) project, active in the framework of the European Ambient Assisted Living (AAL) program [5]. On the interface tablet, where the kitchen lists all shopping items, the user may also find a chat to ask her friends if an ingredient is necessary in a recipe. With this approach, accessibility and usability aspects can be optimized, if the application developers have a sufficient knowledge about these topics. Moreover, it probably requires an easier and faster phase of training for the use of the application functionalities and the interface components. Anyway, the implementation is limited to a specific application, and therefore to only a component of her social connections.

An additional critical aspect of this solution is represented by stability and robustness: if the product does not present high levels of these characteristics, it introduces heavy barriers to elderly people, because they are unable to distinguish between an error in the procedure and a bug in the software.

The second approach is the adoption of already existing platforms as a basis for the implementation of the necessary application, the so-called Social Network Sites. Even if many of them are available, in this contribution the more widespread i.e. Facebook, is considered. As for the use, from http://newsroom.fb.com/company-info/ the following information is available:

- 890 million daily active users on average for December 2014;
- 745 million mobile daily active users on average for December 2014;
- 1.39 billion monthly active users as of December 31, 2014;
- 1.19 billion mobile monthly active users as of December 31, 2014.[1]

From a technological perspective, this implies a robust and affordable platform, which is not comparable with ad hoc implementations. Even if many people still believe that such platforms are only used as an entertainment by the young generations, the actual dimensions of the phenomenon are clearly expressed by the reported figures. Data relative to user

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[1] Approximately 82.4 % of daily active users are outside the US and Canada.

age distribution are also available. Publications, such as [6, 7], confirm a wide distribution of the user age, while outlining differences in the use of the application. A different importance, for example, is attributed to the various communication channels, but no rejection by specific categories is reported.

A second concern of utmost importance in the field of e-inclusion is accessibility. Facebook takes also care of this aspect, with a specific page oriented to the problem: http://www.facebook.com/help/contact/169372943117927. The page assembles all observations in a structured way, so guarantying, at least in principle, an interest to the problem and an extended network that works on it.

3.1 Presentation of the Platform to Elderly Users

When the use of general-purpose platforms for the implementation of social interaction services is considered, an aspect appears particularly crucial, i.e. the presentation and introduction of these communication systems to persons who are not acquainted with the use of the new telecommunication environments or only use few of their features. With reference to [8], first it is necessary to present the goal of the platforms, with a clear description of the basic underlying concepts, which have to be discussed with the users before starting any activity on them. Then, how to create an account must be described, showing the way to modify the personal profile with some example about how to add data to it. Finally, support should be offered in the identification of groups of interest connected to the specific activities of each user. Reactions coming from the user and showing their needs and difficulties should guide the support actions. The training is much more crucial if the users do not present a natural attitude towards the use of the systems. The learning phase may result significantly heavier for them.

4   A Practical Example

In the FOOD project, a community of about 30 families of elderly users are testing services related to feeding. While these elderly people are already using an application specifically developed for managing services related to food and cooking, the project consortium is discussing the adoption of a general-purpose social network application, as Facebook, for social interaction, which results of particular importance in this context.

Most of the scenarios describing new services are often written without specific references to currently available technologies and tools. This is due to the lack of a language that can be easily understood by people with different expertise, to allow fruitful discussions on multidisciplinary aspects. When this discussion about a useful scenario is made possible, in order to translate the description of the scenario in a product to be tested by users, several approaches can be adopted. In FOOD a solution based on the use, as much as possible, of already widely available tools and applications has been proposed.
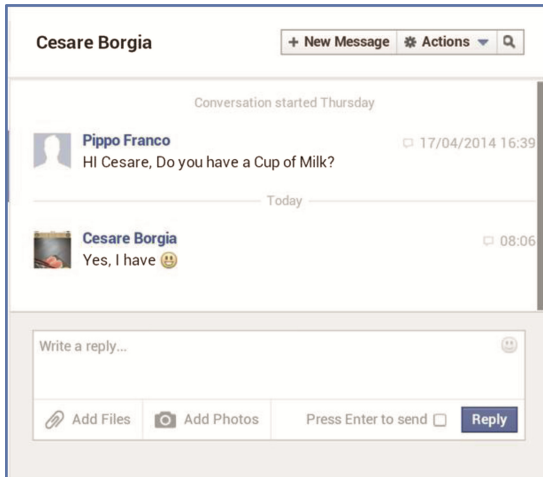
Fig. 2. Chat example

One of the scenarios discussed in the project is based on a social network, which involves friends, neighbors and, at least in principle, other actors such as shopkeepers, with the aim to organize a lunch. The corresponding service can be decomposed in a list of tasks. After these tasks have been clearly described from the perspective of technological implementation, their features can be compared with the features available in existing applications, such as Facebook, and translated as specifications for this specific environment. When the feasibility of all tasks has been checked, the service can be reformulated in the language of the adopted tool.

The organization and management of a service as the one foreseen in the above scenario, requires that the adopted system is able to perform three main tasks:

- To allow the creation and management of a group of people, such as an on-line room;
- To facilitate discussion;
- To help in the organization of an event.

The first task is easily implemented within Facebook, which allows the creation of a group, with the selection of a name, a list of members and a specific level of privacy. The second task is also easily available, because members of each group can have a direct communication with individual members of the group through a chat or with the entire group through the post. In Fig. 2 an example of the chat is presented. In this case, the chat is used to ask a friend an ingredient for the lunch that the group is organizing. A video communication, if necessary, is also possible using the option of linking Skype, provided in the chat menu. Finally, in Facebook (see Figs. 3 and 4), a member can create an event and other members can adhere or not. The name, the context, the location, date, and people to be invited can be introduced. A poll about how many people are available ("Ask Question" button) can also be included.
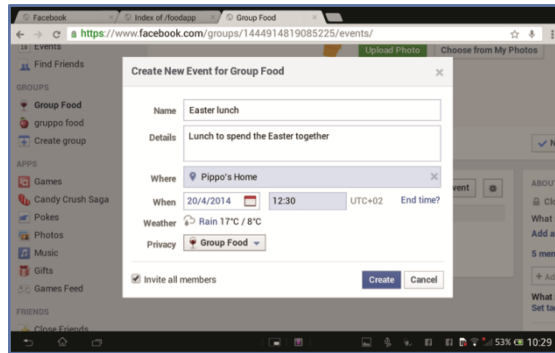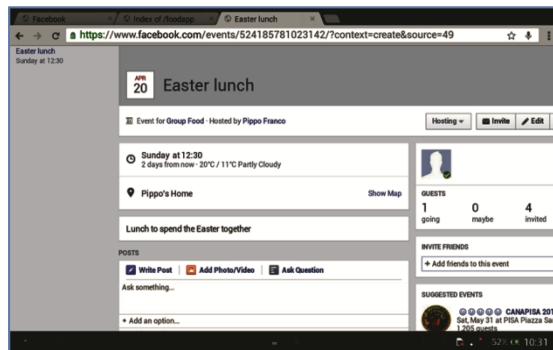
Fig. 3. Event creation

Fig. 4. Event visualisation

Therefore, after having tested the technical feasibility, in order to set up the service the pilot leaders have been asked to proceed with the following steps:

1. Create an account for each user, if this has not yet been done. It is possible to use the language of the country;
2. Create a group for each pilot, for example called FOOD_countryname_1, FOOD_countryname_2, FOOD_countryname_3. The task can be implemented by the pilot team responsible, with just a few settings[2];
3. Fill the list of contact with the names of pilots' participants;
4. Start with an exchange of messages among users;
5. Create an event, for example a lunch together. All users can reply to the invitation and see the list of people, who are involved. With the help of other available applications, a menu can be decided, according to different needs and preferences. A draft

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[2] Data to be set: privacy options, contacts to be added. Among the three different privacy option (open - the group is visible to all Facebook contacts, closed - the group is visible to all, but the posts can be seen only by members of the group, secret - only group's members can see the group), it was suggested to start with "Secret option".

of the menu can be posted by the host and other participants can reply with their suggestions, up to the final version;

6. Simulate a cooperative shopping. When a list of ingredients is ready, if the chef needs some special ingredient, she can ask other users via Facebook to check shops and markets around them and find what she needs;

7. Collect opinions after the event, through the chat.

5   Discussion

The idea of this specific implementation on Facebook has been first presented to the whole FOOD consortium during a plenary meeting, in which also the responsible for the three pilot sites were present. The greatest barrier turned out to be just the adoption of a Social Network Site. The vast majority of partners considered these platforms too complex, not secure enough and distracting for elderly people. These reactions are probably due to an insufficient knowledge of the systems and their technological possibilities. Partners only associate these products to social entertainments for younger generations, while the products are usable in complex environments. This phenomenon is quite common in the field of ICT services, where many people limit the use only to the most common features, without asking if and how different modalities are conceivable. A careful analysis of the technological components leads to the identification of different uses, especially when different categories of potential users are considered.

A second reaction was collected when the service was presented to a limited group of users, asking the question: "Do you agree on a trial with Facebook?", with the only option Yes or No. In this case the reaction was not again completely positive, probably because, as described in Sect. 3.1, a more accurate introduction of the service is required. Presently, different approaches to describe this approach to the final users is under study. Other platform will be studied and tested, but the fundamental idea is to try the use of existing, robust tools with a large number of features already available.

6   Conclusion

Social Network Sites present elements of interest not only for young people, but also for people with limitations to their activities and abilities, and also for elderly people, especially as far as social interaction services are concerned. An analysis of the classifications, the surveys and the examples already available is required before the core methodology to be applied in this specific field can be defined. An example within an ongoing project was presented. The future work will be devoted to verify the actual response of people to such services and to extend the use to other activities of social networking.

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