AAL Joint Programme

Connected Vitality, the Personal Telepresence Network (CVN)

D7.2 A document with results of the Dutch field test at Sensire - PresenceDisplays (month 27)

Author:	PRE
Contributors:	SEN
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Document history

Version	Date	Author	Description
0.1	7.6.2013	PRE	Process guidelines for field study for the YoooM Light in addition to the process guidelines described in D6.2
1.0	28.8.2013	PRE	Added testresults
1.1	30.8.2013	PRE	Added conclusion and updated title.
1.2	4.9.2013	SEN	Review
1.3	30.9.2013	PRE	Small changes and additions, based on SEN review. The whole project has been slightly delayed because of the sudden bankruptcy of NIGZ. Because of this the deadline of 26.8.13 has been exceeded.

Introduction

In addition to the 'big' YoooM model, consisting of custom made hardware and software, we started doing tests with a 'light' version of the YoooM. A main consequence of using custom hardware is that the production costs are very high. This is an obstacle in reaching big groups of elderly, especially against the current climate of reducing costs. This document will cover what the YoooM Light is and outlines the process guidelines for the field test carried out in the Netherlands, mainly based on the process guidelines published in D6.2.

The central goal of this study is to investigate the YoooM Light system in a "natural" setting. Older adults will have the possibility to use the system at their homes over a period of six weeks. In this study we are looking at three main area's of use: Care, Family and Business.

The YoooM system will be evaluated on the basis of various values that are derived from the theory of consumption values (TCV), which seems to be a suitable approach to cover a wide range of factors of Usability (U), User Experiences (UX) and User Acceptance (UA) within one concept (for detailed information see the CVN Evaluation Framework). According to the TCV we are going to investigate the interactional value (social presence, social connectedness, reciprocity), the functional value (reliability, usability, sociability, ease of use, usefulness), the emotional value (fun/enjoyment, computer anxiety) and the conditional value of the YoooM system. In the following, according to the values, the central research questions are defined.
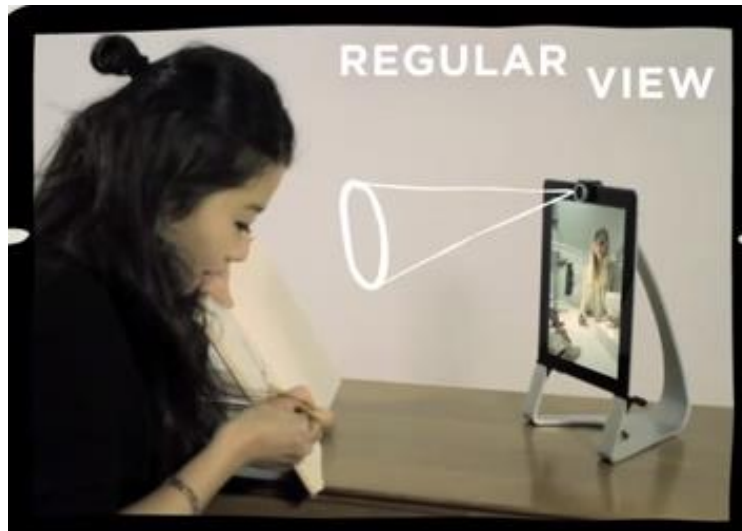
1.What is the YoooM Light?

The YoooM Light aims at creating a comparable YoooM experience at a fraction of the costs. To make this possible, we designed a YoooM standard with a special lens for iPads.

The YoooM light consists of a solid aluminium frame, in which the iPad (version 2 and above with a camera) can be fastened. At the top, positioned exactly before the camera of the iPad, is a special lens. This lens consists of three lenses, recreating the unique YoooM experience for a standard iPad camera. The regular view of the iPad is strongly increased this way. In combination with the hands-free properties of the standard, this recreates the full-body communication and the desired 'social presence' in a low budget version of the YoooM.

We aim at the same results in terms as targeted with the big YoooM models in terms of delivering high quality long distance communication to elderly. We realize that the smaller screen of the tablet will decrease the social presence and social connectedness. On the other hand, we believe that the quality delivered through the tablets is still better than anything current available. Furthermore, due to its portability, the YoooM can be easily transported even during a call. This gives the opportunity to, for example, cook together while in the kitchen and eat together at the table without disconnecting or difficult transport issues.This, combined with a reduction of an estimated 98,4 % (!) of the costs in producing the YoooM standard compared to the big YoooM, makes the YoooM light an ideal budget solution, enabling organisations, government and indivduals to create the YoooM experience with just a fraction of the costs, opening up this solution to far larger groups of people.

2. Central research questions

In the research with the YoooM light, we didn't had any participants that matched to profile for our care focus nor Business. Even though there was interest from the business context, none of those we found interested were aged 55+.

2.1. Focus: Family

Regarding Family, we are interested in the communication between elderly and their distant family members. We are using mainly the same research questions as described in D6.2, especially to enhance the possibility of comparing both devices in a reliable way.

Interactional value:
RQ1: To what extent do participants experience social presence when communicating via the YoooM device with their family?
RQ1.1: To what extent does participants' social presence change over time?
RQ2: To what extent do participants experience social connectedness when communicating via the YoooM device with their family?
RQ3: What characterizes the communication in terms of reciprocity?
Functional value:
RQ4: How do participants evaluate the usability of the YoooM system (effectiveness, efficiency, satisfaction)?
RQ5: To what extent do participants experience the YoooM as easy to use?
RQ6: How do participants estimate the usefulness of the system in order to be in contact with their family?
Emotional value:
RQ7: To what extent does the YoooM evoke fun/enjoyment?
RQ8: What did participants like/dislike when using the YoooM in order to be in contact with their family?
RQ9: To what extent does the YoooM evoke computer anxiety?
Conditional value
RQ10: What characterizes participants' social network in general?

The profile of our testgroup is defined by the following parameters:

- One of the participants is aged 55+

- Participants aren't able to see each other as often as they like due to physical restricitons, whether those are a long distance and/or immobility.

- Participants are open to use technology to bridge the gap and are open to learn the skills required to operate the YoooM Light

3.Methodology

In this study, we build on the theoretical framework provided in D6.2. For an in depth description of the terminology of Social Presence and Social Connectedness and the methodology we refer to the 'D6.2 – A process guideline document for the field tests'document.

There is a variety of different methods that are going to be used in order to evaluate the YoooM system, ranging from qualitative methods (structured interviews, notes gathered within the diary) to quantitative methods, using questionnaires or data logging.

The participants are supported with a manual on how to quick start with their YoooM. Until now, a workshop seems unnecessary because of the extremely simple interface. For some elderly, unfamiliar with the use of an iPad, some instructions on using the iPad are required. These instructions are very basic (basically three steps: snapping the iPad in the YoooM holder, unlocking the iPad homescreen, tapping the icon to call and you're ready to go) and are learned by most people in a very short time, depending on their mental adaptiveness regarding technology.

After the YoooMs are installed the participants start with the six-week field trial. In the first half of the six-week field trial (week 1-3) some activities are triggered (e.g., eating toghether, playing a game). In order to support participants to keep track of the activities that are going to be performed they receive a diary. This is done in order to make sure that participants actually use the YoooM and to pass the threshold of possibly new and unimagined activities like eating together. During the second half of the field trial (week 4-6) no activities are triggered in order to investigate how participants use the system on their own.

After the six-week field trial, the units are de-installed and a short interview is performed in order to discuss the probing materials that were used during the study and to gain information about participants' experiences during the study, using the YoooM.

During the six week trial we use online questionnaire's, thereby using the same questions that are given in the D6.2 document.

4.Timeline

The research questions, online questionnaires and interview questions used are all copied from the D6.2 document. However, we added a RQ 12 on efficiency for the focus business. They are extensively described in chapter 5.5 of the D6.2 and I refer there for further explanation.

The timeline presented here is also based on the timeline presented in D6.2.

RQs	Method	Wk 1	Wk 2	Wk 3	WK 4	Wk 5	Wk 6	Post-inter view
RQ 1: Social Presence	*Interview*							√
	Online Questionnaire	√					√	
RQ 2: Social connectedness	*Interview*							√
	Data logging	√	√	√	√	√	√	
RQ 3: Reciprocity	*Data logging*	√	√	√	√	√	√	
RQ 4: Usability	*Online Questionnaire*	√					√	
RQ 5: Ease of use	*Online Questionnaire*		√				√	
RQ 6: Usefulness	*Online Questionnaire*		√				√	
RQ 7: Enjoyment	*Online Questionnaire*	√		√		√		
	interview							√
RQ 8: likes / dislikes	*Online Questionnaire*	√		√		√		
	Diary	√	√	√	√	√	√	

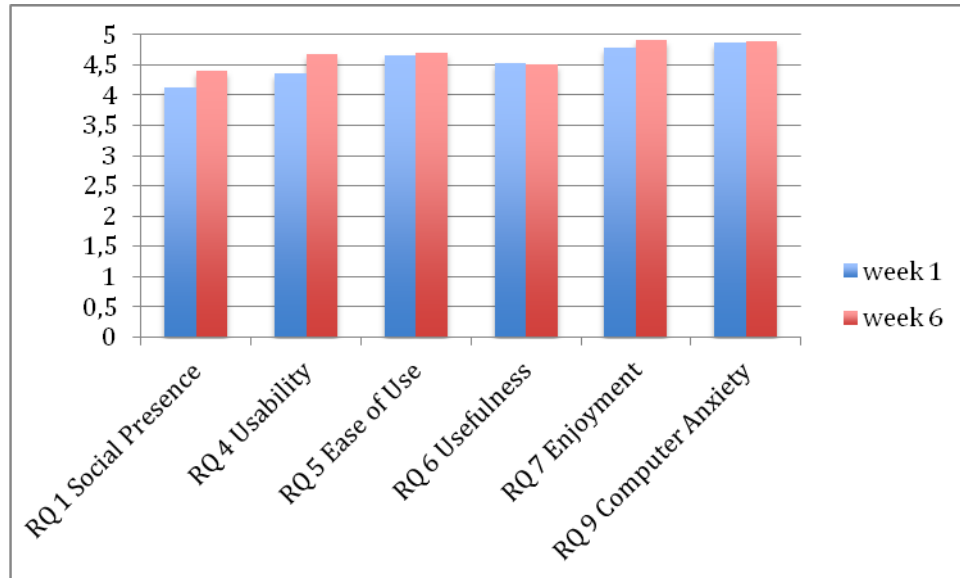|			
	Interview		√
RQ 9: Computer anxiety	*Online Questionnaire*	√	√
RQ 10: Social Network	*Interview*		√
RQ 11: Context	*Interview*		√
RQ 12: Efficiency	*Online Questionnaire*	√	√
	Interview		√

5.Results

5.1. Interactional value

image 1 : Overview of numerical testresults

5.1.1.RQ 1 : Social Presence

Regarding Social Presence the research questions were:

RQ1: To what extent do participants experience social presence when communicating via the YoooM device with their family?
RQ1.1: To what extent does participants' social presence change over time?

This item scored really good. The average score of all the questions was after the first week of testing 4.12 on a 5-point scale (Median=4, SD=0.84) and this score even increased after the full six weeks of testing to an average of 4.41 on a 5-point scale (Median=5, SD=0.71). This also answers RQ 1.1 in the sense that the feeling of Social Presence seems to grow over time as the participants get more used to how to use the YoooM. If we zoom in to some scores on separate questions the sixth week, we find results on the 5-point scale like average 4.86 (M=5, SD=0.38) on the question 'I get a good idea of how people at the other end are reacting.', average 4.86 (M=5,SD=0.37) on the question 'I can easily assess the other people's reactions to what has been said.' and average 4.71 (M=5,SD=0.49) on the question 'I get a real impression of personal contact with the people at the other end of the YoooM.'

The participants also gave comments that are relevant for this research question like:

- It feels like the other is in the same space
- You feel more like you are in each others living space, very nice!
- Because you see so much more of the other and the environment than with normal videocalling, the is much more involvement. You feel, just like a '*real*' conversation, somehow closer to the other.
- Because you can see the body language of the other, the other can do something and

be quit for a moment and that ain't annoying because you can see each other and know why the other is quit for a moment.

- My grandchildren tend to loose less quickly their interest to talk to me because they see more. They start to show things spontaneously to me.

Notable is that all participants that had small children indicated that the difference with other communication technologies was remarkable with regards to the children. They were more interested, started to involve in spontaneous behavior like making music and showing things. Even for the smallest ones (children of 14 months) people reported that they liked to do hide-and-seek games with their grandfather or just wave and laugh. We assume that the increased level of body language appeals especially to these little children because they are so strongly dependent on the body language for their communication.

5.1.2. RQ 2: Social Connectedness

Regarding Social connectedness the research question was:

RQ2: To what extent do participants experience social connectedness when communicating via the YoooM device with their family?

All participants used different technologies to connect with their family in addition to the YoooM; most mentioned email and phone. As Social Connectedness if defined as "the sense of belongingness, which is based on having sufficient close contacts" (CVN WP 6) we can conclude based upon the interviews that all participants had the feeling they had sufficient close contacts overall. Yet, in addition to that, they also all agreed that the YoooM increased the experience of social connectedness.

5.1.3. RQ 3: Reciprocity

Based on the datalogging we see are more or less even distribution between the participants. There are some exceptions, for example were one of the partcipants was a working parent and the other a retired grandparent, the one with the most free times tends to initiate the contact more often. A remark on the datalogging is that most participants admit they haven't always been punctual in their datalogging, which they had to do by hand because it wasn't technically possible to have an automated datalogging. This makes the data from the logs a bit questionable, so in having the conclusions for RQ 3 we also base our results on the data from post-interviews.

5.2. Functional Value

5.2.1. RQ 4: Usability

RQ4: How do participants evaluate the usability of the YoooM system (effectiveness, efficiency, satisfaction)?

The usability of the YoooM is also very highly evaluated and even though it already started with a very high score, it even went up during the testing period. After the first week of use, the participants gave an average score of 4.36 on a 5-point scale (M=5, SD=0.98). After the sixth week of testing, this score went up to an average of 4.67 (M=5, SD=0.55). Zooming in

on specific questions after the six weeks, we see a very high average respons of 4.83 (M=5,SD=0.41) to the question 'I think that I would like to use this system frequently' and the same high average 4.8 score (M=5,SD=0.4) with 'I think the system is easy to use'.

5.2.2.RQ 5: Ease of use

RQ5: To what extent do participants experience the YoooM as easy to use?

The average score was very high to begin with and showed a small increase. Average after the first week was 4.66 (M=5, SD=0.60) and after the sixth week 4.71 (M=5,SD=0.54).

To some people the tablet computer was totally new to work with, so it is reasonable to asume that they incorporated working with the tablet computer in their evaluation. Others were already familiar with the tablet computer or even owned one themselves so it is reasonable to asume they were able to focus solely on the YoooM standard and lense. We see this difficulty in evaluating just the YoooM for users that were new to the tablet also reflected in the comments people gave about what they disliked. Some participant said, when asked about things she didn't liked about the YoooM: "it is not so easy to get the tablet out of its cover" which has, of course, nothing to do with the functionality of the YoooM. Other dislikes in this category were comments like "the wifi is not good", "I don't know how to set my iphone so it doesn't pick up the facetime calles when someone tries to reach me on the iPad" and "the dog kept barking so I was hard to concentrate on the conversation". Never the less, even the users new to the tablet were very enthousiast and a couple of them even decided to buy a tablet of their own after the test ended.

5.2.3.RQ 6: Usefulness

RQ6: How do participants estimate the usefulness of the system in order to be in contact with their family?

The average score here was 4.53 after the first week (M=5, SD=0.52) and 4.50 after the sixth week (M=5, SD=0.55) which is more or less the same score and both very high on a 5-point scale. There was no participant scoring below a '4', and the small difference is explained because not every participant filled in the questionnaire from after the sixth weekR. The usefulness is further underlined by the experience that a lot of people were disappointed to let the YoooM Light go back and had to go back to using skype on their tablet or computer without the YoooM Light. They gave comments like "I will miss it" and "How do I buy one?".

5.3.Emotional Value

5.3.1.RQ 7: Enjoyment

RQ7: To what extent does the YoooM evoke fun/enjoyment?
All participants were very pleased to use the YoooM to communicate. There was one participant that scored lower on fun and mentioned this in the interview. We relate this to the very small distance (10 minutes) the two participants that used to YoooM lived from eachother, as they indicated themselves: 'Just walking by for a cup of coffee is more fun than YoooMing.' We also saw it the other way around: the further participants lived away, the

more they seemed to enjoy using the YoooM. This is not based on the scores (because almost everybody scored very high (A= 4.91, M=5) on enjoyment) but more an impression that came from the interviews: "we really really enjoyed it (participants living 200 km away from each other)" , "using the YoooM was really an enrichment to the video connection we used to have (participants living 1000 km away from each other) ", "My grandchildren tend to loose less quickly their interest to talk to me because they see more. They start to show things spontaneously to me. (participants living 250 km away from each other)"

The average scores on this item were 4.79 (M=5,SD=0.58) after the first week, 4.91 (M=5,SD=0.29) after the third week and again 4.91 (M=5, SD=0.29) after the fifth week. These the top scores of all questionnaires.

5.3.2.RQ 8: likes / dislikes

RQ8: What did participants like/dislike when using the YoooM in order to be in contact with their family?

This data comes from comments people made.
We already mentioned a few. Most notable were the people liked:

- Doing things together
- A feeling of being in the same space
- It is nice to be able to see each other so well
- My grandchildren tend to loose less quickly their interest to talk to me because they see more. They start to show things spontaneously to me.
- Being together while having your hands free to do something.
- Cooking in the kitchen while YoooMing
- The grandchildren really loved to talk to grandmother. They started to ask for it by themselves.
- You really have the feeling you actually do something together.
- Especially for the grandchildren communicating with the YoooM is lifelike.
- The image makes it much more fun than using Skype.
- You feel more a part of what you see and hear.
- Using the YoooM was really an enrichment to the videoconnection we used to have
- Because you can see the body language of the other, the other can do something and be quit for a moment and that ain't annoying because you can see each other and know why the other is quit for a moment.

Dislikes were:
- Complaints about the sound or image quality. This is due to the internet connection that needs to have a high speed. A long distance (for example, trying to call in the garden) or using the connection (for example, downloading files while YoooMing) were along the causes we found.
- When someone lives very close, there is not much need to use a YoooM
- Having diner with the YoooM was not so pleasant for one participant
- "My grandchild wanted to hug me when she saw me. The difficult thing about this was that I could not hug her like I am used to do."
- We were always afraid of loosing the little cap of the lens.
- When you sit really close to the YoooM, the YoooM's angle should be a little bit more

towards the floor.

5.3.3. RQ 9: Computer anxiety

RQ9: To what extent does the YoooM evoke computer anxiety?

This item scored very high; average 4.87 (M=5,SD=0.40) after the first week and average 4.89 (M=5,SD=0.31) after the sixth week. This seems due to a lot of participants being more or less familiar with a tablet computer before the tests started. The YoooM standard itself it pretty straightforward, and we made using the tablet computer even easier by installing an application that enabled one tap video calling, where all the participants had to do was tapping a small photo of their family member to start a YoooM call with that person.

5.3.4. RQ 10: Social Network

RQ10: What characterizes participants' social network in general?

We asked all participants to what extent they felt part of a social network of friends and close relationships and to rate this on a scale from 0 to 10. None of the participants scored below 6, which might be taken as an indicator none of the participants felt really isolated from a social network.

While you might think that scoring a 6 could be an indication of a desire to improve their social network, the participants that scored a 6 where older people, that indicated that they just enjoyed their spouse and family and some distant friends and where rather close with a few of people than to fully engage in all sorts of contacts they associated with being part of a social network as they used to be some decades ago. We have to keep in mind that we didn't asked them to score how satisfied they felt on a scale of 0-10 with their social network, but to what extent they thought they were part of a social network.

All participants indicated they had some sort of network, consisting of family and friends. Some participants indicated that they had quite a large network and scored even a 9.

All participants were familiar with at least email and phone to keep in touch with their network. Out of 28 participants, 18 used social media like facebook or twitter to keep in contact with their network. 23 of them had ever used skype before, but this ranged from a handful of experiences to a totally integrated communication tool.

6.Conclusion

If we look at all the data we gathered, we can conclude that overall the participants were very pleased with the YoooM solution. If we take the average of all questionnaires, we see a amazing 4.46 (M=5, SD=0.76). We also got this feedback from the interviews. A typical pattern is that people have to get used to the experience. One participant stated this very clear in the post-interview, which can be taken as an example of the overall experience participants had: "At first, I wondered how this would be a difference to my normal Skype connecting. But after having made several calls with the YoooM, I realized that it just feels different. It's just closer, more intimate, you feel more like being in the same room. It is something you have to experience, I guess. And the children notice it, you can see it very clear with them. They just act different, they are more engaged."

The experience with the tablet computers (iPad V4) was very positive, even for elderly with no experience with tablet computers. This is due both to the intuitive design of the iPad and to our written instructions and preparation of the tablet computer with an application that made calling possible by just tapping a picture of the familymember on the homescreen. All participants had to learn was to unlock the screen and tap the picture.

Other conclusions are that we can't beat face-to-face contact. We never pretended the YoooM experience could beat that, as we state that the YoooM is 'second best after face-to-face'. But we noticed this especially with one set of participants that lived very close to eachother. Walking by for a cup of coffee was just easier and more fun than YoooMing, even though they still enjoyed the experience. Yet people that were depended on technology to bridge the distance because they just lived to far away from each other to drop by, explicitly stated that they were very pleased with the enhanced experience and would really miss the YoooM ("can't we buy the YoooM after the test is over?").

We could say that one of the most important goals in our development was to build a solution that would deliver maximum social presence, in order for people to really feel connected, even over distance. With an average of 4.41 after six weeks of testing, we could say that this goal is definitely met.

The successful use and effectiveness of the YoooM from here on seems to depend more on the contexts and community building required for the application in different domains, because the question if the YoooM really does deliver better social presence seems answered positively, or at least our research very strong suggests this. Regarding contexts and community building, we can sum up some domains:

- For use on the private market, the biggest challenge seems to be the PR. Typically the YoooM is "something you have to experience" before people really understand what it means to have more social presence through the inclusion of more body language and more environment in the communication. Until now we seem to have some difficulties in bringing this message in a convincing way to the market.

- For application in the care sector, a big part of the solution will be the community building and how to get these parameters right. For example, developing online peer group support for clients that suffer from severe psychiatric disorders has a lot to do with tuning the solution to the specific context and needs of the clients and professionals involved. Key parameters will depend equally heavily on how the community is organized and other aspects of social design as on the technical aspects of the solution.

- Hybridization of care, where online and offline contact, professional care and volunteers or peers and the organization of this whole package have to be combined in an intelligent way seems to have a lot of potential, yet to be developed. In this process of hybridization, the technical aspect is just one of the parameters. A change of mindset regarding care might be as important as the technological solution.