



D2.2c Report on platform’s experimental evaluation and feedback activities (Testing Phase 1)

Ambient Assisted Living Joint Programme
 AAL JP project number: AAL 2019-6-190-CP
 Project Acronym: GUIDed

Project Title: Assisted-Living and Social Interaction Platform (GUIDed)

Project acronym:	GUIDed
AAL JP project number:	AAL 2019-6-190-CP
Deliverable ID:	D2.2c
Deliverable Name:	Report on platform’s experimental evaluation and feedback activities (Testing Phase 1)
Status:	Final
Dissemination Level:	Public
Due date of deliverable:	30.11.2021
Actual submission date:	13.12.2021
Lead partner for this deliverable:	MATERIA
Author(s):	MATERIA
Contributing partners:	HARPO, KARDE, Platus (organisations)

Project partially funded by AAL Joint programme and “Research & Innovation Foundation” (CY), “The National Centre for Research and Development” (PL), “FFG Forschung wirkt” (AU) and “The Research Council of Norway” (NO) under the Grant Agreement number AAL-2019-6-190-CP.

Version history

Version	Authors	Date	Description
0.1	MATERIA	25.10.2020	First draft
0.4	KARDE, HARPO, PLATUS	19.11.2020	Contribution/input
1.0	MATERIA	20.01.2021	Release of deliverable Version 1
1.0	MATERIA	20.01.2021	Update with protocol and results of the Stage 2
1.1	MATERIA	15.04.2021	- High Fidelity Results - Update with Web portal initial feedback - Redefined tertiary users
1.2	KARDE, HARPO, PLATUS	30.04.2021	Contribution/input
2.0	MATERIA	13.05.2021	Final release of D2.2b
2.1	MATERIA	24.11.2021	We removed previous results of Stage 1 and Stage 2. This document is updated with protocol of Stage 3 and results
2.2	KARDE, HARPO, PLATUS	30.11.2021	Contribution/input
3.0	MATERIA	13.12.2021	Final release of D2.2c

List of abbreviations (alphabetically)

Abbreviation	
AAL	Ambient Assisted Living
AR	Augmented Reality
DoW	Description of Work
M	Month
QR	Quick Response
SUS	System Usability Scale
TV	Television



UI	User Interface
WP	Work Package

Table of contents

Version history	2
List of abbreviations (alphabetically)	2
Table of contents	4
Table of Figures and Tables.....	5
1 Introduction	6
2 Overview of Testing Phase 1	7
2.1 End-user involvement	7
2.1.1 Inclusion criteria.....	7
2.1.2 Exclusion criteria	8
3. Stage 3: Living Lab.....	9
3.1 Participants	9
3.2 Protocols for Primary and Secondary Users	10
3.2.1 Protocol for Primary and Secondary Users	10
3.3 Protocol and Questionnaires for Tertiary users.....	11
Protocol for tertiary Users	11
3.4 Testing results from living labs - Primary Users.....	12
Demographics	12
System Usability and first impressions	13
Business model	14
Evaluation of the Application.....	17
3.5 Testing results from living labs - Secondary users	17
Demographics	17
System Usability and first impressions	19
Business model	20
Evaluation of the application	21
3.6 Testing results from living labs - Tertiary users	23
Demographics	23
Evaluation of the application	23
Business model	24
4. Web portal	26
4.1 Purpose of web portal.....	26
5. Conclusion.....	26
6. References	28
Annexes.....	29

Annex 1: Informed consent	29
Annex 2 Stage 3 – Living Lab -Questionnaires for primary, secondary and tertiary users	33
Primary Participants.....	33
Demographics	33
System Questionnaires	34
Secondary Participants	38
Demographics	38
System Questionnaires	39
Tertiary Users.....	43
Demographics	43
System Questionnaires	43

Table of Figures and Tables

Table 1 - Testing phase 1: Stages and methods of testing.....	7
Table 2 - Numbers of users in Testing Phase 1	7
Table 3 - Stage 3 of Testing Phase 1 End-user participant numbers	10
Figure 1- Primary users Age	12
Figure 2 - Primary users IT level.....	13
Figure 3 - System Usability scale Primary participants	13
Figure 4 - Primary users Willingness to pay.....	15
Figure 5 - Preference to pay GUIDed services	16
Figure 6 - Secondary users Area of residence.....	18
Figure 7 -Secondary users IT level.....	18
Figure 8 - Secondary users Willingness to pay.....	20
Figure 9 - Secondary users preferred GUIDed service	21
Figure 10 - Tertiary users IT level.....	23
Figure 11 - Tertiary users preferred pricing model.....	24
Figure 12 - Preferred payment method	25
Figure 13 - User testing - Summary of results template.....	27



1 Introduction

This document provides the continuation of the D2.2 – Stage 1 and 2. This document consists the end-user testing of the GUIDed system during Testing Phase 1 Stage 3 from protocol, recruitment to the analysis of the results.

The present deliverable reports on the recruitment, data collection methods and results of the continuous testing of the GUIDed system. Stage 3 is the testing of the first prototype through a Living Lab approach before the commencement of the real-life trials. According to the initial plan, this deliverable was due on M18 including the testing procedure and results from all aforementioned Stages. However, the consortium decided that all WPs and especially, the technical one would greatly benefit from three sequential releases of this deliverable reporting the results after each testing phase. This will allow the technical teams to have an easy compilation of the improvements and adjustments needed after each testing, instead of presenting all the results in the end.

2 Overview of Testing Phase 1

The key objective of *Task 2.2: Experimental Evaluation and User Feedback (Testing Phase 1)* is to guarantee that the demands and needs of the older adults will be reflected in the hardware configuration of the device and the development of the software platform and services, which also derives from the results of the D2.1 and D3.1 objective. In order to adequately monitor, discuss, evaluate and provide feedback based on the platform development activities, the project team decided to divide the Testing phase 1 into three stages (see Table 1), namely:

1. Low Fidelity Paper prototypes
2. High fidelity Mock-ups
3. Living Labs with First True Prototype.

Table 1 - Testing phase 1: Stages and methods of testing

Testing phase 1 stages	Method to be utilised
1. Paper prototypes	Focus groups/interviews
2. Mock-ups (semi-functioning)	Questionnaires
3. First prototype	Living lab approach

2.1 End-user involvement

According to the DoW, the Testing phase 1 should involve at least 20 primary, 10 secondary and 1 tertiary user in each end-user site (see Table 2).

Table 2 - Numbers of users in Testing Phase 1

Task	Leader	Partners	M	Sample numbers per country/partner
T2.2 Experimental Evaluation and User Feedback (Testing Phase 1)	MAT	PLATUS, KARDE, HARPO	6-18	<ul style="list-style-type: none"> • 20 primary users per end-user site (5 out of them for the Living Lab) • 10 secondary users per end-user site • 1 tertiary per partner country (Cyprus, Austria, Poland, Norway)

The end-user involvement target groups, inclusion/exclusion criteria, recruitment techniques and exit strategy remain the same as per D2.1 Report on user recruitment procedures, and older adults demand analysis and as such, they are only briefly mentioned on this report.

2.1.1 Inclusion criteria

For the first phases of the project's end-user involvement, the partners have developed a set of simple inclusion criteria. These are for the primary end-users:

- 60+ years
- Willing and able to participate (no health-related or functional decline that makes participation difficult or impossible, according to [the informant's] own evaluation)
- Provided informed consent
- Some level of ICT-literacy (e.g., has and uses smartphone or tablet or PC)
- Cf. exclusion criteria.

For secondary and tertiary end-users:

- Minimum level of computer literacy required
- Autonomous and capable of providing consent
- Willing and able to participate.

2.1.2 Exclusion criteria

For the primary end-users, exclusion criteria that will be applied are:

- Presence of terminal illness that according to the informant's own evaluation might prohibit participation or cause early drop-out.
- Severe impairment prohibiting the use of the system including visual, motor and audio impairment. Because in order to test and pilot the GUIDed product and services, it is important the user to be able to see what is written on a smartphone (for example text instructions and buttons, or hear normal voice alerts on such devices (for example beeps and speech), or use the touch screen devices (for example hit and press buttons on it).

3. Stage 3: Living Lab

The concept of Living Labs has gained much momentum. This is so as they help achieve a user-centre development process that is tested out in real world scenarios. In our Living lab approach, we have incorporated a variety of relevant stakeholders and treat them not only as end-users but “*co-researchers*” able to impact on the iterative design process that will channel real world feedback into our development process.

The project employed the methodology of the living lab. This means that an adequate space was provided to participants so as to test the application in a controlled environment that simulated real world settings. This was the participants first opportunity to really try out the product. The feedback provided at this stage was crucial to really understand how the product could be used to make the everyday life of its users much more productive and easier. It was also used to fine-tune the prototype prior to its testing in real-life environments (T4.2). The living lab approach, in contrast to the previous stages (1 & 2) introduces this element of practicality, by giving the participants control over the device and observing its results. As such it helped users really understand their needs and wishes.

As such, it would be best to involve both primary and secondary users as well as tertiary. Primary and secondary users were able to test all the services offered by the application and the web portal in a control environment. Tertiary users received a demonstration of both the services in the application and the web portal while also testing them though, to a much lesser extent than primary and secondary users so as to get a feel for the product as a whole.

Participants could be recruited via telephone, email or other methods. Each partner should aim to make the best use of their network possible. The application of the protocol could only be conducted physically depending of course on the national rules and regulations amid COVID-19. As such, the testing protocol should follow the pattern of a hands-on demonstration, an explanation on how the Living lab is meant to operate, followed by the participants experiencing the Living lab.

With respect to the Living lab, it should be noted that the experiment could be conducted in any premises as long as it is a close simulation of an apartment or house. One room is sufficient but it was preferable to conduct the experiment in two to three different rooms in order for the participant to test the application in different rooms. All the devices meant to be operated by the application, such as lamps and alarms ought to be installed and tested by the researchers prior to conducting the experiment.

The main instrument for the testing is the GUIDed app prototype that was installed on smartphones. These smartphones were given to participants and an orientation of the space testing area where the devices are located should be provided before the Living lab initiates. As such researchers assigned to the living lab should explain to participants where each device is located. The participants may use their own devices for the testing as long as they are compatible with the GUIDed app.

3.1 Participants

At least 5 primary users should be recruited per center in the Stage 3 of Testing Phase 1 called “Living Lab”. Nevertheless, each center in order to meet DoW requirements needed to recruit at least the following number of participants in each target group as demonstrated in the Table 3 below:

Table 3 - Stage 3 of Testing Phase 1 End-user participant numbers

User group	Austria	Cyprus	Poland	Norway
Primary	5	5	5	7
Secondary	5	5	5	5
Tertiary	1	1	1	1

Please note that both the application and the web platform were internally tested. These were tested to ensure that they are safe and respond well with each other before proceeding to check their interaction and their individual performance with participants. Through this internal testing whose results can be found in the annexes no major problems were reported neither with respect to the application nor the web platform and as such we conclude that the stage 3 is ready to commence.

3.2 Protocols for Primary and Secondary Users

3.2.1 Protocol for Primary and Secondary Users

Protocol steps

- 1 Identify the rooms in which the experiment will be conducted and install the devices.
- 2 Check that the participants comply with the inclusion/exclusion criteria as defined in D2.1.
- 3 Briefly explain to the participants the objectives of the GUIDed project and system and the purpose and procedure of this testing phase. You may provide a smaller summary if the participant has already participated in the previous tests.
- 4 Explain to participants the goal of this testing stage and procedure.
- 5 Obtain participants' informed consent (applicable if the participant has not already participated in previous testing phases) – (See Annex 1)
- 6 Obtain the participants' demographic data through the demographic questionnaire. You may skip this step if the participant has already taken part in previous testing phases.
- 7 Provide the participant with the smartphone pre-installed the GUIDed app.
- 8 Follow the "Quick Instructions" to set up the GUIDed app with the Raspberry PI and create a user account.
- 9 At the login screen the username is "XXXX" and the password is "XXXX".
- 10 Once you log in you will see the main screen of the GUIDed App. Clicking on the top right allows you to logout, if you would like.
- 11 Start the protocol by providing a tour of the living lab by explaining and then letting the participants to use the system by prompting them to do the following tasks:
 - i. Medication Planner: Open the camera mode and 'scan' the pillbox marker (pre-register medication and associate with specific user account)
 - ii. Navigation: Open the camera mode and 'scan' the place marker (create places and associate with specific user account)
 - iii. Home-Control: Open the camera mode and 'scan' the lamp
 - iv. Home Sensor: Open the camera mode and 'scan' the door sensor
 - v. Communication open service directly
 - vi. AR expert: Ask them to enable the AR expert.
- 12 Ask the participant(s) if they have any questions or if they would like to see any of the service demonstrated again.

- 13 Allow the participants at least 30-40 minutes to explore the living lab and the application's functions. If they need more time than this, allow them as much time as necessary.
- 14 Be available for questions but do not interfere unless the participant asks for help. Record the problem down and assist the participant.
- 15 Demonstrate the web portal and let them navigate in the portal for about 20 minutes.
- 16 Administer the questionnaires found in the Annexes 2 as per their end-user target group.
- 17 Record the results.
- 18 Thank participants and inform them of how they can stay in touch with us.

3.3 Protocol and Questionnaires for Tertiary users

Protocol for tertiary Users

Protocol steps

- 1 Identify the rooms in which the interview and demonstration will be conducted.
- 2 Set up the interview and demonstration at a time appropriate for both you and the participant.
- 3 Briefly explain to the participants the objectives of the GUIDed project and system and the purpose and procedure of this testing phase. You may provide a smaller summary if the participant has already participated in the previous tests.
- 4 Obtain participants' informed consent (applicable if the participant has not already participated in previous testing phases)- (See Annex 1).
- 5 Obtain the participants' demographic data through the demographic questionnaire found in the Annexes. You may skip this step if the participant has already taken part in previous testing phases.
- 6 Explain to participants the goal of this testing stage and procedure. As such you can say to participants that this is an hour and a half session in which you will demonstrate the application and the portal as well as the interaction of these two. Let them know that we are looking for insights based on their unique position and experiences. Let the participant know that at the end of the presentation and the discussion you will give them a short questionnaire to fill in. Alternatively, you may fill in the questionnaire by asking the questions to the participant.
- 7 Provide a tour of the living lab.
- 8 Ask participants their permission to take down notes.
- 9 Ask the participant(s) if they have any questions or if they would like to see any of the service demonstrated and note down any questions or observations.
- 19 Administer the questionnaire found in the Annexes 2 as per their end-user target group.
- 10 Record the results.
- 11 Thank participants and inform them of how they can stay in touch with us.

3.4 Testing results from living labs - Primary Users

Demographics

All relevant demographic data of the participants can be found in Figure 1 below. In total 22 participants took part in the living labs. These involved 5 participants from each partner: Austria, Cyprus and Poland, as well as 7 participants from Norway.

Most participants were female, accounting for 59% of the total. Beyond this, the vast majority of participants live in urban areas (55%) with a significant portion (36%) residing in rural areas and the rest in semi-urban areas. Most participants were aged between 60-75 years old, which is our intended target market and this was represented in the sample by 72% of the total as opposed to 19% which were aged between 76 and 85 and a small 9% being over 85 years old.

The age, area of residence and gender was kept linked in terms of demographic with the target market of our end solution. The same was true with respect to IT literacy (Figure 2). Herein most participants stated to be at the medium level meaning they, in general, use a lot of devices like smartphones, computers, tablets, the internet and applications and can perform a broad array of IT related functions with a low level of difficulty such as using social media. A rather small 5% of participants also stated their IT level as high while an expected 45% claimed the same to be low.

Age
21 responses

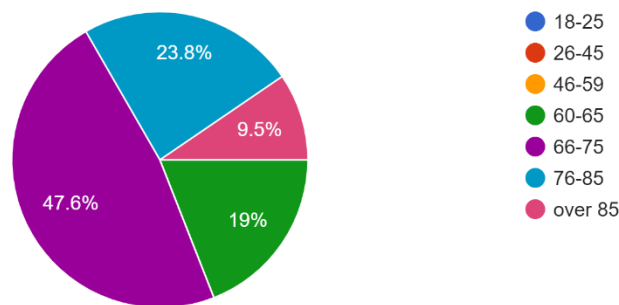


Figure 1- Primary users Age

IT Level

22 responses

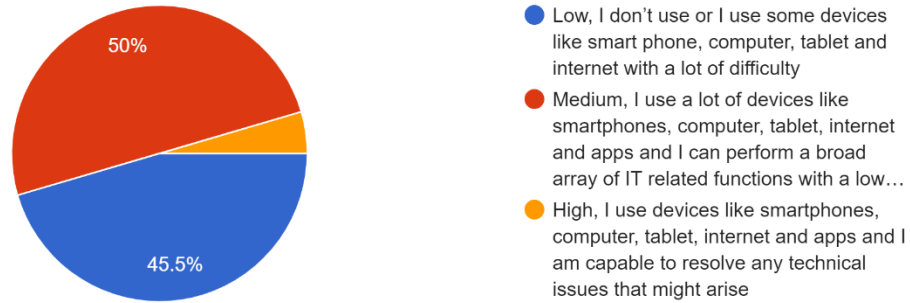


Figure 2 - Primary users IT level

System Usability and first impressions

In order to test the general usability of the system the standard System Usability Scale (SUS) was employed. This has the added benefit of making the system then testable across similar solutions that employ the same scale which has come to be an industry standard. The average sum of the SUS scale was calculated for all users and an average returned from these. We additionally present the results in the graph below using simple percentages (Figure 3). Overall, the system did not perform exceptionally well with most participants finding it rather hard to use.

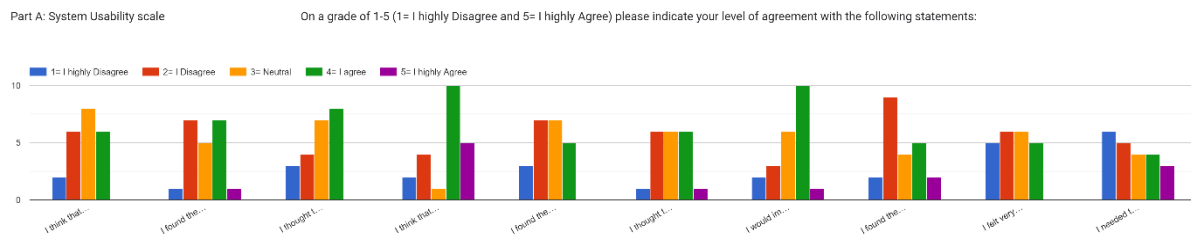


Figure 3 - System Usability scale Primary participants

As these living labs were performed to do exactly that to point out any weaknesses the findings are most valuable to the partners which can work on increasing the usability of the application. The overall SUS returned an average value of 48 wherein 68 should be the average reached as this is the SUS standard average across applications in general. The SUS questionnaire will be repeated after the implementation of the field trials and the taking by the partners of corrective measures to counteract the negative score.

This low relatively score was especially reflected in whether or not participants found that there was too much inconsistency in the system (63% scoring this as neutral or worse) as well as their levels of confidence (73% stating this as neutral or worse) and whether or not they would need the help of a technical person to use the system with 68% agreeing or highly agreeing with the statement. All these are areas that could guide the partners into providing suitable solutions. Encouragingly and despite these results, most participants did believe that eventually, they could come to learn how to use the system with 50% stating they agreed or highly agreed with the statement and 27% stating that they would further like to use the system as at least with another 36% being neutral towards the second statement.

These conclusions are further confirmed by the first impressions of the participants. Most liked a number of features about our solution and services with the highest popularity being awarded to the Medication planner and Home control. However, they did point out the difficulty in using these. For example, when asked what they liked about our application, one participant stated: "Home control by AR but it hasn't worked well", while another added, "I liked it in general but I am having some difficulty in using it". The least favourite service seems to be Navigation while the web portal does seem to require a lot of work in becoming more user friendly.

This does not take away the many favourable responses. These ranged from liking the overall idea to liking some parts that did however present minor difficulties. Another useful insight relating to the above was with respect to the training that needs to be provided. To this one participant commented when asked what would motivate them to use the system "To be shown more times how to use it", while another pointed to the need of "The system must be useful and work well (stably). We have access to useful systems / applications via e.g., alarm / security system regarding fire / smoke, control of lights (smart bulbs), and surveillance camera in the living room."

Business model

Choosing the right business model is very important. As such and following our user-center design, participants were asked a number of questions with respect to relevant business aspects of the application so as to entice responses that could help guide the marketing team in its efforts.

As is the case with a number of applications, participants seem to edge towards the freemium model. When asked whether or not they would be willing to purchase the application if it was not made available for free, just 20% answered yes. However, when asked whether they would be willing to download the application should it be made free to do so 77% this time around answered in the affirmative. These results clearly show the preference of our primary target group and our consortium should take this seriously under advisement when preparing the marketing plan for our system.

These findings are further reaffirmed in the next graph (Figure 4). When participants were asked about the preferred method of payment, 45% stated they wished to not pay for the system. As to the rest that perhaps reconsidered, they are equally split between making a one-off payment, paying a monthly subscription and using the freemium method. In any event, should any service be offered for payment as is the case of the freemium model or the whole system offered as a bundle participants recommend that this per service should not exceed 10 euros a month with 57% leaning towards 5 to 10 euros and 43% recommending that it should not exceed five euros in any scenario.

3 How would you be willing to pay for the GUIDed system?

22 responses

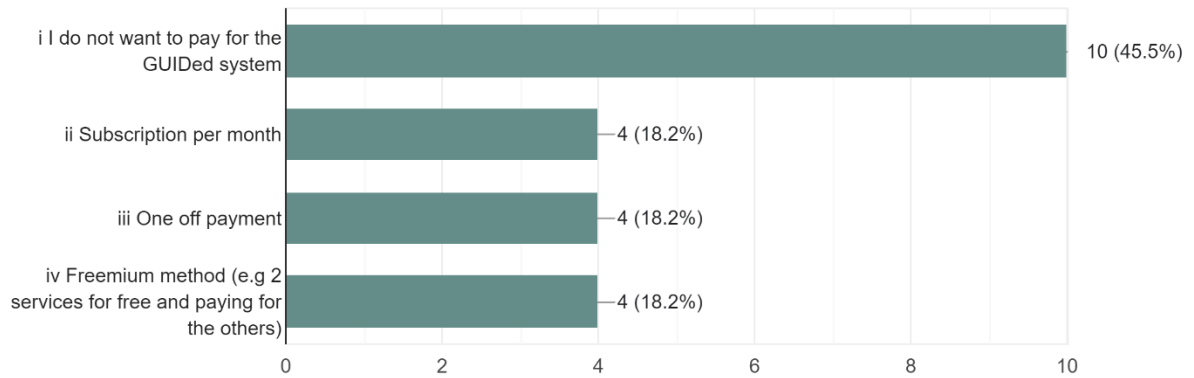


Figure 4 - Primary users Willingness to pay

As to the services themselves, the most valuable service appears to be that of the Medication planner. Almost half of the participants were willing to pay to use the Medication planner. Still, although most participants are adamant that they would use the services only if they were offered for free there appears to be a significant portion of 35% that would be willing to pay under 5 euros a month for these (See Figure 5).

5 Which services of the GUIDed app are you willing to pay to use?

20 responses

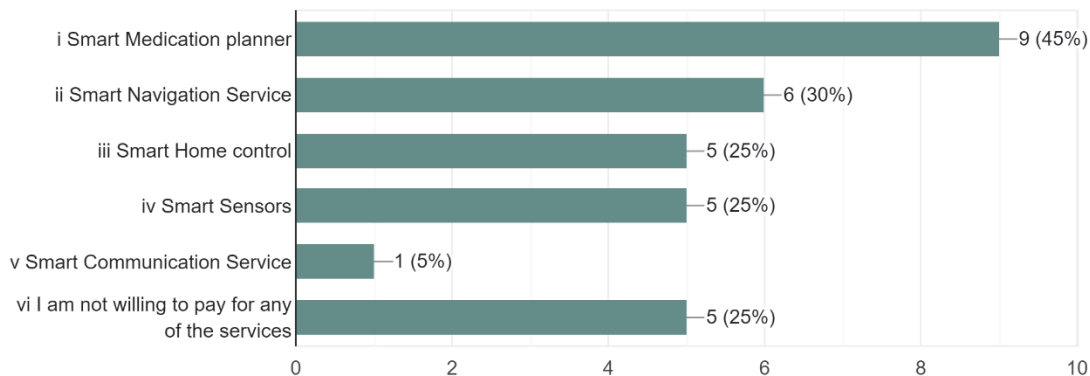


Figure 5 - Preference to pay GUIDed services

Beyond this, the most valuable device for participants appears to be the smoke detector. Indeed, when participants were asked which devices, they would wish to have 65% pointed to the smoke detector followed by the smart lambs with 56% returning a favourable response. The device least desired by participants was the humidity control that only appealed to just 18% of our sample. These devices participants would prefer to acquire mostly through a one-time payment or as a bundle with the application. Another 23.5% stated however that they do not wish to own smart devices implying perhaps they would prefer if these came free with the application paying for the application services as a whole.

Evaluation of the Application

Regarding the context of the application, the overall image is rather positive. Though the majority of participants felt neutral towards it nonetheless we must keep in mind that the application is not meant for all but partners should strive to capture a niche market especially considering the overall reluctance in general of older adults to adopt new technologies. As such it is important to note for example that around 23% of participants thought the application was useful to them and another 28% that it could help improve their quality of life. Moreover, it should be noted that around 58% of participants felt like they would need training in using the application. As such perhaps the percentage of participants that would be willing to use the application regarding it as useful and beneficial to them would increase once more training has been provided. Importantly a sufficient number of participants around half would like to have the application be operated on their behalf by someone else and have the option to disable some of the services. Therefore, it is important for the partners to take these into consideration when producing subsequent versions of the application making it more third-party user friendly and enabling a smooth selection of which services the primary users will be able to use.

Importantly participants would be willing to recommend the application to others. When asked whether they would recommend the application to other older adults, family members and caregivers, participants by 32%, 36% and 34% answered respectively yes. Once more a large percentage of participants seems neutral or undecided to the question asked, a percentage which may perhaps improve into a more favourable response once some more familiarity has been built with the application.

Notably participants seem to trust the application. When asked if they believed the information provided was understandable and clear, whether they felt their data were safe and the application is safe to use, participants answered by 53%, 43% and 39% respectively that this was the case. A large percentage of 29%, 53% and 48% for these categories does seem to be ambivalent and so the communication efforts of the consortium ought to be targeted to ensuring that participants fully understand the safety mechanisms behind the application. Encouragingly around half of the participants characterised the application to be innovative, an element of excitement perhaps that the partners could utilize in their future efforts to introduce improved versions of the application.

Above all else, the biggest dissatisfaction appears to be with the web portal. Indeed, more than half of the participants would not be willing to use it in their everyday life with just 10% answering that this is not the case and that they would be willing to use it. As to the services themselves once more participants reaffirmed that the Medication planner is the most valuable, this time in terms of usefulness, a feature of the application with 59% claiming it so. All the other services fared well and centered around 40 to 50 percent of participants agreeing with the statements on whether these are useful in their everyday life. This time around the least useful service and perhaps an exception to the overall image though barely is the Smart Home control service which gathered around 38% of participant support in using it.

3.5 Testing results from living labs - Secondary users

Demographics

In total 21 participants took part in the living labs and these were mixed with primary users to get a better feel for the system in more simulated real-world conditions. Participants came from all partners and specifically 5 from each Norway Austria, and Poland, as well as 6 participants from Cyprus.

Most of the participants were male, accounting for 57% of the total, allowing the partners to maintain a more representative sample given that as secondary users men are more likely to use technological

solutions than women as they tend to be more IT literate. Furthermore, 62% of participants lived in urban area with a smaller portion (24%) residing in rural areas, and a similar size sample (14%) residing in semi urban areas (Figure 6). The biggest part of the participants, almost half to be exact, were aged between 46-59 years old, which is our target market for secondary users as they are entering that age where they might need to assist family members in their everyday activity and are more tech savvy. The next biggest age group were those of 26-45 that for the most part may be either grandchildren of our primary users or other stakeholders such as caregivers. The rest of the age groups were roughly equally dispersed to 5% of the participants.

Area of residence

21 responses

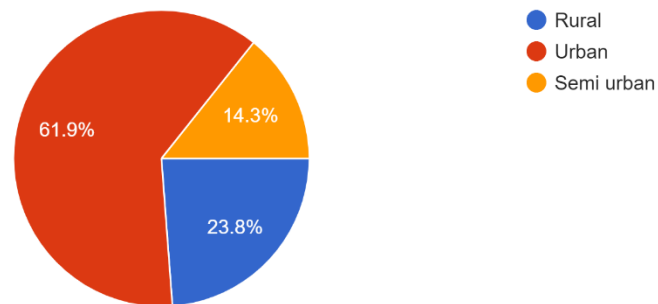


Figure 6 - Secondary users Area of residence

As with our primary participants, the age, area of residence and gender was kept linked in terms of demographics with the target market of our end solution as we envision it. The same holds true with respect to their IT literacy. As to this, most participants, meaning 57% stated to be at a high level meaning they in general use devices like smartphones, computers, tablets, the internet and applications and are capable of resolving any technical issues that might arise. A very small 5% of participants also stated their IT level as low while another 45% claimed this to be at the medium level all of which is rather descriptive of our intended market (Figure 7).

IT Level

21 responses

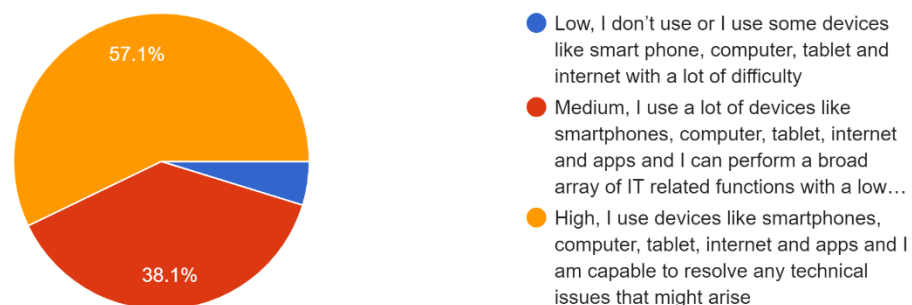


Figure 7 -Secondary users IT level

System Usability and first impressions

As with primary users, in order to test the general usability of the system, a standard SUS was employed. This has the added benefit of making the system then testable across similar solutions that employ the same scale which has come to be an industry standard. The results of the two SUS tests we conducted between primary and secondary users are examined here. We present the results in the graph below using simple percentages while the average SUS score was calculated based on the participant's individual score. Overall and unlike the case with primary users, the system performed rather well with most participants finding it relevantly easy to use.

The difference between primary and secondary users is staggering. The overall SUS returned an average value of 62.2 which is very close to the industry standard which is 68, a result which is much welcomed considering that our product has yet to become final. As a reminder, the SUS for primary users was around 40 and where one places the application in the second case in the needs much work category in the second case the application is placed in the almost done category. Perhaps the results could be explained by the usual older adult's unfamiliarity with technology coupled with the need for more exposure and training regarding the application. As was mentioned before the SUS questionnaire will be repeated after the implementation of the field trials. During this time the recommendations from both primary and secondary users will be taken into account so as to implement corrective actions to improve the SUS score especially with respect to primary users.

Additional insights for these conclusions can be found by examining the SUS categories themselves. Encouragingly as was the case with older adults, secondary users by an even higher degree do generally feel that most people would learn to use the system rather quickly. To this 63% stated that they agreed and another 5% that they highly agree. Areas where perhaps the partners need to pay more attention to concern the overall organisation of the system. Specifically, participants did feel by just 47% that the system was not unnecessarily complex and by only 33% that the various functions of the system were well integrated.

These conclusions can be better understood when one looks at the participants' first impressions. Most thought of the system as rather pleasant but they did point out a couple of things here and there that ought to be addressed. The most common comment regarded the usability of the AR function which did not seem to work for a number of devices. For example, users reported that "It doesn't always work right away", "I would need a longer explanation and later someone to support me" and "Some things didn't work right away" as well as "The overall way of working to feel safe when I use it that it will actually perform" and others.

Another often met comment concerned the extreme level of difficulty in adding a place to the Navigation service and the same is generally true of the portal that could be made more user friendly. As mentioned most participants enjoy the system with the most popular service being once more that of the Medication planner followed by the communication service the second being a stark contrast to the primary users' preferences.

Business model

Always in line with our user-center design approach, choosing the right business model means involving all relevant stakeholders. As was the case with our primary users, secondary users were also consulted in the decision-making process. Unlike primary participants, secondary users seemed more acceptive to paying for at least some of the services to be provided. When asked about whether they'd be willing to pay for the application if it wasn't free though the majority said no, still a rather high 43% answered they would. Even more encouraging, those that would be willing to use the application or at least download it were it made available for free rose to 90% of our sample as opposed to 77% which answered likewise with respect to primary participants.

When participants were asked about their preferred method of payment to acquire the guided system, still 43% answered they wish not to pay for the solution. As to the rest, another 43% stated they would prefer the freemium model, a popular option with online applications. The least favourable options and unlike the case with primary users were those of a one-time payment with 19% and with 33% the option of a subscription per month. As such the message is clear that secondary users by a majority believe that the application should be offered free of charge or at least be provided through the freemium method (Figure 8).

3 How would you be willing to pay for the GUIDed system?

21 responses

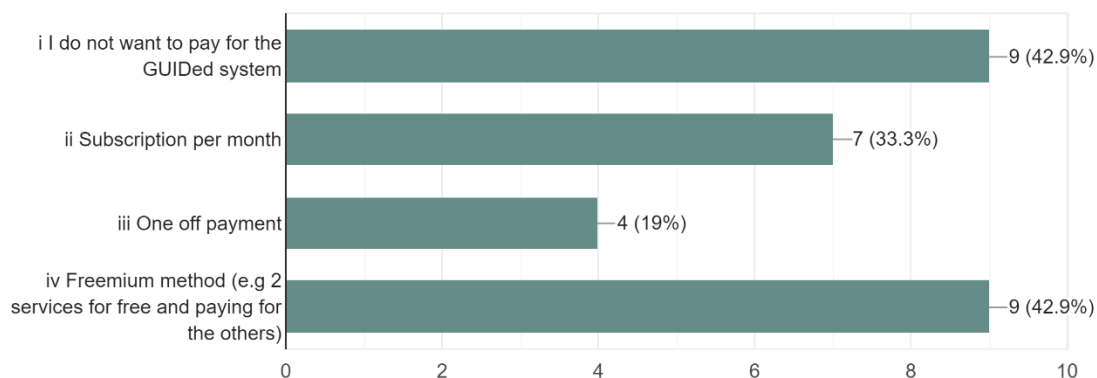


Figure 8 - Secondary users Willingness to pay

As what would constitute a fair price, results resembled those of our primary participants. Here too the most popular option in terms of price was between 5 and 10 euros a month or under 5 euros a month for the whole service. An encouraging 17% did respond that there was room to set the price a bit higher between 11 to 20 euros a month but not much higher than that as just 6% stated that setting the price over 21 euros a month would be reasonable.

Regarding the individual services, results differ from the responses given by primary users. Though once more the Medication planner comes first in preference and in similar percentages as with the primary participants, secondary users seem more willing to pay for all the services (Figure 9). Indeed, the average willingness to pay for any one service centres around 40% as opposed to a rather low 25% which was the comparable case for primary users. Beyond this once more the communication service scores lowest among the services with 15% and though it fares much better with secondary users it is still rather low. Additionally, the previous price-setting conclusions are confirmed as participants by a vast majority of more than 70% would wish to either have the services offered for free or be charged less than 5 euros a month in using these.

5 Which services of the GUIDed app are you willing to pay to use?

20 responses

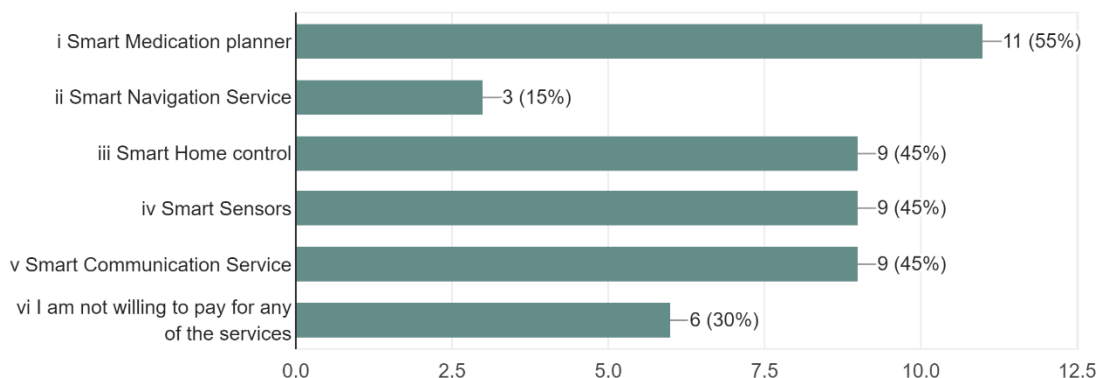


Figure 9 - Secondary users preferred GUIDed service

As to the devices used for these services, preferences vary. Overall, secondary users seem keener in using the system’s smart devices and do seem to show a rather stronger preference for the smoke detector with 75% of participants claiming they would wish to have it as would the smart lamps with 70% stating likewise. The lowest scoring device though still not low in itself are the door sensors with 50% of participants wishing to own these. Regarding the method of ownership most participants, unlike the case of primary users where a significant percentage stated they do not wish to own smart devices, would prefer a one-off payment and to purchase these separately from the application as opposed to primary users who would also prefer to make a one-off payment but still buy them as a bundle with the application.

Evaluation of the application

Unlike primary users, once more secondary participants seemed more willing to use the application. Importantly around 50% of our participants here do believe the application would be very useful in improving the quality of life for the person in their care. Moreover, around 65% of the participants do believe that the application would help the person in their care with their daily routine and the same number holds true with respect to helping participants in providing care to these persons.

Beyond this and much like the case with primary participants, secondary users do feel it best to be able to disable some of the application features at will with 86% supporting this statement. The same results are returned with respect to being able to operate the application themselves for the person in their care. The combination here is very important. Secondary users seem to really believe in the suggested solution but do feel that the application would be better served by having secondary users take responsibility for it enabling them to use it themselves for the benefit of the person in their care and selecting what features that person may operate independently.

Though just 35% of secondary participants thought of the application as innovative, still between 50 and 60% would recommend or strongly recommend the application to other possible users, including primary users, secondary users and caregivers alike. The category of users which secondary users

would recommend this application more are other secondary users. Combining these, the level of innovation and the highest category of users; secondary users would recommend the application for reveals that participants do feel in general the application is rather innovative and certainly useful especially to secondary users.

As with primary users, secondary users also feel in general that the application is trustworthy. This is so as around 42% to 49% believe that the information provided is understandable, the data of the person in their care is protected and that the application is safe to use. As to the rest, most are neutral on the issues needing perhaps some more time to get acquainted with the application. However, it should be noted that the information provided to older adults could stand to improve a bit as another 26% does seem to disagree, a percentage which though not very high still deserves adherence to.

As to the web portal, slightly improved results as compared to primary users are returned. Though still not to the desired degree, as 53% and 35% thought that the portal was not easy to use and did need to be made more aesthetically pleasing, for about 45% of the participants the web portal is easy to use with a pleasant design. However, it could include more features as just 39% believed the web portal complete in this respect.

As to the services themselves, once more the Medication planner takes the lead. Participants by a large majority of 90% declare this service to be the most useful of all the services provided. Second and unlike the primary participants comes the Communication service with 72% while the other services are ranked rather equally with about half the participants believing them useful to themselves and the person in their care. The lowest scoring service is that of Home control but here still 58% of participants did believe it useful for both them and the person in their care and as such we can assume that though some work needs to be put in the services the application is on a very good path nonetheless.

3.6 Testing results from living labs - Tertiary users

Demographics

All partners have provided one tertiary user for the living labs. Overall, the gender was equally represented with 50% being men and 50% being women maintaining an equal proportion characteristic of the tertiary user involvement we expect to encounter as the application hits the market. A definition of what constitutes tertiary users per country has been provided in the relevant above section in this paper along with examples. The IT literacy of our participants was medium to high with 75% stating this as high meaning they use devices like smartphones, computers, tablets, the internet and applications, and are capable of resolving any technical issues that might arise (Figure 10). All participants resided in urban areas with about half being between 46 to 59 years of age, 25% between 26 to 45 and the rest 60- to 65-year-old.

IT Level

4 responses

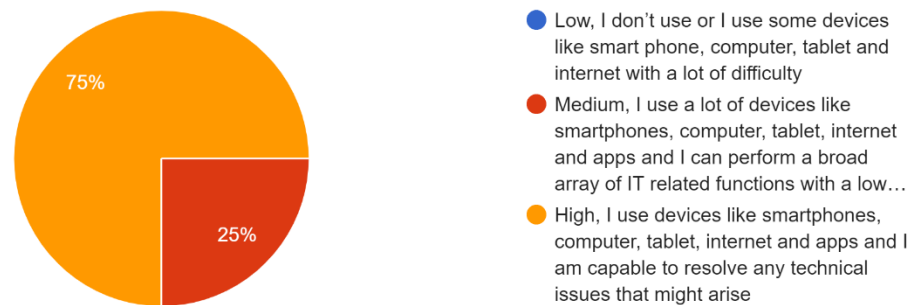


Figure 10 - Tertiary users IT level

Evaluation of the application

Participants were somewhat unimpressed by the system. Though, 25% believe the system would be useful to all older adults, caregivers and stakeholders in the health care sector, most do not believe this is the case. Encouragingly another 25% remain neutral in their estimation at least with respect to older adults and caregivers. What is worrisome though constructive is that once more, as in the case of primary and secondary participants, the web portal does not appear to meet their standards in terms of both usability and completeness by encompassing all the features one would expect to find within. Though tertiary users did not find the system to be innovative still it is good to bear in mind that the standards set in this regard by the group are very high and the partners need to take this under consideration as should they need to include some further elements of innovation.

As to the services themselves, the results are much more welcoming. The most popular category is that of the Home sensors with 75% of participants believing this as a useful service for primary users. The remaining services of Home control, Navigation, Communication and Medication planner, though less popular are still considered highly useful by 50% of the participants. However, and with the exception of the Medication planner where 50% of participants did note this as easy to use, the other services were considered by 75% of participants as difficult to use by primary users. As such perhaps the consortium should consider ways of making the services as well easier to use, taking the Medication planner elements that seemed to work well and transferring these into the other services.

Business model

According to the majority of the tertiary users, the best pricing model for the application is that of the freemium method whereby some services or features are offered free while others require payment (Figure 11). The partners may use the above findings with respect to the application features and services that all participants regard as most useful to derive at the conclusion of which services should be offered for free and which charged provided this model is chosen. As to the method of payment, most of our participants agree that a one of payment would be the better option, a conclusion in line with the opinion of the secondary users (Figure 12). However, it was pointed out that the application needs a lot of work before this option is taken as functionality is limited and more scope is needed while the price for a yearly subscription should not exceed the range of 20 to 100 euros with the main suggestion being that of a one of payment nonetheless.

1) What pricing model would you suggest for this system?

4 responses

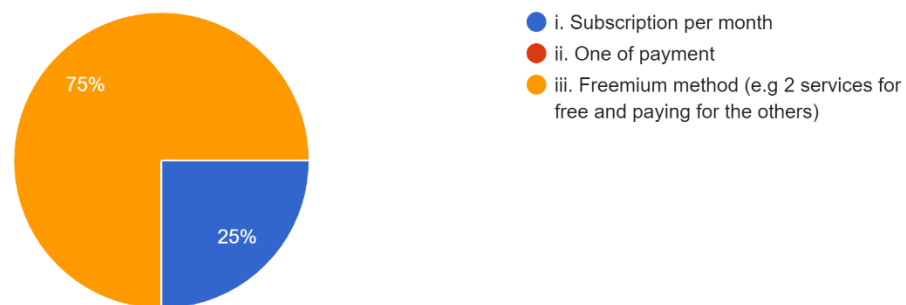


Figure 11 - Tertiary users preferred pricing model

2. What would be a fair price for this application for users (one off amount and alternative yearly subscription)?

3 responses

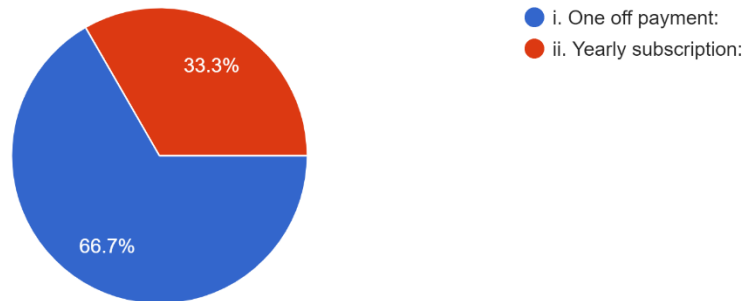


Figure 12 - Preferred payment method

As to the best services to include in the freemium model opinion do differ. Participants do however seem to agree on the Medication planner as the best option to include in the to pay services as is the case with the Home sensors. Beyond this some reservations were expressed once more with respect to its usability. A participant did note that “... There are so many smart home packages for sale today: Elkj p, IKEA, Power. It will be hard to introduce competing products to these market leaders. If the final set-up web is designed to be very user friendly, there may be some market opportunities. I am also quite much in doubt of the navigation service. Google maps is quite good, and it’s free to use. A search in the app stores gives many hits for medication applications. Also, Facetime is in use by many seniors. To get all these ... super easy to use might be a winning formula. My main question is: what is really new here? Selling these services in the ... assistive technology market will probably be a very hard nut.” While another simply stated, “It is too difficult to handle”.

As to the best marketing channels, participants had a number of contributions to make. These included such mediums as mouth to mouth, social media, contacting senior service centers - municipal communal etc., as well as placing ads in journals/magazines for 60+ people and catalogues for professionals as are ergo therapists.

Participants also warned that it is good to keep an eye out for challenges. Additionally, it would be beneficial to make the necessary adjustments. Among these are such things as not completely understanding the target audience, not setting a competitive price and ensuring the smooth operation of the application while comprehending fully the competition and ensuring the application finds the right types of partners to hit the market. As to this, participants did recommend care homes and senior service centers as one of the most important stakeholders the partners should be relationships with. Another key stakeholder is the manufacturer of the devices as with the home sensors that are used for the application and as such careful agreements need to be reached including agreements with large retail stores. Beyond these things as are simplification of the portal and application reliability, e.g. Med planning and Navigation, easier data entry ought to be considered. Home control and Sensors should be remotely accessible and ensure a method for double checking that a person in their care has actually taken the pills.

4. Web portal

4.1 Purpose of web portal

After the feedback from the first two testing phases, the consortium decided to create a web portal where caregivers and independent primary users will be able to complete data for user accounts and particular services, as well as monitor their home status. The web portal includes access to the services of Medication, Navigation, Communication, Home control and Sensors.

The first tests of the web portal were possible during the living lab sessions with users. As relevant feedback was discussed in previous sections.

Nevertheless, since secondary and tertiary users had higher IT level, had the opportunity to navigate more in the web portal and provide further feedback. It was pointed out that the web portal is very complicated and requires a lot of data input. To make things easier, it would be helpful to provide hints (e.g. marked as 'i', which, when clicked, expand into a tooltip) what the field is for and what data should be entered. Despite translations, some information on the Polish version of the portal is still in English, e.g. in the option to create accounts for primary and secondary users.

Currently users can add the data to other users without any restrictions. For example, for the Medication planner one primary user can add medicine to another not related user and this second user cannot even delete this medicine. Only related users (that are assisted to the same secondary user or have the same RasPI hub) should be able to put the data to each other. Moreover, the user should be able to delete data inserted by other users for him. Secondary users should be able to add the data only to primary users assigned to them, not for every primary user.

It was noticed that one can enter an incorrect time format in the portal, e.g. for displaying notifications about medicines, and there is no validation associated with it (the portal should signal that the data has been entered incorrectly).

In the Navigation service redundant geographic coordinates are troublesome to input. The best solution seems to be getting a place from Google maps with one click.

Communication service is also too complicated, especially for primary and secondary users. The users questioned the need for the "is favorite" flag. Currently, if a given contact is not added to favourites, it is not displayed in the application in the Communication service.

5. Conclusion

The Stage 3 - Living Labs has provide us with positive feedback in terms of the GUIDed system and services thus it is very apparent the improvements needed to get GUIDed in the market. The feedback from all end-user groups from the four countries (Austria, Cyprus, Poland, Norway) showed the culture differences but also common needs and requirements of the stakeholders. Therefore, the consortium decided to create the "User Testing – Summary of results" document in order to identify with priority order of the issues and requirements of the users per service. In this document end-user partners will provide the suggestion of changes and improvements requested by the participants. End-user will discuss with technical partners about the level of importance and input it in the document. Then the technical partners will provide their response so end-user partners are aware of the changes that are going to happen or happened already (Figure 13). In this way, the GUIDed system will be improved and prepared for the field trials.

Comment Added By:	Changes/Improvements	Response from tech team	Priority / Timeline	Response Added By:
[Service Name]				

Figure 13 - User testing - Summary of results template

Priorities: 1: High, 2: Medium, 3: Low, 4: Very Low

Responsibilities

FRC: Address app changes for services, except communication.

UCY: Address app changes for communication service.

KI-I & HARPO: Address smart kit and device changes.

KARDE: Address web portal changes and add requests to the Wiki.

Tech team (in Priority column add priority and highlight accordingly, as well as provide your response in the relevant column for providing more information):

- **Green highlights** the comments that have been successfully addressed.
- **Red highlights** the comments to be addressed - Priority 1: High.
- **Orange highlights** the comments that may be addressed based on remaining time & budget/effort available - Priority 2: Medium.
- **Yellow highlights** the comments that are out of scope or out of project budget/effort - Priorities 3&4: Low & Very Low.

6. References

[1] AAL website. (2019). Toolbox. Methods of end users integration. Accessed on 20th of October 2020: http://www.aal-europe.eu/wp-content/uploads/2015/02/AALA_ToolboxA5_online.pdf

[2] AAL (2013). The Art and Joy of User Integration in AAL Projects. Ambient Assisted Living Association. Accessed on 21st of October 2020:

http://www.aal-europe.eu/wp-content/uploads/2015/02/AALA_Guideline_YOUSE_online.pdf

[3] Morgan, David L. (1996). "Focus Groups". Annual Review of Sociology. 22: 129–152.

[4] Chen, Senlin. (2012). Chapter 16: Interviews and focus groups.

Annexes

Annex 1: Informed consent

Full title of project: GUIDed - Assisted-Living and Social Interaction Platform

This document provides all the necessary information that you need to know in a simple and understandable way should you decide to participate in the GUIDed project.

What is the GUIDed project?

GUIDed is a European Union funded project which aspires to help and improve the lifestyle and well-being of older adults at home for as long as possible by facilitating important activities of daily living through IT solutions.

GUIDed aims to develop services in five different areas of daily activities. Although the project is still in early stages, indicative examples of the features that will be available in the system are:

1. Smart nutrition and health service (S1): Reminders and information about taking medication.
2. Smart home control service (S2): Turn lights on and off without getting up.
3. Smart city navigation service (S3): Get helpful instructions to navigate through the city
4. Smart home safety service (S4): When certain changes are detected (e.g., smoke/temperature changes) a relative will be notified
5. Smart social communication service (S5): Communicate with loved ones and see them in "real time".

What will GUIDed look like for users?

Participants will be able to test the GUIDed features on their existing tablet or smartphone. If no device is available, one will be provided in the test phase. The operation of the system will be simple and intuitive and will include an augmented reality guide but also explained by us. If you have any questions or are unsure about something, you will receive immediate support by your local team of researchers.

Why do we need people to test our system?

Since the GUIDed team is still working on the implementation of the above solutions, we need people who agree to test our solutions and give us their valuable feedback. As this is still the initial phase of the GUIDed project, your participation regards your feedback on the potential services (in pictures) that will be incorporated in the GUIDed system. With your help, we can determine how well GUIDed can be used in everyday life and what could be improved. Therefore, we kindly ask you to test our product and to express your wishes and concerns as well as possible. Your feedback will be anonymous and will be utilised in our reports in order to enhance and improve the GUIDed system.

Participation in the project



Your participation in the GUIDed project is voluntary and free of charge. You will not have any economic or material benefit by participating in the GUIDed project. You can cancel your participation at any time without giving a reason and without any consequences. If you would like to end your participation, please let us know by fax, email or telephone. For this, your name and your wish to end participation are sufficient.

Details of any potential danger or discomfort

No direct or indirect danger or discomfort is expected during your participation in the GUIDed project. There will be no change on any medical prescriptions or medical instructions given by your doctor.

Details regarding the data collected, access of information and duration of access

No personal information will be used for the purposes of this research and all your data will be anonymous. Any personal data you provide (name, phone, age etc) will only be known to the researchers of your country who participate in the study and will not be made known to any third party. During your participation in the GUIDed project a four-digit identification number will be assigned to you in order to guarantee your anonymity.

All data are locked and safely stored in dedicated spaces where access is only permitted to the local researchers. All stored data are being stored for up to 5 years after the end of the research and then safely destroyed.

Project coordinator: xxxxx

User Research Manager of the project: xxxxxxxx

Duration of the project: 30 months

The GUIDed project is funded by the European Union - Active Assisted Living Programme - Ageing Well in the Digital World.

1. Have you participated in any other research in the last 12 months?

Yes No

2. Have you read and understood the information provided regarding the project and your participation in it?

Yes No

3. Did you have the chance to discuss any arising questions related to the project?

Yes No



4. Were you satisfied with the answers provided (if any) to your questions?

Yes No

5. Are you aware that you have the right to withdraw from the project at any point and without providing any justification for your decision?

Yes No

6. Are you aware that there will be no consequences for you should you decide to withdraw?

Yes No

7. Who was the researcher you spoke to?

Additional information

Full contact details of the person to whom participants can file a complaint related to the GUIDed project.

[Please insert your organisation's details]

Full contact details of the person to whom participants can refer to for any further information and/or any clarifications regarding the project.

[Please insert your organisation's details]



8. Full name:

9. Date:

10. Do you agree to voluntarily participate to the GUIDed project;

Yes, I agree No, I do not agree

Annex 2 Stage 3 – Living Lab -Questionnaires for primary, secondary and tertiary users

Primary Participants

Demographics

OFFICE USE ONLY	
Participant ID:	

Gender: Please tick the box that applies to you.	
Male	
Female	
Other/would rather not say	

Area of residence: Please tick the box that applies to you.	
Rural	
Urban	
Semi Urban	

Country of residence. Please tick the box that applies to you.	
I currently live in Cyprus	
I currently live in Poland	
I currently live in Austria	
I currently live in Norway	

How old are you? Please tick the box that applies to you.	
18 to 25	
26 to 45	
46 to 59	
60 to 65	
65 and up	

What is your IT level? Please tick the box that applies to you.

Low , I don't use or I use some devices like smart phone, computer, tablet and internet with a lot of difficulty.	
Medium , I use a lot of devices like smart phones, computer, tablet, internet and apps and I can perform a broad array of IT related functions with a low level of difficulty such as using social media	
High , I use devices like smart phones, computer, tablet, internet and apps and I am capable to resolve any technical issues that might arise	

System Questionnaires

Part A: System Usability Scale					
On a grade of 1-5 (1= I highly Disagree and 5= I highly Agree) please indicate your level of agreement with the following statements:	1	2	3	4	5
I think that I would like to use this system frequently.					
I found the system unnecessarily complex.					
I thought the system was easy to use.					
I think that I would need the support of a technical person to be able to use this system.					
I found the various functions in this system were well integrated.					
I thought there was too much inconsistency in this system.					
I would imagine that most people would learn to use this system very quickly.					
I found the system very cumbersome to use.					
I felt very confident using the system.					
I needed to learn a lot of things before I could get going with this system.					

Part B: Participants Comments
1) What did you like about the application?
2) What would motivate you to use the GUIDed application? Are there any services or features you would like to see included?

3) What did you not like about the application? What would you like to see removed from it?
4) What is your favourite service? How could it be improved even more?
5) What is your least favourite service? How can it be improved?
6) What did you not like about the web portal?
7) How can we improve the web portal?
8) What can we improve to make the GUIDed system, a system you can trust?
9) Would you incorporate GUIDed system in your everyday life? Please explain.
10) Would you like to comment on anything regarding the application and the overall process?

Part C: Business Model			
Please answer the following Questions with a Yes or a No		Y es	N o
1	I would be willing to buy the application if it wasn't free		
2	I would be willing to download the application if it was free		
3	How would you be willing to pay for the GUIDed system?		
i	I do not want to pay for the GUIDed system		
ii	Subscription per month		
ii			
i	One off payment		

i			
v	Freemium method (e.g 2 services for free and paying for the others)		
4	If I was charged monthly to use the app a fair price would be		
i	1 to 2 euros		
ii	2 to 5 euros		
ii			
i	5 to 8 euros		
i			
v	8 to 15 euros		
v	15 euros and over		
v			
i	other please specify		
5	Which services of the GUIDed app are you willing to pay to use?		
i	Smart Medication planner		
ii	Smart Navigation Service		
ii			
i	Smart Home control and sensors		
i			
v	Smart Communication Service		
v	I am not willing to pay for any of the services		
6	How much are you willing to pay for each service?		
I	Only for free		
li	Under 5 euros per month		
li			
i	Between 5 to 10 euros per month		
I			
v	Between 11 to 20 per month		
V	Over 21 euros per month		
v	Other (including a combination of payments such as 3 euros for one service and 5 euros for a different service): _____		
i			
7	How would you prefer to acquire the smart devices of the GUIDed system (Choose all that apply)?		
i	I do not want to own smart devices (e.g pillbox, smart lamps, gas detectors etc)		
ii	One off payment		
ii			
i	Leasing it from clinic		
i			
v	Buy separately from application		
v	Buy them with bundle with the application		
v			
i	Other _____		
8	Which smart devices would you like to have? Tick as many as you wish.		
i	Smart Lamps		
li	Temperature control		

li i	Gas control		
l v	Humidity control		
V	Smoke detector		
V i	Smart pillbox		
v ii	Other please specify		

Part D: User Specific Questions for Primary User						
On a grade of 1-5 (1= I highly Disagree and 5= I highly Agree) please indicate your level of agreement with the following statements:						
		1	2	3	4	5
1	I believe the application would be useful for me					
3	I believe the application will help improve my quality of life					
5	I feel I will need training on how to use the application					
6	I would like to be able to disable some of the services of the application					
7	I would like to be able to have the application operated by someone else on my behalf (e.g my son to have control of the temperature in my house)					
8	I believe the application would help caregivers in their daily tasks					
9	I would recommend this application to friends and family					
10	I would recommend this application to other people over 65 years old					
11	I would recommend this application to other caregivers					
12	I found the application to be innovative					
13	I think the GUIDed application is safe to use					
14	I think that my data are protected					
15	I think that all the information provided to me is transparent and clear					
16	I found the Smart Medication planner Service to be useful					
17	I found the Smart Home control and Sensors to be useful					
18	I found the Smart Sensors to be useful					
19	I found the Smart Navigation to be useful					
20	I found the Smart Communication Service to be useful					
21	I would use the web portal in my everyday life					

Secondary Participants

Demographics

OFFICE USE ONLY	
Participant ID:	

Gender: Please tick the box that applies to you.	
Male	
Female	
Other/would rather not say	

Area of residence: Please tick the box that applies to you.	
Rural	
Urban	
Semi Urban	

Country of residence. Please tick the box that applies to you.	
I currently live in Cyprus	
I currently live in Poland	
I currently live in Austria	
I currently live in Norway	

How old are you? Please tick the box that applies to you.	
18 to 25	
26 to 45	
46 to 59	
60 to 65	
65 and up	

What is your IT level? Please tick the box that applies to you.	
Low , I don't use or I use some devices like smart phone, computer, tablet and internet with a lot of difficulty.	
Medium , I use a lot of devices like smart phones, computer, tablet, internet and apps and I can perform a broad array of IT related functions with a low level of difficulty such as using social media	
High , I use devices like smart phones, computer, tablet, internet and apps and I am capable to resolve any technical issues that might arise	

Part A: System Usability Scale					
On a grade of 1-5 (1= I highly Disagree and 5= I highly Agree) please indicate your level of agreement with the following statements:	1	2	3	4	5
I think that I would like to use this system frequently.					
I found the system unnecessarily complex.					
I thought the system was easy to use.					
I think that I would need the support of a technical person to be able to use this system.					
I found the various functions in this system were well integrated.					
I thought there was too much inconsistency in this system.					
I would imagine that most people would learn to use this system very quickly.					
I found the system very cumbersome to use.					
I felt very confident using the system.					
I needed to learn a lot of things before I could get going with this system.					

Part B: Participants Comments
1) What did you like about the system (application, services, smart devices, web portal)?
2) What would motivate you and the person you care for to use the GUIDed system? Are there any services or features you would like to see included?
3) What did you not like about the system? What would you like to see removed from it?
4) What is your favourite service? How could it be improved even more?
5) What is your least favourite service? How can it be improved?

6) What can we improve to make the GUIDed system, a system you can trust?
7) Would you incorporate GUIDed system in your everyday life? Please explain.
8) What is your overall impression of the web portal?
9) Do you have any recommendations on how to improve the web portal further?
10) Would you like to comment on anything regarding the application and the overall process?

Part C: Business Model			
Please answer the following Questions with a Yes or a No		Y e s	N o
1	I would be willing to buy the application if it wasn't free		
2	I would be willing to download the application if it was free		
3	How would you be willing to pay for the GUIDed system?		
i	I do not want to pay for the GUIDed system		
ii	Subscription per month		
ii			
i	One off payment		
i	Freemium method (e.g 2 services for free and paying for the others)		
4	If I was charged monthly to use the app a fair price would be		
i	1 to 2 euros		
ii	2 to 5 euros		
ii			
i	5 to 8 euros		
i			
v	8 to 15 euros		
v	15 euros and over		

v			
i	other please specify		
5	Which services of the GUIDed app are you willing to pay to use?		
i	Smart Medication planner Service		
ii	Smart Navigation Service		
ii			
i	Smart Home control and Sensors Service		
i			
v	Smart Communication Service		
v	I am not willing to pay for any of the services		
6	How much are you willing to pay for each service?		
I	Only for free		
li	Under 5 euros per month		
li			
i	Between 5 to 10 euros per month		
I			
v	Between 11 to 20 per month		
V	Over 21 euros per month		
v	Other including a combination of payments such as 3 euros for		
i	one service and 5 euros for the other: _____		
7	How would you prefer to acquire the smart devices of the GUIDed system (Choose all that apply)?		
i	I do not want to own smart devices (e.g pillbox, smart lamps, gas dedectors etc)		
ii	One off payment		
ii			
i	Leasing it from clinic		
i			
v	Buy separately from application		
v	Buy them with bundle with the application		
v			
i	Other _____		
8	Which smart devices would you like to have? Tick as many as you wish.		
i	Smart lamps		
li	Temperature control		
li			
i	Gas detector		
I			
v	Humidity control		
V	Smoke detector		
V			
i	Smart pillbox		
v			
ii			
i	Other please specify		

Part D: User Specific Questions for Secondary User						
On a grade of 1-5 (1= I highly Disagree and 5= I highly Agree) please indicate your level of agreement with the following statements:		1	2	3	4	5
1	I believe the application would be useful for me to be able to help someone in my care more effectively					
2	I believe the application will help improve the quality of life of the person in my care					
3	I would like to be able to disable some of the services of the application					
4	I would like to be able to have the application operated by me for the person in my care					
5	I believe the application would help the person in my care in their daily life					
6	I would recommend this application to other caregivers					
7	I would recommend this application to older people over 65					
8	I would recommend this application to friends and family					
9	I found the application to be innovative					
10	I think the GUIDed application is safe to use					
11	I think that the data of the person in my care are protected					
12	The web portal includes all the features and functions that I need.					
13	The web portal is very easy to use					
14	The design of the web portal is pleasant					
15	I think that all the information provided to the older adults is transparent and clear					
16	I found the Smart Medication planner Service to be useful for both me and to the person for whose benefit I was operating the service					
17	I found the Smart Navigation Service to be useful for both me and to the person for whose benefit I was operating the service					
18	I found the Smart Home control and sensors to be useful for both me and to the person for whose benefit I was operating the service					
19	I found the Smart Communication Service to be useful for both me and to the person for whose benefit I was operating the service					

Demographics

OFFICE USE ONLY	
Participant ID:	

Gender: Please tick the box that applies to you.	
Male	
Female	
Other/would rather not say	

Area of residence: Please tick the box that applies to you.	
Rural	
Urban	
Semi Urban	

Country of residence. Please tick the box that applies to you.	
I currently live in Cyprus	
I currently live in Poland	
I currently live in Austria	
I currently live in Norway	

How old are you? Please tick the box that applies to you.	
18 to 25	
26 to 45	
46 to 59	
60 to 65	
65 and up	

What is your IT level? Please tick the box that applies to you.	
Low , I don't use or I use some devices like smart phone, computer, tablet and internet with a lot of difficulty.	
Medium , I use a lot of devices like smart phones, computer, tablet, internet and apps and I can perform a broad array of IT related functions with a low level of difficulty such as using social media	
High , I use devices like smart phones, computer, tablet, internet and apps and I am capable to resolve any technical issues that might arise	

System Questionnaires

Part A: User Specific Questions - Tertiary User						
On a grade of 1-5 (1= I highly Disagree and 5= I highly Agree) please indicate your level of agreement with the following statements:						
		1	2	3	4	5
1	The application would be very useful to older adults					
2	It would be useful to be able to disable some of the functions/services of the application					
3	Older adults will be interested in purchasing this system					
4	Caregivers will be interested in purchasing this system					
5	Stakeholders in the health care sector will be interested to promote the use of this system among older adults					
6	The system is innovative					
7	The web portal includes all the features and functions that users might need.					
8	The web portal is very easy to use					
9	Smart Medication planner Service is useful to the users					
10	Smart Medication planner Service is easy to use by the users					
11	Smart Navigation Service is useful to the users					
12	Smart Navigation Service is easy to use by the users					
13	Smart Home control and Sensors is useful to the users					
14	Smart Home control and Sensors is easy to use by the users					
15	Smart Communication Service is useful to the users					
16	Smart Communication Service is easy to use by the users					

Part D: Interview Questions for tertiary users

1. What pricing model would you suggest for this system?
 - i. Subscription per month
 - ii. One of payment
 - iii. Freemium method (e.g 2 services for free and paying for the others)

2. What would be a fair price for this application for users (one off amount and alternative yearly subscription)?
 - i. One off payment:
 - ii. Yearly subscription:

3. Which services of the GUIDed app do you think the customers will be willing to pay to use?
 - i. Smart Meds planner Service
 - ii. Smart Navigation Service
 - iii. Smart Home control Service

- iv Smart Communication Service
 - v Smart Home sensors Service
4. Do you feel such an application is attractive to try and use for older adults?
 5. How best do you feel can this product be commercialized? E.g. what avenues to pursue (social media, mouth to mouth, newspapers etc.)??
 6. What are the key challenges you foresee in promoting this application and reaching profitability / viability?
 7. What are the key improvements that we must carry out for each of the services and for the application as a whole at this stage / before commercialization?
 8. What information (facts, features) would you need to persuade you to incorporate the GUIDed system in your practice?
 9. Which channels do you trust to learn about new products like the GUIDed system, for your organisation (e.g. social media, mouth to mouth, newspapers etc.)?
 10. Who do you think would be our optimal partners for our B2B (tech vendors, care homes etc.)?
 11. Which of the services of the GUIDed system would you be interested to exploit in a B2B manner?
 12. Which purchase model you (as business partner) will be interested to exploit with the GUIDed consortium (e.g. purchase specific services from GUIDed such as the Smart Navigation to resell it? and at what price)?
 13. Please feel free to share any other thoughts you may have.