Ambient Assisted Living Joint Programme
Call 2

D 6.2: E-Participation for senior citizens best practices

Proposal full title:
VIRTUAL NETWORK TO EMPOWER THE INTEGRATION OF SENIORS INTO AN ACTIVE COMMUNITY IN THE POST RETIREMENT YEARS

Proposal acronym:

SENIORENGAGE

List of participants:

Participant no.	Participant organisation name	Participant short name	Organisation type	Country
1 (Coordinator)	Centre de Recerca i Innovació de Catalunya)	CRIC	SME	ES
2	MFKK Feltaláló és Kutató Központ Szolgáltató Kft.	MFKK	SME	HU
3	Center for Usability Research and Engineering	CURE	R & D	AT
4	JAMK University of Applied Sciences	JAMK	University	FI
5	Microlink PC ltd	MICROLINK	SME	UK
6	Association of Care Giving Relatives of Jyväskylä Region	CAJYR	End-user organisation	FI

<u>Control Versions D6.2</u>:

Version	Date	Description	Author
1	19/07/2012	Evaluation Plan	CURE
2	26/7/2012	Revision of Evaluation Plan	CAJYR
3	6/11/2012	Comments	JAMK
4	7/11/2012	Incomplete draft for the deliverable 6.2	CAJYR
5	7/11/2012	Comments	CURE
6	19/11/2012	Final	CAJYR

Table of contents

List of Figures

List of Tables

7. Rating of the platform by Senior and Young participants (%)

8. Experienced social pressure, privacy, social awareness and inclusion by Senior (*S*) and Young (*Y*) professionals (number of replies; 1=strongly agree, 5=strongly disagree)

9. Perceived ease of using the platform

10. Main features of Usability test participants

Acronyms and Abbreviations

Acronym, Abbreviation	Definition
Cajyr	The Association of Care Giving Relatives of Jyväskylä Region
CRIC	Centre de Recerca i Innovació de Catalunya
CURE	Center for Usability Research and Engineering
JAMK	JAMK University of Applied Sciences
MFKK	Feltalálói és Kutató Központ Szolgáltató KFT.
Microlink	Microlink PC ltd
TAM	The Tobii Eye Tracking Monitor System
VAS	Visual Analogue Scale

References

[1] http://www.tobii.com

[2] Venkatesh, V., Morris, M. G., Davis, F. D. & Davis, G. B. (2003). User Acceptance of Information Technology: Toward a Unified View. MIS Quarterly 27, 2003, 425-478.

[3] Flynn D, van Schaik P. & van Werch A. (2004). A Comparison of Multi-Item Likert and Visual Analogue Scale for the Assessment of Transactionally Defined Coping Function. European Journal of Psychological Assessment 20, 2004, 49-58.

[4] Büscher, A. (2007). Negotiating Helpful Action. A Substantive Theory on the Relationship between Forman and Informal Care. Academic dissertation. University of Tampere.

[5] Hakkarainen, P. (2012). "No good for shovelling snow and carrying firewood": Social representations of computers and the internet by elderly Finnish non-users. New Media & Society 14, 2012, 1198-1215.

[6] Nielsen J. (1993). Usability Engineering. Morgan Kaufmann: San Francisco.

1 INTRODUCTION

The current project addresses the need to help retired senior professionals retain their sense of self-worth and continue to participate in society in the post-retirement years by developing network of online knowledge sharing and community. The main objective of SeniorEngage is to provide a tool by which seniors and new professionals may network with each other. SeniorEngage will improve the quality of life of retired and semi-retired seniors by providing them with an outlet for sharing their professional knowledge and allowing them to continue to feel active and useful in their field.

The work plan of this project comprises nine work-packages. This deliverable concentrates on the work package six, which is based on work executed during 1.5.2012– 15.9.2012, and deals with the E-participation for the senior citizens best practices. The findings of training and validation (task 6.2) have also been taken into account in this report.

The objective of deployment, validation and training was to gather information on the necessaries of the users to cover all the actions that will appear during the user's navigation through the platform. This document describes the evaluation procedure and the results of the field trials of the SeniorEngage platform. Any identified technical modifications or improvements have been carried out in order to optimise the system with respect to the user needs and requirements.

The evaluation plan was created by CURE and revised by CAJYR and JAMK for the field trials in Finland. TABLE 1 summarises the tasks that were conducted before, during and after the actual field trials.

TABLE 1: Activity Breakdown of the SeniorEngage field trials

Task	Final Date
Creation of evaluation plan	25/07/2012
Revision of evaluation plan	27/07/2012
Creation of evaluation documents	31/07/2012
Translation of evaluation documents	07/08/2012
Start field phase for retired professionals: Introduction Workshops	08-09/08/2012
Start field phase for young professionals: Introduction Workshops	05/09/2012
End field phase for young professionals	19/09/2012
End field phase senior professionals	31/09/2012
Assessment of questionnaires	19/10/2012
Usability tests	25/10/2012
Finalisation of D6.2	16/11/2012

2 METHODS

The final evaluation of the SeniorEngage platform investigated if potential end users could identify themselves with the platform on a longer term. The necessary pre-condition to have a staple and useable version of the SeniorEngage prototype has been fulfilled by CRIC based on the findings of the usability testing (see D2.1b).

Validation and training was carried out by organizing several workshops for senior end-users in order to understand the needs of the end-user groups. The system developers were informed of user feedback to improve the training tools and the user centered design for the platform.

A long term study of six weeks was conducted for the final evaluation of SeniorEngage to assess the user experience and technology acceptance over time. Therefore the participants were asked for their feedback in the beginning and at the end of the evaluation phase. Furthermore, it was important to know details about the background of the participants (education, profession, affinity towards ICT, etc.) to better understand the details of the results. A group of younger participants was invited to test the platform in order to gain information about their experience and interest of being future users of the SeniorEngage platform.

Additional information about the usability of Senior Engage platform was gathered by running usability tests. The information was gathered using observation, open discussion and the Tobii Eye Tracking Monitor System [1]. Participants for testing were recruited apart of the participant of field trials. Usability tests are described more in detail in chapter 4.2.

All participants were enrolled after signing the informed consent. Participants were informed that they were allowed to withdraw from the field study at any point if they wished to do so. Only authorized persons had access to the gathered data and all data were handled with anonymity.

2.1 End-user Recruitment

The recruitment of senior professionals was done by CAJYR and for young professionals by JAMK. The senior participants were recruited out of the pool of people (current and former care giving relatives, n=18) who have answered a questionnaire about computer use and needs (D1.1), and agreed to be contacted later. Additional senior professionals (n=10) were recruited amongst volunteers who expressed their interest towards SeniorEngage during several dissemination activities. Young participants were recruited from a group of students from JAMK University of Applied Sciences (n=24).

2.2 Sample Description

As SeniorEngage aims to connect retired and young professionals, representatives of both groups were invited to join the study. The sample of senior professionals consisted of 28 participants, in retirement or nearing retirement, all at the age of 55 and over. Young participants were fulltime students at JAMK University of Applied Sciences, age from 19 to 27 (mean 22 years).

It was not necessary that every participant had their own PC at home. However, every participant should have had access to an Internet-connected PC regularly e.g. at the library, offspring or friends.

2.3 Questionnaires in Study

The questionnaires (Appendix 1) were focused on two target groups: senior and younger professionals. The questionnaires were offered by CURE, and translated from English to Finnish by Finnish partners. The translations were ascertained by verifying two independently done translations. The actors of JAMK and CAJYR added some questions to assess the ease/complexity of the using of different functionalities. The inquiry was carried out using paper questionnaires in order to enable all participants to answer regardless their access to internet.

The first set of questionnaires, filled in before the testing, consisted of a background information questionnaire and an expectation-questionnaire (technology acceptance model, TAM t1) [2]. At the end of the trial phase every participant answered the TAM questionnaire (TAM t2) again. The evaluation of technology acceptance (TA) at two different times enabled us to analyse how the acceptance of SeniorEngage has changed during the testing period.

In the course of the post-questionnaire were posed additional questions concerning the usability, and the experiences and concerns that emerged during the interaction phase. Usability was assessed using the Visual Analogue Scale (VAS) [3].

3 TRAINING AND VALIDATION SESSIONS

The SeniorEngage platform is designed also for seniors with none or little previous experience in ICT use. The end users cohort ought to "represent the retired, or close-to, professionals at the European level ", which means a variety of skills and interests in computer use. Some of the volunteer senior professionals had assessed themselves as beginners in computer use, some of them had never used the Internet, and one tester had never used a computer for any purpose.

3.1 ICT workshops for senior end-users

To ensure that all senior testers had sufficient ICT skills to work on the platform JAMK and CAJYR organized tutorial workshops before the piloting. (Figures 1 and 2.) The aim was to get as much valuable feedback as possible from end-users. The e-learning needs and best practices of senior users were gathered (questionnaires and observation), and reported to the technical developers of the SeniorEngage platform. Another objective of the tutorials was to strengthen the end-users' commitment and motivation to the testing procedure. It has been shown that the grouping process will increase the compliance of the subjects during the piloting period.

FIGURES 1 and 2. ICT-workshops for end-users

Altogether twelve workshops were organized in the facilities of JAMK, with PCs for each participant to use. Workshops provided six different agendas, and each of them was carried out twice, in the morning and in the afternoon, to enable as many care giving relatives as possible to attend despite their daily care giving duties. Three workshops focused purely on computer use and learning needs of participants. During three latter ones in addition to practicing computer use the participants were asked to suggest easily understandable Finnish translations for English ICT-related terms. The workshops lasted 150 minutes each.

3.2 Participants of ICT workshops

There were altogether 23 senior participants, four male and 19 female, and the frequency of attending ranged from one to six. Their ages ranged from 59 to 86 years, with the mean being 71. Four participants did not fill in the second questionnaire after the third workshop, and announced not being available for the testing of the platform.

Most (91 %) of the participants were retirees. Two thirds served as care giving relative to a spouse for the time being. Even if the participants experienced themselves functioning and rather healthy, almost all (96 %) reported feeling tired occasionally or continuously. As has been previously shown [4] the caregiving relatives express themselves often tired and lonely because of the load of their daily duties, and tight commitment to their relative in need of care.

3.3 Main findings of the workshops

All 23 participants filled in the pre-questionnaire surveying their computer use and learning needs, and 18 filled in the end-questionnaire surveying the change in computer use and further learning needs.

Before attending the workshops 75 % of participants had used a computer and the Internet. One third of responders reported using the computer on a daily basis, and one third several times a week. Three participants did not own a computer at home, and two computer owners did not use it at all. The purposes for computer use (n=23) at least weekly are shown in figure 3.
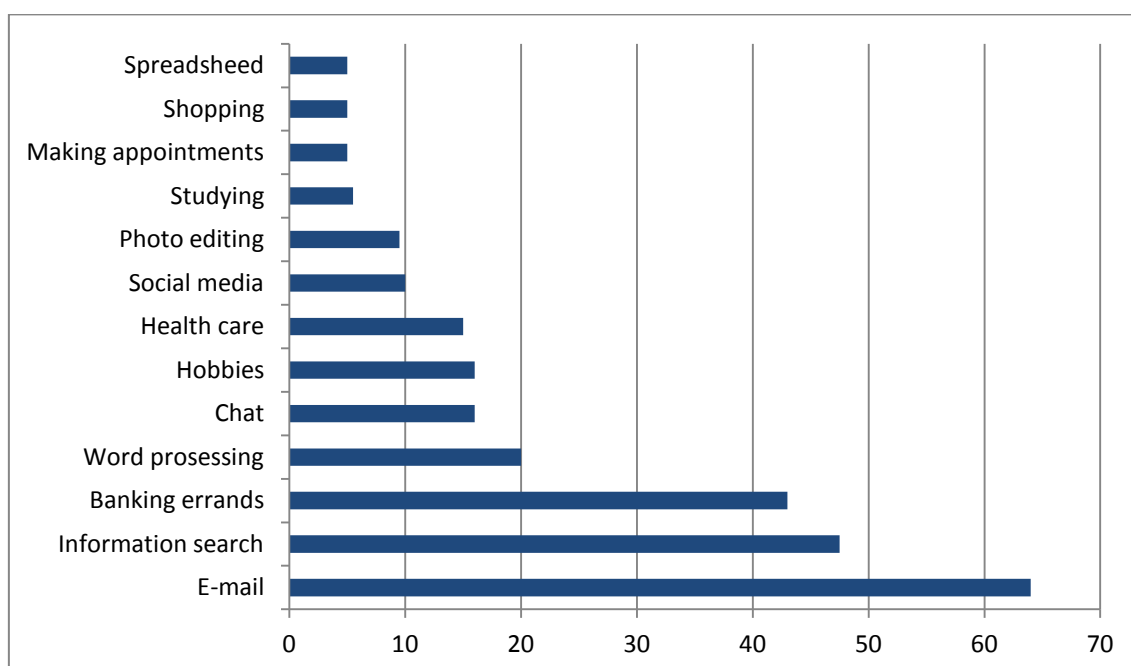
FIGURE 3. The purpose for computer use in general of ICT-workshop participants (%)

Internet was seen by all responders as a useful or primary mean for being in contact with relatives and acquaintances. Nearly all deemed internet as an important mean to run banking errands. Regarding being in contact with colleagues 60 % assessed computer to be a useful mean, and one half in contacts with younger professionals. Two thirds of responders didn't value computer when following the development of one's own profession.

When asked to assess one's computer skills half of workshop participants stated being beginners (n=7) or not having any skills at all (n=4). The most common reported learning needs were computer use in general (70 %), information searching (52 %), photo editing (48 %) and making appointments (40 %).

When the workshops started three participants (n=23) assessed having good learning skills, at follow-up one third (n=18) assessed own learning skills to be improved. After the workshops 80 % assessed own computer skills to be improved, and little over 50 % reported their skills to search information being improved. The most common answer to an open question about the most important skills learned at the workshops was the courage to use a computer and to try new functions. The participants experienced still needing skills in photo editing, word processing and using social media.

The experienced risks in computer use were similar to the ones reported in other studies [5]. During the meetings the participants brought up their concern about "messing up the whole computer". Other problems mentioned were difficulties to understand computer jargon, and being concerned about the security and safety especially when running banking errands. During a four week period between the first

and third workshop eight responders reported more frequent, and nine participants more versatile computer use. Eight responders reported of more versatile internet use.

The responders were asked the importance of different features of a platform with simple yes or no answers (n=18). (Table 2.)

TABLE 2. Importance of different features of a platform (%)

	yes	no
Clarity	17	83
Finnish terms and texts	78	22
Font sixe	28	72
Possibility to change font size	17	83
Contextual help	33	67
Auditory contextual help	11	89
Personal tutoring available	67	33
Colour of text and background		100
Possibility to change text and background colour		100
Free of charge	53	47

The participants stated having difficulties in perceiving all information on the screen and being able to read such a small font. At the last three workshops the participants gave positive feedback for the possibility to use desktop computers with bigger monitors instead of small laptop computers. A bigger screen enabled to enlarge the screen text without losing the edges of the view.

There was arranged additional individual tutoring for two participants willing to test the platform, but experiencing insufficient skills to manage the computer (figure 4). These sessions provided a valuable possibility to gather information about the difficulties they had with using the computer, and also about the type of instructing needed in order to manage the computer use as a novice. The other individually tutored participant (female, 60 years of age) did not possess a computer, and had never used one without being walked through. The other one (male, 80 years of age), had no prior experience in computer use, and purchased his own computer with internet connection in the course of the tutorial workshops.

FIGURE 4. Individual tutorial

The female person stated the biggest problem being the difficulty to remember the instructions on count to not having an access to a computer often enough. When instructed, she managed well all given tasks. The major problems reported by the male participant were difficulties in seeing the small sized font, distinguishing the cursor from the platform, and remembering the instructions. Observing him revealed difficulties in using the mouse and remembering where to find various functionalities on the platform.

4 TESTING THE PLATFORM

The main objective was to test the platform in real-environment to ensure that the system is relevant to the needs of elderly users. The central elements were to present the system to the end-users, to tutor the end-users to use different functions on the platform, and to gather information using questionnaires. Once more it was stressed to all participants that no information will be given to third parties, and only the registered users and the consortium partners will be able to see the information given on the platform.

4.1. Field trials

All senior participants available (n=13) were briefed in an introduction workshop. To enable as many participants as possible to attend an introduction workshop there were organized all together four 150-minute sessions with equal content. For young participants the platform, the testing protocol and timetable of testing were introduced during their university lecture.

All participants at the introduction workshop of each group signed the informed consent form, and filled in the pre-questionnaire for background information. The participants were presented the idea of the SeniorEngage platform as well as the protocol and timetable of the field trials. All participants had a PC to use individually, and they all registered as a user and conducted some testing tasks during the workshop. The first questionnaire (TAM t1) surveying expectations on SeniorEngage in terms of acceptance, and user experience was filled in at the end of the session.

Those Senior professionals who were not able to attend the workshop (n=15) were mailed a written summary of introduction, informed consent form, the respective questionnaires, and a prepaid return envelope.

The participants were asked to conduct at least once each given task during the testing period (table 3). At the beginning of the testing phase there were some inoperative functions on the platform. Therefore, the third week of testing, the senior participants received a letter to inform about the improvements done on the platform, and a short written introduction how to use these functions.

TABLE 3. Tasks to conduct during the testing period

Register at the SeniorEngage Platform
Navigate to you profile and add one or more interests
Create a new subtopic in a topic of your choice
Have a look at a subtopic of your choice
Write a comment to a subtopic of your choice
Write a message to a person who has similar interests
Chat with a person who has similar interests (text or video chat)

After the field trials all participants were invited to a feedback meeting. Four participants were present and two others send their feedback by email.

4.2. Usability tests

To gain additional information about the usability, the platform was tested by the students of degree programme in Wellness Technology in JAMK as part of their studies. The first four testing sessions included the Tobii Eye Tracking Monitor System, the last five tests were done without the Eye Tracking Monitor System because of technical problems which were not related to test supervisors.

The Tobii Eye Tracking device consists of four infrared cameras, which follow the eye movements and analyses them for the Tobii program to use. In addition the system has a web-camera, which takes video-material from the testee. The whole system with its programs was run by laptop computer. So the Tobii Eye Tracking Display functions like an additional display which has USB and Firewire ports for data transfer.
In the testing group there were participants from senior and younger users, and the testing was carried out in the facilities of JAMK.

The objectives of usability tests were set in cooperation with the SeniorEngage partners in Finland, and the protocol was designed under the supervision of the tutoring teacher of Wellness Technology students. One of the students has conducted his studies on the SeniorEngage project and was familiar with the system. At each testing session a moderator and two observers were present.

All tests were concluded individually. None of the participants had previous experience of the SeniorEngage platform. The participants were handed their tasks on separate pieces of paper and asked to think aloud as much as possible during performing their tasks (figure 5).
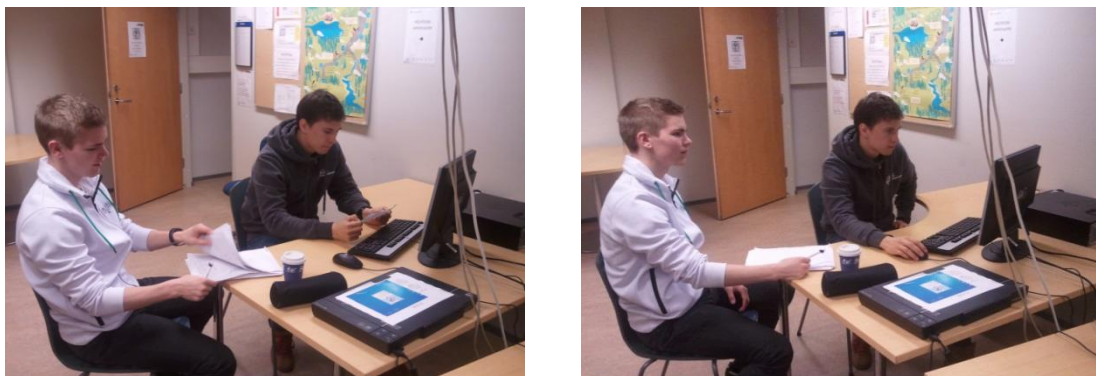
FIGURE 5. The testee is reading the written task and accomplishing the task with the moderator sitting nearby.

The observers took notes and all the sessions were recorded for further analyses. After the testing the participants were asked questions about their experience. The usability was rated using green-yellow-red –analysis adapted from Nielsen Usability Evaluation Scale [6]. The report of the findings has been given to the technical developers of SeniorEngage platform as such.

5 RESULTS OF THE FIELD TRIALS

The response rate of the first round of questionnaires for senior professional was 75 %, and for young professionals 87,5 %. For the final questionnaires the response rate was 60 % for seniors, and 87,5 % for young professionals. (Table 4.) During the testing phase three senior participants informed CAJYR for discontinuing the testing because of a lack of time, lack of interest or poorly functioning network connections.

TABLE 4. Responders for questionnaires

	Background information, pre-questionnaire		Post-questionnaire	
	handed out	returned	handed out	returned
Senior Professionals	28	21	25	16
Younger Professionals	24	21	24	21

5.1 Background information

Mean age of senior participants was 71 years, the youngest being 60 and oldest 80 years of age. The mean age of younger participants was 22 years, and their ages ranged from 19 to 27 years. Majority (81 %) of all responders were females.

Most senior participants experienced themselves healthy. More than half of the respondents didn't report any chronic health problems. The most common long-term health problem was asthma (n=4), and the other mentioned health problems were Parkinson's disease (n=2), high blood pressure (n=2), diabetes (n=1), osteoarthritis (1) and coronary disease (n=1).

Senior participants had been working from 10 to 40 years in their main profession. One senior responder was still working, and the others had been retired from 2 to 22 years (mean 9.5 years). (Table 5.) Half of the younger participants were first year students, and five of them had been working in a previous profession from one to five years.

TABLE 5. Background information of senior professionals

	n	(%)
Sex		
Male	3	(14)
Female	18	(86)
Self-estimated health (n=20)		
Very good	3	(15)
Good	11	(55)
Fair	5	(25)
Poor	1	(5)
Long-term health problems (n=18)		
None	8	(44)
From one to three	10	(56)
Years in main profession (n=20)		
10-20	5	(25)
21-30	7	(35)
31-40	8	(40)
Years of retirement (n=18)		
Still working	1	(6)
1-10	10	(55)
11-20	6	(33)
21 and over	1	(6)

The senior participants were active in their leisure time. The most common hobbies were handicrafts, outdoor activities and reading. Eight participants named three different hobbies, and five participants named at least four hobbies. Majority of younger responders (19) mentioned sports as a hobby.

5.2 Computer use

Younger responders used the computer and the Internet more often than the seniors (figure 6). This result is in line with previous findings that the amount of computer and Internet users is smaller in older age groups [5].
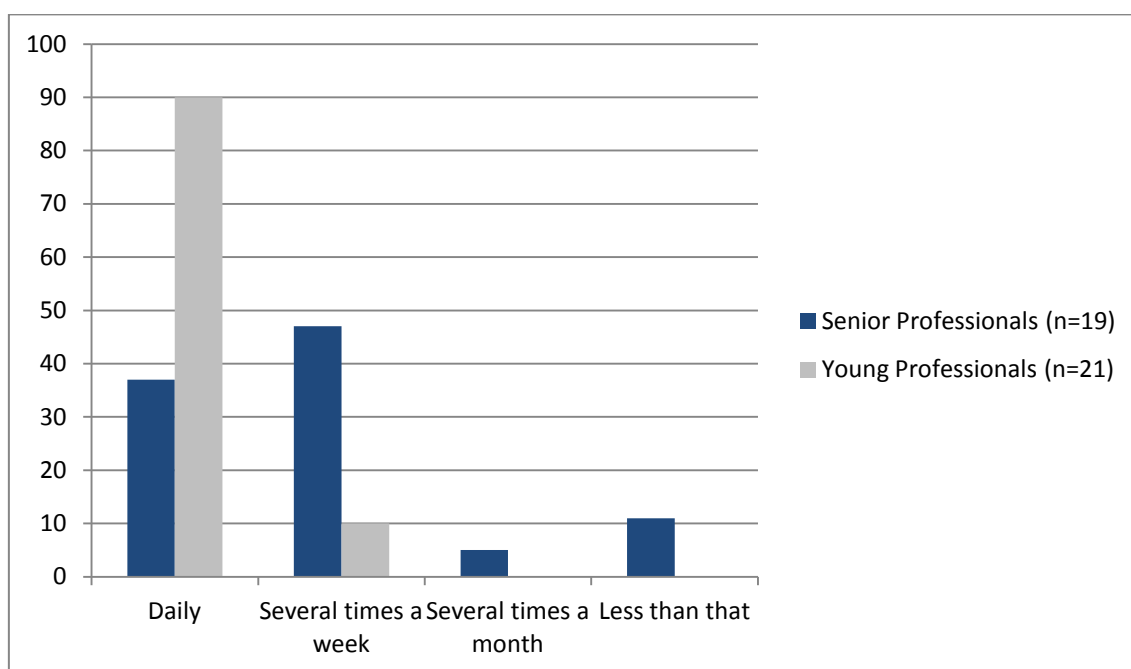
FIGURE 6. Computer and Internet use of responders (%)

Different frequency in computer use reflected on the frequency in testing the platform. According to the log information the number of logings into the SeniorEngage platform ranged from one to 74 times. 26 created topics were created, and 15 topic related discussions. The participants carried out 67 discussions. The amount of actions performed by senior participants during the testing phase ranged from three to 155.

5.3 Sharing professional interests

The responders were asked to think about two people within their social network, with whom they have regular contact, and assess the frequency of talking about their profession with people having the same profession, and people not having the same profession. Sharing professional issues seemed to have very little importance among senior professionals (figure7). The response categories "daily", "several times a week" and "once a week" were combined into one category weekly.
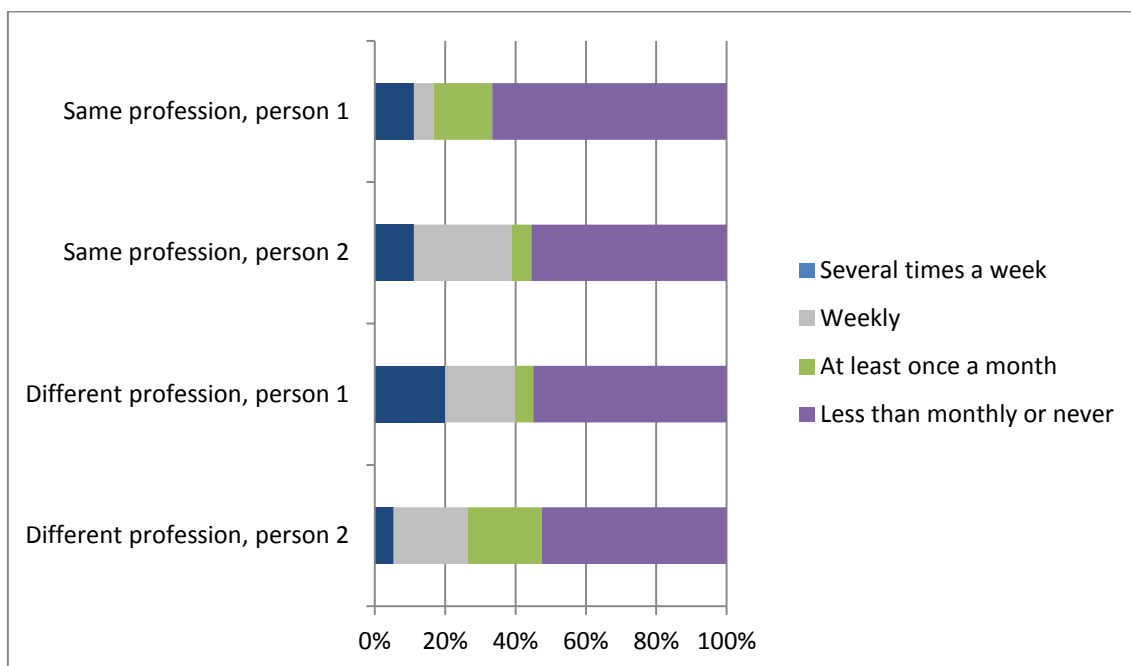
FIGURE 7. Senior responders' frequency of talking about one's profession (n= 18)

The Younger professionals appeared to talk more often about their profession with their friends and fellow students. This goes for both people having the same profession, and having a different one. (Figure 8.)
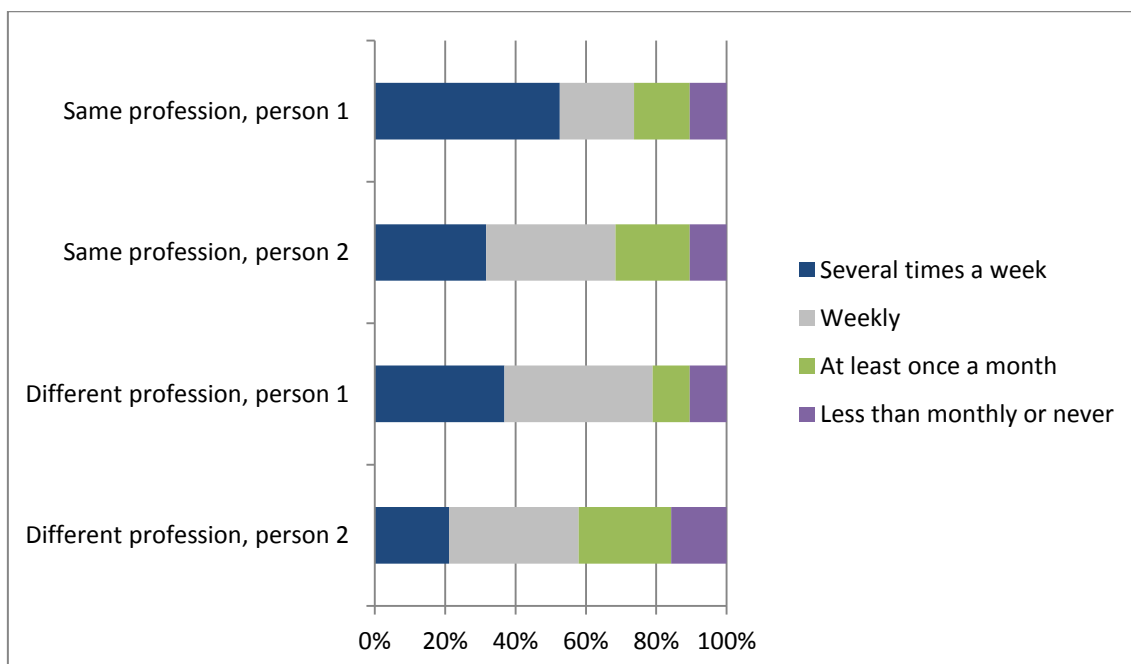
FIGURE 8. Young responders' frequency of talking about one's profession (n= 19)

Half of the senior professionals believed that younger people having the same profession can benefit from their knowledge. The reasons mentioned were seniors

having long professional experience and sharing common background. Regarding not to being able to benefit the reasons mentioned were that the professional fields have changed over the years and "younger professionals have better knowledge nowadays".

Regarding hobbies two thirds of seniors thought that they are able to give helpful information to younger people, and all but one believed benefitting from younger people. The reasons were i.e. that "young people can bring up new ways of doing things", "young people have fresh approach" and "they have the latest knowledge".

Almost all (n=19) younger professionals experienced that they will benefit professionally from retired persons, and more than half (n=12) regarding hobbies. All (n=20) expressed that they are able to advice seniors in regard to hobbies. The responders valued the experience of seniors.

5.4 Expectations and experience of using SeniorEngage

To study expectations and experience the participants were asked to mark their answer on a five point scale. As a summary both groups expected the platform to be easier to use than what they had experienced during the testing phase. (Table 6.) The difference between expectations and experience can be noticed especially in understandability of interaction with the platform, and ease and enjoyability of use.

TABLE 6. Expectations and experiences within and between senior (*S*) and young (Y) professional groups (number of replies; 1=strongly agree, 5=strongly disagree)

		Baseline					Follow-up				
		1	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
I expect that using SeniorEngage will improve my life quality	*S*	3	8	4	3	1		1	5	6	3
	Y			9	7	5			1	4	16
I expect that using SeniorEngage will improve professional qualification	*S*		7	6	3	2		2	3	6	4
	Y	1	9	11				1	2	10	8
I expect that my interaction with SeniorEngage will be clear and understandable	*S*	10	7	2	1		1	3	4	7	
	Y	2	12	6		1		1	4	13	3
I expect that interacting with SeniorEngage will not require a lot of my mental effort	*S*	7	8	2	3		2	5	6	2	
	Y	7	7	5	1		1	8	2	9	1
I expect that I will find SeniorEngage to be easy to use	*S*	12	5	1	1	1	2	2	5	5	1
	Y	8	8	5				3	8	10	
I expect that I easily will find on the platform what I will need	*S*	8	6	4	2		2	3	2	7	
	Y	4	10	6	1			3	10	7	1
I expect that using SeniorEngage will not scare me at all	*S*	7	10	2	1		6	2	4	2	
	Y	14	4	1		1	14	1	3	2	
I expect that using SeniorEngage will make me nervous	*S*		2		8	9		3	5	2	3
	Y		1	4	4	12		5	7	3	6
I expect that new technology will make me feel uncomfortable	*S*		2		5	12		3	1	5	4
	Y		1	4	7	9	2	1	4	3	11
I expect that I will find using SeniorEngage to be enjoyable	*S*	9	7	2	2			3	4	4	3
	Y		2	9	8	2			6	11	4

I expect that my social environment will admire me when I will use SeniorEngage	*1*	*2*	*9* 5	*3* 9	*5* 7	*1* 1		*4* 1	*5* 6	*4* 13
I expect that when I will use SeniorEngage my social environment will contact me more often because they also will be interested in the system		*5* 2	*9* 1	*1* 8	*4* 10		*1*		*5* 1	*7* 19
I expect that if I will have the chance, I will use SeniorEngage even after the trial phase	*10*	*6* 4	*4* 7	9	1	*2*	*4* 1	*3* 1	*4* 8	*1* 9

At baseline senior participants anticipated to be using the platform at minimum for one hour per week, and at maximum for 5 hours per week (mean 3½ hours weekly). Yet at the end of the testing period they reported time spent on the platform ranged from one hour to three hours per week (mean 1½ weekly hours). The respective figures for younger participants were from to two hours in the beginning, and one hour at the end. When the testing started half of the seniors agreed strongly to be using SeniorEngage even after the trial, but after the trial only 2 persons agreed strongly to do so.

The participants were asked to rate the platform on a five point scale from (1) very good to (5) very poor. On group level senior participants rated it higher than young participants (table 7).

TABLE 7. Rating of the platform by Senior and Young participants (%)

	1 very good	2	3	4	5 very poor
Senior professionals (n= 14)	7	29	50	14	
Young professionals (n=19)			26	74	

5.5 Additional questions

Additional information about social pressure, privacy, social awareness and social inclusion was gathered at the follow up. The participants were asked to state a level of agreement by marking the appropriate choice on a five point scale. (Table 8.)

TABLE 8. Experienced social pressure, privacy, social awareness and inclusion by senior (*S*) and younger (*Y*) professionals (number of replies; 1=strongly agree, 5=strongly disagree)

	Follow-up				
	1	**2**	**3**	**4**	**5**
	S Y	*S* Y	*S* Y	*S* Y	*S* Y
I felt obliged to communicate with my contacts	*1*	*2* 1	*2* 1	*3* 5	*9* 13
I responded to an incoming mail or comment, even though I didn't feel like it or didn't have time	*1*	*2* 2	*1* 2	*2* 6	*5* 10
If a person contacted me, I felt I had to respond	*1*	*4* 4	*3* 4	*2* 8	*3* 4
I expected my contacts to communicate with me on a regular basis	*2*	*2*	*2* 5	*1* 6	*6* 7
I thought about my contacts throughout the day		*2*	*3* 6	*1* 3	*6* 11
I learned more about my contacts than I would have liked to know			*3* 7	*4* 7	*7* 6
I saw communication with my contact as a threat to my privacy		1	*1* 3	*1* 7	*11* 9
I had a clear image of the activities of my contacts		*1*	*3* 4	*4* 13	*6* 3
I felt connected to my contacts			*6* 9	*3* 6	*5* 5
I found it easy to stay in touch with my contacts		*1* 2	*3* 7	*4* 5	*6* 6

None of the participants experienced the use of the platform as a threat to their privacy and, only a minority of responders felt obligated to communicate with their contacts. At the feedback meeting the participants expressed being disappointed because of the lack of communication with other users and being able to create discussions because of the dysfunctions of the platform.

5.6 Usability assessed using questionnaires

The perceived ease of using the platform was studied with statements on simple–complex -dimension. The recipients marked their answer on a 100 mm Visual Analogue Scale, where 0 means clear or simple to use, and 100 opaque or complex to use. (Table 9.)

TABLE 9. Perceived ease of using the platform

	Senior professionals * mean (sd)	Young professionals (n=21) mean (sd)
Clarity of user interface	48 (24)	61 (20)
Distinguishing text from the background	32 (22)	40 (16)
Registering to the platform	44 (30)	37 (27)
Logging in to the platform	41 (32)	33 (24)
Editing profile	43 (32)	53 (20)
Sending messages	40 (28)	57 (19)
Reading messages	37 (23)	41 (15)
Creating new topics	51 (17)	54 (22)
Finding interesting topics	37 (24)	54 (21)
Participating conversations	49 (26)	47 (18)
Creating a chat	62 (25)	50 (14)

* the amount of Senior participant responders varied from 12 to 14by question

"Finding interesting topics" differed most between the groups (p=.05), assessed being easier by senior participants than younger participants. The widest ranges amongst the senior participants accorded registering as a user (from 3 to 93), and editing the profile (from 2 to 90). The assessment for registering ranged widely also amongst younger participants (2-98), as well as logging in to the platform (2-98).

5.7 Usability test findings

There were nine participants, who were recruited amongst acquaintees of the testing group and all seniors are potential end users of SeniorEngage platform. All participants signed informed consent form after being informed about the purpose of the usability tests, and the confidentiality of handling all gathered information. Background information was gathered using the same questionnaires as in field trials. Almost all testers (8) are daily computer users. The features of participants are shown in table 10.

TABLE 10. Main features of Usability test participants

Age (yrs)	Sex	Status of tester	Time of testing (mins)
24	F	Friend of test supervisor	15
23	M	Friend of test supervisor	15
58	M	Staff of JAMK	28
51	F	Staff of JAMK	25
75	F	Relative to a staff member of JAMK	36
57	F	Relative to test supervisor	25
24	F	Friend of test supervisor	15
25	M	Relative to test supervisor	15
62	M	Relative to test supervisor	30

The tasks were same for each testee. (Appendix 2.) There was a noticeable difference between time consumed by two participating age groups. All younger participants compiled the tasks in fifteen minutes, the respective time being from 25 to 30 minutes for the elderly testees.

Another noticeable difference between age groups was discovered analyzing eye movements of the participants. Common problem for the senior testees was that they didn't browse the site as a whole. Younger users monitored whole site to gather the information they were looking for. Senior users' eye sight was quite limited, their eyes were glazed bit over the middle section of the screen and that explains why they missed some vital information to conclude the tasks.

The e-learning material got positive response. They were experienced easy to understand and the speed of the videos was commented to be optimal. Other comments from individual participants were:
- "The site should be brighter and colorful so that the site would be more comfortable to use."
- "It's a great thing that there is a site like SeniorEngage."
- "If an older person used this site everything should be in bigger (font, bars etc.) "
- "The site is more arduous to use than Facebook because SeniorEngage demands much more browsing to conclude tasks."

6 CONCLUSION

According to the objectives of WP6 the platform has been developed and tested in a client based real-environment to find out the features to be improved before the launching of the product. The results and evaluations have been analysed, and the best practice findings have been documented in this report.

During the testing period it appeared that there is a wide range in computer skills of participants over 55 years of age. Amongst participants there were senior citizens who had never used a computer before. They need detailed contextual help, or to be walked through several times before being able to use a computer alone. On the other hand there were participants who use computer daily and can perform all needed actions without any help based on their previous knowledge and experience. The diversity of know-how and needs sets its own requirements to the tool of the platform.

Based on the feedback from senior end-users the strength of SeniorEngage platform is the possibility to make new contacts with people sharing same interests within one's own age group and between generations. The participants liked to see what are the fields of interests of other users, and what kind of subtopics the others had created. Some participants argued that they felt uncomfortable joining the conversations because they did not know other participants.

The main subtopics created by senior participants were related to hobbies and leisure time instead of professionalism. This is in line with the finding of the senior participants' frequency of discussing professional matters with the others. Although it must be taken into account that there were only two senior participants who shared the same profession. Because of the variety of professionals it requires a lot longer period of time and a lot more users to find other users of same professional interests, and to be able to contribute to one's profession and to create intergenerational education networks.

Some major problems during the testing phase were caused by the malfunctioning of some functionalities and terms which occurred in English. Because of the dysfunctions the participants were not able to complete their tasks, and as stated in the feedback, the artefacts discouraged to continue the testing.

The e-learning material was rated important by the senior end-users. The problems occurred when the e-learning tool was incomplete in the beginning of the testing phase, and all the video material was shown on an English version of the platform. On the other hand the e-learning videos were commented to be clear and the velocity of the video made it easy to follow.

The results of usability asked using questionnaires were in line with the findings of usability tests. It is important to notice that the contextual help was not in use during the testing phase, and a lot of problems were due to not knowing how to proceed in

order to perform different actions on the platform. If the end-users have little experience in managing the computer they easily assume the problem to be attributed to lack of skills instead of poor product design. As stated by the participants, it is critical that the platform works perfectly before launching. Easy to find and explicit instructions will assist the users to manage the platform, to get the best out of it.

Even though the objectives of the WP6 were to find out how the trial prototype meets the needs of retired or semiretired seniors there were also younger participants in the study. Their participation gave information about how younger people experience the platform, its' functionalities as well as user's navigation, and what should be taken into consideration in order to engage young professional users to the SeniorEngage platform.

There were several functionalities which did not work correctly when the testing started. Creating mentorships and on-going professional conversations require a well-functioning system in order to invite users from the senior and younger users. At best the SeniorEngage platform provides a mean for retired and semi-retired professionals to continue to contribute knowledge to younger professionals as well as to participate in community.

Appendix 1. Questionnaires

Pre-Questionnaire, Background Questions to Senior Users

- Age: ___

- Gender: ☐ m   ☐ f

- Would you say your health is
  ☐ excellent ☐ very good ☐ good ☐ fair ☐ poor

- Do you have any long-term health problems, illness, disability or infirmity?
  ☐ Yes ☐ No

- How often do you use a computer?
  ☐ every day ☐ several times a week ☐ several times a month ☐ less than that

- How often do you use the internet?
  ☐ every day ☐ several times a week ☐ several times a month ☐ less than that

- In which profession have you been working before you retired?

  _____

- Did you work in different professions before? If yes, in which ones?

  _____

- For how many years have you been working in your main profession?

  _____ years.

- When did you retire?

  _____ years ago.

Think of two persons within your social network with whom you have regular contact and who do/did have the same profession.

Person 1 (e.g. partner, child, colleague, friend, …): _____

- How often do you talk to person 1 about your former profession?
  ☐ daily ☐ several times a week ☐ once a week ☐ once a month ☐ less frequent
  ☐ never

Person 2 (e.g. partner, child, colleague, friend, …): _____

- How often do you talk to person 2 about your former profession?

  ☐ daily ☐ several times a week ☐ once a week ☐ once a month ☐ less frequent
  ☐ never

Think of two persons within your social network with whom you have regular contact and who do/did <u>not</u> have the same profession.

Person 1 (e.g. partner, child, colleague, friend, …): _____

- How often do you talk to person 1 about your former profession?

  ☐daily ☐several times a week ☐once a week ☐once a month ☐less frequent ☐never

Person 2 (e.g. partner, child, colleague, friend, …): _____

- How often do you talk to person 2 about your former profession?
  ☐daily ☐several times a week ☐once a week ☐once a month ☐less frequent ☐never

- Do you think young people who have the same profession can benefit from your knowledge?
  ☐Yes ☐No

- Why?

  _____

- What are your hobbies?

  _____

- Do you think you can give helpful information or support to young people who have similar hobbies?
  ☐Yes ☐No

- Why?

  _____

- Do you think young people can give helpful information or support to you regarding your hobbies?
  ☐Yes ☐No

- Why?

  _____

Pre-Questionnaire, **Background Questions to Junior Users**

- Age:

- Gender: ☐m   ☐f

- How often do you use a computer?
  ☐every day ☐several times a week ☐several times a month ☐less than that

- How often do you use the internet?
  ☐every day ☐several times a week ☐several times a month ☐less than that

Think of two persons within your social network with whom you have regular contact and who do/did have the same profession.

Person 1 (e.g. partner, parents, colleague, friend, …): _____

- How often do you talk to person 1 about your former profession?
  ☐daily ☐several times a week ☐once a week ☐once a month ☐less frequent
  ☐never

Person 2 (e.g. partner, parents, colleague, friend, …): _____

- How often do you talk to person 2 about your former profession?
  ☐daily ☐several times a week ☐once a week ☐once a month ☐less frequent
  ☐never

Think of two persons within your social network with whom you have regular contact and who do/did <u>not</u> have the same profession.

Person 1 (e.g. partner, parents, colleague, friend, …): _____

- How often do you talk to person 1 about your former profession?
  ☐daily ☐several times a week ☐once a week ☐once a month ☐less frequent
  ☐never

Person 2 (e.g. partner, parents, colleague, friend, …): _____

- How often do you talk to person 2 about your former profession?
  ☐daily ☐several times a week ☐once a week ☐once a month ☐less frequent
  ☐never

- In which profession are you working at the moment?

  _____

- How many years do you spend on education for this profession (after regular school)?

  _____ **years.**

- How many years ago did you start working in this profession?

  _____ years ago.

- Do you think you can benefit from people who had the same profession as you now have and who are now retired (for up to ten years)?
  ☐Yes ☐No

- Why?

  _____

- What are your hobbies?

  _____

- Do you think retired people/professionals can give helpful advice or support to you regarding your hobbies?
  ☐Yes ☐No

- Why?

  _____

- Do you think you can give helpful advice or support to retired people/professionals who have similar hobbies?
  ☐Yes ☐No

- Why?

  _____

2. Expectations questionnaire (TAM t1) (both user groups)

Please answer the following questions by ticking one out of the five possible gradients, e.g.:
strongly agree   O   O   X   O   O   strongly disagree

Perceived Usefulness

- I expect that using SeniorEngage will improve my life quality
  strongly agree   O   O   O   O   O   strongly disagree
- I expect that using SeniorEngage will increase my zest for life
  strongly agree   O   O   O   O   O   strongly disagree
- I expect that using SeniorEngage will improve professional qualification
  strongly agree   O   O   O   O   O   strongly disagree

Perceived Ease of Use

- I expect that my interaction with SeniorEngage will be clear and understandable
  strongly agree   O   O   O   O   O   strongly disagree
- I expect that interacting with SeniorEngage will not require a lot of my mental effort
  strongly agree   O   O   O   O   O   strongly disagree
- I expect that I will find SeniorEngage to be easy to use
  strongly agree   O   O   O   O   O   strongly disagree
- I expect that I will find it easy to get SeniorEngage to do what I want it to do
  strongly agree   O   O   O   O   O   strongly disagree

Computer Self-Efficacy

- I expect that the interaction with SeniorEngage will be intuitive
  strongly agree   O   O   O   O   O   strongly disagree
- I expect that I easily will find on the platform what I will need
  strongly agree   O   O   O   O   O   strongly disagree
- I expect that the information will be well arranged on the SeniorEngage platform
  strongly agree   O   O   O   O   O   strongly disagree

Computer Playfulness

- I expect that I will use SeniorEngage triggered by Spontaneity
  strongly agree   O   O   O   O   O   strongly disagree
- I expect that I will use SeniorEngage triggered by Goal orientation
  strongly agree   O   O   O   O   O   strongly disagree
- I expect that I will use SeniorEngage triggered by Boredom
  strongly agree   O   O   O   O   O   strongly disagree
- I expect that I will use SeniorEngage triggered by Fun
  strongly agree   O   O   O   O   O   strongly disagree

Computer Anxiety

- I expect that using SeniorEngage will not scare me at all

  strongly agree   O   O   O   O   O   strongly disagree

- I expect that using SeniorEngage will not make me nervous

  strongly agree   O   O   O   O   O   strongly disagree

- I expect that using new technology will not make me feel uncomfortable

  strongly agree   O   O   O   O   O   strongly disagree

Perceived Enjoyment

- I expect that I will find using SeniorEngage to be enjoyable

  strongly agree   O   O   O   O   O   strongly disagree

- I expect that using SeniorEngage will be pleasant

  strongly agree   O   O   O   O   O   strongly disagree

- I expect that I will have fun using SeniorEngage

  strongly agree   O   O   O   O   O   strongly disagree

Image

- I expect that my social environment will admire me when I will use SeniorEngage

  strongly agree   O   O   O   O   O   strongly disagree

- I expect that when I will use SeniorEngage my social environment will contact me more often because they also will be interested in the system

  strongly agree   O   O   O   O   O   strongly disagree

Behavioral Intention

- I expect that whenever I will consciously see/recognize SeniorEngage, I will use it

  strongly agree   O   O   O   O   O   strongly disagree

- I expect that I will use SeniorEngage whenever I will be in the mood to use it

  strongly agree   O   O   O   O   O   strongly disagree

- I expect that my daily routine will be adapted to SeniorEngage

  strongly agree   O   O   O   O   O   strongly disagree

- I expect that if I will have the chance, I will use SeniorEngage even after the trial phase

  strongly agree   O   O   O   O   O   strongly disagree

Use

- On average, what do you expect, how much time will you spend with SeniorEngage each week?

  Please write down the amount of hours here _____

3. Task list

Please conduct all these tasks at least once:

	Done
• Register at the SeniorEngage Platform (in Introduction Workshop)	O
• Navigate to you profile and add one or more interests	O
• Create a new subtopic in a topic of your choice	O
• Have a look at a subtopic of your choice	O
• Write a comment to a subtopic of your choice	O
• Write a message to a person who has similar interests	O
• Chat with a person who has similar interests (text or video chat)	O

4. Post-questionnaire (TAM t2)

Please answer the following questions by ticking one out of the five possible gradients, e.g.:
    strongly agree   O   O   ⊠   O   O   strongly disagree

Perceived Usefulness
- Using SeniorEngage improved my life quality
  strongly agree   O   O   O   O   O   strongly disagree
- Using SeniorEngage increased my zest for life
  strongly agree   O   O   O   O   O   strongly disagree
- Using SeniorEngage improved professional qualification
  strongly agree   O   O   O   O   O   strongly disagree

Perceived Ease of Use
- My interaction with SeniorEngage was clear and understandable
  strongly agree   O   O   O   O   O   strongly disagree
- Interacting with SeniorEngage did not require a lot of my mental effort
  strongly agree   O   O   O   O   O   strongly disagree
- I found SeniorEngage to be easy to use
  strongly agree   O   O   O   O   O   strongly disagree
- I found it easy to get SeniorEngage to do what I want it to do
  strongly agree   O   O   O   O   O   strongly disagree

Computer Self-Efficacy
- The interaction with SeniorEngage was intuitive
  strongly agree   O   O   O   O   O   strongly disagree
- I easily found on the platform what I need
  strongly agree   O   O   O   O   O   strongly disagree
- The information was well arranged on the SeniorEngage platform
  strongly agree   O   O   O   O   O   strongly disagree

Computer Playfulness
- I used SeniorEngage triggered by spontaneity
  strongly agree   O   O   O   O   O   strongly disagree
- I used SeniorEngage triggered by goal orientation
  strongly agree   O   O   O   O   O   strongly disagree
- I used SeniorEngage triggered by boredom
  strongly agree   O   O   O   O   O   strongly disagree
- I used SeniorEngage triggered by fun
  strongly agree   O   O   O   O   O   strongly disagree

Computer Anxiety

- Using SeniorEngage did not scare me at all
  strongly agree   O   O   O   O   O   strongly disagree
- Using SeniorEngage did not make me nervous
  strongly agree   O   O   O   O   O   strongly disagree
- Using new technology didn't make me feel uncomfortable
  strongly agree   O   O   O   O   O   strongly disagree

Perceived Enjoyment

- I found using SeniorEngage to be enjoyable
  strongly agree   O   O   O   O   O   strongly disagree
- Using SeniorEngage was pleasant
  strongly agree   O   O   O   O   O   strongly disagree
- I had fun using SeniorEngage
  strongly agree   O   O   O   O   O   strongly disagree

Image

- My social environment admired me that I have SeniorEngage
  strongly agree   O   O   O   O   O   strongly disagree
- Since I had SeniorEngage my social environment contacted me more often because they were also interested in the system
  strongly agree   O   O   O   O   O   strongly disagree

Behavioral Intention

- My daily routine was adapted to SeniorEngage
  strongly agree   O   O   O   O   O   strongly disagree
- If I would have the chance, I would use SeniorEngage even after the trial phase
  strongly agree   O   O   O   O   O   strongly disagree

- As a platform I rate SeniorEngage being
  very good   O   O   O   O   O   very poor

- On average, how much time did you spend with SeniorEngage each week?
  Please write down the amount of hours here _____

5. Additional questions

Social Pressure

- **I felt obliged to communicate with my contacts.**
  strongly agree   O   O   O   O   O
      strongly disagree

- **I responded to an incoming mail or comment, even though I didn't feel like it or didn't have time.**
  strongly agree   O   O   O   O   O
      strongly disagree

- **If a person contacted me, I felt I should respond.**
  strongly agree   O   O   O   O   O
      strongly disagree

- **If I took the initiative to contact somebody, I expected the other person to react.**
  strongly agree   O   O   O   O   O
      strongly disagree

- **I expected my contacts to communicate with me on a regular basis.**
  strongly agree   O   O   O   O   O
      strongly disagree

Privacy

- **I learned more about my contacts than I would have liked to know.**
  strongly agree   O   O   O   O   O
      strongly disagree

- **I saw communication with my contact as a threat to my privacy.**
  strongly agree   O   O   O   O   O
      strongly disagree

Social Inclusion and Connection

- **I had a clear image of the activities of my contacts.**
  strongly agree   O   O   O   O   O
      strongly disagree

- **I felt connected to my contacts.**
  strongly agree   O   O   O   O   O
      strongly disagree

- **I found it easy to stay in touch with my contacts.**
  strongly agree   O   O   O   O   O
      strongly disagree
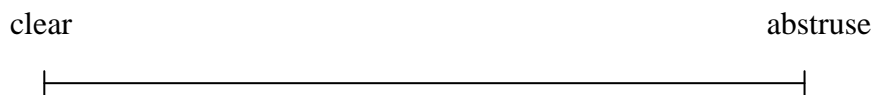
6. Usability

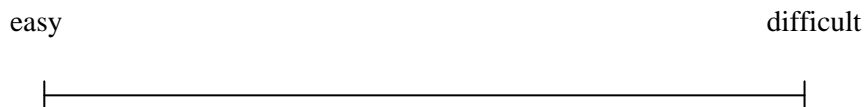Please **mark on the line** whichever point on the scale indicates your experience
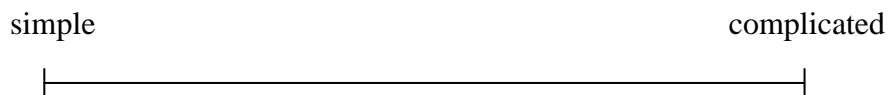
e.g.: **Creating a videochat was**

easy   difficult

1. **The SeniorEngage platform was**

   clear   abstruse

2. **Distinguishing text from the background was**

   easy   difficult

3. **Registering to the platform was**

   simple   complicated

4. **Loging in to the platform was**

   simple   complicated
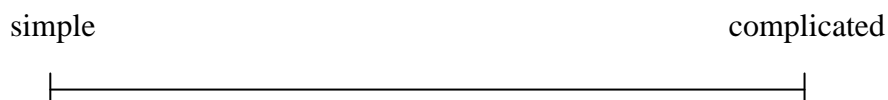
5. **Editing the profile was**

   simple   complicated

6. **Sending messages was**

   simple   complicated

7. **Reading messages was**

simple   complicated

|————————————————————————|

8. **Creating new topics was**

simple   complicated

|————————————————————————|

9. **Finding interesting topics was**

simple   complicated

|————————————————————————|

10. **Participating conversations was**

simple   complicated

|————————————————————————|

11. **Creating a chat was**

simple   complicated

|————————————————————————|

12. **What are the weaknesses of the SeniorEngage platform?**

_____

_____

_____

13. **What are the strengths of the SeniorEngage platform?**

_____

_____

_____

14. Which functionalities did you like best? Why?

_____

_____

_____

15. Which functionalities did you like least? Why?

_____

_____

_____

16. Is there anything else we have not discussed yet, but is important for you to mention?

_____

_____

_____

Thank you for your time!

Appendix 2. Tasks to be performed in usability tests

Tasks to be performed in usability tests
A — Register to SeniorEngage platform.
B — Check introduction videos. Watch the video "Make Friendship".
C — Ask user "n.n" to be your contact.
D — Send a message to user "n.n". You can decide yourself the subject and contents of the message.
E — Navigate to your profile. Edit "*Interested in*" section by adding your hobby. Save the change.
F — Browse the topics. Create a new subtopic under a topic which you find interesting. Write a name of your own choice for the group/subtopic.
G — Logout.