SOULMATE Deliverable 3.2c

Results Qualitative Feedback Sessions

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1. Introduction

In the SOULMATE project, an innovative travelling companion for the target group of older adults has been developed and tested. SOULMATE focuses on increasing elderly's mobility through route navigation, simplification of video assistance through an intelligent system, and movement tracking and automatic alarming.

This document is the third and final part of deliverable 3.2 testing & field trials results. Deliverable 3.2a described the initial design testing results, and in deliverable 3.2b the initial functional testing results were described.

Initially, in deliverable 3.2c the aim was to describe the outcomes of the field trials. However, the field trials have been replaced by 1) additional internal functional testing by the end-user organisations (involving the project team without external end-users), and 2) additional qualitative feedback sessions of SOULMATE with the end-users. Functional testing in November 2019, which aimed to guarantee a stable app for later testing, unveiled that the SOULMATE app was not ready to scale up to go to the trials. Both the functional testing with technical support (Austria) and the functional testing without (The Netherlands and Flanders) showed major points for improvement. In addition, the testing activities with the end-users were severely affected by the outbreak of the Corona virus as the regulations, and concerns corresponding to the virus made it impossible to reliably measure the impact of SOULMATE.

The goal of this deliverable is to present the outcomes of the qualitative feedback sessions of the current version of the SOULMATE app, with the end users. The current version of SOULMATE is regarded as the minimum viable product (MVP), which aims at the most important functionalities for satisfying the end-users' initial needs, and that serves as a starting point for the SOULMATE exploitation.

The next section will shortly set out the methods that were used to gather qualitative feedback. In section 3, the results of these activities will be discussed. The last section, the conclusion, sums up the most prominent results and possible remarks.
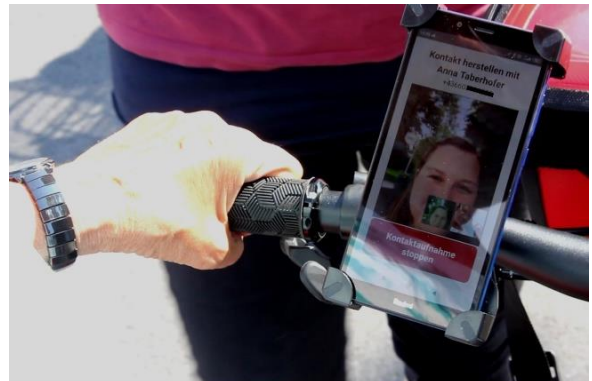
Figure 1. Elderly using the SOULMATE app

Figure 2. the SOULMATE assistance

2. Qualitative Feedback Sessions Methods

The goal of the qualitative feedback sessions is to present scenarios of the current version of the SOULMATE application to end-users and to find out their opinions and suggestions about the functionalities. During the sessions the SOULMATE application is used to plan a route and the app is used during this route.

The target group of the study was defined as older adults. The aim was to have a diverse sample in terms of age, urban density, ethnicity and mobility from Austria, Belgium and the Netherlands. All participants gave written informed consent to participate.

The study consists of 7 separate sessions with elderly people. In Austria there were three sessions. In the first one the app was used by 5 testers for a bike ride. The second session with 5 participants started at the central station and made a train trip to a small town near Graz and continued with a walk to a Cafe. In the third session with 4 testers a bus trip was made, as well as a walk. Some of the Austrian testers participated in more than one session. In Belgium three feedback sessions were organized with five older adults in each session. In these sessions, the SOULMATE app was used on a short walk. In the Netherlands one session with six older adults was held, also to test the SOULMATE app for a walking trip.

The sessions consisted of exposure to the scenarios and collection of qualitative feedback. The sessions started with providing the participants an introduction and explanation of the goal of the session. Then the participants were asked to sign the written consent form. During the first part of the session, participants became acquainted with the SOULMATE app (figure 3). They received an explanation of the current version of the SOULMATE app. The participants had to succeed the scenarios through different steps. First, they had to plan a route in the app (figure 4). Then they had to go outside and start the route (figure 5). Next, the participants were asked to deviate from the planned route in the app and try to handle the warning signs. Then they were asked to finish the route. The last step was to try an emergency call with the app (figure 6). Some project team members and participants stayed at the starting point to be the coaches. The role of the coach is to be the person that can be called when having a problem, providing help via video call, and to who the GPS of the user is sent.

Figure 3. testing of app during bike trip in Austria

Figure 4. creating a route

Figure 5. start the route

Figure 6. SOS button

When the participants succeeded the scenarios, the qualitative feedback sessions started. During these feedback sessions, participants discussed their experiences and remarks (figure 7). Then they filled in the feedback form (appendix 1. Feedback form of the qualitative sessions). The feedback form starts with asking general questions to gather data about the demographics of the participants, their familiarity with smart technology, and possible earlier experiences in the SOULMATE project. Then questions about the usability and perception regarding the app and traveling behavior of the participants are addressed. This part is followed by statements about the functionalities of the app and the willingness of the participants to act as a coach. Then, questions regarding help with the app and assistance are addressed. The last part of the feedback form consists of questions regarding the marketing of the app. Participants are asked about their personal benefits, the risks, shortcomings, possible business opportunities, and possible users. Lastly, the feedback form asks for any additional remarks or comments.

Figure 7. feedback session Austria

3. Results Qualitative Feedback Sessions

This chapter describes the results of the qualitative feedback sessions and exists of the following topics: participants demographics, usability and perception, functionalities, help with the app, and marketing.

3.1 Participants demographics

Table 1, 2, and 3 present the demographics of the participants that took part in the qualitative feedback sessions. In total 30 participants took part, of which 6 participants originate from the Netherlands, 10 participants originate from Austria, and 14 participants originate from Belgium. Somewhat more women (18) than men (12) participated in the sessions. The participants have a mean age of 73 years. In Austria, one younger person (daughter of one of the other participants) participated. In total, 13 participants took part in a previous SOULMATE workshop. For 17 participants this was the first time they participated in a SOULMATE workshop. Table 4 presents how familiar the participants are with smart technology. Most participants (87%) use smart technologies daily. The remaining participants use smart technologies from time to time or are not familiar with these.

Table 1. Participants demographics in the Netherlands

Participant	Gender	Age
P1	Male	90
P2	Male	75
P3	Female	72
P4	Female	72
P5	Female	59
P6	Female	69

Table 2. Participants demographics in Austria

Participant	Gender	Age
P7	Female	75
P8	Female	69
P9	Male	77
P10	Male	67
P11	Female	28
P12	Female	73
P13	Female	86
P14	Female	77
P15	Female	69
P16	Female	76

Table 3. Participants demographics in Belgium

Participant	Gender	Age
P17	Male	78
P18	Male	75
P19	Female	63
P20	Female	76
P21	Male	85
P22	Female	74
P23	Male	69
P24	Male	72
P25	Female	67
P26	Male	75
P27	Female	63
P28	Female	70
P29	Male	82
P30	Male	70

Table 4. Familiarity with smart technology use

Smart technology use	The Netherlands	Austria	Belgium	Total
I use these daily	5	9	12	26
I use these from time to time			2	2
I am unfamiliar with these	1	1		2

3.2 Perception and Usability

The following results describe the participants' opinions about the perception and usability of the SOULMATE app.

3.2.1 Perception

The values that the participants perceived when they used the app are listed in table 5. The table shows that sixteen participants perceived the app as useful. Furthermore, the app is predominantly perceived as reliable, enjoyable and innovative. Each of these values were indicated by 9 participants. Nevertheless, no participants perceived the app as complete and only three participants perceived the app as stable.

The participants were allowed to write down other values. They mentioned both positive and negative aspects. Some participants mentioned that the app needs improvement, reacts slow, is disappointing, and is not easy to understand. On the other hand, one participant mentioned that the app is better than Google Maps and provides a clear overview.

Table 5. Perception values

Perception value	The Netherlands (n = 6)	Austria (n = 10)	Belgium (n = 14)	Total (n = 30)
Reliable	0	4	5	9
Quick enough	1	3	3	7
Enjoyable	0	6	3	9
Easy to use	0	7	0	7
Giving correct routes	2	1	5	8
Stable	0	3	0	3
Innovative	2	3	4	9
Useful	1	9	6	16
Complete	0	0	0	0
Cumbersome to use	4	1	3	8

3.2.2 Usability

Figure 8 shows the results of the usability statements about (future) use and users' motivation. The app is moderately assessed as easy to use by most participants. Participants were neutral or agreed to the statement that the app makes it easier for them to make a trip. A small majority of the participants stated that the app does not make them more motivated to make a trip. Half of the participants agreed to the statement that they would like to use the SOULMATE app in the future. The other half were neutral and some disagreed.
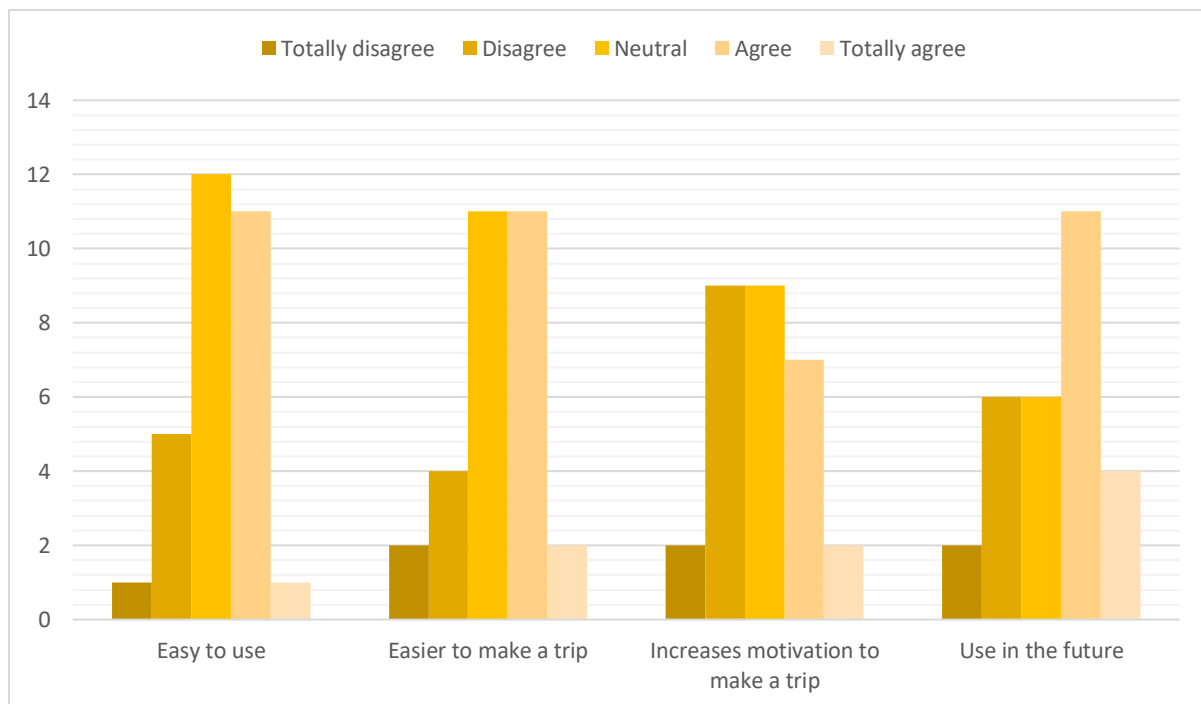

Figure 8. Usability results about (future) use and motivation

Figure 9 shows the different modes of transportation the participants use. Most participants (60%) travels regularly by foot, bike, or car. Participants are most likely to use the app when traveling by foot (53%), followed by bike (33%), and then by car (13%). A small minority of the participants (43%) travels regularly with public transport. A small amount of these participants (20%) think they would use the app when traveling with public transport.
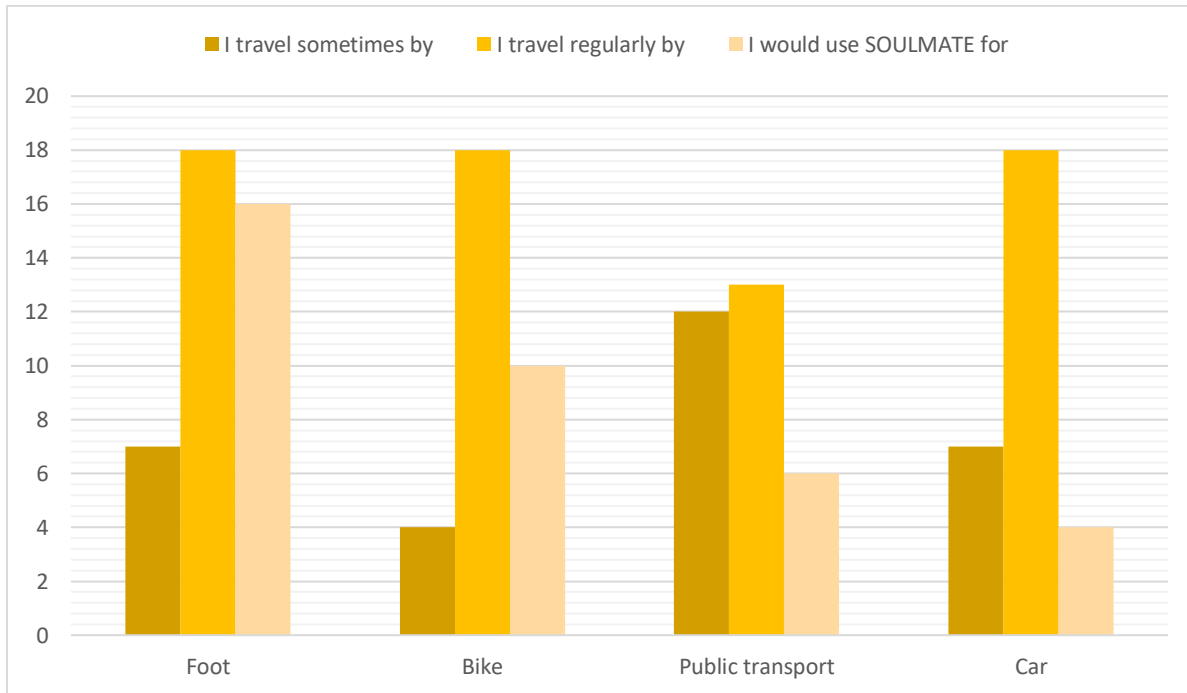

Figure 9. Transportation modes

3.3 Functionalities

The following results are derived from the questions about the separate functionalities of the SOULMATE app.

3.3.1 General functionalities

As shown in figure 10, participants (90%) found the app most useful for calling for help and sharing their current location. Then, a majority of the participants (67%) found the app useful for searching for toilets, restaurants, and taxi stands. 50% of the participants agreed with the statement that the app is useful for following and staying on the planned route and to find the location. The opinions of the participants on the statement that the app is useful for searching the best route are divided.
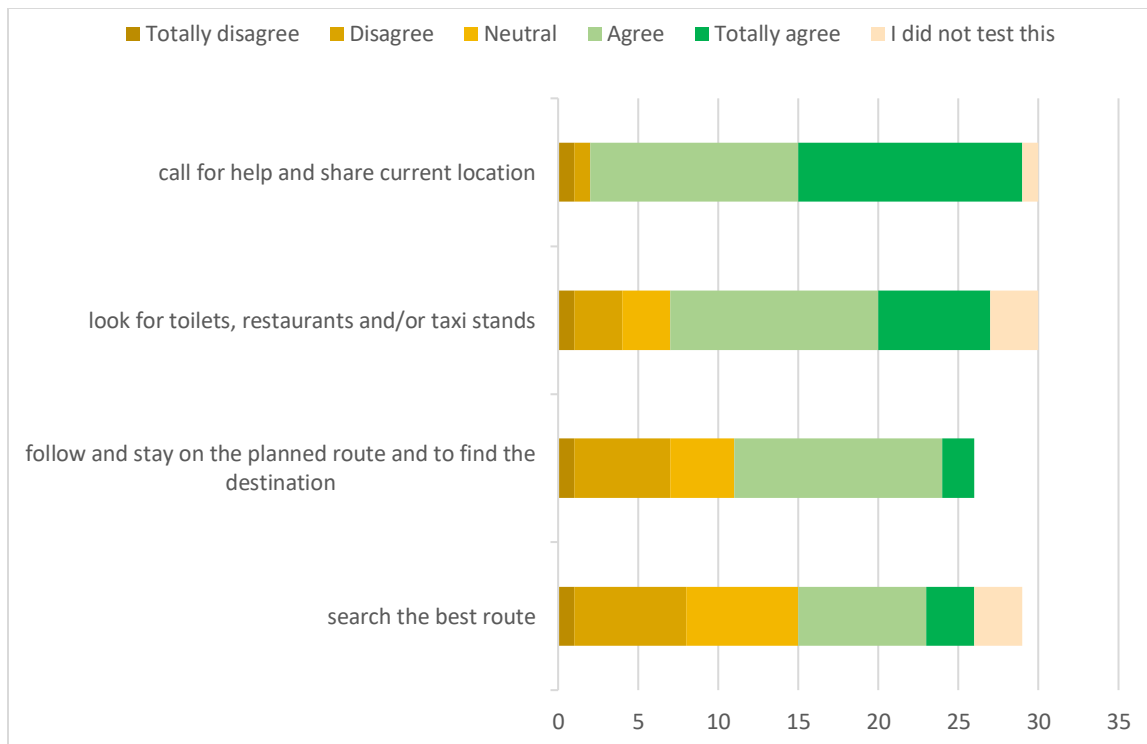

Figure 10. I found the app useful for...

3.3.2 Coaching

As shown in table 6, sixteen participants agreed on the statement that they would like to be coach for a friend. Five participants were not willing to be a coach for a friend, four participants were neutral to the

statement, and four participants did not test to be a coach. Five participants like to be a coach for a friend while they like to help someone. Furthermore, three participants mentioned they would be willing to act as a coach because they prefer support themselves, thus they are likely to give support to others. On the other hand, participants who disagreed on the statement feel unsecure to act as a coach due to physical limits (1), a lack of knowledge (4), or not being constantly available on their phone (3).

Table 6. Willingness to be a coach for a friend

	Totally disagree	*Disagree*	*Neutral*	*Agree*	*Totally agree*	*I did not test this*
I would like to be a coach for a friend	1	4	4	15	1	4

3.4 Help with SOULMATE

If participants need help with SOULMATE, they would ask their partner (2), children (4), family (6), a friend (7), a coach or service desk (5) or an acquaintance (2). Furthermore, four participants mentioned that they would ask someone for help who uses the app daily and knows how to use it properly. One participant mentioned that he would especially ask young people for help.

Table 7 shows the tools that participants preferred as useful and necessary assistance when they used the app. Most participants (73%) preferred an explanation and help by a person in the beginning. A paper or digital manual, tutorial in the app, and hints in the app are stated as useful and necessary by 57% of the participants. Lastly, 50% of the participants think a service line or service desk would be useful and necessary assistance.

Participants were allowed to give other answers to what they think is useful and necessary assistance. One participant (P8) would like to ask her partner or other users for useful and necessary assistance. Furthermore, one participant (P16) would like to try it out herself, thus does not want assistance in the first place. Two participants (P7, P19) think verbal assistance is useful and necessary.

Table 7. Useful and necessary assistance

	Total	*Percentage*
Explanation and help by a person in the beginning	22	73%
Service line or service desk	15	50%
Manual on paper or digital	17	57%
Tutorial in the app	17	57%
Hints in the app	17	57%

3.5 Marketing of the app

The following results are about the business perspective, marketing and service for the overall and current version of the SOULMATE app.

3.5.1 Personal benefits

The first question participants were asked to answer regarding business perspective, was what their personal benefits of the app are. The most stated personal benefit is the navigation of the app. Nine participants mentioned the navigation as a personal benefit because it is easy, comfortable, or live. Eight participants mentioned that one of the personal benefits is the direct contact with the coach and the access to the alarm number to call for help if necessary. Furthermore, the navigation of the app makes participants feel safe (4) and is useful in unknown areas (3). One participant stated that the different modes of transport are useful. Another participant wrote the benefits from the presented calculations of the duration of the different modes of transport. Other described personal benefits are that the app motivates the user through supporting to reach the goal, that the app has a clear lay-out without too much unnecessary information, and that the app gives the user a feeling of going along with new technologies. Nevertheless, four participants wrote that the app does not provide them personal benefits. Particularly, they do not think that using the app for navigation is a personal benefit.

3.5.2 Risks and improvements

The next question was what the risks of using the app are and what (and how) it could be improved.

The risk of distractions
Seven participants mentioned that the app is a risk because it creates distractions in traffic. Users can not oversee risks during a trip and do not pay attention to their environment, causing a higher risk of accidents. Also, two participants think that using the app is especially dangerous and distractive when driving the car. There were thus different perceptions for different transport modes.

Reliability risks
Another risk participants mention, is that users will totally rely on the app (6). For example, a user can accidentally type in the wrong address (1), or the smartphone can be low in battery (4). An improvement could be that the user should be warned when having technical difficulties; this was mentioned by one of the participants. Another participant stated that an amateurish or a poorly trained coach could be a risk. One participant is afraid someone could have access to the personal data and GPS location.

Usability risks
Usability risks are another type of risks. According to multiple participants the navigation of the app is not clear yet. First of all, the guiding point does not follow the exact location of the user (2) and the guiding point is not stable when passing the destination (2). Second, the map is unclear or turned the wrong way (1). Third, the roads of the navigation are unclear. Problems that participants experienced are: the app does not indicate whether the user is using a public road (1), creating a new route is difficult (1), the road is not always displayed on the map (1), there is no or late warning when deviating from the route (3), and the user is already lost before the coach can support (1). According to one participant, an improvement could be that the user receives a warning earlier when deviating from the route. Fourth, according to two participants, the button to call the alarm number can accidentally be pressed because it is placed under contacts.

3.5.3 Shortcomings and improvements

Navigation and environment information
Several points of improvement were stated by the participants. Two participants think the navigation is unclear. Three participants prefer arrows that show in which direction the user is going over the current 'dot'. Three other participants suggest that the app should provide an alternative route when the user is deviated. It is also recommended that the map should rotate with the user (2). And lastly, if the app shows the driven kilometers and speed it would motivate the user to reach the destination (1).

Second, the information provided on the map is unclear. Three participants prefer to see more information about their current location, e.g. street names. The user should be able to oversee the complete route (3). When traveling with public transport, it would be useful if the app shows information about the sort of public transport, e.g. tram, bus, etc. (1), and the names or numbers of the trams, busses, trains etc. (1). And lastly, the time schedule of the public transport should be displayed. Other additions to the map that are mentioned are: displayed toilets (1), hotels, and COVID information (1).

Assistance
Multiple participants mentioned improvements for the assistance of the app. First of all, five participants prefer to have voice assistance during navigating. When integrating voice assistance in the app, an additional benefit is that it becomes accessible for blind people as well (1). Furthermore, the location of the user should be visible to the coach when providing assistance (1). Another remark of one of the participants is to add a button to put a certain contact person at the top of the contact list.

3.5.4 Business

In total 57% of the participants think somebody would be interested to buy the app. Although, only 36% of the participants would buy and pay for the app themselves. The mentioned amount of payment for the app ranges from 5 euros to 150 euros. Two participants mention they would pay 5 euros monthly and two

participants mention they would pay 10 euros monthly. Two participants think the SOULMATE app should be provided for free. Eighteen participants did not answer this question.

3.5.5 Possible users

Elderly
Eight participants think that elderly would use the app. Elderly do not use the smartphones often (2), are likely to use the app because it is easy to use (1) and are not independent (1). One participant mentioned that caregivers are possible future users of the app. Two participants mentioned that people with a handicap could possibly use the app.

Active, young people and tourists

Besides elderly, participants also mentioned active (3), younger people (2) and tourists (4) as possible users of the app. It is important that possible users understand the app and know how to use a smartphone (2).

Travelling individually, lost the way, different modes of transport

Furthermore, participants mentioned some characteristics of possible users, namely: people who are travelling individually (P12, P16), people who lost the way (P14), and people who use different modes of transport when travelling, e.g. foot, bike, public transport, car (P1, P8).

3.5.6 Description and advertisement

Participants (P3, P7, P10, P16, P18, P22) mainly describe the app as a navigation system. Some would call it a soulmate, friend, or companion (P8, P15, P29). One participant described the app as an ideal tool for hikers and bikers (P30), and one participant described the app as specialised in help for elderly (P25). Furthermore, participants described the app as useful (P11, P14), user-friendly without too much extra's (P23), practical (P16), convenient (P10, P28), safe (P14, P15, P27, P29), and supportive (P28). Two participants (P7, P27) said they would include the SOS button in the description of the app. One participant would describe the app as unclear for digital illiterate people (P5). Solely one participant mentioned the way in which the app should be advertised. This participant (P9) thinks that advertisement through partner institutions, such as senior homes and social institutions would work. The app should not be advertised through social media (P9).

37% of the participants would recommend the app to others versus 57% of the participants who would not recommend it. Two participants did not give an answer to this question.

4. Conclusions

The goal of the qualitative feedback sessions with the end users was to find out elderly's opinions and suggestions about the usability and functionalities of the SOULMATE app and help with and marketing of the app. Results show that SOULMATE is generally perceived as useful, although several suggestions for improvement were mentioned. The functionalities to call for help and share a location, are especially useful for the participants. A segment of the participant group found the app relatively easy to use and the app made it easier for them to make a trip. Overall, it can be concluded that the functionalities of the MVP worked well. Nevertheless, future improvements to SOULMATE are possible and required. Currently, some participants feel that SOULMATE is not yet complete or stable and does not motivate them to make a trip. The functionality of searching the best route is perceived as least useful.

Participants who like to be coach for a friend indicated that they like to help and give support to others. Participants that were not willing to be a coach indicated that they feel insecure due to physical limits, a lack of knowledge, or not being constantly available on their phone. Participants travel regularly by foot, bike and car, but are most likely to use the app when traveling by foot. Striking is that most participants do not want to use the app when traveling by car because it can cause distractions in traffic. As assistance, participants preferred an explanation and help by a person. If participants need help with the app, they ask family, friends, or acquaintances. An addition to this is that participants prefer help from people that know how to use the app properly. The most stated personal benefits are the navigation, which is useful in unknown areas, and the direct assistance, which makes participants feel safe. Some participants found the app does not provide them any personal benefits.

The most stated risks are that the app creates distractions in traffic, users will totally rely on the app and the technical abilities of their smartphone, and the poor usability of the app can cause problems. The shortcomings of the current app are the unclear navigation, lack of environment information, and restrictions of the current assistance. The navigation can be improved by arrows that show the direction (instead of the dot that is showing the position of the user at the moment), by providing an alternative route when the user is deviated, and by showing the travelled kilometres and speed. Environment information can be improved by integrating more information about the environment in the map, by showing an overview of the route, and by providing more detailed information about the public transport. Also contrast of the map could be improved. Assistance can be improved by integrating spoken instructions and assistance.

Most participants (57%) think people are interested in buying the app and 50% of the participants are willing to use the app in the future. Overall, 36% of the participants would buy and pay for the app themselves. The participants envision older adults as possible users of the app because they do not use smartphones often and the app is easy to use, and because they are depending on help. Other mentioned possible users are caregivers, disabled people, active people, younger people, and tourists. It is important that users understand the app and know how to use a smartphone. The participants describe the SOULMATE app as a navigation system, soulmate, friend, or companion specialised in help for elderly.

SOULMATE is characterized as useful, user-friendly without too much extra's, practical, convenient, safe, and supportive.

In conclusion, results show that the current functionalities of SOULMATE are perceived as useful. Although certain functionalities could still be added in the future, the current version of the SOULMATE app certainly helps elderly to stay mobile and independent through navigation, and increases their feeling of safety through offering assistance or help when this is necessary.

Appendix A: Feedback form of the qualitative sessions

General Questions

1. What is your gender?

2. What is your age?

3. How familiar are you with using smart technology (using smartphone or tablet to browse the internet, use WhatsApp or Facebook, play games, use navigation)?
   - ☐ I use these daily
   - ☐ I use these from time to time
   - ☐ I am unfamiliar with these

4. Have you participated in one of the previous SOULMATE workshops?
   - ☐ Yes
   - ☐ No

Usability and perception of SOULMATE

5. I perceive soulmate as (multiple answers possible):
   - ☐ Reliable
   - ☐ Quick enough
   - ☐ Enjoyable
   - ☐ Easy to use
   - ☐ Giving correct routes
   - ☐ Stable
   - ☐ Cumbersome to use
   - ☐ Innovative
   - ☐ Useful
   - ☐ Complete
   - ☐ …
   - ☐ …
   - ☐ …

6. I find SOULMATE easy to use
   - ☐ Strongly agree
   - ☐ Disagree
   - ☐ Neutral
   - ☐ Agree
   - ☐ Strongly agree

7. Using SOULMATE makes it easier for me to make a trip
   - ☐ Strongly agree
   - ☐ Disagree
   - ☐ Neutral
   - ☐ Agree
   - ☐ Strongly agree

8. Using SOULMATE makes me more motivated to make a trip
   - ☐ Strongly agree
   - ☐ Disagree
   - ☐ Neutral
   - ☐ Agree
   - ☐ Strongly agree

9. I would like to use SOULMATE in the future
   - ☐ Strongly agree
   - ☐ Disagree
   - ☐ Neutral
   - ☐ Agree
   - ☐ Strongly agree

10. Please indicate if you use the following transportation modes and whether you would use SOULMATE while traveling that way

	I travel sometimes by…	I travel regularly by…	I would use SOULMATE for…
On foot	☐	☐	☐
Bike	☐	☐	☐
Public transport	☐	☐	☐
Car	☐	☐	☐

Functionalities of the SOULMATE app

11. I find the app useful to search for the best route for me
    - ☐ Strongly agree
    - ☐ Disagree
    - ☐ Neutral
    - ☐ Agree
    - ☐ Strongly agree

12. I find the app useful to follow and stay on my planned route and to find my destination
    - ☐ Strongly agree
    - ☐ Disagree
    - ☐ Neutral
    - ☐ Agree
    - ☐ Strongly agree

13. I find the app useful to look for toilets, restaurants and/or taxi stands
    - ☐ Strongly agree
    - ☐ Disagree
    - ☐ Neutral
    - ☐ Agree
    - ☐ Strongly agree

14. I find the app useful to call for help and share my current location
    - ☐ Strongly agree
    - ☐ Disagree
    - ☐ Neutral
    - ☐ Agree
    - ☐ Strongly agree

15. I would like to be a coach for a friend
    - ☐ Strongly agree
    - ☐ Disagree
    - ☐ Neutral
    - ☐ Agree
    - ☐ Strongly agree

15a. Reasoning (optional)

Help with the app

16. I you need help with the app, who would you ask?

17. What could be useful and necessary assistance (multiple answers possible):
    - ☐ Explanation and help by a person in the beginning
    - ☐ Service line or service desk
    - ☐ Manual on paper or digital
    - ☐ Tutorial in the app (short video that explains the app's functionalities)
    - ☐ Hint in the app (as currently available under the i-button)
    - ☐ ….
    - ☐ ….

Marketing of the SOULMATE app

18. What are your personal benefits of the app?

19. What are the risks of using the app? What (and how) could be improved?

20. What do you think the app is missing?

21. Do you think somebody would buy the app?
    - ☐ Yes
    - ☐ No

22. Would you pay for the app and service?
    - ☐ Yes
    - ☐ No

22a. If yes, how much?

23. Who do you think would use the SOULMATE app?

24. How would you describe SOULMATE to a friend? What could the advertisement look like?

25. Would you recommend the current version of SOULMATE to friends and/or family?
    - ☐ Yes
    - ☐ No

26. Do you have any additional remarks or comments?

Appendix B: Answers to open question 26

The testing was interesting as well as the interview. Information point is not necessary → could be smaller at the top → the info point is necessary to go through the app.
It's a good idea to develop the app.
Service places for bikes
It's not bad, but I wouldn't use it because I don't need it. Iam a fan op paper maps for my bike tours. I also search for the bike routes on the internet in advance, so maybe if I have the app I would try it, but for longer routes. For the planning in advance. It's a pity that the PoI's don't work for the planning.
Bike: smart phone bike case is useful. It would be nice if you do not have a name for all routes or have a home address.
Internet connection in areas with bad internet connection, e.g. in the mountains, is it useful there? The SOS button could be extracted from the app onto the display beside other apps. When using public transport, show the names of the start and end stop. The destination point message worked sometimes only after a while (5-10 minutes) walking around the target point. Sometimes it worked even if we were 30 km away from the destination. A waterproof emergency button on a bracelet that is connected via bluetooth to the app would be great.
The route from origin to destination was not clear. It does not indicate where you start, if you deviate from the route or when you have arrived.
I think google maps is more complete.
Speech setting
Use existing application for public transport etc.
The biggest plus could be that the contact person could give route assistance. Unfortunately, this is currently not possible. The other functionalities already exist (button for emergency services, gps, google maps, etc.)
Thanks for the nice testing!
Start of the route was not clear and the direction was not indicated. View should rotate with the direction of the route. Indicate more events on the route and the distance traveled.
I am 100% proponent of such an app, but it should work properly.
I think the app is interesting but if I don't know how to use it, I don't use it, then I wouldn't buy it. I enjoy using any app if explained well. I don't have an idea yet who could be the contact person.
Chique! An arrow instead of a dot would make a huge difference for me with respect to sense of safety and reliability
Indicate whether the route contains stairs or bridges.
Location determination is not accurate. If I change my destination during the trip, the route does not change.