Enhancing engagement and participation of seniors in society with the use of Social Media – The case of a reflective participatory design method story

Klaudia Çarçani [1], Christina Mörtberg[2]

[1] Faculty of Computer Science, Østfold University College
klaudia.carcani@hiof.no

[2] Department of Informatics, Linnaeus University, Sweden
christina.mortberg@lnu.se

Abstract. An ageing population is an emerging phenomenon in Europe and the rest of the world. Seniors face issues of social isolation and loneliness. Recently the research focus in ICT design has also turned to social media that can sustain seniors' engagement and participation in social activities even when it is physically a challenge for them to leave home. Design and re-design of social media may support seniors' engagement and participation in social activities, contributing to mitigate the feeling of loneliness and social isolation. In this paper, the focus is on understanding seniors' social activities and their relationship to social media which may support their relationship. With Participatory Design – a reflective design approach, we have involved seniors in reflecting on possible future social media that can support and enrich social relationships. The participative methods used are cartographic mapping and future workshop, both appropriate for seniors to get involved in reflecting, thinking and making design alternatives together with other participants. We discuss how is to involve seniors in PD and what we need to know to design better future social media that can support seniors.

Keywords: PD, seniors, social media, participation, social relationship

1   Introduction

In the European countries as well as in the rest of the world the population is growing older [1]. The so-called tide-wave-of-elderly is also shown in the statistics, e.g. in the European Union zone, the percentage of persons over 65 is expected to be around 30% of the total population in 2060 [2]. The changes in the demographic structure in Europe and in a global context will have a substantial social and an economic impact on societies [3]. Researchers from different scientific fields are paying more attention to this phenomenon.

Usually, ageing is related to the clinical and biological changes that happen to the human body with age, but ageing also implies shifts in roles and social positions, loss of relationships, goals and priorities [4]. In their paper, Hall and Havens [5] emphasise two dominant issues as consequences of ageing in contemporary societies, namely: social isolation and loneliness. They argue that this might come due to the loss of ability of seniors to participate in most of the social activities they used to

participate before. The concept of loneliness is not connected only with the idea of living alone but also with one's feeling of dissatisfaction with social contacts regarding the number of contacts, quality of relationships or both. Lindley et al. [6] argue that with ageing, people become more keen on their social relationships. They want to spend more time with the people that matter the most to them and which makes them happy. However, a physical and cognitive decline due to ageing can be a challenge to the desire for increased social intercations. Thus, it becomes crucial to research on how to enhance engagement and participation of seniors in their social environment to alleviate loneliness and social isolation.

In the last decades, an array of technologies has changed the way people interact with each other depending on the availability of Internet-based communication systems such as email and social networking services like Facebook and Twitter [7]. Social media and the Internet have influenced people's communication and their engagement in the society. We will use the term "social media" as described in the Oxford dictionary: websites and applications that enable users to create and share content or to participate in social networking[8]. As Fuchs [7] expresses in his book *Social Media a Critical Introduction*, social media is one of the primary technological influencers of the last decade regarding human social relations, organisational structure, and cultural practices. Thus, social media can be a useful means to enhance the engagement and participation of seniors in their social environment contributing in this way in diminishing their loneliness and social isolation. In Beneito-Montagut et. al.'s [9] literature review of internet-mediated social interactions and the effect it has on mitigating social isolation and loneliness, the authors conclude that despite the recent increase in studies, there is still little evidence to show internet effects on social isolation and loneliness. However, Findlay in [10] states that Internet usage helps in lightening feelings of social isolation and loneliness in older adults by promoting participation. Khvorostianov et al. Khvorostianov et al.[11] also showed the positive role that internet services play in the lives of older Jewish immigrants from the Former Soviet Union in Israel. Moreover, Jung and Sundar [12] show how social network sites help seniors to maintain their collective sense of social wellbeing and thereby improve their quality of life.

While social media might help to enhance seniors engagement and participation in social activities, an interesting discourse has been going on regarding the design and redesign of social media. Researchers (e.g. [13-16]), argue that designing appropriate social media it may enhance engagement and participation of seniors in the society, thus mitigating the effects of loneliness and social isolation. Moreover, Brandt et al. [17] in their Co-design Senior Interaction project, explored how to maintain seniors' interaction and social networks. They noted like some other researchers that older people are not a homogeneous group as well as that many of them are very active. This prompted them to establish the notion 'situated elderliness' to honour seniors embodied knowledge and to avoid too homogenous descriptions of seniors' everyday practices.

Thus, this paper aims at contributing to increase knowledge about how to design social media that will enhance seniors' engagement and participation in social activities.

Participatory Design (PD) – a reflective design approach and participative methods will be used to examine seniors' social interactions and the role that technology plays

in it. PD emphasises the idea that, those who will be affected by the design of new information technologies or digital artefacts, should have a say during the design process of these technologies [18]. Thus, to articulate their needs, seniors will be involved in a research project which aims to get an understanding of senior's social relationships, and where social media stands in supporting these relationships. [19] recommends the involvement of seniors in the design process for the researchers to understand better, not just seniors' use of technology, but their attitudes and the unique and situated contexts of seniors' lives.

This paper will be structured as a method story [20] from a PD project with senior citizens to understands their social relationships and their requirements about social media services that will help them to keep social relationships even at an older age. It presents designers notes and methodological reflections [21] and concludes with a list of requirements of seniors needs regarding social media that can enhance their engagement and participation in social activities. The requirements are a result of the data collected in co-design sessions with seniors. Thematic analysis [22] was used during the sessions and after to categorise the issues discussed in main themes. Thus, the other aim of the paper is to contribute to PD at a methodological level of how to apply PD methods to actively involve seniors in participative sessions.

The rest of the paper is structured as follows. First, Participatory Design (PD) as a design approach is presented including arguments why PD can help seniors express their wishes and urge them to think creatively about their social relationship and the role of social media can play to support seniors' social engagement and participation. This is followed by a presentation of the research setting, the participants and the methods used in the exploration of seniors' social relations and the role social media plays in their social interactions. Further, from the main outcomes of the workshops are presented. The paper ends with a discussion of the outcomes, the use of a reflective design approach followed by concluding remarks.

2   Participatory Design approach

Participatory Design (PD) was established at the end of the 1970s with the aim to democratise both the working life and the design process [23]. PD emphasises the idea that those who will be affected by design should have a say in the design process [24]. Hence, as stated by Simonsen et al. [25], PD perspective does not just have something to say but also "influencing the outcome". Users are considered "domain experts" [25]. Thus, their participation in the design process of new technologies which will be used by them is crucial. Genuine participation means the exchange of values and knowledge among participants with the aim of achieving mutual learning. Democratic practices and mutual learning would help to balance out power relations among the participants in PD projects [24].

Furthermore, Ehn [[26], p.62] wrote that 'the origin of design is in involved practical use and understanding, not detached reflection, and design is seen as an interaction between understanding and creativity. This enables interactions between users and designers, to collaborate, to create, develop, express and evaluate ideas and visions regarding design suggestions'. PD has also been influenced by Donald Schön's [21] work with key concepts such as "reflection-in-action and

"conversations-with-the-material-of-the-situation" [[27], p. 46]. Thus, PD comprises a reflective practice paradigm including a collective 'reflection-in-action' between multiple participants. Although PD has evolved, it still has the same core assumption: to examine the tacit aspects of human activity and to examine practices in an ethical and accountable way through cooperation and partnership with the participants [25, 28], Author]. Sanders and Stappers refer to this as co-design [29] "collective creativity as it is applied across the whole span of the design process.

Thus, we argue that the PD approach was suitable for this kind of research. First, seniors are the domain experts of their life. Only by involving them in the design process the designer can get first-hand information on what their needs are. Usually, the design of interactive artefacts and services builds on an ideal user, rather than accounting for heterogeneity and people's situatedness [30] and also Culén, Finken and Bratteteig [31]. They showed how too small buttons, interfaces' inconsistent use of icons, and limited acknowledgement of both cognitive and bodily abilities to master interactive technologies might cause a too high level of complexity for seniors. Thus, the involvement of seniors in the design of technologies that will be used by them, makes their participation in design session essential. Secondly, having a democratic process which promotes genuine participation is especially relevant when the focus group of design, is "fragile". PD commits in designing for seniors and "with" seniors. A range of participative methods has been developed to involve a range of participants in the design of social media. Some of those methods and techniques are used in this research [32].

Technology, as well as design, has evolved since PD was established in the 1970s. It has become more "heterogeneous, partly open and public, engaging users and other stakeholders across organisational and community borders" [[27], p. 57]. One of the challenges of designers and the design community as described in Bjögvinsson, Ehn and Hillgren [33], is to move from designing "things" (objects) to designing Things (socio-material assemblies of humans and non-humans through which matters of concerns are handled). The usage of PD in our research refers to the design of Things. Rather than aiming to design a specific social media site, the aim is to explore seniors' daily activities, social interactions, and visions of social media. The idea is to get a broad view on how seniors experience engaging in social activities and then think with them on how the technology can contribute to improving their experience.

Moreover, in previous PD research seniors have been involved as active participants in the co-design of new technologies [34-37]. Rice and Carmichael [34] state that it is important to emphasise that there is still a requirement to explore methods to engage older users in the development of new technologies fully. Hence, our research can contribute to the myriad of research already done in the context of actively involving senior in co-design session.

In [38] the authors, suggest the sharing of designers' experiences through method stories [20] is the best way of moving forward in the crystallisation of participatory design techniques. Lee [20] writes: "Method stories will help designers reflect on the selection and use of methods more effectively because such stories do not strip away the rich contextuality of actual use, including method application in and adaption to a specific context," says. Telling the story of a method means describing how the method has been implemented, the activities involved, who participated, decisions

made and conclusions, and presenting all this in the form of the researchers reflection. We will draw on Lee. Becoming an inspiration for writing this paper.

3   PD Methods Stories - Research Setting, Participants and workshops

The research was conducted in Växjö, Sweden in spring 2014. Two workshops were organised at the PRO premises in Växjö. The latter is a local organisation within the Swedish National Pensioners' Organization (here and after referred as Workshop A and B). PRO usually organises social activities for seniors in the local communities. The reason why PRO was contacted for the project was that we wanted to involve in the study seniors 65 years of age and older, both woman and man, but persons who were still participating actively in the life of their loved ones as well as in other social activities of their interest. The choice of these seniors was not unintentional. This group of seniors was physically and psychologically able to participate in the workshops, but at the same time, they may face issues related to ageing in their daily life. As the aim of the study is to understand seniors needs regarding social media that can enhance their engagement and participation in social activities even when they are growing older and maybe not able to physically attend the social activities. Due to the abovementioned background, we considered this group of persons as appropriate in the research. The choice of participants was also influenced by the concept of "Design for Me" and "Design for Them" coined by [37]. "Design for me" meant for the seniors to actively participate in the design process and articulate their desires and needs for new social media. Seniors were able to represent themselves. Although still active in their daily life, the participants of the study sooner or later would have to face the difficulties associated with ageing. Moreover, they might have already noticed this changed in their friends and family members. Thus, the participants of the study can represent the needs as well for "them", the other seniors. However, seniors are a very heterogeneous group and would be almost impossible to involve in design session all representatives.

 The participants in the workshops were seniors between 65 and 85 - five women and two men. Thus, 7 participants with an average age of 70. The group was quite diverse, considering their social status, lifestyle, social relationships and affinity with technology. This diversity was noticed during the workshops when the participants were sharing their stories.

Furthermore, two facilitators with a background in participatory design were part of the workshops. The primary facilitator is as well one of the authors of this paper. The participants received a description of the project and a consent form before the workshops. The workshops were audio recorded, and the facilitators took pictures of the participants which do not disclose their identity. Despite being explicitly stated in the consent form, the facilitator repeated the information to the participants at the beginning of each workshop.

The PD methods used in each workshop were cartographic mappings and future workshops. Both methods are more design-oriented, giving the participant the possibility to create a graphical representation of the situation they are discussing. That is, enabling a conversations-with-the-material-of-the-situation and enhancing reflection-in-action [27].

Mapping as a method can be used to explore problematic situations, sketching the solution, and creating design suggestions [32]. Cartographic Mapping is suitable to make visible people's daily life and activities. Low tech material, e.g. paper, pens, post-it notes, images, and so on are used in the mapping activities. In addition, the participants do not need to make any preparations in advance [39].

The future workshop is another method used to facilitate the creation of design suggestions. Jungk and Müllert [40] introduced the method to engage citizens in decision-making processes in their local communities. The purpose of a Future Workshop is to create a shared understanding of a problematic situation and based on the identified shared understanding of the problematic situation provide a future design suggestion to improve it. Future workshops include 5 phases: Preparation – preparing the setting for the workshop. Critique phase – here participants are invited to critique the current situation of the theme. Post-it notes can be used to write down keywords, and these can then be pasted on a wall to make them visible for all. When a rich image of the current situation is generated, the keywords are organised into categories followed by prioritisation. Fantasy phase – in this phase the issue discussed in the critique are seen positively, and ideas are generated like a brainstorming without restrictions. Post-it notes can be used in a similar way as in the critique phase. Realization phase – ideas generated are analysed for implementation Follow up – in this phase following activities that control the progression of the activities decide in the previous step, are included

Workshop A
Cartographic mapping was used in workshop A. The theme was: "An active day of social engagement and participation".

Tools or material provided to the participants were: a big white sheet and colour pens. The participants were invited to sit around the table, which had the white sheet as a tablecloth.

The workshop started with an ice-breaking game. As the participants were part of the same organisation, they knew each other. However, to involve them in a more friendly discussion, an ice-breaking game was organised. The game consisted of a plate full of candies in different colours. Each participant was asked to choose five candies based on their preferences for colours. After each participant chose the candies, the facilitator disclosed the meaning associated with each colour. The participants had to say something about themselves based on the colours they had chosen and the colours specific meaning. The participants took turns to tell about their experiences. The ice-breaking game was useful for the facilitator to establish a friendly relationship with the participants. Moreover, it helped the participants through this funny experience to feel more comfortable with each other. Finally, the game design was similar to the techniques of PD. So, taking a turn to talk, respecting each other, sharing the same experience and ideas, helped to provide seniors with an idea of what to expect for the rest of the workshop.

As stated above, the workshop was ideated as a version of the mapping technique adapted to the context of the research project. The participants were asked to grab a pen and write on the white sheet in front of them "ME". Participants were asked to consider the "ME" as a representation of themselves. Around themselves, they would

start mapping in circles the persons with whom they keep social relationships in their life.

Thus, we asked the participants to write keywords around the "ME" word, related to relatively solitary leisure activities that the participants liked to do. They could write keywords for each activity. Once everyone was finished with the keywords, s/he was asked to share the activities represented by the keywords with the other participants by telling about what s/he had added around the "ME". The keywords were aimed at helping the participant to remember their stories of activities they enjoyed or liked to do by themselves.

Once everyone had finished sharing their activities, the facilitator asked participants to draw a circle around the keywords. This would represent the core circle of involvement, where the participant was focused on activities that s/he preferred to do alone.

Then the participants were asked to write keywords around the core circle of involvement regarding the persons with whom they stayed in touch mostly in their life (maybe in a daily basis), the activities that they did together with these persons and how was the communication intermediated. We will refer to these persons as the seniors' inner circle of involvement. We followed the same procedure of sharing the activities with the other participants, as we did in the core circle of involvement. We asked the participants to draw another circle around the keywords that they just wrote.

To finalise the mapping, we asked the participants to think and write it in the form of keywords about the persons with whom they might be in less frequent contact, but with whom they were engaging and participating in different social activities of common interest. They had to write also about the activities that they did together with these persons and how was the communication intermediated. We will refer to these persons as the seniors' outer circle of involvement. Again, once finished with the keywords, the participants were asked to share them with the others.

In the end, the map that each of the participants drew had the core circle of involvement, the inner circle of involvement and the outer circle of involvement. Figure 1. shows pictures taken during workshop A.

The drawings were documentation of the activities conducted in the workshop session. Together with the audio recordings, they provided valuable documentation of the participants' activities, mindsets, and ideas generated during the drawing and storytelling.

Fig. 1. Moments from the Cartographic Mapping workshop

Workshop B

In workshop B the critique phase and the fantasy phase included in the future workshop method was used. However, before these phases were carried out a video scenario showing a summary of what was discussed in workshop A was presented to the participants. The aim was to remind them of what was discussed in the previous workshop and at the same time get feedback from the participants if the analysis of the activities and the outcomes performed in the first workshop were how they interpreted the activities. After the participants considered the presented video scenario and contributed with comments and reflections, the workshop started.

Initially, the participants were asked to critique their current state of social relations and the digital technologies in use to maintain their social relations – the critique phase. The material or tools used in workshop B were an A1 white paper sheet, coloured post-it notes and pens. The participants were asked to represent their critique with the use of keywords in the post-it notes and then randomly paste them on the A1 sheet. Once finished with the keywords, the participants started explaining and sharing their critique with each other. An exciting discussion erased, and the participants identified similar patterns in their critique. When all the participants had shared their critique, they were asked to prioritise by suggesting three main categories. The facilitator role, in this case, was to help them to summarise their discussion – critique, in three main issues and write those issues down on a new A1 paper sheet, which was positioned at the centre of the table.

In order to not influence the seniors, the facilitator chose to stay in the background during discussions and contribute only on explaining the workshop tasks or asking in situ question as "why" or "how" to better understand what the participant was talking about, or trigger s/he her to tell more.

In the second phase of the workshop, participants were invited to think out of the box for all kind of possible social media that could alleviate the critique represented in the three main categories created in phase one - the fantasy phase. The procedure was the same as in the critique phase, that is, the brainstorming with no restrictions of ideas was represented with keywords.

We decided to end the future workshop after the fantasy phase because the scope of the project was to understand the needs and desires of seniors rather than coming up with a final prototype. However, the generated ideas can be used by other researchers to improve the design of social media or develop new prototypes which would adapt to seniors' wishes and needs. Figure 2 shows activities in workshop B.

Fig. 2. Moments from the Future Workshop

The data analysis of the fantasy phase of the future workshop was conducted by the designer (facilitator) due to time constraints and no possibility to conclude together with the participants. A thematic analysis method was used for analysis of the audio recording and the post-it notes of the fantasy phase.

4   Findings

Social relationships play an essential role in seniors' life [[4], 6]. That is, staying connected with relatives and friends promotes seniors' engagement and participation in social activities that may contribute to their wellbeing. Due to that, we conducted two workshops with an aim to identify the participants' activities, involvement and relationships and how social media (digital technologies) supports their engagement and participation in social activities. We start the presentation of the outcomes identified in the mapping of circles of involvement. Then we present the outcomes of the future workshop in the critiques and fantasy phase.

4.1   Social relationship and the use of social media

The first workshop, workshop A, started with a general discussion about seniors' engagement and participation in social activities. The aim was to understand who the persons were that seniors wanted to be involved with, maintain their relationships with and communicate with continuously. Through this, we could discuss with the participants as well how social media was currently influencing their' social relationship and later discuss the design of social media that can enhance seniors' social engagement and participation.

In the inner circle of involvement spouse, children, grandchildren and alive siblings were mostly included. Instead in the outer circle of involvement, participants positioned their friends. In the friend's group, they distinguish two categories: people which have been in their life for a long time and they share their history with or other interest with and people whom they frequently share activities they like to participate in, like yoga classes, gardening groups etc. These findings are also in accordance with Lindley et al.'s work [6] that is, how seniors tend to enforce their relationships with the people they love the most.

The interactions with the people with similar interest in the outer circle of involvement facilitated participants in having a happier life. For example, one of the participants mentioned the importance of the activities that they did together with PRO and how that made her happy and consequently helped her of feeling healthier. The relations created in the inner and outer circles of involvement help in alleviating loneliness and social isolation. During the storytelling about their relationships with persons in each of the circles of involvement, participants were also talking about the social media that they used to stay in touch with the people or get to know about the activities in each of the circles of involvement, one participant said.

> *"First, we had like a mail list with all our friends, and we could write to them…but then suddenly was like silence in the mailbox…instead, almost everyone is on Facebook, and they regret you if you do not join…like: you are not on Facebook!!!".*

And s/he continued:

>*"now I am actively using Facebook because the mail you get it from shops or other formal sources…however, where are your friends? They are on Facebook…for me Facebook is like playing…you know like a child".*

Another participant added: "*And now I am using Facebook…they say it is cool".* From the quotes, we can notice that, when talking about social interactions and staying connected, participants were as well thinking about the usage of social media to support them in keeping the social relationship. This shows that it is an old myth that seniors are not using technology, see also [16, 34, 36]. However, seniors are a heterogeneous group, and the findings are drawn from the participants involved in the workshops conducted in this study. We are aware that further research is needed to be able to generalise finding.

Moreover, participants emphasised that they use social media once they perceive it is useful for them. The desire to stay connected and to actively participate in the life of their children and grandchildren is what motivates and enables involved seniors to use social media. The interest in staying in touch, as illustrated from the quotes above, is what urge them to explore and use social networks. Östlund [19] also stated that just like any other group of technology users, older users require technology to be "useful, functional, use-worthy and meaningful" (p 38). In addition, it is elderly that should define the exact meanings of these things [16].

Furthermore, the use of social media it is not just a matter of necessity, but it is also fun. This is illustrated by a person who recently started to use Facebook (see quote above). Thus, the second participants contributed with a new perspective. The perspective of a ludic usage of social media, which promotes "fun in seniors' life". One of the women added that:

>*"on Facebook, there is the most wonderful thing, I participate in two groups a gardening group and one for Växjö in the past….and there you can share your feelings, your photos…moreover, there are people who have the same interest that you have, and I can comment and ask whatever I want…and everything sitting on my sofa…".*

The quote illustrates how social networks enable the seniors to share an interest and to communicate with peers even if they are at home sitting on their sofa. The can communicate from home and do not need to move. The woman exemplified FB groups she had joined. She emphasised interests she shared with the other group members. Moreover, she distinguished the well-structured design of FB groups on sharing the information by posting on the group wall, commenting, sharing each other posts etc. FB groups are created with a specific thematic and attract people who have an interest in that topic.

Moreover, as noticed from the quotes above and as stated in (Rice and Carmichael, 2013) "participants are influenced in their storytelling about technology in use by the practical or social implications of it, referring to real experience within a storytelling context. This influenced the kind of social media mentioned in the workshops. All the cases were from the involved seniors' experience or experience that other persons close to the involved seniors have had with social media.

However, seniors find the subscription in the social network as a younger generation domain and being part of that domain is considered a big challenge for them. Even though the workshop participants were using social media, they felt sorry

for declining face to face communications with their loved one. This transformation is a consequence of the increased use of mobile technologies and social media. This will be elaborated further in the next subsection.

4.2 Social relationships - Critique of the Actual Situation

Future workshop as it is described above is an important participative method that generates fruitful discussions enabling to find a common suggestion with an aim to improve an existing situation. We will present some details from the future workshop to illustrate how the workshop works as a reflective practice.

"we do not have any problem…. that is the problem".

This was the instant reaction of the seniors when the facilitator presented the technique and what we would be doing during the workshop. Identifying older adults with their parents was the participants' rationale to argue in this way. However, the atmosphere changed later. The open brainstorming session made seniors comfortable to identify themselves with issues presented by other participants. Thus, the discussions flourished, and everyone was willing to contribute to the aim to identify possible challenges that he or she encounter in social interactions as well as in the social media currently at his or her disposal for supporting his or her social relationships.

The emerging tendency of fewer face-to-face contacts with their children and grandchildren became an important issue in the workshop. One of the participants said: *"I do not have a problem to talk to my grandchildren they have problems talking to me".* Another participant concluded that: *"It is a big difference between generations…and we are somewhere in between.".* Hence, seniors had the feeling that the usage of new communication technologies was influencing negatively in the real-world communication by shifting the relationships from humans to the virtual environment.

However, it seemed that their perspective on the use of social media changed once they entered into "designing for them"[37]. They were thinking not only for themselves but also for a group of seniors that might face, the decline in possibilities to keep face to face social relations due to physical or cognitive problems and consequently run the risk to feel loneliness and social isolation. One of the participants said:

> *"there is a risk that you might return to a hundred….and there is a risk that you are sitting on your little corner and you have lost contact with the world".*

Through this, the participants were encouraged to think that sooner or later they are facing physical or psychological decline that will prevent them from participating in the life of their children and grandchildren and in social events that they are used to participate in. At that moment social media can be the mediators to supplement and sustain their communication with loved once and contribute to active social life. The shift in the conversation illustrated by the quote above brought the discussion of the critique of existing social media further.

The lack of design of social media and technologies adapted to seniors' and their usage were as well a crucial discussion point. This target group has specific characteristics. Hence, to pay attention to elderly persons' special needs, e.g. the physical incapability's of seniors is important in the design of new social services to

avoid too complicated services that may cause problems [31]. Another issue was the lack of support regarding learning to use social media. The participants added that meanwhile, they are willing to learn and adapt to the new services, few are appropriate to their needs and adapt to their learning abilities.

After a thematic analysis and reflection-in-action of all the arguments presented during the critique phase together with seniors we concluded in three main critiques about the actual situation of social relationship and the technology in use:

- Lack of Face to face communication
- The risk of loneliness
- Unappropriated design

These became then the areas in the fantasy phase where the participants aim to generate vision on how to improve the identified problems.

4.3   Seniors' Wishes and Requirements

In the fantasy phase of the future workshop participants were invited to think in this way:

   "possible social media that will help in reducing the sense of loneliness by promoting a feeling of face to face communication and designed specifically based on your unique requests."

Some of the ideas generated were:
1) Getting more support for learning and using social media.
2) Social media must be designed to fit seniors' needs and capabilities User-friendly devices and services: big letters, low-resolution screen and maybe a future design challenge such as a new computer shape which can be more comfortable for seniors to use when they are sited in their preferred chair and want to search on the internet.
3) Another suggestion was to design big screens with the possibility to offer a real-life sensation of interaction. An example was a window-like "portal" through which people could see each other in their kitchen or family room. Enhancing in this way face to face communication and fighting the loneliness. Some research into lightweight technologies or natural interfaces has been done to take advantage of resembling everyday objects and increase the likelihood of a low learning threshold, ease of- use and integration into everyday activities. (examples, [14] an ambient display prototype, named *Tlatoque*, to encourage social engagement amongst family members.)
4) Seniors can offer their knowledge on online platforms. Their life and professional experience are valuable. It can help new professionals to gain insights on their job from more experienced people, that is, people who possess skills and knowledge from a specific field. This can be in the form of consulting services. One of the ideas discussed was helping immigrants to learn Swedish. In this way, seniors can benefit from having someone to communicate with and feel useful in their society, and immigrants can benefit from learning and practising the language.

5) Photo and video-based applications are another favourite ICT solution for seniors. Writing is too complicated and becomes an obstacle between seniors and the use of specific ICT solution. This transmits in seniors a sense of exclusion. Instead, photos are real moments captured in pictures. They help people envision the real situation and give a sensation of having been there with the person at the moment the picture was taken. Seniors need this, especially when they are not able anymore to move from home. An application that creates the sensation of real journeys 'could be very interesting for seniors.

6) Another suggestion was the design of social media that are concentrated on a specific thematic. This will bring together people who share the same interest. Similar to Facebook groups that may be focused on a specific theme, like gardening or the history of a specific town etc. This can enhance peoples' communication with their local communities or communities of interests.

5   Reflections

This paper aimed to understand senior's social relationships: Who are the main groups that they interact? How do they communicate and get involved in activities with them?, and How social media can help seniors to preserve the social relationships, their engagement and participation in the society even when they will not be able to move from their home? Thus, to achieve these goals a Participatory Design (PD) – a reflective design approach, and participative methods, has been used.

5.1   Reflection on the PD process

PD aims at creating closer connections between design ideas and conditions for use by involving future users in design. Users are invited to design their futures. Having a voice and Having a say are guiding principles of PD. From the findings, we can see that seniors do have something to say even when it comes to new social media design. They liked the democratic practice of the PD techniques used in the workshops. It made them feel comfortable and consequently actively participate and contribute to the discussions. Seniors felt that not only they had a say as domain experts of their social realities, but at the same time as stated in [25], they could also influence the outcome with their ideas. At the end of the session one the representatives of PRO stated how powerful and involving the techniques were, and they would like to use them even in another setting within the organisation.

   As described by Löwgren and Stolterman [41] the design is seen as a creative process where there are no wrong answers and where everyone contributes to his or her own experiences, skills and knowledge. Having the freedom of working in an unexplored field is very challenging, but at the same time, it can lead to unexpected suggestions. Designing means creating something new. Every design process is unique, and it is influenced by several factors in which it is developed. The design gives the possibility to rethink on a specific theme, and it shapes the reality in a mutual process between the designer and the users. This was a guiding principle in the workshops held in this research and how the design process was presented to the

participants. They were invited to express their ideas, to discuss them freely and in this way, contribute to design suggestions. Referring to Lowgren and Stolterman [41] design process, we can position the research into the generation of vision and generation of some alternatives of the operative image. More research and specifications need to be added to transform the ideas in feasible social media.

Skills and knowledge of practitioners', researchers or other involved stakeholders, have an impact on design decisions. This dependency is also reflected in Schön's [21] terms reflection-in-action. The facilitator – a thoughtful designer, had to make in situ decisions to support the participant's activities. Moreover, he has to critically think about the next step in the process [41]. Further, the invited seniors were also included in the reflections, e.g. in the future workshop when they generated critiques of existing social media and suggested ideas on how to improve the shortcomings. Reflections are embedded in the method future workshop used in this research. In a future workshop the participants are expected to create a shared understanding of a specific topic – an actual situation, then they create visions of how to improve the situation. The generation of ideas was performed without any restrictions.

Finally, above we introduced the concept of method story coined by [20]. We shared our methods story in this paper, by describing how we applied both mapping and future workshop methods in our context. The two methods are not new and have been used in other projects and other contexts. However, they were modified to adapt to the context of understanding seniors' requirements for social media which would enhance seniors' engagement and participation in social activities. The detailed description of our methods could help other designers reflect on the selection and use of the two methods as well as other activities as the ice-breaking game or the video scenario. The benefit of method stories is that such stories do not strip away the rich contextuality of actual use, including method application in and adaption to a specific context," says Lee [20]. Moreover, through method stories, it is possible to present the reflection-in-action process that happened during the sessions. We find the concept of method stories valuable in PD, and we aim through this paper to have contributed to the PD knowledge base on how to actively involve seniors in co-design project.

5.2 Reflection on the usage of social media from seniors

PD helped us in building some knowledge on seniors' social relationships and ways of keeping engaged and participating in the society. Social relationships have a key role in seniors' life in promoting their well-being. Chou et al. [42] in their research describe the desire to communicate with children and grandchildren as the primary source of stimulating seniors to use social media. Our findings also support this. In addition, we found out that is not only the necessity that is driving seniors to use social media. In these virtual social networks, they are finding ways of entertainment, communities of interest. Thus, there is a growing interest to use and interact with new social media.

In their study of communication patterns, Lindley et al. [6] argue that seniors were selective about what they used and how they appointed their time. Seniors tend to use those social media that they consider as useful. Based on our findings we would add to this discussion the fact that seniors are not just using the social media that they consider useful, but they are searching and finding new ways, new themes, new topics to make meaning from the social media and make them useful for themselves. They

are also aware of and wish to share their embodied knowledge gained through taking part in a range of activities through their lived experiences [43, 44]. Sustaining and transferring their knowledge also includes" a move away from understanding seniors as *users* of social media, and instead, understand and involve them as a *designer* of such. FB groups adapted to some of the seniors shared interest urge the idea that seniors are not just waiting for social media to fit their needs, but they are trying to lead the change. However, as stated in the research setting the participants involved in the project are active seniors, and the situation differs with seniors that are already suffering from any form of decline due to ageing.

Even though the participants of the study were currently active, they were aware that life at a certain age has changed and is continuously changing. In analogy with Light, Luong and Robertson [45] the participants in this study were thinking of ageing as a process rather than a state. This was also demonstrated in their narratives. The finding in the critique phase of the future workshop support what Hall and Havens [5] have defined as problematic issues related to the ageing in contemporary societies: social isolation and loneliness. In our finding the lack of face to face communication or a decrease in the frequency of the relationship between the inner and outer circle can be translated into social isolation. Loneliness was the other aspect that can come up with ageing which is the same as stated in [5]. The other issue concluded in the critique phase was the inappropriate design of social media for usage by seniors is also rooted in theory. Culén et al. [31] showed how limited acknowledgement of both cognitive and bodily abilities to master interactive technologies might cause a too high level of complexity for seniors. Hence, this illustrates that the design of interactive artefacts and services builds on an ideal user, rather than accounting for people's situatedness [30].

The concluded remarks from the participative workshop – future workshop, is that the involved seniors like using the technology and the revolution that social media and social network have had on the way they communicate with people and loved ones. They considered social networks, not as something for spending their time, but they think to use social media to add value to their lives.

References

1.   ALL. *Ambient Assisted Living*. 2018; Available from: http://www.aal-europe.eu/about/.
2.   Demunter, C., *Europeans aged 65+ spent a third more on tourism in 2011 compared with 2006.* Eurostat Statistics in focus, 2012. **43**.
3.   Wittgenstein, *Population Dynamics and Aging* 2014, Wittgenstein Center for Demography and Global Human Capital.
4.   Organization, W.H., *World report on ageing and health*. 2015, World Health Organization.
5.   Hall, M. and B. Havens, *Social isolation and social loneliness.* Writings in gerontology: Mental health and aging, 2002. **18**: p. 33-44.
6.   Lindley, S.E., R. Harper, and A. Sellen. *Designing for elders: exploring the complexity of relationships in later life*. in *Proceedings of the 22nd British HCI Group Annual Conference on People and Computers: Culture, Creativity, Interaction-Volume 1*. 2008. British Computer Society.
7.   Fuchs, C., *Social media: A critical introduction*. 2017: Sage.

8.   Reference, O. *Dictionary Of Social Media* 2018 [cited 2018 04/06]; Available from: http://www.oxfordreference.com/view/10.1093/acref/9780191803093.001.0001/acref -9.

9.   Beneito-Montagut, R., N. Cassián-Yde, and A. Begueria, *What do we know about the relationship between internet-mediated interaction and social isolation and loneliness in later life?* Quality in Ageing and Older Adults, 2018. **19**(1): p. 14-30.

10.   Findlay, R.A., *Interventions to reduce social isolation amongst older people: where is the evidence?* Ageing & Society, 2003. **23**(5): p. 647-658.

11.   Khvorostianov, N., N. Elias, and G. Nimrod, *'Without it I am nothing': The internet in the lives of older immigrants.* new media & society, 2012. **14**(4): p. 583-599.

12.   Jung, E.H. and S.S. Sundar, *Senior citizens on Facebook: How do they interact and why?* Computers in Human Behavior, 2016. **61**: p. 27-35.

13.   Pedell, S., et al. *Social isolation of older people: the role of domestic technologies*. in *Proceedings of the 22nd Conference of the Computer-Human Interaction Special Interest Group of Australia on Computer-Human Interaction*. 2010. ACM.

14.   Cornejo, R., M. Tentori, and J. Favela, *Ambient awareness to strengthen the family social network of older adults.* Computer supported cooperative work (CSCW), 2013. **22**(2-3): p. 309-344.

15.   Grosinger, J., F. Vetere, and G. Fitzpatrick. *Agile life: addressing knowledge and social motivations for active aging*. in *Proceedings of the 24th Australian Computer-Human Interaction Conference*. 2012. ACM.

16.   Durick, J., et al. *Dispelling ageing myths in technology design*. in *Proceedings of the 25th Australian Computer-Human Interaction Conference: Augmentation, Application, Innovation, Collaboration*. 2013. ACM.

17.   Brandt, E., et al. *Communities of everyday practice and situated elderliness as an approach to co-design for senior interaction*. in *Proceedings of the 22nd Conference of the Computer-Human Interaction Special Interest Group of Australia on Computer-Human Interaction*. 2010. ACM.

18.   Robertson, T. and I. Wagner, *Engagement, representation and politics-in-action.* The Handbook of Participatory Design, edited by J. Simonsen and T. Robertson, 2012: p. 64-85.

19.   Östlund, B., *Design paradigmes and misunderstood technology: The case of older users.* 2005.

20.   Lee, J.-J., *The true benefits of designing design methods.* Artifact, 2014. **3**(2): p. 5-1-5.12.

21.   Schön, D.A., *The reflective practitioner: How professionals think in action*. 2017: Routledge.

22.   Morgan, D.L., *Focus groups as qualitative research*. Vol. 16. 1996: Sage publications.

23.   Bjerknes, G. and T. Bratteteig, *User participation and democracy: A discussion of Scandinavian research on system development.* Scandinavian Journal of information systems, 1995. **7**(1): p. 1.

24.   Greenbaum, J. and F. Kensing, *Heritage: having a say*, in *Routledge International Handbook of Participatory Design*. 2012, Routledge. p. 41-56.

25.   Simonsen, J., et al., *Methods: organising principles and general guidelines for Participatory Design projects*, in *Routledge International Handbook of Participatory Design*. 2012, Routledge. p. 137-164.

26.   Ehn, P., *Work-oriented design of computer artifacts*. 1988, Arbetslivscentrum.

27.   Ehn, P. and L.J. Bannon, *Design: design matters in Participatory Design*, in *Routledge International Handbook of Participatory Design*. 2012, Routledge. p. 57-83.

28.   van der Velden, M. and C. Mörtberg, *Participatory DesignDesign participatory and Design for Values*, in *Handbook of Ethics, Values, and Technological Design: Sources, Theory, Values and Application Domains*, J. van den Hoven, P.E. Vermaas, and I. van de Poel, Editors. 2015, Springer Netherlands: Dordrecht. p. 41-66.

29.   Sanders, E.B.-N. and P.J. Stappers, *Co-creation and the new landscapes of design.* Co-design, 2008. **4**(1): p. 5-18.

30.   Mörtberg, C. and M. van der Velden. *Studying the Entanglement of Humans and Technology in Work Practices A'Modest Intervention'*. in *Dilemmas for Human Services 2011: Papers from the 15th International research Conference, 2011.* 2012. London: Royl Docks Business School, University of East London, UK.

31.   Culén, A.L., S. Finken, and T. Bratteteig, *Design and interaction in a smart gym: cognitive and bodily mastering*, in *Human Factors in Computing and Informatics*. 2013, Springer. p. 609-616.

32.   Bødker, K., F. Kensing, and J. Simonsen, *Participatory IT design: designing for business and workplace realities*. 2009: MIT press.

33.   Bjögvinsson, E., P. Ehn, and P.-A. Hillgren, *Design things and design thinking: Contemporary participatory design challenges.* Design Issues, 2012. **28**(3): p. 101-116.

34.   Rice, M. and A. Carmichael, *Factors facilitating or impeding older adults' creative contributions in the collaborative design of a novel DTV-based application.* Universal access in the information society, 2013. **12**(1): p. 5-19.

35.   Uzor, S., L. Baillie, and D. Skelton. *Senior designers: empowering seniors to design enjoyable falls rehabilitation tools*. in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. 2012. ACM.

36.   Otjacques, B., et al. *Designing for older people: a case study in a retirement home*. in *Symposium of the Austrian HCI and Usability Engineering Group*. 2010. Springer.

37.   Massimi, M., R.M. Baecker, and M. Wu. *Using participatory activities with seniors to critique, build, and evaluate mobile phones*. in *Proceedings of the 9th international ACM SIGACCESS conference on Computers and accessibility*. 2007. ACM.

38.   Hendriks, N., K. Slegers, and P. Duysburgh, *Codesign with people living with cognitive or sensory impairments: a case for method stories and uniqueness.* CoDesign, 2015. **11**(1): p. 70-82.

39.   Elovaara, P. and C. Mörtberg. *Cartographic mappings: participative methods*. in *Proceedings of the 11th Biennial Participatory Design Conference*. 2010. ACM.

40.   Jungk, R. and N. Müllert, *Future Workshops: How to create desirable futures*. 1987: Institute for Social Inventions London.

41.   Löwgren, J. and E. Stolterman, *Thoughtful interaction design: A design perspective on information technology*. 2004: Mit Press.

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

43.   McCarthy, J. and P. Wright, *Technology as experience*. 2007: MIT press.

44.   Harrison, S., D. Tatar, and P. Sengers. *The three paradigms of HCI*. in *Alt. Chi. Session at the SIGCHI Conference on Human Factors in Computing Systems San Jose, California, USA*. 2007.

45.   Light, A., T.W. Leong, and T. Robertson. *Ageing well with CSCW*. in *ECSCW 2015: Proceedings of the 14th European Conference on Computer Supported Cooperative Work, 19-23 September 2015, Oslo, Norway*. 2015. Springer.