



AMBIENT ASSISTED LIVING, AAL

JOINT PROGRAMME

ICT-BASED SOLUTIONS FOR SUPPORTING OCCUPATION IN LIFE OF OLDER
ADULTS

<p>D2.3 User Evaluations Report</p> <p>Intermediate Version</p>

Project acronym: **ProMe**

Project full title: **ProMe – Professional Intergenerational Cooperation and Mentoring**

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1. EXECUTIVE SUMMARY

In this intermediate user evaluation report we provide an overview on the activities that were part of the iterative evaluation process, supporting the technical development. It provides results and implications from three studies, i.e., 1) the user workshops that were carried out in February 2015, 2) the heuristic evaluation that was done in June 2015, and 3) the user evaluation that was carried out in December 2015.

1.1 Link with the objectives of the project

The iterative user evaluations aim at keeping focused on the needs of potential end users throughout the whole development process. Users were asked to provide their feedback already in an early stage of the development process. As the project addresses two target groups, we included older and younger adults. Additionally, experts in the field of human computer interaction were involved in the evaluation phase.

1.2 State of the art

So far, three evaluation studies have been carried out. In a next step a 2nd heuristic evaluation and a user study in the lab are planned before the platform will be finally tested in the field over a period of at least 8 weeks.

2. DESIGN WORKSHOPS

The design workshops were the first step within our evaluation process. On basis of the requirements analysis (see also D2.2) first mock-ups of the ProMe platform have been developed that were evaluated with end users in Austria (EURAG), the Netherlands (NFE), and Romania (AGIR).

2.1 Research goal & Research Questions

The goal of the design workshops was to evaluate the mock-ups with respect to processes and procedures, i.e., we investigated if users could successfully navigate on the platform. Furthermore, we focused on the graphical design. Three main areas of the platform were addressed, i.e., (1) the Home Platform (i.e., public platform, personal home platform), (2) Log-in/Sign up, and (3) Profile (setting up a profile, matching process, public profile, personal profile).

2.2 Methodological Approach

In this early stage of the development process, only first sketches of the platform were available. Thus, we carried out workshops in order to discuss these first ideas with potential end users and to reflect upon possible improvements and future developments. As Dickson et al. (2007) point out, when working with older participants it is a challenge to elicit high quality results. The study set-up highly influences, for example, the participant's engagement. Discussing in a group of people can help to avoid feeling uncomfortable and reduce the fear to state something "wrong" when being asked questions about a system they are not familiar with. Within the workshops we discussed the mock-ups and identified potentials for improvement. Mock-ups were presented by means of a slide show to the participants and we reflected about procedures, processes, and the graphical illustration of information (e.g., icons). Thus, we did not focus on usability issues but aimed at better understanding in which way a user can get active on the platform.

2.3 Results

In this section we describe the central results of the design workshops. In the beginning we will provide an overview on the workshop procedure and about the participants, who took part. Afterwards we outline the findings according to the different areas of the platform.

Altogether three design workshops took place, one in Austria, one in the Netherlands, and one in Romania. Overall 20 participants, aged between 25 years and 76 years (Mean= 56.25 years/SD= 16.50 years), took part. Participants were recruited accordingly to the two target groups of the project, i.e., participants, who could

imagine taking over the role of a Coach or Mentor and participants, who could imagine taking advantage from the service by acquiring support from an experienced professional¹.

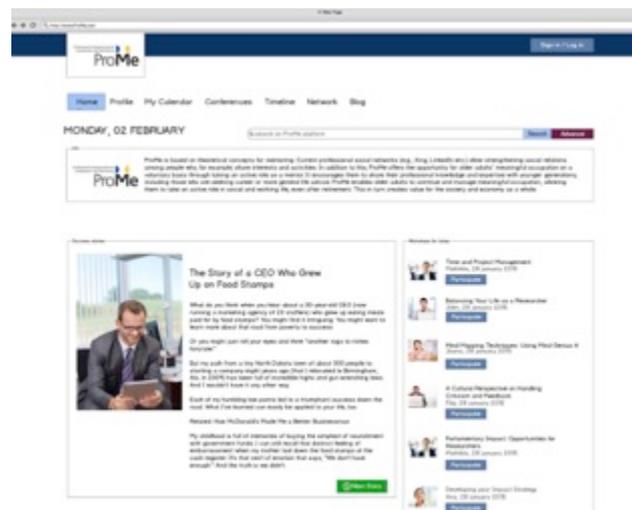
In Austria, four participants, three males and one female, joined the workshop. The participants were aged between 60 years and 71 years (Mean=65.5 years/SD=4.93 years). Three participants were married, one participant was living in a partnership. All participants were retired, however, one of the participants was still working besides retirement. In the Netherlands, eight participants, six males and two females, took part in the workshop. The participants were aged between 35 years and 75 years (Mean=58.38 years/SD=15.47 years). Six participants were married, one participant was living in a partnership, and one participant was single. Two participants were currently working, three participants were retired, two participants were unemployed, whereof one participant was mainly doing housework. Seven of the participants indicated that they were doing voluntary work. In Romania, eight participants, seven males and one female, attended the workshop. The participants were aged between 25 years and 76 years (Mean=49.5 years/SD=19.58 years). Seven participants were married, one participant was living in a partnership. Seven participants were currently working, two participants were already retired, whereof one participant was working anyway. Two participants specified doing voluntary work. In the following section the central results of the workshops will be presented accordingly to the different areas of the platform for which first mock-ups have been developed.

2.3.1 Homepage

Regarding the ProMe Homepage, we were interested if the information that was given was sufficient, if it was visually appealing, and if they knew how to navigate on the homepage.

Starting from the homepage participants were asked about their expectations, i.e. if the given information was sufficient. The discussion revealed that there was too much text on the platform and that the participants lack step-by-step information. Moreover, the content that was provided was not

clear, in particular the success story, which is illustrated with the following quote: *“Does this guy need a Mentor or something?”* Participants discussed that it was not possible to change the language and that the homepage lacks meaningful pictures that accompany important statements. Furthermore, information about the ProMe project itself was missing/not sufficient. This issue can be illustrated by the following quote: *“I’d like to know what ProMe is. I think that should be more prominent.”* Finally, the log-in icon was hardly visible (blue background and blue-coloured button) and participants stated to prefer when it would be more prominent (e.g., choosing a different colour for this button). The calendar was considered unnecessary on the homepage



¹ In Austria only “providers” of support took part in the workshops because it was not possible for the end user organization to recruit potential “receivers” for the workshops.

but useful on an inside level of the website for members on the condition that it contains the year date (missing in the first mock-ups).

2.3.1.1 Suggestions for improvement

A variety of suggestions for improvement were discussed, for example, to show areas of activities (e.g., technical sciences, medical sciences) in the task bar to ensure that users can easily find basic information. Moreover, the purpose of the section “Workshops” was not clear and it was suggested to remove it from the homepage to a place on the website that is only accessible by registered users. Moreover, it was suggested to provide success stories about users, who were already a Mentor or a Mentee on the platform instead of providing a success story of someone, who has nothing to do with mentoring. Moreover, participants suggested providing a search function, where users could search for providers of support according to, for example, skills.

2.3.1.2 Design issues

The design in terms of colours was considered as pleasant, however, some issues were raised that concern the visual design. Participants pointed out, for example, that there was too much text and they recommended reducing the amount of text by using, for example, some sentences as a teaser; a “more” button allows retrieving additional information if required. The pictures that were provided were considered as too small and hardly visible.

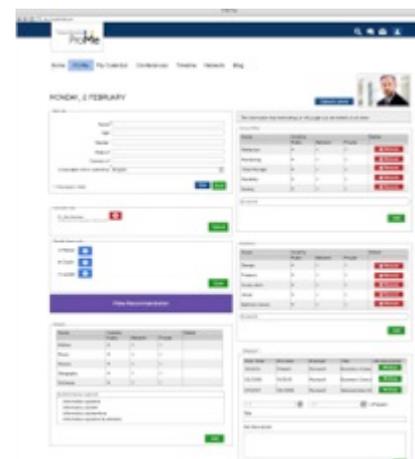
2.3.2 Register to the platform

Regarding the register process, participants indicated that (after indicating their name, etc.) they expect being forwarded to a page, where they can register as a provider (e.g., Mentor) or a receiver of support (e.g., Mentee) and where one has to fill in personal data to generate an account. Moreover, they would expect being asked to sign a “licensing agreement” before being forwarded to another page. In general, participants understood the registration process.



2.3.3 Edit a profile

Participants’ first impression towards the profile was mainly positive. One participant stated, for example, “*The first impression is good.*” However, we could identify potential for improvement, for example, more information about the ProMe project itself and the opportunities the platform offers to its members. Moreover, participants would expect explanations for the privacy/cookie policy. “*What are cookies? I don’t want cookies.*” Finally, they had some



remarks with regards to the design of buttons (e.g., participants were wondering why the “upload” button is red like the design of the “delete” buttons).

2.3.3.1 Suggestions for Improvement (add/remove information)

Participants pointed out that they would like to add more skills and interests. Moreover, concerns with respect to information on the platform were raised, i.e., that the link between time of employment in a certain job position and skills of a person should not be overrated as this might not always correlate. Accordingly, the declaration of the duration of employment was not considered as necessary. It was suggested that the information regarding duration of employment in a certain position should be rather discussed in a personal conversation with a Mentee than being indicated in the profile. Another point of discussion was the personal and public profile. Participants did not understand why certain information should be visible only in the personal profile and not in the public profile. This can be illustrated by one quote of a participant: *“Why would you want information that is only visibly to you? That makes no sense. I would remove that possibility.”*

2.3.3.2 Comprehensiveness of information

The discussion revealed that participants did not understand why it was required to add “skills” and “experiences”, indicating that experiences in a certain field might not correlate with adequate skills. Moreover, participants were wondering about the purpose of the “role recommendation” service and were asking on what kind of information the recommendation is based and if there were any obligation to take over the suggested role.

In general, it was clear to all of the participants that the fields marked with a red star are mandatory fields and that it is necessary to use the “save” button after editing the content on this page. However, participants raised concerns regarding the amount of mandatory fields (e.g., name, language) and were wondering how the system could create a role recommendation based on that limited amount of information. Moreover, the terms “public”, “network”, and “private” in connection with the profile were confusing for the participants and they were not sure, who could actually assess certain information, which is illustrated in the following quote: *“Who is in your network?”*

2.3.3.3 Privacy issues

Privacy issues were a prominent topic within the workshops. Participants indicated that they would like to reveal only basic information about skills (no details, which could be looked up in the CV) in the public profile and that they would prefer to talk about details in a private conversation with their Mentor/Mentee. Moreover, it was considered important to reveal more detailed information about oneself (e.g., name, language, country, area of expertise, experience, CV) in order to facilitate potential Mentees of support in their choice of a provider of support. *“You have to show all your information, especially as a Mentor so Mentees have a wide range of Mentors to choose from”*. However, a personal photo, the personal address, and age were rather considered as “sensitive information”, which should not be visible in the public profile.

2.3.4 Role recommendation

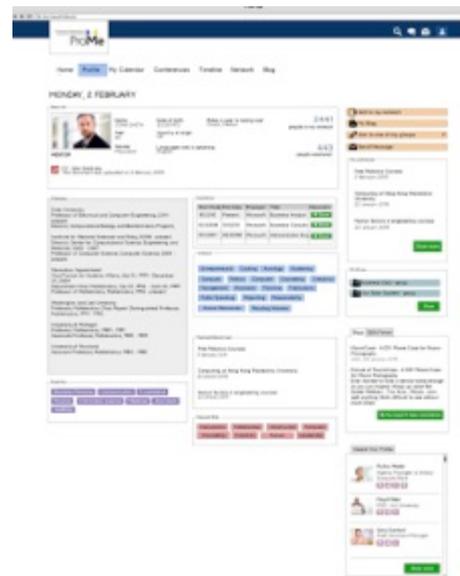
The idea of the role recommendation was not clear for the participants and they were wondering, for example, if the role that was suggested by the system is mandatory or if it was possible to change the role over time. One participant asked for example: *“Is it possible to pick up more roles? To be a Mentor as well as a Coach?”*

Moreover, participants were wondering how the recommendation was generated and some participants explicitly said that they refuse to receive role suggestions in any form.

Further, participants did not understand what kind of expectations or obligations are bound to a certain role (e.g., *“The terms can all be used for the same thing.”*) and pointed out that differences between the roles are not clear and that it might be difficult to select a certain role, because a role someone takes over on the platform would develop over time. If a role recommendation service was implemented, participants would prefer to receive the recommendation in form of instant messages or pop-ups on the screen.

2.3.5 Profile of a registered user

With respect to the profile of a registered user, participants were asked to indicate if they were able to extract information about personal skills and the groups in which a user is enrolled. All of the participants could extract the relevant information. As already mentioned above some services and functions on the platform caused confusion among the participants. This concerns the role recommendation, the necessity to indicate specific kinds of information in the profile (e.g., gender), and the design of the buttons (e.g., delete buttons are red but the upload button is also red).



2.3.5.1 Interest to get active

Beside participants' general impression and the comprehensiveness of the given information we were interested if the profile was appealing and if it would encourage user to get active.

Participants were positive towards the profile, which is illustrated by means of the following quotes: *“It’s visually strong, as there are a lot of boxes. The design is good.”* *“Yes, it encourages me.”* Moreover, they were positive because the profile seems to be similar to profiles they know from other social network sites. Participants were only wondering if it was necessary to indicate the number of people in ones network, as they perceived this as very negative in terms of being stigmatized when having only a small amount of people in the network.

2.3.5.2 Navigation

Regarding the navigation, ways of getting in contact and sharing information with other users on the platform (e.g., via a blog) were discussed. In general, participants would prefer to get in contact via instant message services on the platform, via E-Mail, and in face-to-face meetings.

Within the network they would expect to have a list with members of the platform, who are/were working in the same field of expertise, and to have the possibility to send another member of the platform an invitation to join ones own network.

The service “Join to one of my groups” caused confusion among participants. The workshops revealed an uncertainty when clicking on “Join to one of my groups”. As one of the participants stated: *“I don’t understand what these groups are anyway.”*

With regards to the messenger system, participants expect being forwarded either to an instant message service or to an email service on the platform when clicking on the button “send message”. Participants understood how to navigate in order to get in contact with other users on the platform.

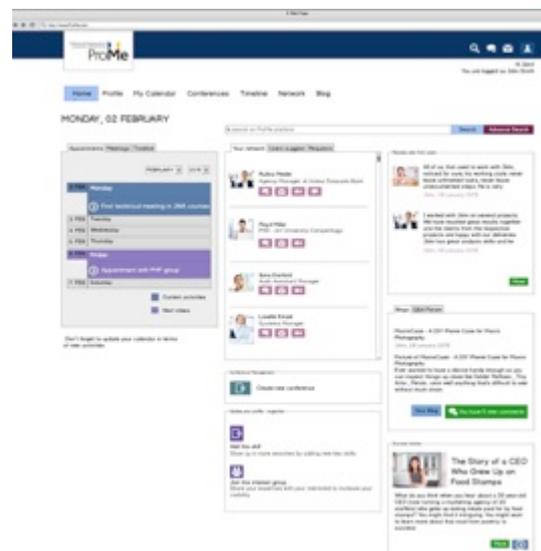
2.3.6 Log-in from existing profile

Participants, who already had a LinkedIn or Xing account, were positive towards the possibility to use an external profile to access the ProMe platform. Participants, who did not have an account did not know what to expect when clicking on the symbols and stated that these additional buttons are not necessary.



2.3.7 Personal Home Screen

With regards to the personal home screen we discussed with participants how they would expect to get in contact with other users (e.g., Mentors) and if the information that is provided is sufficient and comprehensive.



2.3.7.1 Navigation on the Home Screen

How to get in contact with another Mentor, i.e., how to search for another Mentor, was not clear for most of the participants. Some participants could not anticipate what to do, suggested to try the “Search” function to retrieve a list of other Mentors and to select “Join my network” or “Join my group” in order to find other Mentors. A few participants suggested a difficult workaround, i.e., they would log in themselves as a Mentee and look for other Mentors that way.

Participants had also difficulties to understand why someone should set up a conference with a protégé because it was predicted as being a lot more complicated than just using Skype or E-Mail to get in contact with somebody else.

2.3.7.2 Comprehensiveness of information that is provided on the home screen

The home screen provides a variety of different information (e.g., reviews from other users, “my network”). Within the workshops it was discussed that reviews have to be controlled by a third, neutral party, to avoid that fake reviews (either positive or negative) or even mean reviews are given. Moreover, reviews on such a platform must be reasonable, i.e., a guideline should be provided that describes how to write a review properly. The whole process of reviewing was mostly positively connoted because many participants had positive experiences when relying on reviews of others regarding restaurants or hotels, but participants were aware of the possibility that some people might want to write something mean on purpose.

The service “your network” was not clear for the participants and it was discussed that it could either contain users, who are interested in the same area of expertise or who are currently a provider for somebody else. A few participants pointed out that they would not need such a service, as they would prefer focusing solely on their current Mentee instead of keeping in touch with other Mentors.

2.3.7.3 Suggestions for improvement

Participants pointed out that they would like to see a list of all members of the platform and short summaries of members. *“I would like to see a short summary of every member. What their role is, what they are here for. What they specialize in. Just some sentences and a short résumé or something like that.”*

Moreover, they would expect support/more information about how a Mentor can find other Mentors on the platform. Language and skills are considered as important information in order to get in contact with other providers of support (e.g., Mentors). Participants suggested adding this information.

Overall, participants were satisfied with the way the information was arranged. *“The information is well arranged and the graphic looks good.”* Some participants pointed out that the search function should be more prominent as they considered it as a very important feature of the page.

2.3.8 Public profile

With regards to the public profile, it was discussed that visitors of the platform, who are not members (i.e., people who do not have an account), should not be able to access the same information than members of the platform. We identified a discrepancy between information someone would like to reveal and the information someone would like to retrieve from others. Most of the participants would like to retrieve more information than they are willing to reveal. The following information was considered as being important for the public profile: name, language, and location (including time zones).

Due to the limited information that is provided in the public profile, it was discussed that the profile needs to be aesthetically more pleasant in order to encourage users to get in contact. In particular, information about



the skills one has to offer should be more prominent and a kind of classification for Mentors like recommendations from others would help when deciding to join a specific provider of information.

As already mentioned above, participants considered some information with regards to the profile as sensitive and were not willing to reveal the following details in a public profile: age, marital status, information about personal health, salary, and anything that can be considered frivolous. Most of the participants stated that they didn't have any concerns when uploading a profile picture, although it was mentioned that this possibility should be up to each member individually (e.g., it should not be mandatory).

When talking about personalizing the public profile participants pointed that they would appreciate such an option, however it should not be mandatory.

2.4 Implications

Based on these results, major implications for the platform development were derived, which concern to major topics, i.e., the homepage, setting up a profile, and the personal home screen (see Table 1).

Results	Implications
Homepage	
<ul style="list-style-type: none"> • Content on the home page is not clear (Workshops? Success stories?) • Insufficient information regarding the project (project description is missing) • Log in is not prominent enough • Too much text and too little pictures 	<ul style="list-style-type: none"> • Remove the section “workshops” on the homepage • Success Story – report about successful coaching relationships; work with quotes and big pictures • Provide information about the project • Provide a motto to support users to “grasp” the central idea of the platform (e.g., ProMe helps you to share your knowledge with others ...) • Provide a prominent log in/register area (see examples from LinkedIn or Facebook) • Provide a “see more” button instead of too much text at once, increase pictures
Set up profiles	
<ul style="list-style-type: none"> • Difference between skills and experiences? • Purpose of the role recommendation? • Why should information be only visible in the private profile? • The areas public, network, private are not clear • Similar buttons are differently designed (e.g., delete button in the CV area, general delete button) 	<ul style="list-style-type: none"> • Instead of skills and experiences provide interests and expertise (provide a possibility to add more skills) • Remove the role recommendation – roles are developing within a relationship • Provide only one profile (no difference between personal and public profile) • Pay attention of consistent design • Provide information about roles – could be already provided on the homepage • Allow role selection based on different criteria (e.g., amount of time one is willing to invest) • Make expectations and obligations visible (e.g., as Coach on this platform you agree to invest 1-2 hours a

	<p>week, your Coachee expects ...)</p> <ul style="list-style-type: none"> • Encourage participants to provide a “full” profile • Work with “see more” button to avoid too much text at one spot
<p>Personal Home Screen</p>	
<ul style="list-style-type: none"> • How can users get in contact? • How to set up conferences? • Meaning of network/my network? 	<ul style="list-style-type: none"> • Develop a clear structure that supports users getting in contact with other users • Develop a clear structure that allows users to understand how the process is managed – clear navigation – work with sub-menus • Provide a calendar and a news feed • Provide a task bar with the most important areas (home, profile, ProMe network) instead of too much content (home, profile, calendar, conferences, timeline, etc. ...)

Table 1: Implications

2.5 Summary

The major goal of our workshops was to identify if the navigation (based on the mock-ups) on the platform is easy to understand. Based on our results major issues were raised concerned establishing contacts (e.g., between Mentor-Mentee, Mentor-Mentor). In this context it was not clear how to make first contacts (Mentor-Mentee) but also how to get in contact with other providers (e.g., other Mentors). Another point of discussion was the “role recommendation”. The issue was raised that it would be important to understand in which way recommendations are given, i.e., based on what kind of information if only little data entries (e.g., name, language) are mandatory. Additionally, to the navigation, we identified some suggestions for improvements that concern the design. Specifically, the small font size and too much text were considered as a problem with respect to the orientation on the platform. Instead, more pictures were suggested as one possibility for improvement.

3. HEURISTIC EVALUATION WITH EXPERTS

Based on our first evaluation, the mock-ups were further developed and evaluated within a heuristic evaluation with usability experts. The following table (see Table 2) provides an overview on the tested functionalities and the corresponding activities. No functionalities have been implemented yet, thus for the tests mock-ups were used.

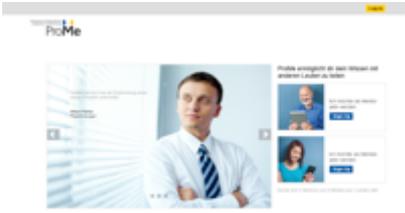
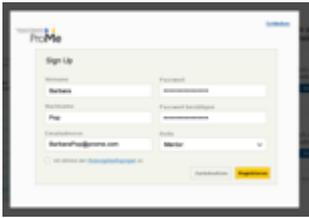
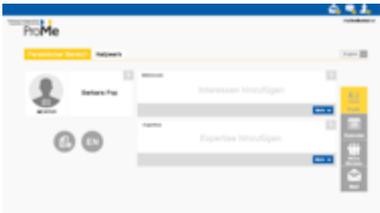
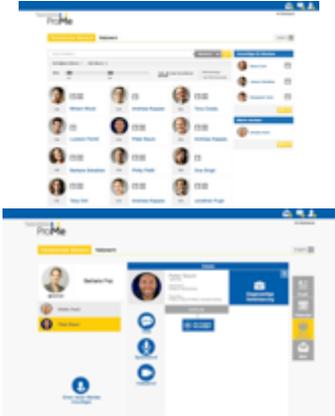
Activities	Mock-ups
<p>Sign up as Mentor/Mentee</p>	
<p>Log in as Mentor/Mentee & reset password</p>	
<p>Set up a profile</p> <ul style="list-style-type: none"> • Upload of profile picture and CV as Mentor/Mentee • Set language as Mentor/Mentee • Define interests and expertise as Mentor/Mentee 	
<p>Communication</p> <ul style="list-style-type: none"> • Search for Mentor/Mentee • Add a new Mentor/Mentee to the network • Communicate via chat, phone call, and video call with a Mentor/Mentee 	

Table 2: Functionalities and Activities

3.1 Research Goal & Research Questions

The main goal of the heuristic evaluation was to identify major usability problems. Four usability experts with different scientific backgrounds (i.e., Computer Science, Psychology, Design, Human Computer Interaction) were invited to carry out several predefined tasks.

According to the central goal, the following research question was defined:

- RQ: Which problems regarding the usability emerge, while the experts accomplish the predefined tasks?

3.2 Methodological Approach

A heuristic evaluation is a valuable method for evaluating an interface in an easy and cheap way (Nielsen 1994). This method involves usability experts inspecting an interface in order to find any violations of the usability. A set of heuristics is used, that guides the experts through the evaluation process (see Annex A). The experts rate the problems concerning their severity for the application (4=usability catastrophe, 3=major usability problem, 2=minor usability problem, 1=cosmetic problem, 0=no usability problem). The main advantage is that this method can be conducted in an early phase of the development process in order to find obvious usability problems and to prepare the interface for the upcoming field tests.

Experts were introduced to the different tasks by means of a short scenario that aimed at supporting them to imagine a certain situation. As we had two perspectives (Mentor/Mentee), the scenarios were slightly adapted, however, the tasks were the same for Mentor and Mentee. For the Sign up/Log-in unfortunately no mock-up from the Mentee perspective was provided, thus, this task was only carried out from one perspective (i.e., Mentor) by all usability experts.

Overall, four experts were invited to our heuristic evaluation, aged between 27 and 34 years, with at least 3 years experience in user interface design, usability engineering, and/or HCI. In order to capture different perspectives we focused on both target groups, i.e., older adults, who could imagine providing support to younger generations (provider of information), and younger people, who could imagine acquiring support from experienced professionals (receiver of information). Two experts carried out the tasks from a Mentor's perspective and two from a Mentee's perspective.

3.2.1 Procedure

In the run-up phase to the heuristic evaluation, participants were informed about the general idea of the project and were asked to thoroughly read through the main personas that are addressed, i.e., Maria (Mentor) and Sarah (Mentee), in order to better understand our target users. Additionally, the heuristics were sent out.

Within the evaluation phase, participants had to solve three major tasks (see Table 2). Each task was introduced with a short scenario that supported our experts to imagine a certain situation. The experts noted the identified problems and assigned them to the respective heuristics.

The test leader summarized all identified problems and the experts were asked for their rating in order to identify the severity of the problems. Moreover, they made suggestions, how the problems could be solved.

3.3 Results

In the following table (see **Error! Reference source not found.**) we provide a list of identified usability problems and their severity. Additionally, suggestions for improvements the experts gave during the evaluation are reported. A variety of problems concern the category “major usability problems”, which should be given high priority to fix and “minor usability problems”, which should be fixed as soon as the major problems are solved. However, all experts expressed that they are positive about the system.

Usability catastrophe (4 – 3,5): imperative to fix this before product can be released		
Heuristic	Problem Description	Ideas for improvement
4.1	<ul style="list-style-type: none"> There is no possibility for the user to log out 	<ul style="list-style-type: none"> A log out button should be placed next to the log in button

Major usability problem (3,4– 2,5): important to fix, should be given high priority		
Heuristic	Problem Description	Ideas for improvement
Log in /Register		
3.3	<ul style="list-style-type: none"> User can only select <i>one</i> role (either Mentor or Mentee) 	<ul style="list-style-type: none"> Allow users to select both roles (Mentor <i>and</i> Mentee)
4.1	<ul style="list-style-type: none"> Terms of use: there is no information given about purpose and consequences (<i>apparently there was no information given so far</i>) 	<ul style="list-style-type: none"> Provide adequate information about purpose and consequences
4.1, 5.2	<ul style="list-style-type: none"> The Pop-up window that appears when users do not fill out all fields (e.g., do not accept the terms of use) is problematic. Users need to switch between different windows, which makes the navigation complicated 	<ul style="list-style-type: none"> Pop-up windows are not state of the art anymore. Use real time parameter validation, which is available through JavaScript/AJAX Provide feedback directly in the erroneous fields (background colour: red, textually describe what is wrong – in or next to the corresponding field)
Profile		
1.1	<ul style="list-style-type: none"> It is not clear “<i>which language</i>” is changed when pushing the language button on the right upper corner, i.e., the language on the platform or the language the Mentor or Mentee is speaking 	<ul style="list-style-type: none"> Clearly differentiate between the interface language and the language a user on the platform speaks A drop-down menu should be placed next

	<ul style="list-style-type: none"> Why isn't the language a Mentor or Mentee is speaking already pre-selected? 	<ul style="list-style-type: none"> to the log in, in order to clearly separate it from the profile
2.2	<ul style="list-style-type: none"> The DE/EN button to select the language one is speaking is not self-explanatory 	<ul style="list-style-type: none"> Use flags instead of codes (DE, EN)
3.3	<ul style="list-style-type: none"> It is not possible to select more than one language 	<ul style="list-style-type: none"> It should be possible to select more than one language It should be possible to add additional information regarding the language skills (e.g., native, fluent, etc.)
4.1, 5.1	<ul style="list-style-type: none"> It is not possible to directly type into the expertise/interest field, additional pop-up windows make the navigation on the platform more difficult 	<ul style="list-style-type: none"> Avoid additional pop-up windows Allow users to directly type information in the corresponding fields Keep all interaction inside the field. Suggestions should appear with autocomplete while typing. Each added interest/expertise should then appear in a box, with the possibility to delete it appearing on hover/click (touch devices)
4.2	<ul style="list-style-type: none"> There is no consistency regarding the provided "buttons" on the platform – uploading a CV and selecting a language is totally different to the interest and expertise area 	<ul style="list-style-type: none"> Keep consistency with respect to the provided buttons on the platform
Communication – search for a Mentor/Mentee		
5	<ul style="list-style-type: none"> The overall navigation is not clear – there are different levels, where one can navigate – personal space, network (navigation bar on the left upper corner), my Mentees, calendar, etc. (right hand side) – this is confusing 	<ul style="list-style-type: none"> Think of an overall site structure and redesign the navigation accordingly Clearly visualize the different levels and keep the hierarchy as shallow as possible
4.1, 4.2, 5.2, 6.2	<ul style="list-style-type: none"> There is no "searching button" below the searching criteria How is the search according to the selected criteria "activated"? 	<ul style="list-style-type: none"> Add either a search button below the selected criteria or an "ok" button Show and update results simultaneously (real time) and accordingly to the selected criteria
4.2	<ul style="list-style-type: none"> The profiles on the results page show a picture, below the language, and the name on the right hand side – this is totally different to the visualization of one's own profile, where the name is positioned under the picture 	<ul style="list-style-type: none"> Strive for minimalistic and consistent design
4	<ul style="list-style-type: none"> The list of Mentees changes from the left hand side (overview) to the right hand side (searching for Mentees) 	<ul style="list-style-type: none"> Strive for consistent design (either on the right or left hand side)
5.2	<ul style="list-style-type: none"> The buttons on the right hand side (my Mentors/Mentees, calendar, etc.) disappear when searching for another Mentor/Mentee 	<ul style="list-style-type: none"> Keep the buttons visible
6	<ul style="list-style-type: none"> The "add Mentor/add Mentee" button does not trigger searching for a Mentor/Mentee 	<ul style="list-style-type: none"> Distinguish between searching and adding
6.1	<ul style="list-style-type: none"> The grey font is hardly readable on a yellow background (e.g., my Mentee button when selected) 	<ul style="list-style-type: none"> Adopt colours and allow more visibility
<ul style="list-style-type: none"> Mutual Agreement 		

3.3, 5.2	<ul style="list-style-type: none"> It is not possible to directly type into the mutual agreement field (see also fields for interest and expertise) Users need to switch between different windows, which makes the navigation complicated 	<ul style="list-style-type: none"> Avoid additional pop-up windows Allow users to directly type information in the corresponding fields Keep all interaction inside the field
Communication via Chat, Audio, Video, etc.		
1.1	<ul style="list-style-type: none"> There is no user feedback when calling somebody 	<ul style="list-style-type: none"> Provide user feedback
3	<ul style="list-style-type: none"> It is not possible to directly work on the schedule 	<ul style="list-style-type: none"> Allow users to easily work on the schedule
4.2	<ul style="list-style-type: none"> The chat button switches from the left hand side to the right hand side when starting the conversation 	<ul style="list-style-type: none"> Strive for consistent design
4.1	<ul style="list-style-type: none"> Video call: the camera captures the picture in landscape format; the picture is displayed in portrait format 	<ul style="list-style-type: none"> Rework the illustration of the communication partner during the video call
2, 4.1, 6.1	<ul style="list-style-type: none"> Communication elements should be similar to what users already know (e.g., Skype) Design and labelling of the calling buttons are confusing (e.g., the yellow telephone receiver for hang up) 	<ul style="list-style-type: none"> Reiterate the buttons considering consistency (e.g., use a green telephone receiver for starting a call and a red telephone receiver for hanging up)
4, 6	<ul style="list-style-type: none"> The button for the call (microphone) is confusing – the microphone symbol is normally used for “recording a voice message” 	<ul style="list-style-type: none"> Better use the telephone icon
3.3	<ul style="list-style-type: none"> There is no possibility to switch between video call and call without video, because there are two different buttons 	<ul style="list-style-type: none"> Follow existing standards (e.g., Skype)
3.3	<ul style="list-style-type: none"> There is no possibility to delete entries from the timeline 	<ul style="list-style-type: none"> Offer a delete/edit function
3.3, 4.1, 5.1	<ul style="list-style-type: none"> “active elements” should be more prominent (e.g., when being in a call, etc.) 	<ul style="list-style-type: none"> The current focus (function that is used) should be made more prominent – maybe labels could help Think about a flexible grid that allows to adapt to the current situation

Minor usability problem (2,4– 1,5): should be fixed after the major usability problems have been solved		
Heuristic	Problem Description	Ideas for improvement
Log in/Register		
1.1	<ul style="list-style-type: none"> There is only a message provided that a link has been sent to an email address but the information, <i>which</i> email address is missing 	<ul style="list-style-type: none"> Provide information about the email address Add a simple textual feedback: "Congratulations! You're just one click from beginning with your Mentoring activities at ProMe. Please check your email inbox name@domain.com for the activation of your account."

2.2	<ul style="list-style-type: none"> The “close button” is confusing – it would be better to have a “back” button to navigate to the homepage 	<ul style="list-style-type: none"> See also comments regarding pop-up windows – if it is avoided to use pop-up windows this problem can be easily solved
4	<ul style="list-style-type: none"> The log in button could be more prominent 	<ul style="list-style-type: none"> Log-in is one of the two central functions on the first page, it should be put center stage (similar to Facebook)
4.1	<ul style="list-style-type: none"> There is no information about the different roles, what Mentor and Mentee means, and if someone can take over more than one role 	<ul style="list-style-type: none"> A “question mark” icon could offer tooltips with further explanations. This could be used on the whole platform to explain the meaning of terms and the purpose of functions
4.1, 5.2	<ul style="list-style-type: none"> There is no possibility to fill in user name and password directly on the homepage - the log in triggers another window - too many steps are required to log in 	<ul style="list-style-type: none"> Place the input fields directly next to the log in button. Also an "I forgot my password/username" link should be placed on the right hand side of the log in or beneath the inputs Avoid additional pop-up windows and allow users to fill in the required information directly on the homepage
4.1, 5.2	<ul style="list-style-type: none"> Pop-up window “sign up”: Information is not logically arranged (i.e., reading flow from left to right is not considered); the last name should be placed on the right hand side of the name, etc. Too many steps are required to sign up 	<ul style="list-style-type: none"> Group similar items together, add white space (or borders) between different groups Simplify the registration process
4.1, 5.2	<ul style="list-style-type: none"> After the log in it would be good to be forwarded to the personal space area 	<ul style="list-style-type: none"> Allow users to be forwarded to the personal space area after they have confirmed their account
1.1, 5.2	<ul style="list-style-type: none"> After the sign up there is no welcome site The navigation is not clear 	<ul style="list-style-type: none"> Provide user feedback
6.2, 6.3	<ul style="list-style-type: none"> Buttons are for older adults partly too small and font is hardly readably 	<ul style="list-style-type: none"> Rework the size of the buttons and the font
Profile		
1.1	<ul style="list-style-type: none"> The difference between CV and expertise is not clear 	<ul style="list-style-type: none"> Offer tooltips (i.e., question mark icons with further information) to explain the meaning/difference of/between CV and expertise Add a short description and a list of examples
5	<ul style="list-style-type: none"> The difference between interest and expertise is not clear 	<ul style="list-style-type: none"> Offer tooltips (i.e., question mark icons with further information) Add a short description and a list of examples
1.1	<ul style="list-style-type: none"> Rather say "please select a picture/file" than "you haven't uploaded a picture/CV yet" 	<ul style="list-style-type: none"> Change the text accordingly
3.3	<ul style="list-style-type: none"> It is not possible to crop a picture 	<ul style="list-style-type: none"> Allow to crop the picture (see, for example, Facebook)
3.3, 4.1	<ul style="list-style-type: none"> There is no possibility for drag and drop when uploading documents or a picture 	<ul style="list-style-type: none"> Allow drag and drop for the upload

4.1, 4.2	<ul style="list-style-type: none"> The CV can be uploaded but there is no possibility to directly provide the information on the homepage 	<ul style="list-style-type: none"> Provide a template to type in the CV (optionally)
4.1, 5.1, 6.3	<ul style="list-style-type: none"> The "more button" is confusing 	<ul style="list-style-type: none"> Remove the "more" button and display all information
4.2	<ul style="list-style-type: none"> The selected language is displayed with an abbreviation (e.g., DE), however, the selection of the language happens via flags 	<ul style="list-style-type: none"> Drop the usage of country codes, use flags and the language name instead
6	<ul style="list-style-type: none"> The buttons on the right hand side (i.e., profile, calendar, etc.) are not in one line with the other elements on the platform (i.e., interests, expertise) 	<ul style="list-style-type: none"> Develop a grid and stick with the mobile first approach!
6.3	<ul style="list-style-type: none"> The design of the buttons is varying - some are quite detailed and some not - it would be better to make them more simple 	<ul style="list-style-type: none"> Redesign clickable items to be more consistent Simplify the icons
Communication – Searching for a Mentor/Mentee		
1.1	<ul style="list-style-type: none"> There is no feedback when a Mentor or Mentee is added to the network 	<ul style="list-style-type: none"> New entries could be highlighted as "new" or in a different colour for a few seconds after adding them New added contacts should appear at the bottom of the list (probably with a grey background until the other person accepts the connection)
6	<ul style="list-style-type: none"> The arrangement of photo, name, and labelling is not appealing 	<ul style="list-style-type: none"> Create a more appealing business card Mentors and Mentees should be shown differently
2.2	<ul style="list-style-type: none"> The "friend request" when a Mentee asks for a Mentor appears unprofessional - it is not about a friendship but about a professional collaboration relationship 	<ul style="list-style-type: none"> Change the text (e.g., xy asked for a first contact)
2.2, 5.1	<ul style="list-style-type: none"> The "add new Mentor/Mentee" button appears separated from the list 	<ul style="list-style-type: none"> The "add new Mentor/Mentee" button should be placed directly below the list of Mentors/Mentees The list should have a maximum length before the user has to start scrolling so that the button is always accessible
4.1, 5.1, 5.2	<ul style="list-style-type: none"> New users should be supported when navigating the first time on the platform (e.g., in order to get started with your Mentor/Mentee you need to work on the mutual agreement ...) 	<ul style="list-style-type: none"> Use tooltips (i.e., question mark item that provides further information) Provide a step-by-step tutorial for the first use (with the possibility to switch it back on anytime later and an automatic request for switching on in case the user is idle for more than 30-60sec) Overlay the rest of the interface with a semi-transparent darker plane to focus the currently important input and add a description overlay next to it
4.2	<ul style="list-style-type: none"> Some buttons are angular, some are circular 	<ul style="list-style-type: none"> Reiterate the design of the buttons with a focus on affordances ("it looks clickable")
5	<ul style="list-style-type: none"> There is no header "my Mentees" above the list of the Mentees 	<ul style="list-style-type: none"> Clearly label lists. If a list is empty, how should a user know that there could be some content?

5.2	<ul style="list-style-type: none"> It is not clear how the suggestions for Mentors/Mentees are displayed 	<ul style="list-style-type: none"> Display the suggestions for a Mentor/Mentee in a certain order (e.g., alphabetically, based on language, experience, etc.)
6.3	<ul style="list-style-type: none"> The button next to the “add Mentor/Mentee” button (i.e., suggestions for Mentors and Mentees) is not meaningful – What is it for? 	<ul style="list-style-type: none"> Use icons that are easily recognizable by users
Mutual Agreement		
4.1, 5.1	<ul style="list-style-type: none"> When working on the mutual agreement avoid a new pop-up window Information that is not required can be minimized 	<ul style="list-style-type: none"> Avoid additional pop-up windows
6	<ul style="list-style-type: none"> The suitcase icon is confusing 	<ul style="list-style-type: none"> Use a handshake icon for the mutual agreement
Communication via chat, video, etc.		
1.1	<ul style="list-style-type: none"> There is no feedback if a user is online or offline 	<ul style="list-style-type: none"> Follow semi-standards (e.g., Skype) to indicate if a user is online or offline
4	<ul style="list-style-type: none"> The chat symbol implies live-communication 	<ul style="list-style-type: none"> Also allow to send messages (similar to Facebook)
5.2, 6	<ul style="list-style-type: none"> The elements when calling somebody are placed on the right lower part and the rest of the page is quite empty 	<ul style="list-style-type: none"> Integrate chat/audio/video into one single chat tool with different levels of communication
6	<ul style="list-style-type: none"> The colours in the chat are not good readably 	<ul style="list-style-type: none"> Reiterate the colours
4, 6	<ul style="list-style-type: none"> The size of the fonts is not consistent 	<ul style="list-style-type: none"> To avoid resizing, use semi-standards to load older messages

Cosmetic problem (1,4– 0,5): needs to be fixed when extra time is available		
Heuristic	Problem Description	Ideas for improvement
Log in/Register		
6	<ul style="list-style-type: none"> The visual design of the button to accept the terms of use seems to be optionally 	<ul style="list-style-type: none"> Make the button more prominent
Communication – Searching for a Mentor/Mentee		
3.3	<ul style="list-style-type: none"> There is no button to select “all days” when setting the filter criteria 	<ul style="list-style-type: none"> Add an “all days” button
Communication – chat/audio/video		
6	<ul style="list-style-type: none"> The headline is confusing 	<ul style="list-style-type: none"> Remove the headline

Table 3: Identified usability problems

3.4 Summary

Overall, experts were positive towards the system. However, the heuristic evaluation revealed a variety of major and minor usability problems that need to be solved within the next iteration. Most of the problems concern consistency standards, information architecture, and the visual design. From the experts' point of view a lot of problems can be solved by using state of the art solutions, which can be found, for example, in Skype or on Facebook. Moreover, the experts recommend avoiding additional pop-up windows to simplify the navigation on the platform, specifically considering that our target groups also include older adults. Finally, a variety of design issues were identified, which can be easily solved by following a consistent design and by considering older adults' needs (e.g., readable fonts, large buttons, user feedback etc.).

4. USER EVALUATION

The user evaluation studies are part of the iterative evaluation circle and aim at supporting the development of the ProMe platform by gathering feedback from potential end users. Within these studies first functionalities that are already implemented on the platform, i.e., the ProMe homepage, the register/log in area, and the profile area were tested. Additionally, the collaboration tools (i.e., calendar, mutual agreement, my progress) were illustrated to participants by means of mock-ups that show how the tools could support the collaboration process. User studies were carried out by the end user organizations EURAG, NFE, and AGIR in Austria, the Netherlands, and Romania.

4.1 Research Goals and Questions

Within the study we address two major research goals. First and foremost, we aim at evaluating the **usability** of the system, i.e., how effective (accurate, complete) and efficient users can fulfil the defined tasks and to what extent they are satisfied/unsatisfied when completing a certain task. Moreover, we aim at identifying suggestions for improvement. Second, we focused on **exploring participants' overall impression regarding the platform, i.e., with respect to the different tools that are provided.**

RQ1 What is the overall usability of the system?

RQ1.1 How do users rate the overall usability of the system?

RQ1.2 What kind of usability problems can be identified?

RQ2 What is users' overall impression towards the idea of the platform and the tools that are provided (i.e., mutual agreement, calendar, my progress).

In this report we will outline the results with regards to the major research questions.

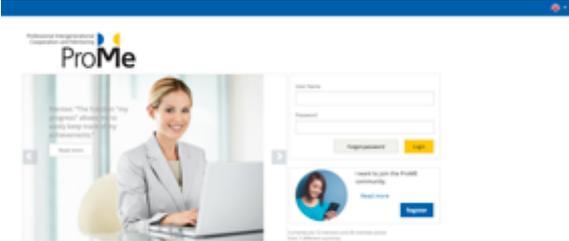
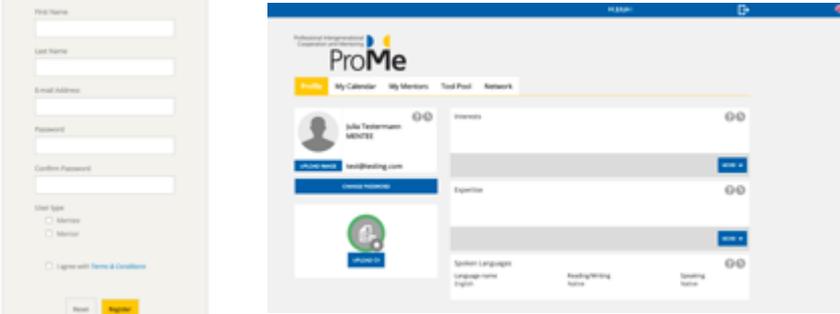
4.2 Methodological Approach

The ProMe platform was evaluated by potential end users, i.e., potential Mentors and Mentees could try out the different functionalities and tested the usability of the system. Participants were invited in pairs, i.e., one potential Mentor and one potential Mentee took part per test round.

After they had been introduced to the overall idea of the project, participants were interviewed about their pre-experiences with regard to mentoring and coaching and were asked to indicate their expectations towards the platform. Afterwards, users were asked to complete several pre-defined tasks on a desktop PC (see Table 4), i.e., to explore the home page (gain basic information about the project, services that are provided, and the roles users can take over on the platform), to sign up, and to set up their personal profile. As not all functionalities have been implemented yet, participants were introduced to the collaboration tools by means

of mock-ups, i.e., the Mutual Agreement, the Calendar, My Progress, and the Tool Pool were illustrated to the participants. Small scenarios supported the participants imagining a certain “use case” considering the perspective of the Mentor or the Mentee.

At the end of the evaluation, participants were asked to fill out the SUS questionnaire (system usability scale) and were interviewed about their experiences when using the platform.

Tasks	
<p>Task 1: Homepage</p>	<p>Participants are asked to have a look at the ProMe homepage, to explore, how they can get active, to find out what kind of different roles they can take over and, which services are provided on the platform.</p> 
<p>Task 2: Sign-up & Personal Profile</p>	<p>Participants are asked to register on the platform, to sign in, and to set up their personal profile.</p> 
<p>Task 3: Calendar (mock-up)</p>	<p>Participants are asked to look up pre-defined appointments and to add a new appointment with their Mentor/Mentee.</p> 

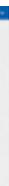
<p>Task 4: Mutual Agreement (mock-up)</p> <p>Participants are asked to look up the agreement section, to explore the trigger questions, and how they can edit and save content.</p>	 <p style="text-align: right;">mutual</p>
<p>Task 5: My Progress (mock-up)</p> <p>Participants are asked to look up the “My Progress” tool, to explore the different topics that have already been defined, to create a new topic, and to create a comment (Mentor).</p>	
<p>Task 6: My Meetings (mock-up)</p> <p>Participants are asked to look up defined appointments, to accept one appointment, and to deny one appointment.</p>	
<p>Task 7: Tool Pool (mock-up)</p> <p>Participants are asked to explore the tool pool and to look up the G.R.O.W. model.</p>	

Table 4: Tasks

4.3 Results

In this section, we describe the main results of the evaluation study. We will start with information about the participants, who took part and will give an overview on the usability of the system, pointing out the different usability issues that were identified. Afterwards, we provide insights on participants’ overall impression of the system, which are based on the interviews that were carried out at the end of the evaluation.

Overall, 22 participants took part in the study (54,55% female, 45,45% male), aged between 26 and 82 years (M=54,91, SD=16,84). They were recruited according to the profile of our personas Maria and Sarah. Twelve participants took part as potential Mentors, and ten as potential Mentees. Participants, who took part as Mentees were on average 42,40 years old (SD=15,42), participants, who took part as Mentors were on average 65,33 years old (SD=9,29).

Almost one third (31,82%) has finished a Professional School, almost one third (31,82%) a qualification for University Entrance, and more than one third (36,36%) has finished University. More than half are still working (54,55%) and almost one fifth (18,18%) are unemployed, whereof 13,64% are doing voluntary work. Almost one third (27,27%) is already retired.

A minority of 9,09% has already been active on a mentoring platform; the majority (90,91%) has not been active so far. All participants except of one agree that coaching/mentoring is a mutual beneficial relationship, thus we can assume that our participants are rather positive that both parties can gain benefits out of a mentoring/coaching relationship. However, two thirds of our participants (86,18%) agree that being a Mentor or Coach for somebody else requires a lot of professional knowledge (see Table 5). Most of our participants indicated that they could imagine being active as a Mentor/Coach (40,91%). Almost one third (27,27%) would like to be active as a Mentee/Coachee, and also one third (27,27%) indicated that they could imagine taking over both roles, i.e., Coach/Coachee and Mentor/Mentee.

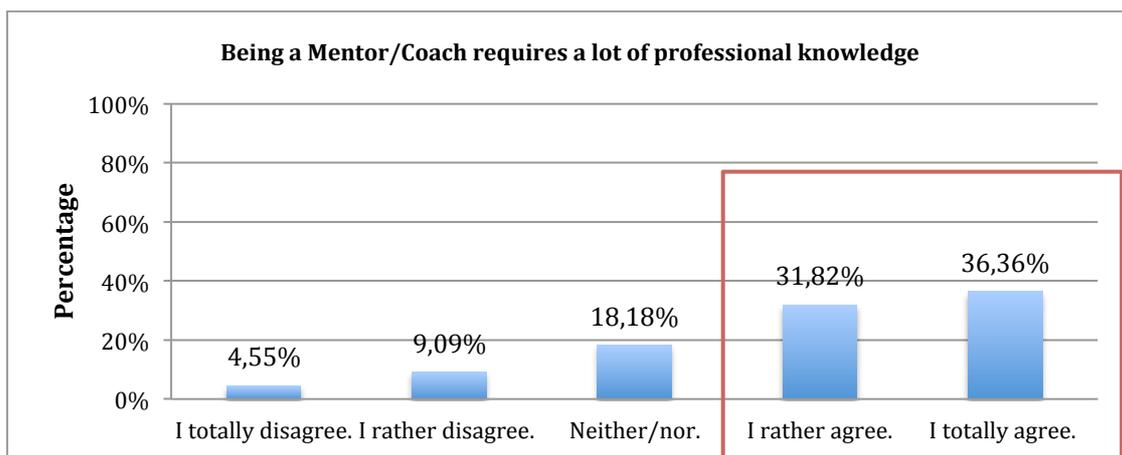


Table 5: Preconditions for being a Mentor/Coach

The majority of participants are technology affine. 95,45% agree that technologies (e.g., mobile phone) enrich their everyday life and the majority indicated that they have at least a smart phone and a laptop (see Table 6).

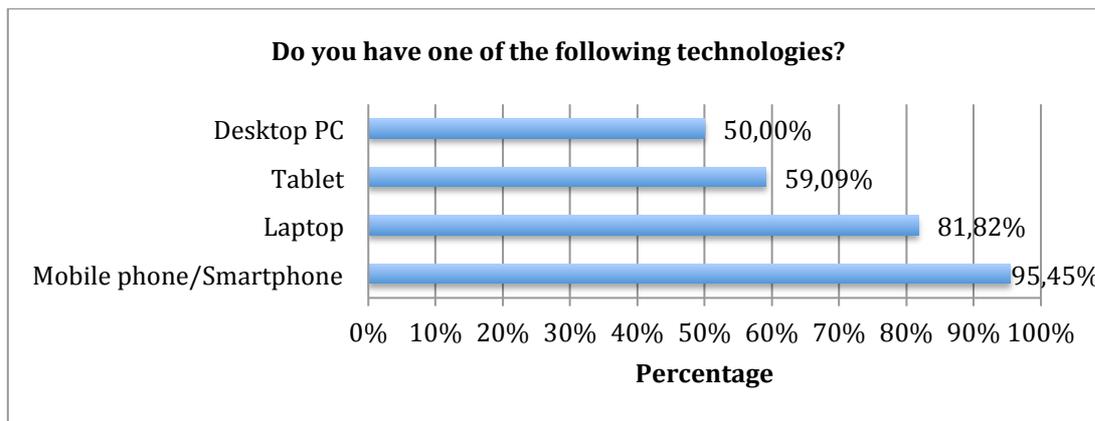


Table 6: Technologies participants own

4.3.1 Overall usability of the system

The usability of the system was assessed by means of interview questions during the evaluation and the SUS questionnaire (Brooke 1996). After each task, participants were asked to indicate how easily they could solve the task, if they experienced any problems, and if they had any suggestions for improvement. The SUS questionnaire was filled out after the participants had completed all seven tasks. Thereby, their subjective experience of the usability of the system was evaluated by means of ten items. Scoring the questionnaire yields a usability score in the range of 0–100, i.e., 80 to 100 users like the system, 60 to 79 users accept the system, and 0 to 59 users dislike the system.

The overall usability score with regards to the user evaluation revealed a score of 63. This indicates that participants accept the system. However, we identified a variety of usability issues that need to be addressed in the further development of the system.

In the following, we briefly describe the central results, which are structured according to the seven tasks². At the end of this section we summarized the main usability issues that were identified and provide suggestions for improvement (see Table 7).

4.3.1.1 The Home Page

In general, the first impression participants had, when exploring the ProMe homepage was good. Some participants explicitly said that it was clearly structured (6), that the layout looks professional (2), and visually appealing (1). A few participants indicated that they do not like that the pictures were moving (4), that the “read more” buttons do not provide the expected information (2), and one participant pointed out that the success stories were too long and that it would be good to provide quotes instead. The majority of participants indicated that the platform would encourage them to get active (12), one participant explicitly pointed out, that the platform does not encourage him/her to get active.

Regarding the information content, the overall purpose of the platform seems to be clear (7), however, some participants lack information regarding the services (6) and the roles that are provided (3), which can be

² The frequency of mentions by our participants is indicated in brackets. This does not say anything about the importance or severity of a certain usability issue, however, provides additional information how many participants were aware of a certain usability problem.

illustrated by means of a quote of one participant *"It was really hard to find more information"* (P15). Observations from the test leader showed that some participants did not look up detailed information (e.g., success stories) and, thus, could not find any information about roles or services.

The navigating on the platform was perceived as easy by most of the participants (14), however, it was also pointed out that there is not that much to navigate so far (2). One participant said that the font size is too small, so that s/he could hardly read the content.

Participants provided the following suggestions for improvement:

- Increase font size
- Provide quotes instead of too much text
- Avoid "moving" images

4.3.1.2 Sign up & Personal Profile

All participants could manage to sign up, however, they mentioned that the confirmation took some time. Half of the participants (9) indicated that it was confusing for them that the email address was automatically used as "user name" and pointed out that they would have required information that the email address is the user name. Some participants (3) tried to log in first, before registering, and one participant failed to log in, because s/he accidentally pushed the "reset" button, which is positioned just next to the register button. This participant explicitly pointed out that the "reset" button should not be placed next to the register button.

With regards to setting up a profile we could identify a variety of issues that made it somehow difficult for the participants to complete the tasks. Half of the participants (9) indicated that the difference between the "save" and the "add" button was not clear and that they lack a "remove" button in the interest and expertise section (6). A few participants indicated difficulties to edit content (3), i.e., it was not clear to them that they needed to push the edit button before they could start adding content. Two participants experienced difficulties when editing the language section, as too many fields needed to be filled in, and two participants raised concerns regarding "drag & drop". It was not clear for them in which direction, objects should be moved in order to be added. Moreover, some participants (7) raised concerns regarding the "question-mark-button", indicating that the tool tip was provided at the wrong place (instead in connection with the edit button a separate question mark button is provided). Also the meaning of the "refresh" button was not recognized in this context.

Participants suggested the following improvements:

- Provide information that the email address is the user name
- Provide only a save button
- Add a remove button for the interest and expertise section
- Provide the tool tips at the right place

4.3.1.3 Calendar

In general, participants could easily find the required information, i.e., an appointment in the calendar (20). Only two participants pointed out that "everything looks disordered" and that they needed to search for a while until they could find the required information. Adding a new appointment caused difficulties for some participants, which can be illustrated by the following quote of one participant: *"Normally, I can easily add new entries on my iPhone without any additional button"* (P8). The button at the left hand side was not easily recognized (2) and some participants pointed out that it was not clear for them that they needed to select a

Mentor, when creating a new appointment (4). One participant suggested that it would be nice to have the possibility to search for certain entries (e.g., an appointment with a certain person).

Participants suggested the following improvements:

- Provide a possibility to search for entries in the calendar
- Make it easier to add a new appointment - no extra button is required, however, allow to directly add a new appointment in the calendar field (similar to Google Calendar)

4.3.1.4 Mutual Agreement

With regards to the mutual agreement, half of the participants (10) reported about difficulties to find the required information (mutual agreement), because the symbol was not clear for them. Moreover, some participants reported about difficulties to find the trigger questions (4). Some participants expected to find the mutual agreement in the tool pool (6) or to find the trigger questions in the tool pool (3). One participant pointed out that the “disk symbol” seems “odd” to him/her as it is out-dated. Moreover, one participant said that the font is too small and hardly readable. In general, participants appreciated the idea of the mutual agreement and considered the trigger questions as very useful (14).

Participants suggested the following improvements:

- Provide tool tips to easily find the required information
- Increase the font size

4.3.1.5 My Progress

Participants reported about difficulties to find the required information, because the navigation was too difficult (2), and the structure not logical/unclear (4). In particular, the subtopics could hardly be found.

When adding a comment, participants, who were in the role of the Mentor expected to have a kind of save/add button to be sure that the information was actually saved. Again, the issue was raised that the font size is too small and, thus, information was hardly readable.

Participants suggested the following improvements:

- It would be good to show those columns with finished topics greyed out
- Instead of the green point a "✓" icon could be used
- Provide a possibility to add or save a comment
- Provide a labelling for icons/buttons
- Make information visible at once (do not only show main themes)

4.3.1.6 My Meetings

All participants said that it was easy to complete the task. However, half of the participants pointed out that it was confusing and “does not make any sense” to provide the meetings in an extra section and not in the calendar part. A few participants (3) reported about difficulties to recognize the meaning of the “my meetings-icon” and one participant said that the font size was too small, and thus, information was hardly readable.

Participants suggested the following improvements:

- Provide tool tips to find the required information
- It would be good to have notifications in the calendar instead of an extra section with appointments

4.3.1.7 Tool Pool

With regards to the tool pool, all participants pointed out that it was easy to find the required information. The descriptions were considered as being useful (3), however, one participant pointed out that s/he would prefer an “article-format”, and one participants had concerns in using the G.R.O.W. model in the context of mentoring as the G.R.O.W. model is a coaching model.

Participants suggested the following improvements:

- Add the following information: smart model, KPIs
- The back button should always be the same
- Do not mix up the terms coaching and mentoring

4.3.2 Overview on identified usability issues

The following table (see Table 7) provides an overview on the usability issues participants raised during the evaluation. For each usability issue, we provide suggestions for improvement.

Problem		Suggestions for improvement
Task 1: Home Page		
1	Font size is too small, that makes it difficult to read content	Increase the font size
2	Detailed information about roles and services are difficult to find	Make information about services and roles more visible (e.g., “read more about roles”, “read more about services”)
3	Success stories are too long	Shorten the success stories, highlight the most important information
4	“read more” buttons do not provide the expected information	Link the picture with one success story behind that fits the content in the foreground
Task 2: Register/log in & Set up the profile		
1	Email address is automatically used as user name	Provide information that the email address is the user name
2	Register was not prominent enough	If users try to sign before having registered, provide a question “Have you already registered?”
3	The reset button was too prominent next to the register button	Remove reset button in the register area
4	Some participants did not recognize the meaning of the button provided in the expertise and interest area – “refresh”?	<i>To be discussed</i>

5	No delete button in the expertise and interest section	Add remove/delete button
5	Difference between "add" and "save" button is not clear	Remove the add button
6	Difficulties to edit content	Provide tool tips at the right place – the tool tip is provided when moving the mouse over the question mark Remove the question mark as it is redundant when providing the tool tip for the edit button
7	Difficulties when editing the language section – too much content needs to be provided	<i>To be discussed</i>
Task 3: Calendar		
1	Adding a new appointment would be expected directly in the calendar (see Google calendar)	Provide the possibility to add a new appointment in the calendar without any extra button
2	Confusing that a Mentor/Mentee needs to be added when creating a new appointment	Support users in adding a Mentor/Mentee when creating a new appointment
3	Unclarity how to manage appointments with different people	Provide a search function for appointments
Task 4: Mutual Agreement		
1	Icon is not easily recognizeable	Provide tool tips for the buttons, modify design
2	Trigger questions could not be easily found	Support users to find the trigger questions (e.g., by a notification)
3	Font size is too small	Increase font size
Task 5: My progress		
1	Structure is not logical, navigation is not easy	Simplify navigation (e.g., show the overall structure of the progress not only the main themes)
2	Font size is too small	Increase font size
3	Difficulties to recognize, which topics are already finished and which are still open issues	Work with colours – topics that are already finished could be in shown greyed out Instead of the green dot an "✓" icon could be used

4	There is no save or add button when adding a comment – not sure if information is acutally saved	Provide feedback/information for the user by providing, for example, a save or add button
5	It is difficult to find the progress	Provide tool tips to support users to find the required tool/information
Task 6: My meetings		
1	Icon was not clear/easily recongizeable	Provide tool tips to support users to find the “My Meetings” area
2	Unclear, why “My Meetings” are not included in the calendar	Include the “My Meetings” in the calendar section
Task 7: Tool Pool		
	<i>No usability problems were identified</i>	

Table 7: Usability Problems

4.3.3 Users’ overall impression towards the platform

Information regarding participants’ overall impression of the platform mainly stems from the interviews at the end of the studies. Thereby, participants were asked if they could imagine getting active on the platform, what they consider important for the success of the platform, and what are likes/dislikes with regards to the platform idea. The interviews show that the willingness to get and stay active as well as the success of the platform is related to user’s experience with regards to the usability of the system.

Unfortunately, we do not have detailed information about the interviews as only rough notes were made by the EUOs. However, the most important aspects are summarized in the following.

4.3.3.1 Getting active on the platform

In general, participants are positive towards the idea, could imagine that it is useful for older as well as younger adults, and they can imagine using the platform themselves.

Participants overall impression of the platform was influenced by their subjective experience of the usability of the system. With regards to some service on the platform (e.g., my progress, mutual agreement) participants could not recognize the meaning of icons, thus, had the impression that they needed to search a lot before finding the required information, which can have an influence on the willingness to stay active.

Another issue concerns the lack of “common used practices”, which is illustrated by a quote of one participant. *“In general, I like the idea of the platform, however, I think a lot things could be simplified by implementing common used practices, for example, how to add a new appointment in the calendar.” (P2)*

Finally, an issue that was raised several times during the evaluation and also at the end of the interviews was the font size. Some participants had difficulties to find, read, and recognize information because the font size

was too small. *“It is exhausting to use the platform as the font size is too small and the contrast is sometimes bad” (P5)*

4.3.3.2 How to ensure the success of the platform

In order to ensure the success of the platform, one issue concerns doubts and fears with regards to data abuse. One participant, for example, pointed out that it was important to allay older adults’ doubts and fears towards the Internet. S/he would prefer if everything rather stays “anonymous”.

Moreover, the importance of a kind of help area was raised, where all functionalities of the platform are explained. Supporting the user to navigate on the platform and in using the different services was considered as major issue for the platform success. One participant suggested a kind of administrator that could support users in terms of any problems that might occur.

Finally, focusing on specific areas instead of being “too broad” and promoting the platform through various channels (e.g., Social Media) is considered important for the success of the platform.

4.4 Summary

Overall, participants were positive towards the platform, however, a variety of usability issues were identified, which might not only influence participants’ willingness to get and stay active but are considered as having an impact on the success of the platform. The most issues concern the design, in particular the design of icons, which sometimes caused difficulties for the users when trying to find the required information. Moreover, the lack of common used navigation practices (e.g., how to add a new appointment in the calendar) caused problems for the participants during the evaluation. A lot of participants raised concerns that the navigation is not logical, clear, consistent, etc. Thus, one important issue that needs to be addressed is to simplify the navigation and to stick to common used navigation practices. Finally, in particular for the older adults in our evaluation study, the font size was actually too small and impeded the navigation on the platform.

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6. ANNEX A: HEURISTICS

1. System status

1.1. User feedback:

- The system should always keep users informed about what is going on, through appropriate feedback within reasonable time. In addition, the feedback should be adapted to different tasks [Nielsen 1993].

1.2. Error messages:

- An error message should explicitly indicate what has gone wrong in a human-readable language. Furthermore, it should provide a precise description of the problem as well as a constructive advice on how to fix it [Nielsen 1993].

2. Match between system and real world

2.1. Language:

- The information and interface components have to be understandable [Affonso et al. 2010]. Instead of using jargon and technical terms the interface should speak the users' language. It should use words that older adults know. If there are technical words or jargon the interface should assist the users in learning what the terms mean [Chisnell et al. 2006].

2.2. Metaphors:

- The technology should make use of virtual objects and actions as metaphors for objects or actions in real world. A classic example of a software metaphor is the folder: Since people put things in folders in the real world, they immediately understand the idea of putting files into folders on a computer [Apple 2012]. It is important that metaphors are not used to have another meaning than in real world. E.g., the folder should not be used as a recycle bin.

3. User control and freedom

3.1. Audio:

- Users should have the possibility to use the volume button to adjust the volume how they want to have it. In order to hear sounds privately the technology should provide the possibility to use headsets and headphones. Additionally, it should be possible to switch the interface to silent [Apple 2012].

3.2. Stop control:

- To maintain user control and freedom the technology should allow to stop actions. The current state when stopping should be saved at the finest level of detail possible [Apple 2012].

3.3. Flexibility:

- The interface should offer the possibility to perform frequently used operations especially fast, using dialogue shortcuts. Typical accelerators include abbreviations, having function keys, command keys or specific gestures that package entire command in a single keypress. A classic example of a shortcut is "STRG + s" to save a file [Apple 2012].

3.4. Search function:

- In addition, the technology should provide a search function in order to find information more quickly.

4. Consistency and standards

4.1. Standards:

- The appearance of a control that performs a standard action should not be changed radically. Moreover, the interface should follow the recommended usages for standard user interface elements. It should be avoided that standard buttons and icons mean something else, as otherwise the users may be confused [Apple 2012].

4.2. Consistency:

- The interface should not use different words, situations or actions for the same thing [Nielsen 1993]. Additionally, it is important to have the same controls on the same position in the whole interface.

5. Information architecture

5.1. Minimize the users' memory load:

- Regarding information architecture it is important to make the interface easy to skim and to scan. The pages should look well organized (versus cluttered or busy) and there should be a clear visual starting point to the page. Moreover, if the interface is dense with content, it should be grouped to show what is related. Frequently used topics should be before all others [Chisnell et al. 2006]. Only necessary information should be present and irrelevant information should be avoided [Kurniawan et al. 2005]. Thus the amount of text should be minimized. It is important to increase the focus on main information [Apple 2012, Chisnell et al. 2006].

5.2. Navigation:

- The shallowest possible information hierarchy should be implemented. For any given task a reasonable length (2-5 clicks) should be given. Furthermore, the navigation should be easy and predictable. The path through the information should be logical and easy for users to predict. In addition, markers should be provided on each screen, such as titles and back buttons [Apple 2012]. Clicking the back button should always go back to the page the user came from [Chisnell et al. 2006].

6. Visual Design

6.1. Contrast/Use of colors:

- It should be a high contrast between touch areas, text and the background [Spinks 2012].

6.2. Appearance of control elements:

- Control elements should be highlighted differently from other non-clickable items (e.g., through contours). Thus labels should be easily distinguishable from controls and it should be obvious what is clickable and what is not. In order to make the controls easily clickable there should be enough space between different targets and they should be large enough [Apple 2012, Chisnell et al. 2006].

6.3. Design of buttons:

- Graphics should be simple as well as meaningful and should be relevant and not for decoration [Kurniawan et al. 2005]. Furthermore, the buttons should be descriptive enough to make it easy accurately predict what the content will be. An image on a button should be task-relevant. Additionally, any controls should be clearly and unambiguously labeled [Chisnell et al. 2006].

7. CONCLUSION

Overall, the three studies that were carried out in the course of the past year in the project allowed us to gather feedback from potential end users and supported us to address their needs already in an early stage of the development process. Moreover, the expert evaluation supported the development team to improve the usability of the system. The design workshops were in particular important for the design of the overall structure of the system and allowed us improving the overall idea of the platform and to identify important issues we need to consider (e.g., privacy issues). The heuristic evaluation proved valuable to improve the usability of the platform and finally, the user evaluation supported in particular the improvement of the collaboration tools that are provided, which are a major part of the ProMe platform. Based on the recommendations we gained out of these studies the platform was and will be further developed. In a next step, a second heuristic evaluation and a user study in the lab are planned in order to support the future development of the ProMe platform.