

AAL Joint Program



Connected Vitality, the Personal Telepresence Network (CVN)



D8.3 Evaluation of Developed Applications

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Due to an official project extension provided by the AAL that concerned all project partners, the initial delivery for the evaluation of the developed applications (month 33) was delayed following the postponed deployment of all pilot sites according to the granted extension, so the results and analysis were done after the initial proposed date as described in this deliverable.

Table of Contents

1. INTRODUCTION	4
<i>The Communication Formats</i>	4
2. EVALUATION	6
<i>Aspects of the Evaluation (PLUS)</i>	6
<i>Pilot Sites Scope (EUOs)</i>	6
<i>Arvika (Sweden)</i>	6
<i>Sensire (The Netherlands)</i>	7
<i>Spain (ASSDA)</i>	7
3. EVALUATION RESULTS (EUOS, PLUS)	9
<i>Arvika (Sweden)</i>	9
<i>Sensire (The Netherlands)</i>	11
<i>Spain (ASDDA):</i>	12
4. CONCLUSION (PLUS, EUOS)	15
<i>Arvika (Sweden)</i>	15
<i>Sensire (The Netherlands)</i>	15
<i>Spain (ASSDA):</i>	16
5. POTENTIAL IMPROVEMENTS AND RECOMMENDATIONS (EUOS) –	18
<i>Arvika (Sweden)</i>	18
<i>Sensire (The Netherlands)</i>	18
<i>Spain (ASSDA):</i>	19
6. REFERENCES	21



1. Introduction

Following the description of work and according to the planning of the CVN project, this deliverable contains the evaluation results from each of the pilots sites, making special reference to the communication formats and the feedback from the users and carers with regards to user experience factors such as, usability (effectiveness, efficiency, satisfaction), ease of use, perceived usefulness, fun/enjoyment and computer anxiety. According to ISO (2008) user experience can be defined as “A person’s perceptions and responses that results from the use or anticipated use of a product, system or service.” Thus, user experience is on the one hand an immediate consequence of the use of a system based on perceptions and responses but refers also to anticipated use of a system (Law et al. 2009).

The main objective of this deliverable is to provide comprehensive information on how the users and carers perceived the different communication formats of the YOOOM and how valuable and easy to use those were for the users and carers at each of the pilot sites.

More detailed information about user experience factors and the overall results are reported in D7.1, D7.3, D7.4 for each of the sites. This deliverable especially focuses on end users experience from the perspective of the carers and professionals who have been monitoring and overseeing the tests throughout the different phases.

The number and type of communication formats used during the pilot stage were selected according to the nature of each of the pilots. For the pilots, two research foci were intended: either community building (Sweden) or care (Netherland, Spain). To support Community Building especially the Classroom and Club Format were used; in order to support Care, the Meet Format was in the central scope of the study. Hence, there are formats that were not within the remit of the study for specific pilot sites and therefore not or only partly tested at all locations.

The Communication Formats

As described in D2.4. the communication formats (i.e. activities of older adults) provided by the Yooom device were implemented as part of the CVN system and supported by the web server. It allows audio and video calls to friends or healthcare professionals, to play games, meet with a group of people in the Classroom format and thus allows for social activities. The three main communication formats that were evaluated are briefly described in the following.

Meet: The Meet Format allows one-to-one communication of high quality with no latencies experienced with a synchronized video and audio connection.. The overall goal of the “Meet” communication format is to provide the best possible real presence experience for people unfamiliar with technology and who also may not have the patience to tolerate with bad communication. Older adults are considered one of the most vulnerable groups of people in terms of the digital divide that exists between them and technology. Thus, it is essential to provide an easy to use and optimal communication in order to avoid the situation where older adults lose interest in an activity because it does not convey the feeling of being connected and interacting in a natural way; in particular with family and friends. The meet format is the preferred option for the pilots focused on care since it improves the one to one communication experience and enhance the interaction among the users involved. This particular format has a more personal approach in terms of intimacy and privacy, providing a detailed display of the user movements in a natural way and a high value social experience. The pilot focusing on care based the interaction of their users on the meet format so as to test the improvements of the Yoom device within the family and formal/informal carers environment.

Classroom: The Classroom Format enables many-to-many communication and as the name signifies allows activities that are conducted in order to “teach” other participants interested in a certain topic.. This format is intended to be used at the community building pilots that look for increasing social interaction among their users with common interests and activities, sharing knowledge about certain topics, etc. .. The communication format is graphically visualised on the YooM device by having the tutor video feeds being displayed in the whole upper screen, consuming a large part of the lower screen. The sessions were scheduled by older adults that teach using the session or by other computer literal moderator, which took care of inviting also the older adults that might be interested in joining the session. Thus, older adults and users that are not competent in interacting with technology did just see under the group “Teach” the scheduled session and join at the specific time with the click of a button. This was again to alleviate the burden and assist older adults by keeping their interaction with the system at a minimal level.

Club: The final communication format is classified as a group named “Club”, which refers to many-to-many communication and falls under the focus of the Community building Pilot. The users who are participating in an activity are displayed at the upper part of the screen while on the lower part other activities take place such as playing movement games (e.g. handball balloon games), or taking virtual tours together using panoramic imagery, such as the one provided by Google Streetview. For instance, users can join a virtual tour session embarked on a virtual visit to miscellaneous locations around the world. The characteristics of this format allows for active interaction among different users located away from each other and increases the social interaction of a group by participating in entertainment activities, furthermore, care focus pilots can also benefit of this activities increasing the interaction with family and informal carers.

These scenarios are initial club activities considered for implementation, which reflect the views and preferences of older adults.

2.Evaluation

Aspects of the Evaluation (PLUS)

The following section describes the concept of the different aspects evaluated during the pilot phase.

Usability (effectiveness, efficiency, satisfaction)

The **usability of the system** (effectiveness, efficiency, satisfaction) can be described as a general quality of *“the appropriateness to a purpose of any particular artifact”* (Brooke, 1996).

Ease of use

Ease of use describes the degree to which an individual believes that using a particular system would be free of physical and mental effort (Chutter 2009). The easier the use of a system, the more likely is an acceptance by the user (Davis 1989).

Usefulness

Perceived usefulness is the degree to which an individual believes that using a particular system would enhance his or her job performance (Chutter 2009).

Fun/enjoyment

Enjoyment is the extent to which it’s enjoyable to use a specific system in its own right, aside from any performance consequences resulting from the usage of the system (Venkatesh 2000).

Computer anxiety

Computer anxiety can be described as *“the degree of an individual’s apprehension, or even fear, when she/he is faced with the possibility of using computers”* (Venkatesh, 2000, p. 349 referring to Simonson et al. 1997).

Pilot Sites Scope (EUOs)

This section provides a short description of the pilot. Number of users, duration, focus and the number of communication formats used for each of the sites including goals and targets.

Arvika (Sweden)

The first field test round was held in Arvika Municipality between the 28th of January and 10th of March 2013 focusing on “Community Building”. We were interested in the communication and interaction within a group of elderly in a relatively small community. We intended to find out if the YooM could be used to build a bond between eight elderly who had no real connections more than living in the same town.

In addition to the eight senior’s one person from the end user organization participated in the field test. Especially in the beginning of the field test the contact person from the end user organization had the role of a moderator, holding the group together and organizing most of the meetings and activities.

We wanted to investigate to what extent the formats Club and Classroom supported community building. The format that was used the most was without a doubt Classroom. This was the format that older adults in Arvika appreciated the most, both to be the teacher and to be a student. Every week, the moderator held a book club session using text that had been distributed to the seniors at the start of the field test. At the last three-four weeks of the field test several of the participants chose to have their own Classroom sessions where they talked about something close to their heart. This was much appreciated by the participants and it turned out to be a good way to get to know the others better.

Since the participants didn't know each other from the start the format Meet wasn't used much. To talk one-to-one seems to be an activity that users prefer to do with someone they know at least a little. After some weeks in the field test the Meet was used more frequently even though the participants had some technical problems with it.

One thing that played an important part in the field test was that there were meetings in real life too. From the start there were only two meetings planned, one in the beginning and one at the end of the field test. This was planned to introduce the participants to each other and to have a formal Good Bye at the end. But after the first meeting the participants and moderator felt that there was a need for another meeting a few weeks later. At the second meeting several of the participants asked for one more meeting before the field test ended. After the field test all of the participants and the moderator went out to eat dinner and discuss the weeks that had past.

Sensire (The Netherlands)

The field test of Sensire was held in Doetinchem, in the east of the Netherlands between 28th of January and 26th of April 2013.

The focus for the field test in Sensire was on Care, meaning that the focus was on investigating in what way the YooM supported the target group to be in contact with their formal and informal care givers (e.g., family members). Sensire already works with several new ways of giving care to its clients. For example, every day there is contact with 1000 clients via iPad. Some moments of care now only take place through video communication between carer (both the professional carer and the informal carer) and client.

For the field test there were 9 YooM-units available. It was planned to have 4 units installed at 4 older adults' houses and each of those elderly would form a couple with one of their relatives/family members (informal carer). So the planning was to have 4 couples of YooMs. One additional YooM unit was installed at the Medical Service Center of Sensire during the whole field test, for the professional carer.

Unfortunately, because of technical problems in the beginning of the field test it was decided to place two YooMs at professional carer givers' places instead of placing them at two elderly people. Those two professional caregivers participated in the project and because of this it was easier to report technical issues to the technical helpdesk in Delft.

Spain (ASSDA)

The third pilot was conducted in the city of Malaga (Spain) between 27/05/2013 and

	CVN – Connected Vitality Network	Project No.	823502
	<i>D8.3 Evaluation of the developed applications</i>	Date:	20/09/2013

08/07/2013. 9 YoooMs units were installed; 2 units for two older users of the day center with their two relatives, two units for users of the telecare service and two relatives and one unit was installed at the office of ASSDA.

A Help Desk was provided by ASSDA who were in continuous contact with other technicians of the project to solve any type of incident. The contact person from ASSDA, who had the role of a moderator, organized regular meetings with users at least 1 or 2 times a week using the meet format and occasionally the club and teach format. The users were very active (especially in the morning) and they were not at home on many occasions.

Telecare users were more familiar, and they were more likely to talk with their families than with the moderator, and they used the device in the evenings usually. The users of the Day Centre were often in contact with the moderator, (sometimes more than twice a week). They liked to take part in meetings with the moderator and to prove together the device and its different variants.

They used all available formats, whereas the Meet Format was used the most. This one was the best in video and sound quality. The Classroom format also was used, especially in "Paint," because other options are equal. It was an option, which lost quality in sound and video while it allowed the connection of more than two people at the same time. The Day Center users used this format more than Telecare users.

Finally, the following activities were used within the Club:

Games: We played almost every week, especially Ludo game, a user liked putting her grandson to play Bubbles with his uncle. The game Ping Pong was used less, because it was delayed.

Excursion: It was used primarily in meetings with the moderator. It was tested every week. The video and sound quality were similar to Meet Format

News: We read news between several people. They liked to use, especially to read newspapers Sur and La Opinión de Málaga. The other IMSERSO and ASSDA web pages were used rarely.

	CVN – Connected Vitality Network	Project No.	823502
	<i>D8.3 Evaluation of the developed applications</i>	Date:	20/09/2013

3. Evaluation Results (EUOs, PLUS)

Arvika was the first of the pilot sites who carried out a pilot phase among the CVN project. At this stage the development and robustness of the platform was solid enough for a pilot implementation although many of the issues arisen throughout the pilot provided strong indications about necessary changes and updates of the system as it is shown below.

The different times in which each of the pilots were implemented and tested are related to a continuous improvement of the overall system as more detailed feedback was compelled and further requirements fulfilled. Therefore, as the project pilot phases were moving along, the experience of the users at each of the pilot sites were different in terms of satisfaction, general feedback and quality of the data gathered.

Sensire was in charge of implement the second pilot site test although the focus of the pilot site was on care (Arvika focus was on Community building) and therefore put a stronger focus on different formats.

The technical improvements and suggestions gathered in Arvika were simultaneously being handled in Sensire, creating a collaborative team work among the two pilot sites to reach effective solutions, which in turn were creating a solid basis for the final fine tuning of the YOOMS to be tested in Spain.

Spain was the last of the three pilot site tests to take place and therefore benefited from all of the technical improvements and findings from the previous pilot sites.

As it was expected, at the beginning of the pilot site test, it took some time to solve and overcome the technical requirements in terms of internet connection speed, and settings. Once that was settled, Spain was quite successful towards the end of the pilot phase, finding all the significant technical problems solved and providing a nice and fruitful experience to the users.

It should be mentioned that the overall success of the pilot phase in Spain was a process started in Arvika and Sensire where issues and concerns dealt with served as the improvement platform for the test in Spain.

The following section describes the results for each of the pilot sites based on the user's experience and the feedback to the aspects subject to evaluation: Usability (effectiveness, efficiency, satisfaction), ease of use, usefulness, fun/enjoyment, computer anxiety.

Arvika (Sweden)

Thru the field test the moderator in Arvika gathered information from the participant by regularly having contact with the participants and taking down notes. The following data is a result from this.

Usability of the system (effectiveness, efficiency, satisfaction)

The Yooom really makes it easier to form a community between people who don't know each other from before. When you can talk in a group and see each other too it makes it so much easier to get to know each other.

Since Arvika had some problems with connecting calls in the Meet format during the field test it didn't seem efficient to the participants. They rather called each other on the regular

landline.

Unfortunately when talking to another person on the Yooom most people looked at their own picture or at the picture of the person they were talking to. This means that the person they were talking too was looking down and not into the communication partner's eyes. This decreased their experienced sense of closeness. To look into the camera (which would enable eye contact) doesn't feel natural; you naturally look at the pictures displayed on the screen.

Ease of use

Since the system had a lot of problems during the field test in Arvika it was hard for the users to see that the Yooom would be easy to use. The field test gave a lot of enjoyment but also caused a lot of mental effort since it didn't work properly.

Some of the participants had difficulties to understand some of the features of the Yooom; especially with regard to the activities News and Excursion. As example of things that turned out to be difficult is that the participants had a hard time keeping track of all the buttons and what they all meant in News, in Excursion some participants had a hard time using the keyboard. The moderator had to schedule meetings in both News and Excursion to show the activities to the seniors but afterwards there were still some open questions. That the Yooom didn't react immediately to the touch on the touch screen confused the participants and made them press buttons too many times.

Even if some of the participants had problems to understand everything there were those who understood how to use the Yooom instantly.

Usefulness

Most of the participants were positive to use this kind of technology to enhance their contact with family and friends. Several of the participants felt that they already had some of the function of the Yooom on their Ipad or computer and that these solutions worked better and also offered the use of a normal computer and internet access.

As there were a lot of technical problems during the field test the participants didn't get to see the full use of the device and this influenced their perceived usefulness.

Since the participants didn't know each other from the start the moderator played a crucial part for the use of the Yooom. If the participants had to work everything out themselves - without a schedule of activities to follow - the results of the field test had been very different. But this is not due to the Yooom itself.

Fun/enjoyment

The participants appreciated to be able to interact in an easy way with several people at the same time in the Classroom. The only game the participants enjoyed playing was Ludo, the rest seemed a little too simple for them.

To participate in an EU-project seemed to be an objective in itself. The participants were both proud and happy to be a part of the project.

Computer anxiety

All of the participants in the field test in Arvika had a computer of their own and showed no tendencies of computer anxiety using the Yooom.

Since they could get in contact with the moderator at any time during working hours via the YooM, and after working hours via cell phone, they felt secure that if something happened they would get help without too much delay.

Sensire (The Netherlands)

Usability of the system (effectiveness, efficiency, satisfaction)

Sensire had a lot of technical problems so the results of the field test are a bit colored by this aspect. We cannot make any real conclusions about effectiveness, efficiency and satisfaction because almost all of the contacts the people made via YooM were interrupted because of technical problems. In the field test we concentrated on reporting the errors so the technical partners could work on them.

But in spite of this of course the participants were asked about their opinion if the YooM would have worked fine.

Ease of use

Overall, the participants find the YooM very easy to use. The buttons are easy to understand and very intuitive. Almost any participant did immediately know what button they had to push to go somewhere in the YooM.

Because of a lot of different error screens the participants didn't have much opportunity to navigate through the YooM but the the field test leaders noticed that they did push the right buttons.

The Excursion format was, by most participants, described as: a bit more difficult than the rest. They had to zoom in and out a lot and in their opinion this worked a bit confusing sometimes.

Usefulness

When the system was working fine the participants liked to have contact with their family members, but if the field test leaders, did not tell them to make contact again, not so much was happening. They wouldn't have made contact out of their own. Also this could have been caused because of technical problems. Most of the talks were only about if the system worked or not and about what went wrong this time or last time. Only a few times they had some cosy chats.

Fun/enjoyment

Meet format: people did like this format but preferred the Club – Games format because they could do something with each other.

Teach format: participants hardly used this format. Maybe because most of the contacts were between two YooMs and then you can meet each other in the Meet format.

Club format: This format was most used

Participants did not like that it was not possible to make contact in the Club. At first you have to call someone in the Meet format and then make an 'appointment' for another activity like the Balloons game or Ludo in the Club format.

The people would also like it if you could see your missed calls.

Computer anxiety

There was hardly no computer anxiety.

Spain (ASSDA):

Before evaluating the different aspects of the pilot evaluation, it is convenient to remember briefly the profile of the users who have participated in the project.

In Spain we worked with older users, which generally could be considered "advanced" in the use of new technologies. Users were also eager to learn, very socially active and highly participative.

Two of the participants were regularly at the day center, where they participated in different activities such as computer classes, dancing, excursions, etc.

The other two users were from Telecare and did outdoor activities or they enrolled in various workshops and courses.

One of the users was a person in a dependency situation, but she had enough social life and, despite her limitations, she got involved in many activities that helped her to improve her quality of life.

Based on the professional opinions and experiences from ASSDA staff who worked directly with users during six weeks we present below the main findings and conclusions with respect of the aspects of the evaluation previously described.

Usability (effectiveness, efficiency, satisfaction):

Apart from the technical problems inherent in any pilot, the YooM fulfilled its duties as a tool to facilitate a greater social integration of older people, providing a greater sense of closeness with respect to family and / or caregivers and a greater sense of safety.

In addition, its ease of use made it attractive for the users who participated in the pilot who saw it as a better alternative to a landline. All users who participated in the trial in Spain considered a modern version of YooM as the future of communication and the reckoned that it will be a basic device in a few years within the field of social and health services.

Users of day centers were previously involved in many courses and workshops and they were aware of the "digital divide" between older people and new technologies. They believed that the potential of the YooM could be improved even more, increasing in this way the interests of older people in new technologies and encouraging the loss of "fear" that exists for these devices.

Some of the improvements that they posed, were the ability to use the internet freely from the device or the inclusion of more features and games (e.g., Youtube, Facebook, Twitter, Skype)

Generally, the device was considered to be quite effective for what it was required when connecting family members and users. It increased the sense of presence and users evaluated very well the functioning of the system, the users instructions and the intuitive layout of the device. Furthermore, they pointed out how easy it was (even for a child) to understand and start a call via de YooM. It fully met the purpose intended and the effectiveness was a real time experience of telepresence connection among the users.

For the purpose of the pilot itself, it was very convenient to have people who were in need for

	CVN – Connected Vitality Network	Project No.	823502
	<i>D8.3 Evaluation of the developed applications</i>	Date:	20/09/2013

social connections and were eager to try new technological means in this respect.

The efficiency was good although sometimes it lacked some stability in the process of keeping the conversation alive, since the sound and video quality was cut at specific occasions, mostly at the beginning of the project, but despite that, it was much better than a regular phone call, enhancing the communication, making longer connections and providing a greater feedback about the conditions of the participants. Smiling, surprised, questioning, joking were emotions that could be transmitted in a much more realistic manner thanks to the use of the YooM.

The satisfaction across the users and family members was very good, they acknowledged some problems mostly at the beginning of the project but also accepted them as part of the pilot itself. It should be noted that most of the participants would have liked to have the YooM for longer if that was possible since it really improved their social connection with family and friends part of the same pilot.

Ease of use

In terms of ease of use of the device, it can be stated categorically that Spanish users found it easy to master the device. At all times they knew to make calls and how to meet in other formats to access games, news, excursion, etc. They didn't provide important questions in this regard, and this was reflected in the questionnaires, in which, the users had no problem in this matter. The users considered the device as usable and intuitive.

Usefulness

All users, through their experience working with YooMs, considered the device as very useful, they believed that the idea was very good but it needed to be improved by including extra applications and enabling to contact more participants and links to existing well know social network tools e.g., Facebook, Forums, Twitter.

All the users used the devices regularly and they employed it as an alternative to landline to talk to their families. A significant fact is that all users said they felt pity when we had to remove the device, they expressed their wishes to stay with the device more time.

In order to have a smooth decommissioning of the trial and compensate the feeling of missing the Yoom, users were instructed on how to use alternative applications to keep regular contact with their relatives via internet (Skype, Face time) and were informed that they would be first contacted when a similar pilot takes place in case they want to participate again. Additionally, they were offered to visit ASSDA premises and telecare centre to see how it works and have a deeper knowledge about the telecare service provision in Andalucia.

Everyone understood perfectly well that it was a pilot and they were sympathetic with technical errors typical of this phase of the project.

Fun/enjoyment

Spanish users were satisfied with the pilot in general terms. It was very important for them to participate in a project of these characteristics and they enjoyed working with it. They liked the feeling of being useful and taking actively part in the development of an European project, hence the valuations of the questionnaires were high.

Apart from this, a distinction could be made between the perception of users from day centers and users from Telecare:

-Telecare users were more familiar in general terms, and they proposed a scenario in which all their close relatives had their own YooM that could be used as a familiar device to conduct regular meetings. For them this was reported to be the perfect scenario where everyone would enjoy and feel more comfortable.

-The users of the Day Centre were especially sociable, in constant contact with others who were open to meeting new people and learning new things. These users, imagined a scenario in which many people had a YooM, being able to communicate with each other to share knowledge and to interact socially with each other. For them this was considered to be the ideal setting and it would provide more fun as a social club community.

In both cases, they were in favor of including free internet access and a greater number of games and applications that could make the device more fun.

Computer anxiety

In the pilot in Spain users felt comfortable with the device, because one of their relatives had another device and could consult them their concerns, in addition to the support of a "moderator".

When the devices were installed at users homes, some of them were not delighted because of its large size, but when they saw their relatives on the other side, they considered it good and easy to use, quickly losing that suspicion.

The simple and comfortable design of the software made the users feel very comfortable all along.

The results of the questionnaires corroborated this.

	CVN – Connected Vitality Network	Project No.	823502
	<i>D8.3 Evaluation of the developed applications</i>	Date:	20/09/2013

4. Conclusion (PLUS, EUOs)

Arvika (Sweden)

When talking to the eight participants after the test period they were all very happy and proud to have been a part of the field test. This was something out of the ordinary for them and none of them regretted the time they had put into this the last six weeks. They were all happy to contribute to something that can take the care of elderly another step into the future.

For the seniors this was a great possibility to get to know some new people in the town. The YooM did support this, but since there were a lot of technical issues the focus on getting to know each other sometimes got forgotten. In many interactions the technical problems were discussed almost exclusively, especially in the Meet format.

In the last weeks of the field test the project group discussed if a prolongation of the field test would be necessary due to the technical issues that prevented the participants to use all the formats. We decided to leave it up to the participants to make the decision. They turned down the offer due to all the technical problems; they felt that there wouldn't be much change in just a week or two. Some of the participants thought that we should have tested the YooM more before letting seniors try it out. We have to remember that Arvika, Sweden, was the first pilot site and therefore met problems that we hadn't come across before.

A few of the participants expressed that they thought the YooM was a bit big and clumsy. But they still liked the size of the screens. Some said that they would have preferred YooM if it was a laptop. The participants appreciated the design of the interface even if someone said that the dark background made it hard to read the font. They pointed out that it is important that the texts are big enough, in our case the text was so big that it didn't fit on the screen, which of course isn't good.

The participants were used to using computers and other communication tools. Several of them thought that they already had the equipment and tools that the YooM is providing; Skype, Facetime, online games etc. The format they liked the best was the Classroom where they could talk to and see several people at the same time.

Sensire (The Netherlands)

In the beginning of the field test it was hard to find people who wanted to participate due to different reasons. Some people didn't have an internet connection, or were skeptical because of the big size of the device. Moreover, some people did not fit because they had no family members who could participate.

But the people who did participate were all kind of proud to be a part of developing the YooM. They knew from the beginning that it was a test and that there could be some errors. Unfortunately there were a lot of problems, but all our participants agreed in extending the field test two or three weeks so the technical partners would have more time to fix the problems, so the next field test would turn out better. And because of good work from the technical partners this was the case.

The participants have used all the formats during the field test.

	CVN – Connected Vitality Network	Project No.	823502
	<i>D8.3 Evaluation of the developed applications</i>	Date:	20/09/2013

The Meet format was used the most. The professional carers made contact with the end users in the Meet format, but also elderly and the informal carers made most of the time contact in Meet format.

The Club format was also used a lot for entertainment. Especially between the elderly and their grandchildren. But also the professional carers initiated some of those contacts in the Club format. Besides the Games the other buttons (News, Excursion) were not used very much.

The Teach format is not used very much. Mostly because of sound issues, but also because our main focus wasn't on community building but on care. Besides this we also noticed that the people didn't know each other and didn't seem to have the need to have contact with each other.

Spain (ASSDA):

In Spain, as discussed above, four users were involved in the pilot, two of whom were volunteers in day centers for older people, and other two who were users of Telecare service, therefore, there were two different profiles in the Spanish pilot:

- The Telecare users saw the Yooom as a good opportunity to communicate with their families and as a tool for the future in the field of Social Services.
- Users of Day Centers considered the Yooom as the future tool for social communication, not only in the family environment, but also in the field of connections with other centers and people to share experiences and knowledge. In addition, they pointed out that it was an intuitive system to get some people to lose "the fear" of new technologies.

All the users who participated in the pilot liked the general idea of the project, and the possibility to see their family and friends in almost life-size, therefore, the idea was considered to be very good, older people felt an increasing need to enter in the world of new technologies and this was a good prototype to start with.

The design of the interface was described as very good, because it looked to be easy to use and very intuitive. This was a point that was fully achieved because all users knew how to use the Yooom almost from the beginning.

Regarding the device, users considered it "too big and heavy", all agreed that it would require a lighter and more comfortable prototype to be handled physically and they suggested that the external accessories of the device should be incorporated internally in the Yooom such as the speakers or microphone.

They were very pleased with the work the technicians did, because they could see how they very quickly solved the problems that were appearing and the communication with the moderator was always very fluid and close.

All users without exception considered pilot time as "short", they wanted the pilot to last more time to see improvements in the device and continue to use it, since they liked to use it every day more and more.

Users who used the Yooom in Spain admitted that when the Yooom was working correctly, it replaced other communication technologies (especially the landline). They did not use the landline to call their relatives, instead, they called through the Yooom.

Overall, we can conclude that in general, participants were positive towards the YooM and were impressed that the communication was similar to meeting a person face-to-face. The YooM supported Social Presence and Connectedness among the participating parties within the field trial. Nevertheless, the variety of technical problems that occurred during the trials negatively influenced participants' experiences although they were very understanding and happy about the quick technical support.

	CVN – Connected Vitality Network	Project No.	823502
	D8.3 Evaluation of the developed applications	Date:	20/09/2013

5.Potential Improvements and Recommendations (EUOs) –

Following the suggestions and recommendations from the different pilot sites, a few ideas were pointed out repeatedly around the same aspects to be improved, like the size of the device, the type of internet connection required or need for additional applications and functionalities among others,

The following section shows those recommendations per site, where, for the most part, there are common concerns among the users from all of the pilot sites in respect of the YOOM, with some additional recommendations specific to each location.

Arvika (Sweden)

To get the YooM to be available for the seniors that live on the countryside it is important that the requirements on the bandwidth aren't too high. As we saw in the field test in Arvika several people who showed an interest in joining the field test was prohibited due to the bandwidth conditions offered on the countryside.

There are different opinions about the size of The YooM device The YooM device is very big and unhandy to the participants. Since they use laptops and iPads the YooM seems impractical. Someone said that they thought that the size was the best thing about the YooM. He liked that it was big and that the screens were big. The opinion about it being too big and ungainly is overrepresented.

At several times during the field test participants expressed a wish for some kind of light or frame that would show who is talking during classroom activities. The participants felt that this would simplify the conversation a lot. They also requested an agenda of sorts where you could sign up to get to talk. In that way you would know when it's your or someone else turn to talk.

Some of the participants had troubles using the touch screen, it's either too sensitive or not sensitive enough. This might be due to the shipping but on the finished product this must be absolutely reliable. Several of the participants use a mouse instead of the touch screen.

The buttons for volume control should have a symbol that is easier to understand and see. Some participants have trouble seeing which symbol that decreases and increases the volume.

When using the YooM it's sometimes hard to find others to interact with. If you, in the contact list, could see what people are doing it would be easier to get in touch with each other. There could be a symbol showing in what room you currently are, or if you're talking to someone else the symbol could show that you're occupied at the moment.

One last thing that the participants requested is that there should be a list of missed calls so that you can see if someone has called while you were out or busy.

Sensire (The Netherlands)

The participants felt that the YooM was too big. Some of the participants live in a small home and it was a bit of a problem to place the YooM somewhere on a table. They would

	CVN – Connected Vitality Network	Project No.	823502
	<i>D8.3 Evaluation of the developed applications</i>	Date:	20/09/2013

like the YoooM to be smaller so that they could move it somewhere else, e.g when they have visitors and would like to use the dinner table.

The participants would also like the YoooM to have a wireless internet connection instead of cables.

It would be nice if there would be a sound connection while switching to other formats. E.g. you call someone in the Meet format and while going to the Club format you can still hear each other so you can tell each other on which table you are, and if there are other participants, etc.

Another thing that would improve the YoooM would be that you can also call someone from the Club format, and that new players can join the play without having to start a new game. Also our participants would like to see if they have some missed calls, so they can call back.

The elderly participants find the excursion map too difficult to use. Two grandchildren did use them a few times, but preferred google maps on a tablet. Maybe if it would be possible to zoom in and out with the fingers instead of using the buttons this would be work more easily.

Participants would like the YoooM to have more games to choose.

Spain (ASSDA):

Although in general terms, the users were satisfied with the pilot, some issues that could improve the application were pointed out, most of them raised by users.

- The first thing to improve was the "look" of the device. The four users and their four relatives when they saw it for the first time, they agreed that the device was too big and heavy. The device occupied a lot of space and if there was need to move it, it was impossible to move for an older person.

- The majority of users who participated in the project had a computer and internet connection with. They thought that the YoooM should connect via wifi, without cables to this existing setting.

- Apart from its size and weight, also they stressed that the prototype had too many external accessories (speakers, cameras). They would have liked that the external accessories were incorporated into the device. The users of the Day Centre also mentioned to be missing a keyboard.

- As for the software, they considered that the options presented in the program were correct, because they believed that the device should be intuitive and easy to use, although, for a possible future sale, it should include more options. They stated that, in a short time, a person with few computer skills could master the YoooM, and when that happened, that person should be able to use other applications and functions, such as:

- Inclusion of more games, such as chess, card games etc.
- Ability to open up to social networks like facebook, twitter, skype, etc ...
- Using "free" internet, via navigator.

- Due to the number of errors related to bandwidth, users posed audio-video alternatives with lower bandwidth requirements so that the conversations were more fluid and the system more

stable.

- The day centers for the older people are very interesting places to introduce such devices because that users are usually very sociable, active, eager to learn new things and with eager to teach their colleagues. A YoooM network between several day centers would be a good idea to test prototypes and develop awareness of these technologies.
- The price was considered prohibitive for an elderly person in Spain. Ideally, the device should be marketed subsidized by any public entity, but that's a difficult option currently in Spain.

6. References

Brooke, J. (1996). SUS: A quick and dirty usability scale. In: P. W. Jordan, B. Thomas, B. A. Weerdmeester, A. L. McClelland. Usability Evaluation in Industry. London: Taylor and Francis, Retrieved on 23.02.2011: <http://www.usabilitynet.org/trump/documents/Suschapt.doc>

Chutter, M.Y. 2009: Overview of the Technology Acceptance Model: Origins, Developments and Future Directions. In: Working Papers on Information Systems, 9(37). Sprouts, Indiana University, USA. <Http://sprouts.aisnet.org/9-37>

Davis, F.D. 1989: Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. In: MIS Quarterly, Vol.13(3), 319-340.

ISO DIS 9241-210:2008. Ergonomics of human system interaction. Part 210: Human-centered design for interactive systems (formerly known as 13407). International Organization for Standardization (ISO). Switzerland.

Law, E., L.-C.; Roto, V., Hassenzahl, M., Vermeeren, A.P.O.S., Kort, J. 2009. Understanding, Scoping and Defining User eXperience: A Survey Approach. In: Proceedings of CHI'09. 719-728.

Venkatesh, V. 2000: Determinants of Perceived Ease of Use: Integrating Control, Intrinsic motivation, and Emotion into the Technology Acceptance model. In: Information Systems Research 11(4). 342-365.