Digital Personalized Health and Medicine
L.B. Pape-Haugaard et al. (Eds.)

doi:10.3233/SHTI200328

User-Centred Approach to Design an Online Social Support Platform for Seniors : Identification of Users' Types and Their Requirements

Arnaud RICCI[a,1], Jessica ROCHAT[b], Henk Herman NAP[c], Lotte CORNELISSE[c], Christian LOVIS[a,b], Frédéric EHRLER[a]
[a] *Division of medical information sciences, University Hospitals of Geneva, Switzerland*
[b] *Faculty of medicine, University of Geneva, Switzerland*
[c] *Innovation & Technology of eHealth, Dutch Expertise Centre on Long-Term Care, Vilans, Utrecht, The Netherlands*

Abstract. A well-designed social platform has the potential to reduce senior isolation and promote active ageing. However, to design tools that respond to the user need it is important to understand what types of seniors will use it and what are their needs. Through a user-oriented approach at several design stage: focus group, co-creation and usability test we were able to identify the different roles related to the use of the platform, which allowed us to classify them by type, each type having very specific needs. Among the types of users identified, "Active users" are looking for an efficient platform. "Socialiser users" are more passive and mainly interested to participate in activities and are sensitive to trust. "Low skilled users" have limited digital skills and must be accompanied to start with the platform. Finally, "Sporadic users" lack of time to actively use the platform but would use a platform involving a large number of stakeholders. It is important to include all these different types of users in the design phase to ensure the future success of the social platform.

Keywords. Aged, social participation, social media, needs assessment, user-computer interface

1. Introduction

While good quality of life among seniors is correlated with an active social life [1], loneliness is strongly associated with depression, thus decreasing well-being of elderly [2]. Unfortunately, prevalence of loneliness in Europe is still high since it has been measured at 9.6% in older adults [3]. One way to fight isolation is to strengthen the social link between communities. Researches showed that participation in social activities can be motivated by online social support platforms [4,5]. While some researches have studied seniors' requirements to use social media [6-9], only few studies have focused on the different type of seniors' users and their heterogeneous needs. *PaletteV2* is a

[1]Corresponding author: E-mail: Arnaud.Ricci@hcuge.ch

European project aiming to develop Palette, an online social support platform for seniors to encourage them to an active and social life. The aim is to provide to seniors a user-friendly online platform that gives them access to likeminded people and activities, aligned with their interests. They can create different types of events such as recreational or volunteer events and search for their activities according to their interests and by type of event. They can also easily discuss with the creator of the activities.

It is known that ageing influences how people feel comfortable using technologies and how they learn to use new technologies [10]. To ensure the success of any product and its adoption by users, it is essential to understand end-users needs and to design and evaluate it with a range of potential end-users at each stage [11]. An iterative user-centered design process took place in which the interface was iteratively ideated, designed and evaluated with end-users at each stage of the project. In this article, our goal is to present the different users types of such platform and their requirements.

2. Methods

The development of the social platform named "Palette" was conducted as an iterative process involving targeted users at each stage. First, focus-groups allowed us to identify user's difficulties and needs [12]. This stage highlighted their desire of seniors to engage in meaningful and social activities. Then, co-creation sessions were organized to understand how an online platform could support this goal and to ideate the platform functionalities with end-users [9]. Finally, prototypes and final platform were iteratively tested with end-users to assess and improve the usability [13].

During this whole process we collected a large amount of information about our user group and aimed to classify them into categories regarding their intended and actual use of the platform. Then we associated these categories with their main need and barrier regarding the platform

Although there is no strong consensus on a single taxonomy, there are several attempts to classify social network users in particular categories depending on their behavior. To classify our users, we were guided by the research of Brandtzaeg & Heim (2011) [14], which define five roles of users on social networks: sporadics (new comers and users who use the platform irregularly), lurkers (people using media for lurking or time-killing), socialiser (early majority, intermittent contributors), debaters (early adopters, intermittent contributors), active (users who actively participate on social networks).

3. Results

3.1. Participants

In total, 165 end-users participated in the participatory design process of the platform. Focus groups were held in 3 countries, Switzerland, the Netherlands and Romania from August to December 2016. The first session was organized in the Netherlands and Switzerland and included 4 participants each time (average age = 75 years) and the focus groups that followed included 2-3 sessions each with 4-6 participants aged 50 to 80 years (average age = 64 years). This represents a total of 41 participants. Co-creations sessions took place in March 2017 in the same countries with a total of 47 participants (mean age = 67 years). Concerning usability testing of the platform, it involved 5-10 participants

ages between 50-80 years old (mean age = 68 years) in each country with a total of 77 participants.

3.2. Types of users and their requirements

During the different design phases, we were able to classify our participants into 4 categories guided by the Brandtzaeg & Heim model (2011). However, we had to create a new category to consider users who do not have the necessary skills to use the platform despite their willingness to use it.

Some participants did not have the necessary skills to get involved, others wanted to get involved minimally, others wanted to be actively involved and finally participants did not have the time to get involved. Based on these 4 types of users we associated their need and barrier from the data collected at the different design stages,

Table 1. Type of users, needs and barriers

Type of user	*Needs*	*Barrier*
Low skilled user	*Improving digital skills*	*Independence*
Socialiser user	*Platform offering a wide range of activities and a wide variety of offers*	*Trust*
Active user	*Easy-to-use platform with feedback and* quickly and easily publish and evaluate events	*Poor platform ergonomics*
Sporadic user	*Have all the activities organized in the municipality*	*not a lot of time (socially active) and very busy*

Low skilled user - seniors with poor digital skills
Due to their poor digital skills, some of these seniors do not have an email address. They also have difficulty using a keyboard or a mouse. People with such profile needs to be helped in order to use the platform. This category of seniors considers that the use of the platform could be a good way to improve their digital skills. To use the platform by their own, they would need a support functionality. Organizing meetings to teach them the basics of computer use in addition to test the platform could be beneficial to them and could allow this category to benefit from this service. This is a category that is not found in the Brandtzaeg & Heim (2011) model because their model does not take into account people who do not have enough skills to use social networks but would like to use them.

Socialiser user - seniors who just want to participate in activities
This category can be considered as poorly qualified regarding their digital skills. They sometimes have doubts about Internet security. Some of them don't feel safe trying things on the Internet and they are afraid of making mistakes. They are interested in the concept of the platform and want to use it to meet people and find activities but they don't want to organize events themselves. For these seniors, it's necessary to offer a platform offering a wide range of activities and a wide variety of offers, including support services. They would like to have a system that shows all the offers grouped by municipality or region. This category of users' needs to know that the platform is

trustworthy. One way to do this is to use a moderator to moderate the content. Ideally, it should be a local person who can be contacted by phone or email.

Active user - seniors who are active and want to offer events
This profile of seniors is active and wants to help others, invite others to join activities in which they have already participated or to propose activities they organize themselves. They are often more comfortable with digital than the others. They are often effective in explaining to other seniors how the platform works. The platform must be easy to use with system feedbacks. For example, that tells them that they have correctly created their events and to make sure that other users have access to them. For people who offer several activities it's important to quickly and easily publish and evaluate events. In particular, it should be possible to create an event without a specific start and end date.

Sporadic user - seniors who are socially active and too busy
This category of senior are very socially active with a busy schedule, they don't feel the need to use such platform. They don't really have something to offer and they don't need to use it to have social contacts and participate in activities. Although this category of seniors is not the most concerned by the platform, it can be useful for them to have a platform where all activities of municipalities and organizations are centralized and displayed. The platform could be used by some as an online agenda and replace the activities posted on the different websites.

4. Discussion

Seniors attitudes' and uses' of digital tools in known to be heterogeneous [15]. The user-centered approach used throughout the project allowed us to identify four types of users to consider when creating an online social platform for seniors. Each type have specific needs and thus a different use of an online social platform.

Among the types of users identified, the "*Active users"* want to participate actively to the platform by providing a lot of activities. For them, the most important is to have an efficient platform to avoid losing time in using the platform. To satisfy this need, it is important to be able to filter by categories the different events proposed. It is also important to be able to sort according to the user's interests, otherwise the platform becomes complicated to use when it offers many events. *"Socialiser users"* are more passive and mainly interested to participate in activities. They are looking for various content and are sensitive to the trust in the platform. To address trust issue, a moderator role is important to moderate the content and strengthen users' trust in the platform. "*Low skilled users"* have limited digital skills, highlighting the importance of offline training sessions to help to get started with the platform. It is also necessary to ensure that the various functionalities are easy to access and use. Online tutorials should also be offered to these users. Finally, *"Sporadic users"* are already socially active and lack of time to actively use the platform, they would still use it as an event reference if the municipality's activities were listed on it. This requires involving stakeholders like municipalities as event provider in platform if we want to attract this type of senior.

When developing such platform, it is important to include all types of end-users into a user-centered process to make sure the tool meet the needs of all users.

References

[1] M. Levasseur, L. Richard, L. Gauvin, É. Raymond, Inventory and analysis of definitions of social participation found in the aging literature: Proposed taxonomy of social activities. Soc Sci Med 71 (2010), 2141–2149.A.N. Author, Article title, *Journal Title* **66** (1993), 856–890.

[2] Cacioppo JT, Hughes ME, Waite LJ et al (2006) Loneliness as a specific risk factor for depressive symptoms: cross-sectional and longitudinal analyses. Psychol Aging 21:140–151

[3] Eurostat, Union européenne, Active ageing and solidarity between generations: A statistical portrait of the European Union. Publications office of the European Union, 2012

[4] C. Cachadinha, J. A. Costa Branco De Oliveira Pedro, J. Carmo Fialho, (2011). Social participation of community living older persons: Importance, determinants and opportunities. Proceedings of the 6th International Conference on Inclusive Design "The Role of Inclusive Design in Making Social Innovation Happen", (2011).

[5] Goswami, S., Köbler, F., Leimeister, J. M., & Krcmar, H. (2010, June). Using online social networking to enhance social connectedness and social support for the elderly. Association for Information Systems.

[6] Gomes, G., Duarte, C., Coelho, J., & Matos, E. (2014). Designing a facebook interface for senior users. *The Scientific World Journal*, *2014*..

[7] Chou, W. H., Lai, Y. T., & Liu, K. H. (2013). User requirements of social media for the elderly: a case study in Taiwan. *Behaviour & Information Technology*, *32*(9), 920-937.

[8] Karahasanović, A., Brandtzæg, P. B., Heim, J., Lüders, M., Vermeir, L., Pierson, J., ... & Jans, G. (2009). Co-creation and user-generated content–elderly people's user requirements. *Computers in Human Behavior*, *25*(3), 655-678.

[9] Rochat, J., Nap, H. H., Ricci, A., Cornelisse, L., Lukkien, D., Lovis, C., & Ehrler, F. (2018). Designing an Online Social Support Platform Through Co-Creation with Seniors. *Studies in health technology and informatics*, *247*, 760-764.

[10] Barnard, Y., Bradley, M. D., Hodgson, F., & Lloyd, A. D. (2013). Learning to use new technologies by older adults: Perceived difficulties, experimentation behaviour and usability. *Computers in Human Behavior*, *29*(4), 1715-1724.

[11] Gulliksen, J., Göransson, B., Boivie, I., Blomkvist, S., Persson, J., & Cajander, Å. (2003). Key principles for user-centred systems design. *Behaviour and Information Technology*, *22*(6), 397-409.

[12] R. A. Krueger, M. A. Casey , Focus groups: A practical guide for applied research. Sage publications, 2014

[13] Bastien, J. C. (2010). Usability testing: a review of some methodological and technical aspects of the method. International journal of medical informatics, 79(4), e18-e23.

[14] Brandtzaeg, P. B., & Heim, J. (2011). A typology of social networking sites users. International Journal of Web Based Communities, 7(1), 28-51.

[15] Czaja, S. J., & Lee, C. C. (2017). The potential influence of the internet on the transition to older adulthood. In *New dynamics in old age* (pp. 239-252). Routledge.