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AMBIENT ASSISTED LIVING, AAL

JOINT PROGRAMME

ICT-BASED SOLUTIONS FOR ADVANCEMENT OF OLDER PERSONS'  
INDEPENDENCE AND PARTICIPATION IN THE "SELF-SERVE SOCIETY"

## **D2.2 User Requirements Report**

### **Final Version**

Project acronym: **ProMe**

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

Contract no.: **AAL-2013-6-026**

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Delivery date: **31.12.2014**

Dissemination: **Public**

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## 1. EXECUTIVE SUMMARY

ProMe aims at developing an online platform that allows exchanging professional knowledge between older and younger generations. Older adults will have the opportunity to take over different roles to share their knowledge with younger generations. Thus, the platform allows different forms of collaboration associated with different roles (e.g., Mentor, Coach, Advisor). As a first step in the project we aimed at better understanding system requirements to support communication, collaboration, and knowledge transfer, identifying key factors for successful mentoring relationships as well as possible pitfalls that hinder successful mentoring relationships. Accordingly, we defined the following three central research questions:

- RQ1 How can ICTs support communication, collaboration, and knowledge transfer?
- RQ2 What are key factors for successful collaborative relationships?
- RQ3 What are (common) pitfalls that hinder successful collaborative relationships (offline and online)?

The deliverable is structured as follows. We will first provide a brief overview on the methodological approach and will afterwards outline the central results with respect to the three major research questions (more detailed information regarding the different studies that were applied can be found in the internal reports). Finally, we will give an outlook on possible implications for the ProMe platform.

### 1.1 State of the art

The user requirements investigation encompassed a variety of different (user) studies and has been finished in December 2013. As a next step, the iterative user evaluation will take place (e.g., expert evaluations as well as user studies in the lab that aim at evaluating first prototypes of the ProMe platform).

## 2. METHODOLOGICAL APPROACH

In the following section, we will give a brief overview on the methodological approach. A detailed description regarding the different methods that have been applied can be found in D2.1 (User study framework). Following a user centred design approach we give extensive attention to the target groups’ needs (provider and receiver) throughout the whole development process. Within the analysis phase we applied four different methods: a literature research, workshops, expert interviews, and a survey (see Figure 1).

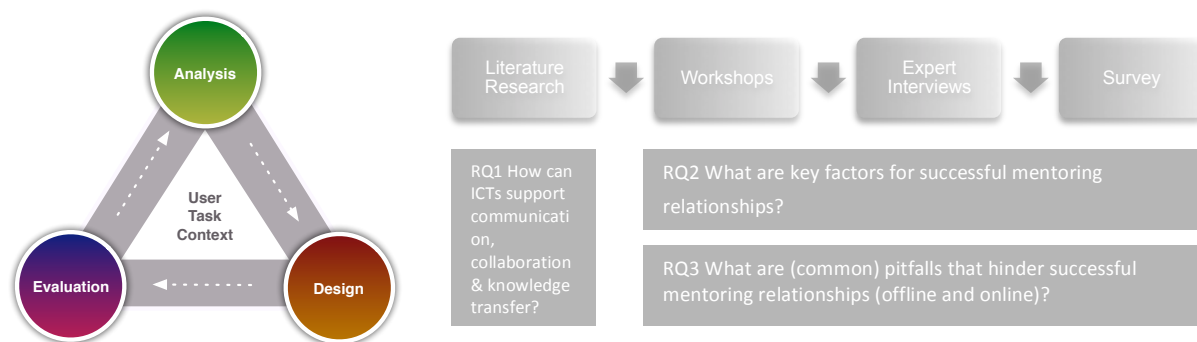


Figure 1: Research Process and Methods

### 2.1 Literature Research

Starting point for the development of the ProMe platform was a profound literature research, that aimed at investigating how intergenerational collaboration and knowledge transfer can be facilitated. This investigation was done from two perspectives. Motivated from the behavioural sciences, a mentoring concept was developed that builds the foundation for the main mentoring roles, that are going to be addressed within the platform: Mentoring, Coaching, and Network Learning (see D2.5 Mentoring Concept). This work has been accomplished by the KH Leuven. From a human computer interaction (HCI) perspective we investigated in what way ICTs can support communication, collaboration, and knowledge transfer. Thereby, we aimed at identifying key success factors as well as pitfalls for successful mentoring/coaching relationships. This work was done by PLUS.

### 2.2 Workshops

We further proceeded with several workshops in order to identify potential end users’ needs and motives to invest in a collaborative relationship, and their expectations with respect to the project idea (i.e., sharing knowledge via an online platform). Overall five workshops were carried out in the Netherlands (NFE), Austria (EURAG), and Romania (AGIR) with overall 34 participants. All workshops were done with potential providers of the service (e.g., Mentors) as well as potential receivers (e.g., Mentees). Only the workshop in Austria took place with potential Mentors only as the end user organization did not have access to potential Mentees.

## 2.3 Expert Interviews

Additional to the workshops, we carried out expert interviews that aimed at investigating best practices/success factors in a professional collaborative relationship (e.g., how a Coach-Coachee relationship can be supported best) and identifying possible pitfalls from an expert's point of view. Overall six Coaches were interviewed, mainly working in the management consultancy area, focusing on different areas such as stress management, change management or personnel and organizational development. All of them had at least four years of experience in working as a Coach and all except of one were mainly self-employed. The interviews took place in Vienna and Salzburg (Austria).

## 2.4 Online Survey

As a last step within the analysis phase we carried out an online survey. It was compiled according to the knowledge we gained from the workshops and expert interviews. We aimed at broadening our understanding of our target group's needs in order to share/receive professional knowledge and with respect to the features that are expected from an online platform that fosters qualitative relationships.

The online survey was available in six different languages (i.e., English, French, Dutch, Italian, German, and Romanian) and was sent out via various mailing lists mainly provided by the end user organizations of the project (AGIR, EURAG, NFE). The survey was distributed in Austria, France, Italy, the Netherlands, Romania, and the UK. We addressed two target groups: people, who were interested in *providing* support for younger professionals (who can imagine to get active, for example, as Coach or Mentor) as well as younger generations, who could imagine *taking advantage* of such a service (e.g., potential Mentees, Coachees). Altogether 650 participants fully completed our online survey.

## 3. RESULTS

The results of the different studies will be presented in the following three sections according to the three major research questions. We will give answers how different forms of collaboration can be supported best online and will describe success factors and pitfalls for collaborative relationships. We would like to point out, that we only highlight the most important results. Detailed information about the different user studies can be found in the internal reports.

### 3.1 How different forms of collaboration can be supported

In the following section we will deal with RQ1: How can ICTs support communication, collaboration, and knowledge transfer? This first research question was mainly answered by literature and was based on the mentoring concept, developed by the KH Leuven (see D2.5), focusing on three major forms of collaboration: mentoring, coaching, and network learning.

#### 3.1.1 E-mentoring & E-coaching – a few definitions

E-mentoring is basically a form of mentoring, where face-to-face meetings are replaced through digital communication. It requires different strategies to develop an effective partnership. Another difference compared to traditional mentoring is, that e-mentoring is defined as a mutually beneficial relationship, being less paternalistic but more egalitarian than traditional mentoring [Philippart & Gluesing 2012]. It can also be described as a computer mediated relationship between an experienced Mentor and his/her protégé focusing on a developmental relationship [Boyle, Single, Muller 2005] or as Bierema and Merriam [2002] would define it, as a *“computer mediated, mutually beneficial relationship between a mentor and a protégé which provides learning, advising, encouraging, promoting, and modelling, that is often boundaryless, egalitarian, and qualitatively different than traditional face-to-face mentoring.”* [p.214]

Whereas the Mentor has a great deal of background knowledge or informal organizational knowledge, can tactically help the Mentee to develop his/her job skills/position, gives general life advice, and supports personal development, coaching focuses on one specific goal. It can be described as a dialogue between a Coach and a Coachee that aims at unlocking the potential of an individual. It focuses on the cognitive, emotional, and behavioural side of a person [Whitmore 1997]. Thus, e-coaching is a developmental relationship that is enabled through different forms of computer mediated communication, for example, e-mail or online chat [Stein et al. 2013].

Although mentoring and coaching are different forms of collaboration, they use similar communication tools and face the same challenges that go along with the absence of face-to-face meetings, for example, building up trustful relationships. Also natural cultural differences or time zone differences may be challenges. In this context, Philippart and Gluesing [2012] are talking about “psychological separation” or “virtual distance”, first

described by Sobel, Lojeski, and Reilly [2008]. In order to address these challenges we will outline in the following strategies and success factors in order to support successful collaborative relationships.

### 3.1.2 Supporting successful one-to-one collaborative relationships

There are a variety of possibilities to support collaborative relationships best in computer mediated collaboration environments. Most of the literature deals with e-mentoring but from a collaborative perspective the raised issues account for e-coaching as well.

#### 3.1.2.1 Overcome virtual distance

One aspect that needs to be addressed, are the challenges that go along with virtual distance. Phillippart and Gluesing [2012] propose a conceptual model that consists of four factors that impact virtual distance between Mentor and Mentee: partner matching process, goal clarity, mentoring practices, and technology usage.

Provide meaningful profiles to support the matching process

Trigger the definition of goals

Support the organizational structure for the mentoring process

Provide feedback mechanisms

**Matching the “right” collaboration partners** can highly influence virtual distance insofar, as profiles, for example, can help Mentees to find an appropriate Mentor, who supports them to meet their goals. Phillippart and Gluesing [2012] point out that a Mentor’s profile should comprise skills and relevant business experience and should help to assess personal compatibility, expunging cultural or other personal differences. Additional to the matching process the authors emphasize the importance of **developing personal goals** for the Mentee and document them in their online profile, so that these goals can be matched with a Mentor’s expertise. The **use of certain mentoring practices** and support mechanisms can also help to overcome virtual distance. Mentor and Mentee should agree on terms and logistics of the partnership, including methods, expectations, and time organisation (e.g., frequency of interaction). This is best done via participation in either a formalized virtual kick-off event or session to discuss the organizational structure of the mentoring process. Methods should also comprise ways of providing feedback. Finally, a user’s (i.e., Mentor and Mentee) **access and level of comfort when using certain technology** has an impact on virtual distance in collaborative relationships. In the partnerships studied by Phillippart & Gluesing [2012], telephone calls and emails were identified as key communication channels utilized (only written and oral channels). Relationships in which individuals additionally sent pictures to enable virtual partners to “see” each other and provided some context about their environment, families and community, were rated higher on development of rapport.

#### 3.1.2.2 Overcome low visibility

The concept of **visibility** covers several important factors, for example, the **visibility of the work** a Mentee is investing. When Mentors have no idea, what a Mentee is doing at the moment to solve a problem, for example, because the Mentee wants to send his/her Mentor a finished solution, s/he cannot help him. It also covers the visibility of the Mentor or Mentee him-/herself (e.g., being “visible” in an online chat).

Allow transparency with respect to the work of both collaboration partners

O’Neill & Gomez [1998] investigated 26 lengthy email relationships between students in grades 7 to 12 and volunteer scientists, who advised them on science projects. Mentees complained that waiting for responses was annoying, hindering them from continuing their work. As a possible solution they suggest the use of groupware products, meaning that all members can react to and advance ideas of



others. This makes it necessary to make ideas, as well as the process that leads to these ideas, clearly visible for others, which, in turn, can support collaborative processes.

### 3.1.2.3 Avoid “too much help”

The lack of visibility also reinforces the Mentor’s concerns about providing “too much help” to their Mentees. They fear that they solve the Mentee’s quests instead of enabling them to do this for themselves. This fear can lead to a “teasing” dynamic. Mentors think that they should not provide too much help, considering that their Mentee finds the answer for him-/herself whereas Mentees suspect their Mentors of egotism or simple mean-spiritedness [O’Neill & Gomez, 1998]. This again stresses the importance of transparency with respect to the collaboration process.

### 3.1.2.4 Social Presence

Trigger regular meetings between collaboration partners

Gooch & Watts [2011] describe a causal relationship between social presence during a communication and the more enduring feeling of closeness. They found out that regular meetings are very important for a high feeling of closeness, building the foundation for the development of long-term and trust-based relationships.

Allow face-to-face meetings

According to Powell, Piccoli, and Ives [2004] face-to-face meetings are a great opportunity to “*foster the ability to form closer interpersonal relationships between members*” [p.10] especially within the starting phase. Fostering social communication among interaction partners also contributes to higher feelings of trust and the development of valuable relationships. Trendafilov et al. [2011] researched different feedback conditions with respect to remote collaborative interaction and found out that visual feedback provided the best results in terms of shared awareness.

Moreover, social presence and closeness also vary depending on the medium used to communicate [Gooch & Watts 2011]. This also goes along with the idea of Short et al. [1976], who stress the quality of the medium as an influencing factor for social presence. The quality of sound (especially stereo sound), for example, can simulate a feeling that people are actually around you within simulated 3D worlds [Dicke et al. 2010].

Even “*small changes in showing the presence of other can have large effects on behavioural commitment*” [Farzan et al. 2010, p.329]. Lee & Takayama [2011] investigated communication work practices and technologies that support distributed collaboration, i.e., mobile remote presence systems. They found out, that collaboration among remote workers that was supported through “*mobile embodiment*”, enabling workers to move within a remote environment (which was enabled by a kind of video chat, where a screen can be moved within the room), lead to an increased presence of the remote co-worker.

Support meaningful profiles – allow “catching” the identity of another person

The visibility of another person in terms of “identity” might have a positive impact on social presence [Donath 1999]. The use of real names instead of freely chosen user names, the visualization of a body (e.g. via photo and/or video), voice and language (e.g. via online voice- or voice and video-chat), and a signature (e.g., users have to end each post with some form of greeting and their real name) support the online identity of a user and his/her representation on the platform. This “visibility” in turn supports mutual awareness and might positively influence social presence.

Use real names instead of user names

### 3.1.3 Practicing and network learning

Beside one to one communication between two collaboration partners, the ProMe platform also aims at allowing for collaborative processes within a group. According to Backstrom et al. [2008] a group can be defined as ‘a collection of people’ [p.117], which can be divided by two categories. The first category includes groups of social identifications (e.g., between co-workers, classmates). These groups are often represented online, especially on social platforms like Facebook. A second category of groups is formed for structured communication about, for example, political issues or specific interests. ProMe will mostly support the second structured communication type groups, but certainly also profits by fostering identification of group members with their network.

#### 3.1.3.1 Levels of participation

A group can be described by the different levels of engagement of active users [Beverly & Etienne 2011]. In this context, the authors distinguish, for example, between active or more peripheral users. Backstrom et al. [2008] consider not only the level of participation, but also the time a person continues to contribute, before leaving the group or getting inactive. So they classify users by means of three categories, namely light, short-core, and long-core users. Light users use the network only passively (by reading), or sometimes asking questions, but are only peripherally contributing content, a short core user contributes content, but only over a short period, whereas a long-core user typically contributes over a longer period (more than a month).

The user, of course, always chooses the level of participation that serves his/her purpose best, except the group or platform s/he uses does not support him/her to do so. From the user’s viewpoint a regular and active participation is not automatically better than being a so called “lurker”, a transactional user who does only read what others in the group are discussing, but does not actively contribute. Of course, a full participation normally has more outcomes than a passive one, but it also requires greater effort.

As outlined by Backstrom et al. [2008] the majority of users are more passive (about 77,6%). Thus, the challenge is fostering an optimal level of user participation: active, regular, and long lasting. According to Schoberth et al. [2006] sustainable communities depend on the benefits that are provided for their members that outweigh the costs of membership (e.g., time effort). Therefore, the goal when developing an online collaboration group platform is fostering active and long-term contribution as much as possible, without browbeating peripheral users too much to contribute. Otherwise this important user type will be discouraged to use the platform. The platform needs to provide resources (e.g., interesting content on the platform, normally provided by the users) that motivate users, who are already active to stay in the group and that arise the interest of new users. Moreover, the property of a person influences active and long-term membership.

Wang & Clay [2010] emphasize a similar issue, pointing out that ‘when online communities just start, high-value contributors are welcome and high-interest content are desired, so that other individuals can be attracted and trigger the interaction among contributors and other participants.’

Jones, Ravid, and Rafaeli [2001] described the limits of group interaction. On the one hand, a growing community does not automatically improve the communication, as the occurrence of ‘social

Foster active and long-term contribution

loafing' (free riding or lurking) generally increases too. On the other hand, with a growing number of posts users are reaching more and more their individual limit for processing information. This state is known as information overload, as described by Schoberth et al. [2006] (see above).

Provide asynchronous communication channels

What Jones, Ravid, and Rafaeli [2001] found out is, that personal limits of sustainable interactive communication are depending on the type of technology used. For example, chat systems lead to a higher communication load and therefore can sustain fewer active participants than asynchronous systems (e.g., Email). Moreover, usability issues may also discourage users who are ready to contribute actively or joining the group to do so, so a good environment (from the HCI's viewpoint, e.g., ease of use, efficiency) is a key success factor.

Trigger active participation and feedback mechanisms especially for new users

Another important success factor is a supporting community, meaning that users consider each other as equally important. The studies of Backstrom et al. [2008] suggest that new users, who would later become long-core users, got better treatment in form of faster and more responses right from their first contribution. Considering this finding from the opposite direction, it can be assumed that the behaviour and reaction to a user's first input is fundamentally influential to their decision of how much and often to further contribute, which is also confirmed by Wang & Clay [2010]. The motivation to contribute on the platform depends on the reaction of other users: *"individuals' motivation can either be maintained or disrupted, depending on whether their basic psychological needs are satisfied. For example, after someone contributes content, if other participants actively discuss the content and provide positive feedback, that person's need for competence and relatedness are likely to be satisfied, and they are likely to continue contributing."* [p. 23-24]

### 3.1.3.2 The role of the group facilitator

To support collaboration within a community the group facilitator plays an important role as s/he supervises the correct behaviour within the group, for example, through giving constructive feedback. Further tasks encompass the control of content, privacy level, and day-to-day operations [Backstrom et al. 2008], for example, organizing regular chat sessions with all team members [Powell, Piccoli & Ives 2004].

### 3.1.3.3 Organizational structures

Trigger a kick-off meeting

Create awareness for a shared organizational structure

Similar to what we already identified with respect to one-to-one collaborative processes a kick-off meeting in the beginning when starting up an online group can positively influence the collaboration processes. Feldman [1984] suggests that group norms are enforced to bring behaviours that ensure the group's survival under normative control. Postmes, Spears & Lea [2000], raise the importance of common norms, for example, with respect to the content and form of communication and social norms. These norms are developing over time and are limited to the boundaries of the group.

### 3.1.3.4 The role of motivation

Wang & Clay [2010] developed a motivation-based theory of long-term contribution, explaining how collaboration can be supported. Following their theory highly and **intrinsically motivated users** (e.g., users who are motivated to contribute because of the issue itself, and not because of a wish to, for example, showing off with their knowledge or because they want to find a solution for a problem) will attract and motivate other users to contribute even if they are just externally motivated.

Create awareness for the uniqueness of contributions - gratification

Beenen et al. [2004] found out that in order to foster collaboration it can be beneficial if users are **reminded of the uniqueness of their contributions** and the benefit that results out of it. Moreover, specific and challenging goals might raise motivation.

Rashid et al. [2006] state that such goals should be timely limited (e.g., a solution needs to be created within the next hour), and should provide individual feedback, that is showing each user how their specific and unique contribution helped on reaching the group's goal.

### 3.1.3.5 Group identity

Foster group identity

An additional key factor for the success of the platform is to **find an appropriate name** for the group one is part of. Different denotations for online groups, which are actually metaphors of really existing offline phenomena, including 'community', 'group', 'forum', and 'conference', are associated with a different set of assumptions about the features and processes of these collectives [Butler 1999].

The author suggests using the denomination "voluntary associations" as an umbrella term, and choosing the appellation of a specific group wisely, considering user assumptions about what they can expect. This finding additionally supports the hypothesis, that correct and easy-to-read information even before the start of collaboration, can greatly help the user to get a realistic set of assumptions about a voluntary association. So, disappointment can be avoided.

### 3.1.4 Summary

Literature provides a variety of answers in what way different forms of collaboration can be supported, i.e., what kinds of different challenges need to be addressed. The main challenge with respect to collaborative processes is associated with the absence of face-to-face meetings. Thus, an important aspect is to overcome what is called in literature "virtual distance". This can be addressed, for example, by providing meaningful profiles that support the matching process, or by supporting the use of certain mentoring practices that help the collaboration partners to set up an organizational structure (e.g., frequency of meetings).

Another issue that is closely related to the virtual distance is the low visibility, which can be addressed by providing tools that make activities of the collaboration partners visible, for example, feedback mechanisms. According to the literature, collaboration processes can also be supported by enhancing social presence, i.e., embodied representation of remote collaboration partners, which can be achieved, for example, by providing video-conferencing opportunities. This accounts for one-to-one collaboration as well as for group activities.

With respect to network learning the main challenge is to maintain active participation within a group. A kick-off meeting as well as regular feedback mechanisms regarding the activities that take place can support active participation. Moreover, it is important to meet a user's requirements with respect to the level of engagement and allow different opportunities to be active on a platform.

## 3.2 Key factors for successful collaborative relationships

This section deals with RQ2: What are key factors for successful collaborative relationships? The question will be answered from two perspectives: the expert perspective (based on interviews with professional Coaches) and the end user perspective (based on workshops with potential end users and the online survey).

### 3.2.1 The experts' perspective

We will start with a general description of the central characteristics of a Coach-Coachee relationship and how it can be distinguished from the idea of mentoring. We will furthermore describe what professional Coaches would expect from the ProMe platform in order to support collaborative processes between Coach and Coachee.

#### 3.2.1.1 Characteristics of a Coach-Coachee relationship

The relational level was considered as most important for all Mentors. They pointed out that such a relationship needs to be characterized by trust, empathy, openness, attention, and appreciation. In general, as an important pre-condition a Coach needs to enjoy working with other people and needs to be congruent. Moreover, clearly defined roles were mentioned as an important pre-condition, i.e., the Coach is responsible for the process and the method and the Coachee is the expert for the content. A Coach has got the task to support the Coachee to find the answers to the questions s/he has. This contrasts with the idea that the Coach actually tells the Coachee what to do. Thus, the experts consider themselves not as a consultant per se but as somebody who activates the resources of their clients.

In general, the coaching process can be divided into four different phases: contact, contract, analysis, and working phase. The contact phase encompasses the so-called "Erstgespräch" (first encounter) and leads to the contract (agreement of both parties to work with each other). This, in turn, leads to the analysis phase (identifying the problem and defining a goal). Finally, the working phase encompasses the process of finding a solution for the given problem.

Most important **in the beginning of the coaching relationship** is the so called "Erstgespräch", an initial meeting that aims at discussing the central topic the Coachee wants to work on and to find out if a collaboration between Coach and Coachee is possible, with respect to the relational basis (if the chemistry between the two parties works out fine, i.e., if they feel sympathy for each other). With respect to the central topic the Coachee wants to discuss, the Coach needs to ask circular questions, targeting the function of revealing new perspectives for a certain problem. A positive, valuing tenor and the Coach's attitude that the Coachee has a variety of resources to solve his/her problems is important, especially in the beginning of the process. Coaches emphasize that the responsibility for the problem needs to be taken over by the Coachee and not the Coach.

A clearly defined goal, i.e., defining what the Coachee needs to achieve and the general framing conditions (e.g., how often do they want to meet, when, and where?) is crucial in the beginning of the coaching process. In order to clearly define the goal it is necessary to reflect on the given problem. One Coach pointed out that s/he normally hands out questionnaires to motivate the Coachee to reflect on their problems. The Coach does not provide the solution for the given problem but reveals ideas and perspectives together with the Coachee to find an adequate solution.

In order to **sustain the coaching process and relationship** it is important that the client is aware of the progress when working on the problem/towards the goal. The Coachee needs to be aware of the progress s/he makes and needs to see a meaning in working on a certain problem. Thus, the role of the Coach includes making progress visible and to initiate reflection on the coaching process. Therefore, regular reflections on the given problem are required.

**3.2.1.2 Skills and success factors**

The most important quality for a successful Coach-Coachee relationship is empathy. In this context the experts pointed out two qualities: First, the ability to respond to somebody else (e.g., being aware that clients are sometimes under pressure because of professional reasons) and second, the ability to refrain from one’s own ideas in order to avoid providing the solution to the client – the Coach can of course offer solutions but the client takes the decision.

Moreover it was considered as important to be congruent as a Coach and to regularly reflect on one’s own role and the whole process. Besides, curiosity, patience, and the ability to focus on the most important things. When asking experts about factors for a succeeded cooperation of Coach and Coachee the relational basis was mentioned being most important. Qualities such as trust, security, openness, appreciation, and curiosity were considered as important.

**3.2.1.3 Platform requirements**

Support the initial phase when getting to know each other

At the end of the interview participants’ were introduced to the general idea of the platform and were asked to indicate what such a platform would need to provide to support them best (from the perspective of being a Coach) and what would be needed to support the Coachee.

Support personal contact

One issue that was raised by almost all interview partners concerns the relational level, i.e., to support Coach and Coachee to get to know each other. This issue is reflected in one statement of a Mentor: *“The key to a successful Mentor-Mentee relationship is the personal contact”*. In this context one Coach suggested to provide a kind of Skype-functionality in order to support the transmission of non-verbal cues (postures), which are important in order to access the Coachee’s reactions, feelings, etc. S/he also said that the platform should provide personal contact, meaning that a face-to-face meeting especially in the beginning of the Coach-Coachee relationship would be important. Another Coach pointed out that it would be important for him/her that the platform supports the so called *“Erstgespräch”*, which is crucial to find out if Mentor and Mentee fit together. One Coach pointed out that it might be good to have photos from the Mentee. This could make it easier to find out if somebody is personable, an important precondition for starting a collaborative coaching relationship. Moreover, eye contact was considered as important, which could be enabled via a kind of Skype-functionality on the platform.

Trigger initial contact to find out if Coach and Coachee fit together

Provide adequate information about Coach and Coachee

Besides this more relational aspects the Coaches also pointed out the importance of information. Personal information about the Coachee (e.g., the topics or areas in which s/he is searching for support/advice), information about the Coach (e.g., that s/he has the possibility to represent him-/herself on the platform), information about the general idea of coaching, i.e., that the Coach is not a wizard and does not provide solutions but only supports the process of finding a way to deal with a

Provide information about the role of a Coach

Allow an easy way to make appointments

certain problem and gives information about obligations and expectations. Moreover, experts suggested providing an easy way to make appointments and to provide an opportunity to get in touch with different Coaches at the same time in order to get a broader view.

Support the Coachee to find an appropriate Coach

When asking the experts about the qualities the platform needs to provide in order to support potential Coachees especially information aspects were mentioned: Information about the Coach (including a curriculum vitae and the Coach’s motivation, i.e., what is important for the Coach when s/he accompanies a Coachee, personal information about the Coach), information about expectations (e.g., what the Coachee can expect from a Coach), information how to get in contact with the Coach (e.g., when s/he is online, contact details). Moreover, the experts pointed out that the platform should be structured according to topics to make it easy for the Coachee to find an appropriate person for the problem s/he wants to address. Finally, personal contact (face-to-face contact) should be supported, anonymity should be preserved, especially in the beginning, and there should be an opportunity to find out if someone is likeable (e.g., by providing pictures of the Coach).

### 3.2.2 The end user perspective

Besides investigating the experts’ perspective we also carried out workshops with potential end users (provider and receiver) where we assessed their expectations, motives, and needs with respect to the platform idea in order to identify key factors for a successful collaborative relationship. As aforementioned, we also carried out a survey in order to deepen the knowledge we gained throughout the workshops.

#### 3.2.2.1 Expectations with respect to a cooperative relationship

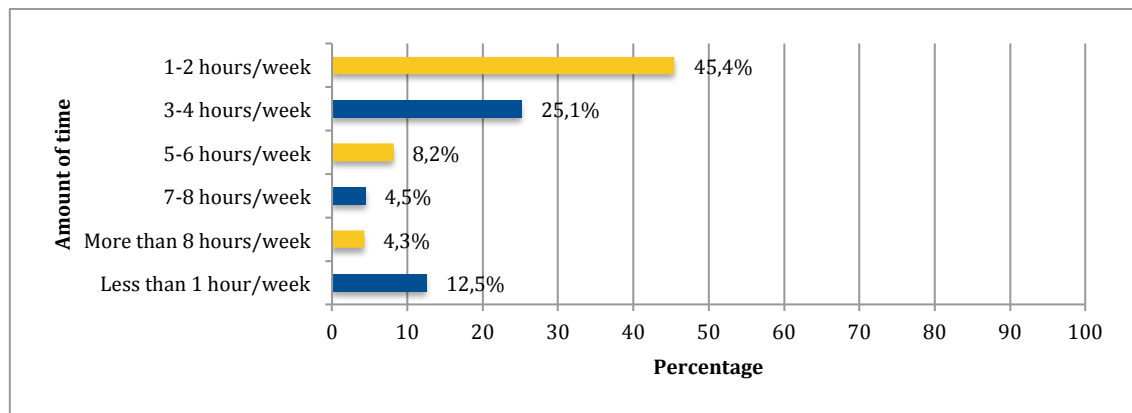
Support the process of creating an organizational structure

In a professional, cooperative relationship Mentors and Mentees expect the other party to hold on to certain predefined rules (e.g., keeping appointments, being honest and trustworthy, talking to each other when problems occur instead of breaking up the relationship). Furthermore, it is expected to be clear in the beginning if one is interested in a relationship, which includes personal problems as well or in a strictly professional relationship. This separation in the expectations continues in the kind of information the potential end users, both Mentors and Mentees, consider as being important to know about each other. One group would be willing to share personal information in order to establish a good relationship, while the other group wishes to know only basic points from their counterpart (e.g., Curriculum Vitae, goal). Both parties expect a Mentor-Mentee relationship to be mutually beneficial.

In the workshops we found out that the amount of time one is expecting to invest varies strongly, depending on the type of Mentor-Mentee relationship (e.g., strictly professional or personal too). According to what we found out in our survey, the majority of participants indicated 1-2 hours a week (45,4%). At least one quarter (25.1%) stated “3 – 4 hours per week”, 8.2% stated “5 – 6 hours per week”, 4.5% stated “7 – 8 hours per week”, and 4.3% stated “More than 8 hours per week” [1 missing]. Only 12.5% of the participants indicated that they would be willing to invest less than one hour a week (see Figure 2).

The amount of time one is willing to invest correlates with age, meaning that the older the participants of our survey the less time they were willing to invest in the relationship. The correlation

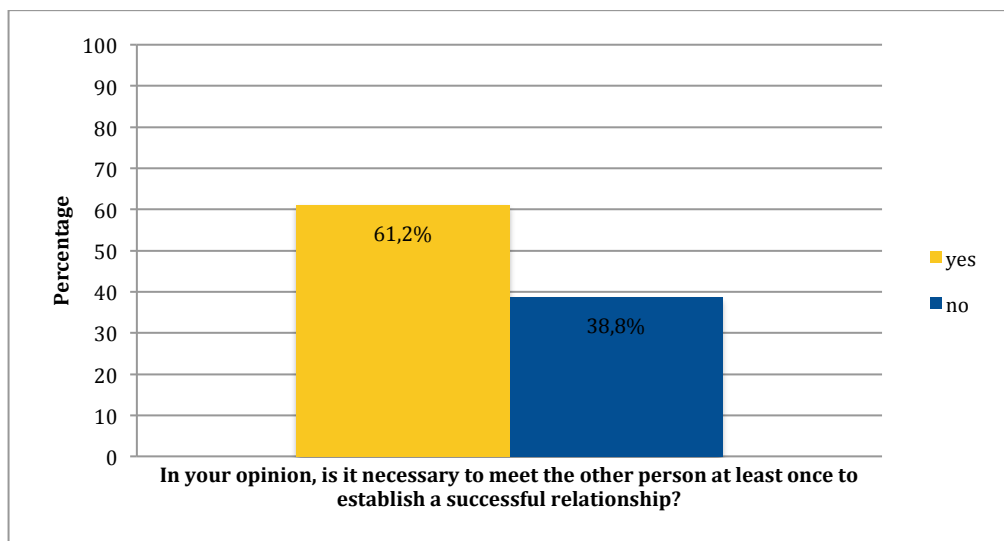
is very weak and highly significant ( $r=-.14, p=.00$ ). We assume that older adults tend to invest less time than younger adults.



**Figure 2: Amount of time participants are willing to invest**

In terms of communication channels the potential Mentors as well as the potential Mentees were very open to all kinds of media (e.g., E- Mail, Chat, Telephone, Skype, Video-Chat) and they expected to have the possibility to use them all via the platform. Interestingly, both parties expected more problems in the communication when using E-Mail or Chat instead of talking to each other, either on the phone or over Skype.

Meeting each other at least once in the beginning was an expectation of both parties to get to know each other better when being involved in a Mentor-Mentee relationship that involves personal information too. The majority of participants (61,2%) of our survey indicated that it is necessary to meet the other person at least once face-to-face to establish a successful relationship (see Figure 3).



**Figure 3: Need for face-to-face meetings**



We also were interested in needs with respect to the characteristics of a collaborative relationship. Participants of our survey were asked to select from a list of characteristics (see Figure 4). Communication (70,4%), Trust (59,7%), and Empathy (36,6%) were the most selected characteristics. We assume that these are the three most important qualities within a collaborative relationship for our target group. Control appears as being the least important characteristic as it was selected by only 7,6% of our participants.

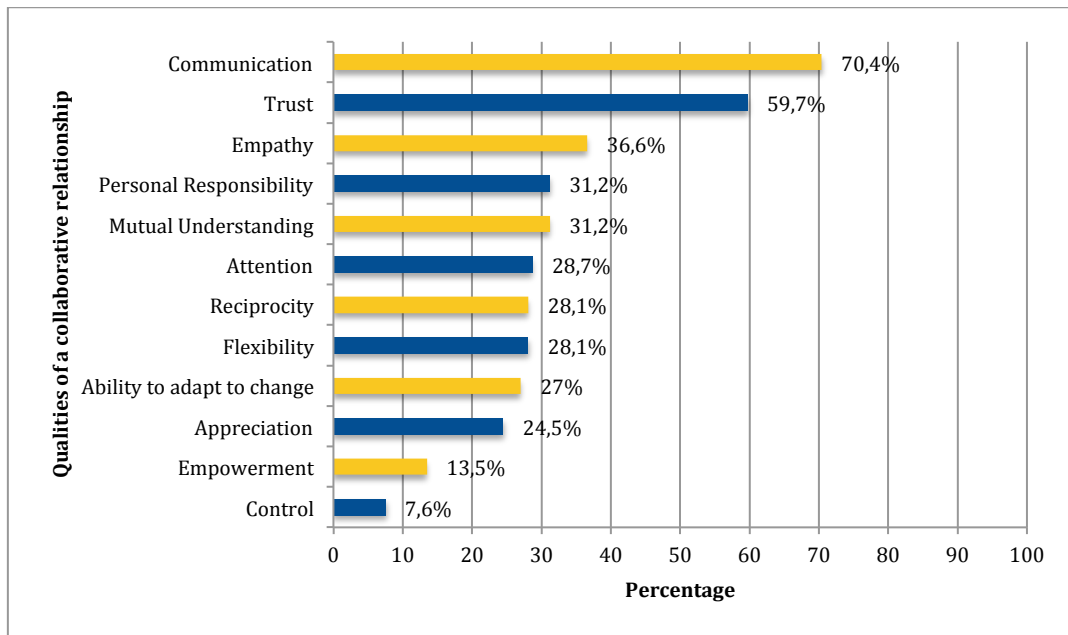


Figure 4: Qualities of collaborative relationships

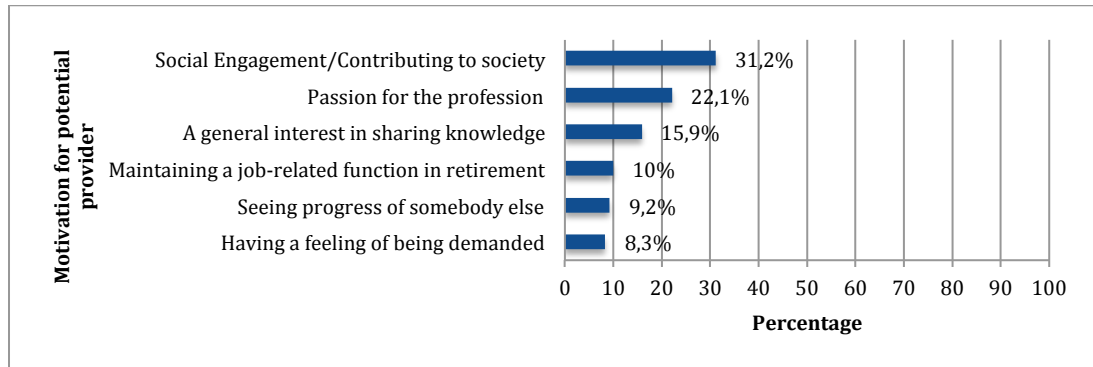
### 3.2.2.2 Motivation to get active

Consider the variety of motivations for users to get active

When talking in the workshops about participants’ motivation for getting active on an online platform to share professional knowledge, it was an important motive for many potential mentors to have a function although being retired (e.g., if someone used to be active in professional life that habit doesn’t stop with retirement). As one potential mentor stated: “I believe it’s a waste that my specialist knowledge and experience that I have created in 46 years is not used.” Further, a general interest (e.g., being curious for the Mentee and for the new topics this relationship might bring up), social engagement (e.g., receiving praise and appreciation, the wish to contribute to society, the desire to be useful for the new generation), satisfaction (e.g., from supporting others, from contributing to a relationship), and passion for the profession (e.g., collaboration leads to progress in the area of expertise) were mentioned as being significant motivations.

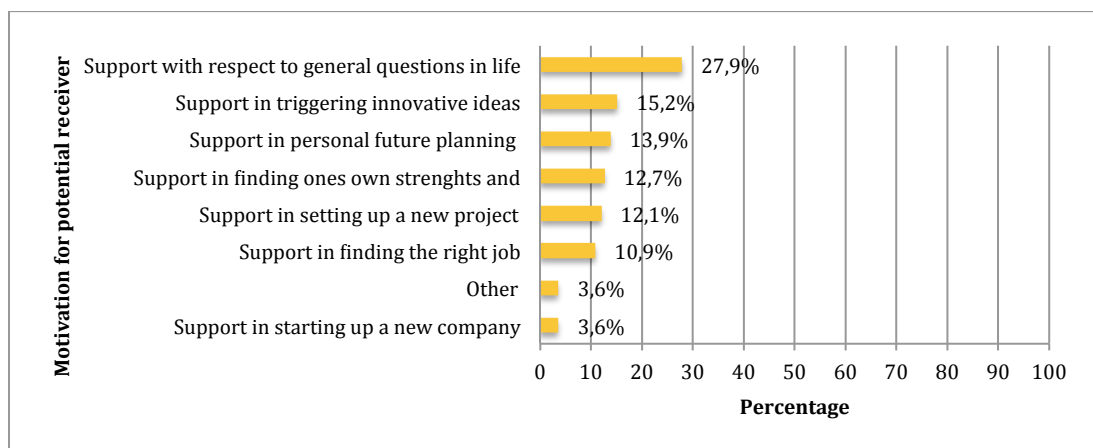
In the online survey the majority of participants indicated that social engagement/contributing something to society would be a motivation for them to get active on such a platform. More than one fifth (22,1%) indicated passion for the profession. Contrary to what we expected only a minority of respondents indicated that the feeling of being demanded would motivate them to get active on such a platform. Only among participants who were aged 80 years and older almost one quarter

(23,5%) indicated that their motivation would be a feeling of being demanded. Social engagement was mentioned by 29,4% and passion for the profession by 26,5% of this group of people (see Figure 5).



**Figure 5: Motivation to get active (provider)**

For potential Mentees, the main motivation to get active on such a platform was acquiring support with respect to general questions in life (27,9%), receiving support in triggering innovative ideas (15,2%), support in personal future planning (13,9%), and support in finding one’s own strengths and weaknesses (12,7%) (see Figure 6).



**Figure 6: Motivation to get active (receiver)**

**3.2.2.3 Needs to keep investing in the relationship**

To keep investing the Mentor-Mentee relationship, both parties specified that it would be crucial to share a pre-defined agreement (e.g., about the invested amount of time, the goal of the relationship, the certainty of privacy), which is maintained by both people. When thinking about sharing personal information on the platform, all potential end users had concerns in terms of data abuse, but indicated that these concerns are not different to the concerns they have when using social media sites (e.g., Facebook). To ensure the perceived security possibilities like the ability to delete old entries from the platform and even the use of Nicknames instead of real names were mentioned as being significant.

Support the process of creating an organizational structure

Ensure perceived security

### 3.2.2.4 Types of relationships participants could imagine taking over

In the workshops with potential end users first ideas for roles that could be taken over on the ProMe platform were discussed in groups. Five different roles were presented to the participants: (1) Buddy, (2) Coach, (3) Teacher, (4) Advisor, and (5) Leader. The participants were asked to state their opinion about the meaning of the different roles according to the associations the pre-defined names arouse in them and to reason about, which one of the roles they would want to take over personally when participating on the platform. Based on the outcomes of the literature review (compiled by PLUS) and the theoretical concept (compiled by KH Leuven) the meaning of the roles was as follows: The role of the buddy relies on the idea of providing long-term guidance for the Mentee, it requires a trust-based relationship (i.e., one-to-one relationship). The role of the Coach incorporates the idea of a person that motivates others in the sense of a “You can do it!” mentality (i.e., one-to-one relationship). The role of the Leader is that of a person, who raises discussions and inspires others based on his/her knowledge (i.e., one-to-many relationship). The role of the Teacher incorporates the idea of providing knowledge to others and addresses both, one-to-one and one-to-many communication. The role of the Advisor is to provide immediate assistance in terms of decision-making (i.e., one-to-one communication). For an overview of all roles see Table 1.

Role	Description	Communication type
Buddy	Long-term guidance, trust-based	One-to-one
Coach	Motivator	One-to-one
Teacher	Providing knowledge to others	Both, one-to-one and one-to-many
Advisor	Immediate assistance in terms of decision making	One-to-one
Leader	Raising discussions, inspiring others based on his/her own knowledge	One-to-many

**Table 1: Overview of possible roles on the platform**

Support potential users to get active as Coach and/or Mentor and offer “alternative” ways to share knowledge, e.g., quick assistance or simply sharing documents

The associations of the participants about the roles on the basis of their pre-defined names were mostly as we expected with some exceptions. For example, the associations regarding the role of the Buddy. Participants in a workshop associated it with a rather loose relationship in which one can receive quick answers on certain topics while participants in another workshop associated it with a relationship, which is that close that it would be impossible to do it virtually as it requires personal /face-to-face contact, and in another workshop the participants considered it as being an equivalent relationship with reciprocal benefits. The role of the Coach was considered being for persons who like to provide help for self-help and who like to follow a structured process in guiding someone else. Differences in the associations to this role occurred with regard to the amount of time someone has to invest in fulfilling this role, the assumptions ranged from quick help in specific situations to a

guiding process over the next five years. The role of the Teacher was continuously considered for persons who like to pass on their knowledge to others. The role of the Advisor was considered for persons who like to counsel others based on their specific knowledge but do not want the same responsibility for their counterparts as a Teacher. The role of the Leader was considered for persons, who like to give others directions, are able to inspire others, and can answer quick and specific questions in their area of expertise. When asked about, which of the roles they would want to take over when participating on the platform the majority of the participants specified that the role of a Coach would fit best for them. The other roles were about equally dispersed among the participants. Altogether, the participants were satisfied with the pre-defined names for the roles when they were given the explanation about their purpose in the end of the workshop but as we aimed at providing role clarity we decided to further specify and differentiate the roles for the following studies.

Whereas in the workshops we discussed first ideas for different roles potential users could take over, we asked participants of our survey to indicate the type of relationship they could imagine taking over. We differentiated between five roles: 1) long-time guidance and support, 2) support over a pre-defined period, 3) immediate and quick assistance, 4) sharing documents and scripts, and 5) being involved within group discussions. With respect to respondents, who indicated that they would like to provide support for others we found out, that the majority (57,7%) would like to like to provide advice over a time defined period and to support somebody with respect to a specific goal (e.g., supporting somebody to improve his/her job performance). 41,2% could imagine being somebody, who provides long-term guidance and supports and encourages young people to maximize their skills and potentials. One third (33%) said that they would like to lead group discussions, because they would like to inspire other people to reflect on certain topics. Finally, 27% indicated that they could imagine supporting somebody else by providing documents and scripts they could easily share.

With respect to those participants, who could imagine to receive support from somebody else, more than one third (36,4%) said that they would like to participate in group discussions, one third (33,2%) indicated that they could imagine being somebody, who would search for immediate advice (e.g., in order to take a decision, or with respect to a certain question). 32,6% said that they are searching for advice with respect to a specific goal (e.g., when starting up a new project), 32,1% said that they would appreciate if somebody could support them by sharing his/her knowledge via documents (e.g., about business models). Finally, 31% indicated that they would be searching for long-term guidance and would like to have somebody, who supports and encourages them to maximize their potentials (see Figure 7).

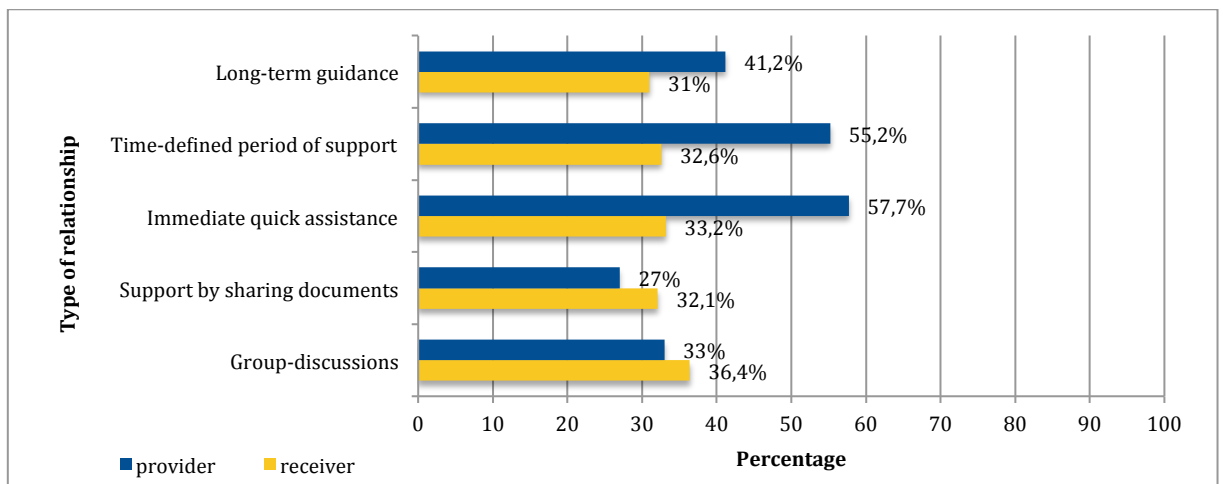


Figure 7: Type of relationship

With respect to participants, who indicated that they could imagine being active as a provider we identified some factors that correlate with the selection of a role. We considered the factors age, if participants have had already been active as a Mentor/Coach for somebody else, and the time they would be willing to invest in a collaborative relationship.

Consider that older adults are less willing being active as someone who provides long-term guidance

As already mentioned, age seems to be an important factor. A very weak negative correlation could be identified with respect to long-term guidance. The older the participants, the less they were willing to provide long-term guidance ( $r=-.12$ ,  $p=.12$ ) and the less time they were willing to invest ( $r=-.10$ ,  $p=.03$ ).

Besides, pre-experiences in being a Mentor or Coach for somebody else seem to have an influence on the role somebody is willing to take over. Participants, who indicated that they had already coached or mentored somebody else, rather indicated that they could imagine to provide long-term guidance (mentoring) ( $r=.19$ ,  $p=.00$ ), providing advice over a pre-defined period (coaching) ( $r=.32$ ,  $p=.00$ ), and could imagine to lead group discussions ( $r=.24$ ,  $p=.00$ ). Moreover, this group of people is also willing to spend more time in a collaborative relationship, than participants, who had never coached somebody before ( $r=.24$ ,  $p=.00$ ).

### 3.2.2.5 Trust and privacy issues

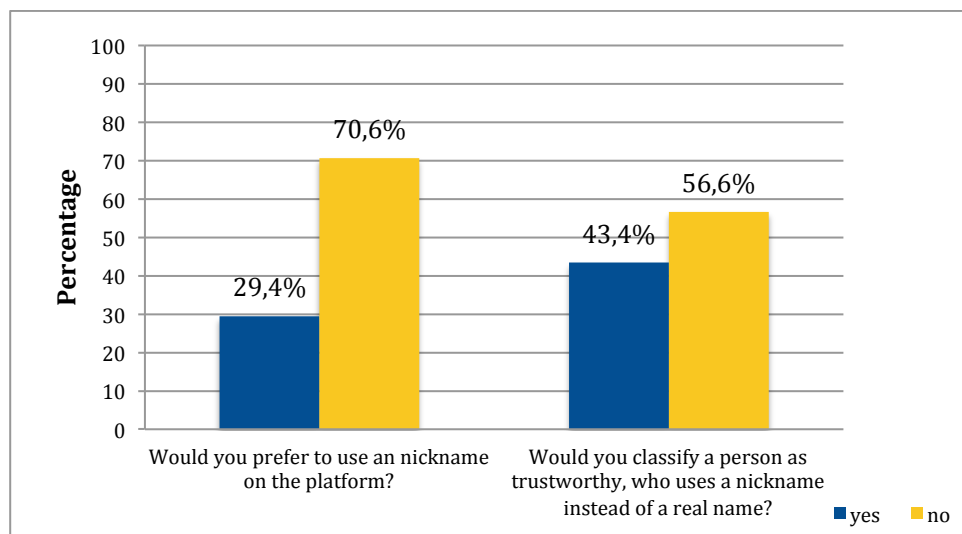
Other aspects we consider as important with respect to a successful collaborative relationship on the platform are trust and privacy issues. Trust and privacy were major topics that had already been raised within our workshops. Therefore, we were especially interested in the information participants would like to reveal on a platform (e.g., in terms of a profile) and if they would consider a person as trustworthy even when s/he uses a nickname.

User real names instead of user names/nicknames

With regards to privacy issues we asked our participants if they feel comfortable using their real name on an online platform. The majority (70.6%) said that they would prefer to use their real name on the platform, which indicates that they do not want to be anonymous. Almost one third (29.4%) of the participants would prefer to use a nickname instead of their real name on the platform.

Almost half of our participants (43.4%) would classify a person, who uses a nickname instead of a real name as trustworthy, more than half of the participants (56.6%) would not consider a person, who uses a nickname as trustworthy (see Figure 8).

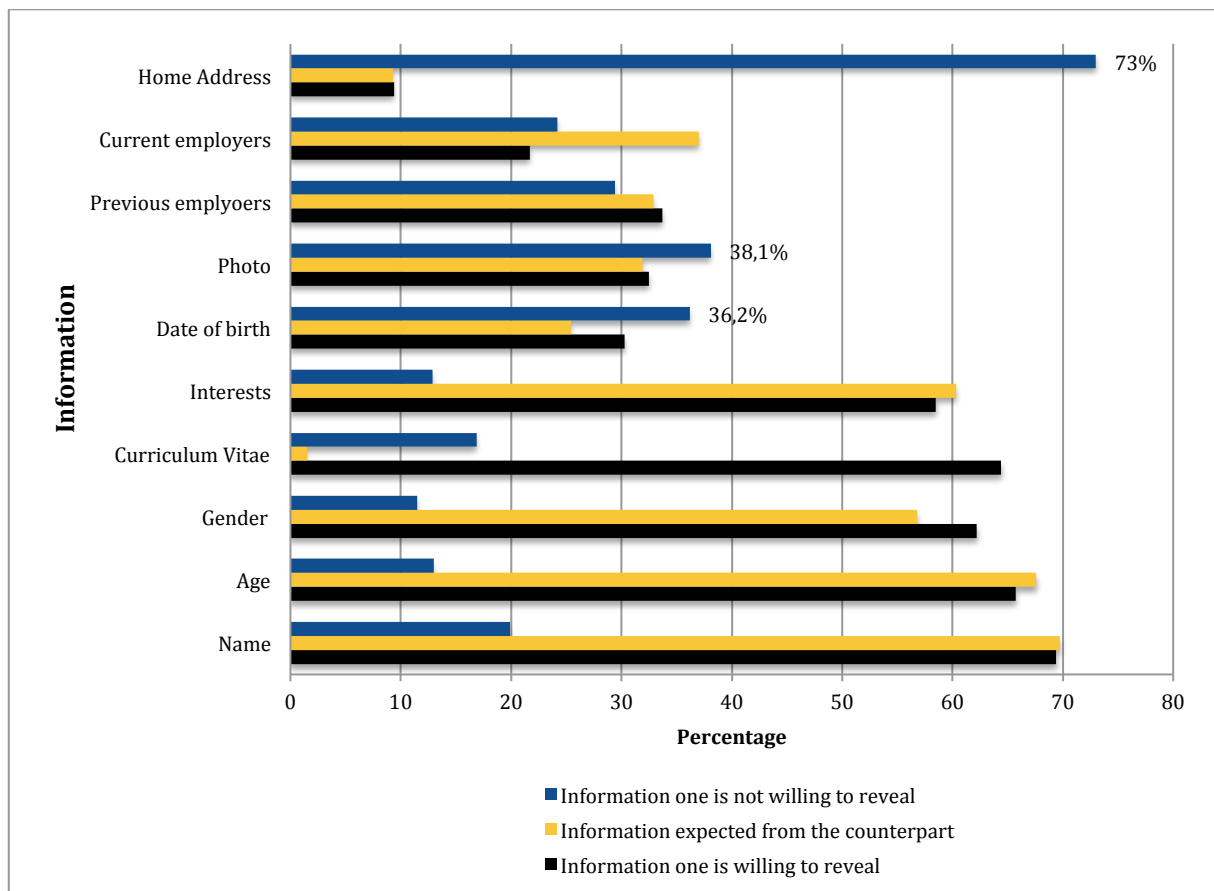
Accordingly, we found a weak correlation between the variables “Would you prefer to use a nickname on the platform instead of your real name” and “Would you classify a person as trustworthy, who uses a nickname instead of a real name?”, which is highly significant ( $r=.29$ ;  $p=.00$ ). We can assume that participants, who prefer to use a nickname, consider other persons, who use a nickname as more trustworthy than participants who do not prefer to use a nickname.



**Figure 8: Use of nicknames**

With respect to the idea of having a profile on the platform we asked participants to indicate what kind of information they would like to reveal and what they would expect from their counterpart. Most important seems to be the name (69,4%), age (65,7%), gender (62,2%), and a curriculum vitae (64,4%), as this was indicated by approximately two thirds of our participants. More than half (58,5%) selected “interests”, one third selected the date of birth (30,3%), a photo (32,%), and previous employer(s) (33,7%). One fifth (21,7%) would indicate their current employee and only a few their home address (9,4%).

Similar to the kind of information one would be willing to reveal, are the expectations. Approximately, two thirds expect their counterpart to indicate the name (69,7%), age (67,6%), and a curriculum vitae (71,5%). Half of them would like to know the gender (56,8%) and interests (60,3%). Only one quarter (25,4%) the date of birth, and one third would expect to see a photo (31,9%), previous (32,9%) or current (37%) employer(s), and only 9,3% stated that they would expect to have the information about the home address (see Figure 9).



**Figure 9: Information on the platform**

Consider that home address, date of birth, and a photo are considered as "sensitive" information

Provide users with the possibility to decide personally which information they are willing to reveal in their profile

Additionally to the kind of information one would be willing to reveal and one would expect other persons to indicate on the platform we were interested if there are kinds of information users on the platform would not be willing to share with others. The most sensitive information seems to be the home address (73%). Two thirds won't be willing to reveal this information. At least one third (36,2%) won't be willing to reveal their date of birth which can also be an indicator that this is considered as "sensitive information" by our respondents. 19.9% of the participants stated "Name", 16.9% stated "Curriculum Vitae (e.g., education, professional experience)", 13% stated "Age", 11.5% stated "Gender", 38.1% stated "Photo", 29.4% stated "Previous employer(s)", 24.2% stated "Current employer", and 12.9% stated "Interests".

### 3.2.3 Summary

What are key factors for successful collaborative relationships? This issue especially addresses our potential end users' needs and focuses primarily on specific needs with respect to collaborative processes online. The initial phase seems to be quite important, e.g., helping Mentor and Mentee to figure out if they can actually work together and supporting them shaping the organizational structure of their relationship (e.g., time and frequency of appointments). This can be easily done by, for example, providing a calendar or certain feedback mechanisms that make the work of both collaboration partners visible. But there are also issues we need to consider that are more complex, for example, addressing qualities participants expect from a collaborative

relationship, such as trust or empathy. It needs to be carefully considered how a platform does not only provide functionalities that support communication and collaboration but how certain qualities can be achieved.

This issue is closely related with the idea of providing different forms of collaboration. As our studies have shown, participants appreciate different forms of engaging with a collaboration partner, reaching from typical forms such as being a Coach or Mentor to more volatile roles, for example, providing quick advice for others. It needs to be discussed how we can address the needs of our potential end users besides providing an opportunity for being a Coach/Coachee or Mentor/Mentee. Also privacy and security issues need to be taken under consideration.

### 3.3 Pitfalls that hinder successful collaborative relationships

Besides the success factors we were also interested in identifying pitfalls or possible problems that could occur with respect to collaborative relationships. Again, we asked professional Coaches as well as potential end users.

#### 3.3.1 The experts' perspective

All interview partners agreed that there is a possibility that problems occur during the coaching process except of one, who stated that a coaching process does not always run smoothly but that this does not necessarily mean that there are problems. S/he stated that s/he would rather talk about "irritations" that might occur during the process.

Two circumstances were mentioned that might lead to problems. First, if the relationship with the Coachee becomes too close it might happen that the Coach starts taking over the role of a friend or companion in a sense that s/he starts influencing the process too much by providing for example, the solution for the problem. In this case, the Coach does also not respond to the client anymore and takes over the role of a Consultant. Second, if the Coach is working with the Coachee on a problem that somehow affects him-/herself. In this case the Coach gets in danger to lose the necessary distance and might have problems to engage in the situation of the Coachee.

In both cases, the Coach faces a kind of role-conflict. In order to solve or deal with these problems the experts pointed out that it is very important to regularly reflect on one's own role within the process in order to avoid slipping into another role (e.g., friend, companion). One Coach said that s/he always takes notes during the whole process in order to support the process of reflecting upon one's own role.

Other problems that were mentioned concern the involvement of third parties, for example, if the wish to gain support from a Coach does not come from the client but from a relative. In this case the intrinsic motivation from the Coachee is missing. Moreover, if the Coachee is pointed to some issues s/he does not want to believe or does not want to take into account it might be difficult to actually solve the problem.

In order to solve or deal with these problems the experts said that it is important to address potential problems right away. For example, making the clients clear that they won't get advice but

Avoid role conflicts  
- support regularly  
reflections on ones  
own role

Address problems  
right away



have the potential to solve their problems and that they will be supported within this process. If there is no agreement on a common goal then it might be that the Coach refuses working with the Coachee.

### 3.3.2 The end user perspective

Hindrances or pitfalls were also a topic that was addressed within the workshops as well as our survey. Within the workshops a variety of different issues were raised. Potential Mentees said that the lack of (mobile) devices (e.g., if a person does not have access to web-enabled devices like Personal Computers/Tablets/Smartphones) could be an obstacle. From the perspective of potential Mentors, the feeling that someone could take advantage of them (e.g., if the Mentee is behaving disrespectful, if the Mentee is behaving in an unethical way), missing collaboration (e.g., if the Mentee is not following the predefined rules like keeping appointments), and concerns about the loss of intellectual property (e.g., if the Mentee or the organization s/he is working for is using ones intellectual property to make money) were mentioned. One potential Mentor stated: “I would not share my knowledge for objectives that can be unethical in any way.”

Provide an instrument to regulate IPR

Trigger active collaboration through, e.g., features that make activities of users visible

We further investigated this issue within our survey and found out that for more than two thirds of our participants (69.7%) missing collaboration from the counterpart would be a hindrance to share their professional knowledge. Almost one third (30.5%) had concerns that the counterpart could take advantage of them. For one fifth (21,9%) the lack of technology affinity could be a hindering reason to be active on such a platform and 9% mentioned restrictive contract(s) with (former) employer(s). Finally, 4.1% had concerns about the loss of intellectual property (see Figure 10).

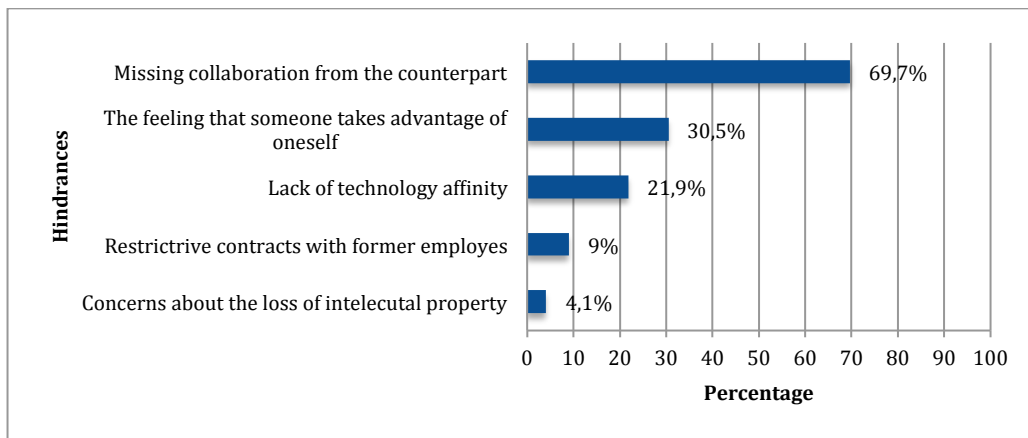


Figure 10: Hindrances to share professional knowledge

### 3.3.3 Summary

The pitfalls we identified mainly go along with security and privacy issues and ethical concerns. As our workshops revealed, participants are not willing to share information when they feel that their knowledge is abused. Moreover, it needs to be avoided that participants feel like somebody takes advantage of them. It needs to be elaborated how to deal with, for example, IPR and how a respectful and esteeming communication and collaboration can be achieved/supported through the platform. This is also closely related with the idea of

quality assurance and we need to think about how we can establish/maintain a high quality of information exchange.

Little or missing collaboration was also identified as one hindering factor to take part in a collaboration process. This issue has already been identified in our literature research. Thus, we need to think about tools that make the work, especially the progress, of both collaboration partners visible and therefore motivate users to engage with each other.

### 3.4 Additional insights

Besides our three main research questions that aimed at answering, how collaboration could be supported online (RQ1), identifying key factors for successful collaborative relationships (RQ2), and figuring out (common) pitfalls that hinder successful collaborative relationships (RQ3) we also were interested in what kind of technologies our potential users could imagine to use and what kind of business aspects we need to consider with respect to the platform. This information is solely based on the information from our survey.

#### 3.4.1 Technology usage

We asked what kind of interaction/communication channels respondents of the survey would like to use when sharing knowledge. Almost all of them (both, potential Mentees and Mentors) (90%) indicated that they would want to use E-Mail. Half of them (48%) could imagine using their Mobile Phone or Smart Phone, almost one third (29,8%) wanted to use Video-communication, one quarter (24,5%) wanted to use Text-Messenger, and 26% wanted to use Social Media (see Figure 11).

Provide a variety of communication channels (potential users are already familiar with)

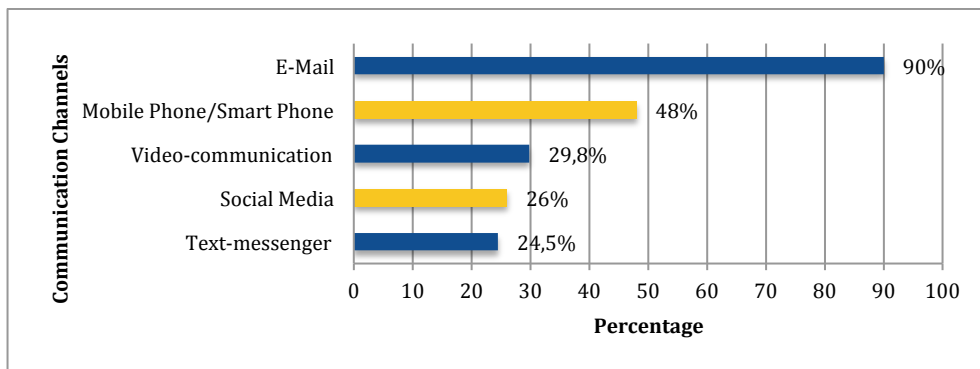


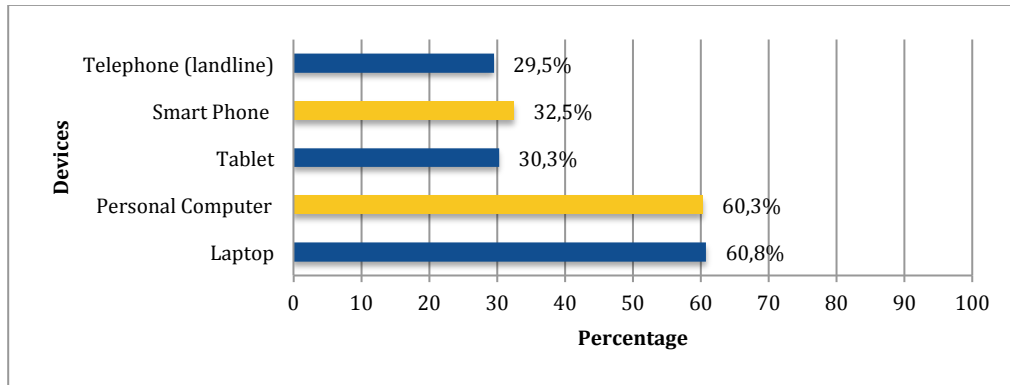
Figure 11: Communication Channels

We identified a weak correlation with technology affinity<sup>1</sup>, meaning that participants, who consider themselves as technology affine rather indicated that they would like to use their mobile phone ( $r=.25$ ,  $p=.00$ ), text

<sup>1</sup> Technology affinity was assessed by means of a self-reporting questionnaire (How would you estimate your technology affinity?) Two thirds (66,3%) of the participants considered themselves as technology affine (38.8% stated "I consider myself as technology affine.", 27.5% stated "I consider myself as rather technology affine."). One third (33,7%) considered themselves as not technology affine (16.6% stated "I consider myself as rather not technology affine.", and 17.1% stated "I consider myself as not technology affine."). Technology affinity correlates with age. With increasing age, participants consider themselves as less technology affine ( $r=.33$ ,  $p=.00$ ).

messenger ( $r=.06$ ,  $p=.00$ ), video communication tools such as Skype ( $r=.25$ ,  $p=.00$ ), and social media ( $r=.17$ ,  $p=.00$ ) to share professional knowledge.

Asking about the device(s) one would like to use when sharing knowledge, almost two thirds of the participants could imagine using their laptop (60,8%) or personal computer (60,3%). One third would use their tablet (30,3%), smart phone (32,5%), or telephone (i.e., landline) (29,5%) (see Figure 12).



**Figure 12: Devices participants prefer to use**

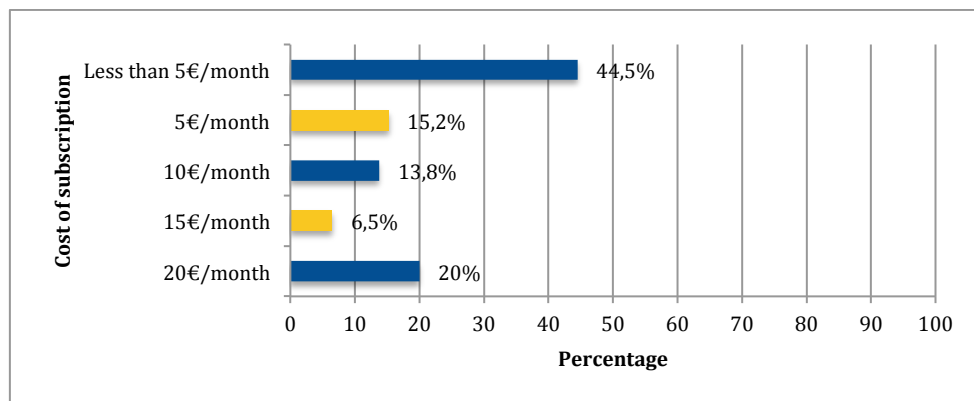
We also identified a correlation with technology affinity indicating that participants, who consider themselves as technology affine would rather use their laptop ( $r=.25$ ,  $p=.00$ ) or smart phone ( $r=.27$ ,  $p=.00$ ) and not their telephone ( $r=-.19$ ,  $p=.00$ ) to share professional knowledge.

### 3.4.2 Business aspects

Consider that the majority of participants won't be willing to invest more than 5€/month

When thinking about a possible cost of subscription to this service almost half of the respondents (44,5%) would not be willing to pay more than 5 EUR/month, one fifth (20%) stated "20 EUR/month". 15,2% of our participants would be willing to pay 5 EUR/month, 13,8% would pay 10 EUR/month, and 6,5% stated 15 EUR/month (see Figure 13). We could not identify any correlation between the role one would like to take over (provider/receiver) and the estimation of suitable costs for the platform ( $r=-.08$ ,  $p=.03$ ).

Regarding the preferred frequency of payment for the subscription to the online platform the majority (49,5%) of the participants specified preferring monthly payment and 27,7% stated preferring annual payment.



**Figure 13: Cost of subscription**

## 4. PLATFORM REQUIREMENTS

Based on all these insights we gained through the literature research and the user studies we derived platform requirements, which we briefly summarize in the following section. An overview of all suggested requirements can be found in Table 3.

### 4.1 Provide meaningful profiles

One core aspect and success factor for our platform are meaningful profiles. Meaningful in this context means profiles that provide the most important information to support the matching process (for example, bringing together a Mentee with an appropriate Mentor). This encompasses, for example, providing information about one’s profession or the expertise one is willing to share/somebody is searching for. Profiles give a first impression on a person and influence the decision if, for example, a potential Coachee decides to get in contact with a potential Coach.

Based on the results we suggest using real names instead of user names/nicknames in the profiles. Moreover, we would recommend a kind of “restricted profile”. Participants have concerns to reveal all kinds of information and especially a photo or the date of birth were identified as “sensitive information”. This issue could be solved, for example, by providing a “closed area”, where only members of the platform can look up the full profile of another user. Besides, we could think about a feature that allows users to decide what kind of information they would like to reveal on the platform and which not. However, we suggest that some information should be mandatory such as age, gender or profession. A list of possible information that could be provided in the profile is given in Table 2.

Information	Access
Photo	Member
Name	Open
Age	Open
Gender	Open
Profession	Open
Expertise	Open
Interests	Member
Current employers	Member
Previous employers	Member
Curriculum vitae	Member
Date of birth	Member
Country of origin	Open
Languages one is speaking	Open
Roles a user is taking over	Open

**Table 2: Information provided in the profile**

## 4.2 Provide features that support the collaboration process

With respect to the collaboration process, i.e., activities that take place, we figured out a plenty of issues we need to address on the ProMe platform. We identified that it is important to make the activities of both collaboration partners visible, especially the progress. Transparency has a great influence on the motivation of the collaboration partners to engage with each other. Moreover, it affects the role behaviour. If the Mentor does not know what his/her Mentee is doing it will be difficult for him/her to react appropriately. S/he will probably give too less advice and the Mentee might wonder why s/he does not receive the support s/he expects. We could, for example, provide a shared calendar including a list of current activities and next steps. This would be a possibility to visualize the progress of a Mentee and could motivate users to keep active on the platform. Additionally, a timeline could be provided.

Further, we suggest triggering face-to-face meetings (if possible) at the beginning of the relationship in order to get to know each other. Moreover, fostering social presence (e.g., through video conferencing) is one opportunity to support the forming of close relationships, enhance behavioural commitment and the online identity, which, in turn, positively influences collaborative processes.

Another important issue is identity. As the platform aims at enabling different forms of collaboration we need to create awareness regarding the different forms of engagement. According to the mentoring concept we have identified three major roles (i.e., coaching, mentoring, and network learning). Our studies have revealed that users would like to provide quick advice as well as simply sharing documents. It needs to be further defined how we can support different forms of collaboration by creating awareness for the different opportunities the platform provides.

## 4.3 Support setting up an organizational structure

The organizational structure encompasses activities that need to take place in order to define the collaboration process (e.g., agreement between provider of support and receiver).

In the beginning it encompasses also the process of finding/defining one's own role as a provider or receiver. We suggest providing information for provider (e.g., responsibilities when taking over a certain role) as well as for receiver (e.g., what they can expect).

It also encompasses functionalities that help to structure activities such as regular appointments or regular meetings. A shared calendar could include, for example, a kind of reminder functionality that encourages users to define regular appointments/meetings or reminds them to make use of certain tools.

## 4.4 Ensure perceived security & trust

Security and trust were two important topics that were raised within the workshops with potential end users. Security issues address, for example, how data is handled on the platform (e.g., Who has access? What kind of data is stored and how long?). Trust is a broad topic and affects the relationship between the collaboration partners. As outlined before, social presence, the reduction of virtual distance, positively influences the development of close relationships. Thus, one possibility to address this issue is to foster social presence via the platform (e.g., by video-conferencing). Moreover, a kind of reputation/recommendation component could enhance trust/security assurance on the ProMe platform.

When talking about trust we also need to consider a more “general” trust in the platform, which we think can mainly be achieved through quality assurance. Thus, we need to think of features on the platform that ensure the quality of the service we provide (i.e., knowledge exchange). In the following we provide a few ideas how we could deal with this issue:

- ✓ The system automatically triggers that users increase information on the platform (e.g., information of their profile).
- ✓ Based on how much time provider and receiver spend together or the tools they use, questions that help provider and receiver to better work together (e.g., Don’t forget to update your calendar in terms of new activities) are automatically triggered by the system.
- ✓ “Success stories” written by receivers could serve as a kind of evaluation tool and might motivate new users to get active.
- ✓ Reviews from users could be used to evaluate the mentoring process.

Platform Requirements	Examples
<b>1. Provide meaningful profiles</b>	
Support the matching process	<ul style="list-style-type: none"> <li>• Automatically suggest users that fit to ones profile according to pre-defined criteria (e.g., interests, expertise)</li> </ul>
Support the initial phase to get to know each other	<ul style="list-style-type: none"> <li>• Design visually appealing profiles</li> </ul>
Provide adequate information	See Table 2
Use real names	
<b>2. Provide features that support the collaboration process</b>	
Make activities visible	<ul style="list-style-type: none"> <li>• Shared calendar including activities that currently take place or goals that have already been accomplished</li> </ul>
Trigger face-to-face meetings	<ul style="list-style-type: none"> <li>• If provider and receiver are living geographically close together, the system could suggest them to meet each other face-to-face</li> </ul>
Foster social presence	<ul style="list-style-type: none"> <li>• Provide a video-conferencing tool</li> </ul>
Allow different forms of collaboration	<ul style="list-style-type: none"> <li>• Sharing documents, giving quick advice through chat or email</li> </ul>
Monitor user behaviour and improve the user experience	<ul style="list-style-type: none"> <li>• ProMe will assess the preferences of the users. Each user will create seamlessly his/her “preferences” graph through his/her interactions on the platform. Through the recommendation system the ProMe platform will evaluate the offers with respect to each users preferences and then it will start sending recommendations for matchmaking among the community of ProMe.</li> </ul>
<b>3. Support setting up an organizational structure</b>	
Support the process of defining one’s own role as provider or receiver	<ul style="list-style-type: none"> <li>• Provide information on the platform</li> </ul>
	<ul style="list-style-type: none"> <li>• The success of an online community depends on its ability to attract members and to encourage them sharing content. In order to facilitate user engagement, any user has to register within a matter of a few minutes, form friendships, follow others, participate in groups, and upload content such as reviews</li> </ul>
Provide an opportunity to coordinate activities	<ul style="list-style-type: none"> <li>• Calendar</li> <li>• Activity list</li> </ul>

<b>4. Ensure perceived security/trust</b>	
Support the development of trustful relationships by fostering social presence and reducing virtual distance	<ul style="list-style-type: none"> <li>• Provide a video-conferencing tool</li> <li>• Facilitating knowledge transfer among users about the cultural, physical, and social characteristics through the platform operation and modules (wiki, forums, etc.)</li> </ul>
Quality assurance	<ul style="list-style-type: none"> <li>• Trigger that users increase information on the platform</li> <li>• Based on information about the activities of collaboration partners on the platform the system triggers activities</li> <li>• Trigger success stories to motivate new users</li> </ul>

**Table 3: Platform requirements**

## 5. PERSONAS


In order to support the development process based on the wealth of data we could gather throughout the requirements assessment, Personas were developed, i.e., fictional characters that represent a specific user type. They should help to gain a shared understanding of the users for the technical partners and end user organisations. Clusters were defined based on demographic data, as specifically age and the overall life situation was the most important distinctive feature. Five different personas were developed, whereby, we specifically focus on Maria (Persona 1) as a Mentor and Sarah (Persona 2) as a Mentee as these two persons actually fit the general project idea, i.e., connecting older adults with younger generations. However, we need to consider, that the other personas represent potential users of our platform.



## 5.1 Persona 1: Maria, Mentor

	<p><b>Demographics</b></p> <p>Name: Maria                  Age: 70 years                  Role: Mentor                  Provides: guidance on the way to reach a specific goal and quick advice for specific questions                  Areas of expertise: medical technical assistance, Ayurveda, traditional Chinese medicine</p> <p><b>Living Situation</b></p> <p>Maria is 70 years old and lives in a flat in Bologna. She is married since 47 years, has a daughter and 2 grandchildren, both boys, which visit her on a regular basis.</p>	
<p>Maria is in close contact with her family and often watches her two grandchildren but she misses being engaged since she is in retirement. She always enjoyed working and passing on her knowledge to younger colleagues at work. Before retirement she was working as a medical technical assistant (she holds an undergraduate degree) in a hospital for 34 years. Maria always enjoyed travelling and on her journeys she learned a lot about Ayurveda and traditional Chinese medicine, which she regularly practices since more than 20 years. Maria would like to enrich her spare time with some activities that encompass the contact with people who have the same interests; she always enjoyed supporting others and likes to stay active. She could imagine doing this via an online platform, as she is used to utilizing her PC when she's at home and her Laptop when travelling to write E-Mails or to use Facebook and LinkedIn in order to stay in touch with all the people she met on her various journeys and her former colleagues from work. When communicating with her family or talking about something important in general, Maria prefers using her landline or her mobile phone/Smartphone. She likes the idea of online mentoring because it provides her with the possibility to get in touch with people from other countries around the world. Despite her engagement for her family and friends she could imagine spending 1-2 hours a week to be part of a collaborative relationship to offer another person guidance on the way to reach a specific goal but she could also imagine giving quick advice on specific questions. Maria would be willing to provide support regarding her profession (i.e., MTA) but also concerning her private passion for Ayurveda and traditional Chinese medicine.</p>		
<p><b>Technology Usage</b></p> <p>Maria is rather technology affine. She regularly uses her PC for writing E-Mails and her Landline or mobile phone/smartphone to communicate with her family. Further she is active on Facebook and LinkedIn to keep in touch with her travel companions and her former colleagues from work.</p>	<p><b>Communication with the Mentee</b></p> <p>When thinking about a collaborative relationship Maria would want to communicate mainly via E-Mail but can also imagine talking to others on her mobile phone/smartphone.</p>	
<p><b>Motivation to get active and expected Benefits</b></p> <p>The main motivation for Maria to provide her support in online mentoring is to stay active and the satisfaction she gets when supporting others. Regarding the features that the ProMe platform provides (i.e., mentoring toolkit, possibility to find other people with the same interests, integrated communication tools) its users Maria would be willing to invest up to 5 € per month in order to use them.</p>	<p><b>Collaboration Barriers</b></p> <p>Missing Collaboration would be a main barrier for Maria when thinking about a collaborative relationship.</p>	<p><b>Success Factors</b></p> <p>For Maria the greatest success factors for collaborative relationships are communication and mutual trust.</p>

## 5.2 Persona 2: Sarah, Mentee

	<p><b>Demographics</b></p> <p>Name: Sarah  Age: 28 years  Role: Mentee  Searching for: long term collaborative relationship  Areas of interest: computer science, human-computer interaction</p> <p><b>Living Situation</b></p> <p>Sarah lives in a small apartment in London. Her parents and her two siblings, a brother and a sister, live in other parts of the country.</p>	
<p>Sarah has finished her master degree in computer science and is currently working on her PhD. Besides her studies she is already working full-time in a research institute, which focuses on Human-Computer-Interaction. Although she likes her job she is thinking about alternative possibilities for occupation (e.g., founding her own research company). Currently she is writing a research proposal in order to apply for a post-doc scholarship. As she has no experience in project management and the resources in her institute are limited, she is searching for somebody who can support her with respect to this project. Despite her full-time employment Sarah would be willing to invest approximately 1-2 hours a week in a collaborative relationship with a person who can support her in setting up a new project (e.g., writing a research proposal), triggering innovative ideas, and especially in bringing forward her personal future planning for the time after she finished her thesis. She is thinking of a coach or mentor who can support her in reaching that goal. She expects to improve her own skills and to gain new knowledge from such a collaborative relationship that is based on trust, communication, and commitment.</p>		
<p><b>Technology Usage</b></p> <p>Sarah is very technology affine. She frequently uses her Laptop, her Smartphone and communicates via E-Mail, Instant Messages, and Skype in order to keep in touch with her family and friends. Moreover, she is active on Facebook.</p>	<p><b>Communication with the Mentor</b></p> <p>For collaboration purposes Sarah could imagine to use Laptop and Smartphone and sometimes also her PC or her Tablet. She would like to be in contact with her Mentor via E-Mail and sometimes using video-communication, and her Smartphone for communication purposes. She could also imagine being in contact via Facebook.</p>	
<p><b>Motivation to get active and expected Benefits</b></p> <p>Sarah's main motivation for joining the ProMe platform and the benefits she expects are getting support in finding the right job, setting up a new project, triggering innovative ideas, and facilitating her personal future planning. In order to find a mentor who can support her with that she would be willing to invest 10€ per month to join ProMe.</p>	<p><b>Collaboration Barriers</b></p> <p>Missing collaboration would be the biggest barrier for Sarah regarding a mentor-mentee relationship.</p>	<p><b>Success Factors</b></p> <p>Regarding collaborative relationships trust, communication, and commitment are the most important success factors for Sarah.</p>

### 5.3 Persona 3: Jakob, Mentee



#### Demographics

Name: Jakob  
 Age: 74 years  
 Role: Mentee  
 Searching for: quick advice and engagement in group discussions  
 Areas of interest: political and societal changes, general questions of life

#### Living Situation

Jakob is 74 years old and lives with his wife in a small house in Vienna. They have three children, all sons, and 5 grandchildren, 2 boys and 3 girls.

Jakob has finished secondary education and has been a passionate salesman for 46 years in the same company. Now, in retirement, he and his wife have a lot of hobbies they pursue. Jakob has recently discovered that he likes to work with his computer but he has only small experiences because he only used the computer at work for bills. He is familiar with writing E-Mails on his PC at home or his wife’s laptop when they are on vacation but everything beyond is difficult for him. Jakob would like to find other people at his age that he can ask for support in learning more about the possibilities of a PC with internet access. Further he would like to discuss general questions of life (e.g., political or societal changes) in groups with other people. His son Manuel recommended Jakob to try and find others via an online platform because that would, as a second benefit, immediately improve his computer skills through more frequent usage. Despite the time Jakob is spending with his family he would be willing to spend 1-2 hours a week in order to get in touch with others on a regularly basis.

#### Technology Usage

Jakob is only little technology affine. He has a PC, which he regularly uses for sending E-mails to his sister who lives in Canada. His wife has got a laptop, which he sometimes uses when they are on vacation. When communicating with his family and friends he uses the telephone (land line). Although he has got a Smart Phone he uses it only in case of an emergency.

#### Communication with the Mentor

Jakob would preferably communicate via E-Mail with others on the platform because he is familiar to this form of online communication.

#### Motivation to get active and expected Benefits

Jakob’s strongest motivation and, at the same time the benefit he expects is finding like-minded people with whom he can discuss general questions in life. In order to gain access to others and use the features of the ProMe platform (e.g., mentoring toolkit, possibility to find other people with the same interests, integrated communication tools) Jakob would be willing to spent up to 5€ each month.

#### Collaboration Barriers

When reflecting on collaboration barriers, lacking collaboration from the other person or the feeling that someone takes advantage of him, would be the worst for Jakob.


#### Success Factors

For Jakob, the most important success factors for collaborative relationships are communication and mutual trust.

## 5.4 Persona 4: Paul, Mentor

	<p><b>Demographics</b>                  Name: Paul                  Age: 48 years                  Role: Mentor                  Providing: long-term guidance and quick advice                  Areas of expertise: electrical engineering, telecommunication</p> <p><b>Living Situation</b>                  Paul is 48 years old and lives in a semi-detached house in a suburb of Frankfurt. He is married since 19 years and has 3 children, two sons and a daughter, which still live at home.</p>		
<p>Paul studied electrical engineering in which he holds a master’s degree and works full-time as a communication technician for the public services of Frankfurt. He has 23 years of experience in his profession. 10 years ago, he voluntarily applied to train apprentices, which he did regularly since then but recently the training of apprentices was outsourced to another department. His motivation for doing this was that he realized that he feels satisfied when passing on his knowledge in a collaborative relationship that is based on communication and mutual trust. Paul has made predominantly positive experiences in the training of apprentices but he also had to face some problems; the greatest barrier for him to continue the training was lacking collaboration from the apprentice. When Paul mentioned at work that he would miss the training of apprentices one of his former apprentices, now a work colleague, recommended Paul to continue passing on his knowledge via an online platform. At first Paul was not sure if it would be possible to pass on knowledge via an online platform but after he looked into the ProMe platform and read some of the information other users of the platform had posted about their experiences, he decided to give it a try, because he is very passionate regarding his profession. Concerning that he is full-time employed and that he wants to spend time with his family he considers it as realistic to be able to invest 1-2 hours a week in a collaborative relationship established through the ProMe platform. In doing so, he aims at supporting another person in finding her/his way in professional life but he would also be willing to share his personal life experience in order to facilitate the other person’s evolvment. Further, Paul could imagine giving quick, professional advice to colleagues who are facing a problem they cannot solve on their own. Through his work Paul is used to utilize all kinds of Information and Communication Technologies, in his private life he regularly uses his PC, Laptop, and mobile phone/Smartphone. He writes E-Mails and sometimes also Instant messages, mostly when he is communicating with his children. For the purpose of staying in touch with his friends from school and his former work colleagues he likes to utilize social media like Facebook and LinkedIn. When it comes to important content Paul prefers to talk instead of writing.</p>			
<p><b>Technology Usage</b>                  Paul is technology affine. He regularly uses only his <b>mobile phone/Smartphone, PC, and Laptop</b> in his spare time.</p>	<p><b>Communication with the Mentee</b>                  For collaboration purposes Paul would like to communicate with his mentee preferably <b>verbally</b> via mobile phone or via <b>video-communication</b>.</p>		
<p><b>Motivation to get active and expected Benefits</b>                  Paul’s main motivation for getting active on an online platform like ProMe is passion for his profession. He would be willing to invest approx. 20€ a month to use the features the platform provides its users (e.g., mentoring toolkit, possibility to find other people with the same interests, integrated communication tools).</p>	<table border="0"> <tr> <td data-bbox="730 1711 1018 1928"> <p><b>Collaboration Barriers</b>                      Missing collaboration would be the main barrier for Paul to continue passing on his knowledge to someone else.</p> </td> <td data-bbox="1045 1711 1326 1928"> <p><b>Success Factors</b>                      For Paul, the most important success factors regarding collaborative relationships are communication and mutual trust.</p> </td> </tr> </table>	<p><b>Collaboration Barriers</b>                      Missing collaboration would be the main barrier for Paul to continue passing on his knowledge to someone else.</p>	<p><b>Success Factors</b>                      For Paul, the most important success factors regarding collaborative relationships are communication and mutual trust.</p>
<p><b>Collaboration Barriers</b>                      Missing collaboration would be the main barrier for Paul to continue passing on his knowledge to someone else.</p>	<p><b>Success Factors</b>                      For Paul, the most important success factors regarding collaborative relationships are communication and mutual trust.</p>		

## 5.5 Persona 5: Marcella, Mentee

	<p><b>Demographics</b></p>	
	<p>Name: Marcella                  Age: 46 years                  Role: Mentee                  Searching for: guidance regarding a specific problem over time but is also interested in taking part in group discussions and sharing documents.                  Areas of interest: computer science, system administration</p>	
	<p><b>Living Situation</b></p>	
	<p>Marcella is married since 10 years and has an 8-year-old daughter. She and her family live on the countryside near Antibes.</p>	
<p>Marcella is working full-time in her job as a system administrator (she holds a Masters degree) since 19 years and is slightly unsatisfied with her job. She wishes to change her life in a direction that opens up an opportunity for her to work freely on projects that she coordinates by herself; therefore she wants to start up her own company. She seeks to gain more self-determination regarding her profession. Therefore she is looking for a mentor who can support her in gaining new knowledge and gives her guidance regarding specific problems while funding her own company. She would be willing to invest 1-2 hours each week in a collaborative relationship with a mentor in order to receive guidance regarding specific problems but she would also be interested in taking part in group discussions or to simply share documents. As Marcella is highly interested in technology, she's familiar with using all kinds of communication tools and channels but when it comes to sharing information she preferably writes E-Mails or talks via mobile phone when something has to be settled fast.</p>		
<p><b>Technology Usage</b></p>	<p><b>Communication with the Mentor</b></p>	
<p>Marcella is a technology affine person. She regularly uses her mobile phone/smartphone, writes E-Mails on her PC, and sometimes uses Instant Message Services. Further, she uses Facebook and LinkedIn to stay in touch with her friends.</p>	<p>Marcella would, complementary to the action she wants to accomplish, use either E-Mail's or talk via her mobile phone/Smartphone when communicating with others on the platform.</p>	
<p><b>Motivation to get active and expected Benefits</b></p>	<p><b>Collaboration Barriers</b></p>	<p><b>Success Factors</b></p>
<p>Marcella is looking for support in setting up a new project, triggering innovative ideas, and facilitation in her personal future planning. For the subscription to the platform and the usage of its features Marcella would be willing to pay up to 5€ per month.</p>	<p>Missing Collaboration would be the only barrier for Marcella in a collaborative relationship.</p>	<p>The main success factors Marcella sees in collaborative relationships are communication and mutual trust.</p>

## 6. SUMMARY

Summing up, within our requirements analysis (literature research and the user studies that have been carried out) we aimed at investigating how ICTs can support communication, collaboration, and knowledge transfer, and aimed at identifying key factors and pitfalls for successful collaborative relationships. Based on the results we derived a variety of important implications for the platform development. Thereby, meaningful profiles (i.e., profiles that provide important information to support the matching process), features that support the collaboration process, tools that support setting up the organizational structure, and perceived security and trust were identified as the main areas we aim to address within the platform development. The personas that have been developed will guide the development process as they allow us to actually focus on the identified user needs, in particular within the iterative evaluation studies.

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