



OPAALS

## **OPAALS PROJECT**

Contract n° IST-034824

### **WP10: Sustainable Research Community Building in the Open Knowledge Space**

#### **Del10.21 – Report on recommendations for improving the usability of the OKS**



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**Short Description:** This deliverable reports the results from a study that was conducted in order to provide insights in the usability and sociability of the OKS, acknowledging that the OKS will represent the main interface between the various stakeholders of the project as the basis of communication and collaboration for the whole OPAALS community.

The study followed a two-fold approach that included a task-oriented test and a survey with users who are already experienced in using the software. The theoretical part in turn summarises the need to receive user feedback for the development of a user-centered software. Its semiotic focus allows the work to be connected with the second OKS usability task in WP6.

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**Partners contributed:** IPTI, LSE

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*The information marked with an asterisk (\*) is provided in order to address Recommendation n. 4 from the Year 2 review report*



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## EXECUTIVE SUMMARY

This deliverable presents the results from a study that was conducted in order to provide insights in the usability and sociability of the OKS, acknowledging that the OKS will represent the main interface between the various stakeholders of the project as the basis of communication and collaboration for the whole OPAALS community.

The study followed a two-fold approach that included a task-oriented test and a survey with users who are already experienced in using the software. The theoretical point of departure is the field of *online communities*. Online communities are regarded to be analysable with respect to their *sociability* and *usability*. Furthermore, a semiotic approach towards user interface design and metaphors was chosen to connect the theoretical considerations with the empirical usability study. The theoretical section provides an analytical basis for the usability test and the corresponding results. The research allows connecting with other research within OPAALS (namely with the work in WP 6).

Generally the participants of the task oriented usability test regarded the software as an easy and optically well-designed platform. The majority of the tasks were solved without problems. However core issues that occurred are misplaced or missing feedback messages and notifications, inconsistent links, and ambiguous icons and labels. Problems occurred independently from the internet/computer experience of the participants, which in both tests was relatively high. The corresponding recommendations are specific answers to the detected problems and are intended to improve the usability and sociability of the OKS (provided as inputs for T10.21).

## INDEX

<b>1</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>2</b>	<b>THEORETICAL BACKGROUND.....</b>	<b>3</b>
2.1	THE SOCIABILITY AND USABILITY OF ONLINE COMMUNITIES .....	3
2.2	USABILITY AS AN IMPERATIVE OF SUCCESSFUL ONLINE COMMUNICATION .....	6
<b>3</b>	<b>RESEARCH QUESTIONS AND TEST DESIGN .....</b>	<b>8</b>
3.1	TASK-ORIENTED USABILITY TEST.....	8
3.2	EXPERIENCED USER QUESTIONNAIRE.....	10
3.3	COMPUTER/INTERNET EXPERIENCE AS INFLUENCE DIMENSION .....	11
<b>4</b>	<b>RESULTS AND RECOMMENDATIONS .....</b>	<b>13</b>
4.1	RESULTS FROM TASK-ORIENTED USABILITY TEST .....	13
4.1.1	<i>Sample description .....</i>	<i>13</i>
4.1.2	<i>Unsuccessful tasks .....</i>	<i>14</i>
4.1.3	<i>Core Problems .....</i>	<i>16</i>
4.1.4	<i>Further Issues .....</i>	<i>23</i>
4.1.5	<i>Feature requests .....</i>	<i>26</i>
4.2	RESULTS FROM EXPERIENCED USER QUESTIONNAIRE .....	27
4.2.1	<i>Sample description .....</i>	<i>27</i>
4.2.2	<i>Perception of Guigoh .....</i>	<i>28</i>
4.2.3	<i>Guigoh compared to other tools .....</i>	<i>28</i>
4.2.4	<i>Recommendations drawn from the comparison with other tools.....</i>	<i>28</i>
<b>5</b>	<b>SUMMARY .....</b>	<b>30</b>

## INDEX OF FIGURES

<b>Figure 1</b>	<b>OKS usability development as an iterative process .....</b>	<b>2</b>
<b>Figure 2</b>	<b>Online Communities: Sociability and Usability .....</b>	<b>5</b>
<b>Figure 3</b>	<b>The test setting .....</b>	<b>10</b>
<b>Figure 4</b>	<b>Highly visible feedback in Guigoh which could serve as reference for similar feedback .....</b>	<b>20</b>
<b>Figure 5</b>	<b>The file list on the home page of a certain community .....</b>	<b>22</b>
<b>Figure 6</b>	<b>Draft of improved invite dialogue .....</b>	<b>23</b>
<b>Figure 7</b>	<b>Community home view: file list is out of focus .....</b>	<b>24</b>
<b>Figure 8</b>	<b>Members of a community: Mini-avatar of Ingmar is labelled "Ingmar" .....</b>	<b>25</b>
<b>Figure 9</b>	<b>Contacts of a user: Mini-avatar of Ingmar is labelled "ingmar.steinicke" .....</b>	<b>25</b>
<b>Figure 10</b>	<b>Communities page after accepting the first invitation to a community .....</b>	<b>26</b>

## INDEX OF TABLES

<b>Table 1</b>	<b>Functions of interest for the performance of Guigoh.....</b>	<b>11</b>
<b>Table 2</b>	<b>Items used to identify the computer/internet experience.....</b>	<b>12</b>
<b>Table 3</b>	<b>Experience of participants compared to needed time and actions for the tasks.....</b>	<b>14</b>

## 1 INTRODUCTION

The Open Knowledge Space/Open Knowledge Society (OKS)<sup>1</sup> can be regarded as one of the cornerstones of the OPAALS project. It offers researchers the opportunity to collaborate with each other, to develop, and to share ideas. Those joint practices contribute to the sustainability of the OPAALS community. From the beginning of the project, the idea of having a joint communication and collaboration platform was acknowledged as being crucial for all partners and participants within the project.

The OKS consists of various spaces and tools (<http://www.opaals-oks.eu/>). The *collaboration* elements are mostly present within the OKS-version of Guigoh (<http://www.opaals.org.br>). Guigoh consists of e.g. a profile setup function, personal network expansion options, a collaborative document editing tool, a conference-chat function, an instant messenger, and the possibility to create, customise, and collaborate in various research communities. The OKS can be regarded as the common digital environment of the OPAALS Digital Ecosystems community.

The actual design of this demanding vision has “come a long way and [is] consistent with the recursive nature of the project” (English, 2009, p. 3). Initial assertions and expectations were re-visited and fine-tuned over time (English, 2009). In Phase I, the first milestone was D10.5 “Principles, Models and Processes for the Collaborative Development of the OKS”. The authors of the respective deliverable published a discussion paper in advance, in order to integrate the ideas and comments from the community members. The discussion in the community continued in Phase I of the project with the initiation of various user groups studying and discussing different important aspects of collaboration software. Those efforts are documented in a paper written by Briscoe and Iqani (2007).

From a broader empirical perspective the team of task T10.9 approached the OKS by means of the OPAALS survey in Phase II, focussing particularly on the perceived appropriateness of (computer-mediated) collaboration tools. Furthermore, a content analysis of the project’s mailing list was conducted. Those studies were conducted in order to stimulate a data based self-reflection among all community members. The corresponding questionnaire covered aspects of governance, communication, and collaboration (see D10.9).

Two additional surveys were initiated by the ICT (Integration and Coordination Team) and investigated the implementation priorities for several features of the OKS (specific requirements gathering) as well as their perceived implementation level. These questionnaires were basically meant to support the OKS developers and hence the results were reported to them<sup>2</sup>. The UniKassel team supported those actions with methodological consultancy and helped to conduct the surveys and analyse the results. Another “empirical” perspective on the design and development of the OKS through a metaphorical lens was conducted under the umbrella of task T6.2 and presented in D6.7, including three stages of analysis: Stage 1 comprised of a first comparative analysis of the OKS: Guigoh and Sironta. In stage 2 the systematic framework for the OKS usability testing was developed, and

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<sup>1</sup> The OKS and all collaboration etc. tools included (such as Guigoh) is still work in progress, i.e. being further developed and refined (also using the feedback from this work/deliverable). Hence, the OKS we are speaking of in this deliverable reflects the status from November/December 2009, when the tests of Guigoh (one OKS core application with graphical user interface for usability testing) had been conducted.

<sup>2</sup> More information can be found in D10.9, p. 61ff.



Stage 3 represented a comprehensive analysis of the OKS (based on a metaphorical approach).

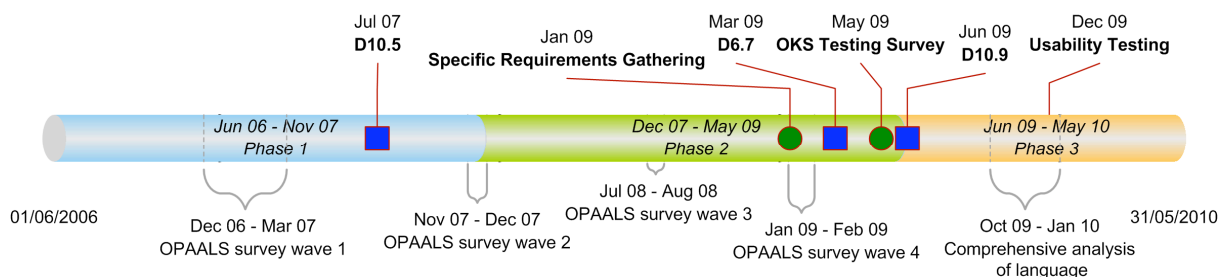
One of the challenges the OKS faces at the moment is its user population in relation to activity and content creation. That is why aspects of its usability have become salient. Hence two tasks deal with those aspects in Phase III of the project:

- 1) User interactions and experiences with the system (T10.24) and the
- 2) Analysis of linguistic patterns in language (e.g. OPAALS) as the basis for knowledge representation and communication (T6.11).

The first reflects the actual user experience with the software and helps to identify problems and drawbacks of the system. It focuses on the users and their tasks, and the quality of their interaction with the software. This effort is part of the iterative process (see Figure 1) that is continuing under the umbrella of task T10.24 and supports the further development of the OKS. The second aims at providing insight into language dynamics that underpin the knowledge and communication systems within human-computer-interaction (HCI) in general and the OKS in particular. Figure 1 presents all efforts concerning the usability and sociability issues of the OKS in which the UniKassel team has been involved in so far.

The study that will be presented in this deliverable was planned and conducted in collaboration with the LSE, IPTI, and UniKassel. It followed the paradigm of user-centered design (UCD), exposed usability flaws and provides improvement recommendations for the computer science domain, i.e. the software developers. The tight and intensive collaboration with IPTI and with the LSE throughout the testing, as well as the antecedent planning phase, guaranteed a constant and iterative exchange between the social scientists conducting the tests and the computer scientists that are involved in the software development.

In the following chapter, the theoretical approach of the usability study will be introduced. In Chapter 3, the research questions and the research design are elucidated, followed by Chapter 4 that presents the results and the recommendations for improvement. The final chapter summarises the most important conclusions.



**Figure 1** OKS usability development as an iterative process

## 2 THEORETICAL BACKGROUND

This chapter introduces the theoretical approaches this deliverable is built on. Point of departure is the research field of *online communities*. Online communities are regarded to be analysable with respect to their *sociability* and *usability*. Furthermore, a semiotic approach towards user interface design and metaphors is chosen in order to connect the theoretical considerations with the empirical usability study. The theoretical section aims to (1) provide an analytical basis for the usability test and the corresponding results that will be presented below and (2) to develop contact points that allow to connect this research with other research within OPAALS (in particular with the work in WP 6 and WP10).

### 2.1 The sociability and usability of online communities

The OPAALS community has been defined from different theoretical perspectives (e.g. as community of practice in D10.9 and as a complex adaptive system in D12.1). From the beginning the ideas behind the project were inspired and influenced by the open source phenomena (see OPAALS DoW). In various deliverables and on many occasions the OPAALS members defined themselves and their respective community recurrently (see Introduction). Besides this variety of perspectives there is a consensus among OPAALS members that online communication plays a crucial role not only for the community but also for the whole concept of Digital Ecosystems.

We suggest using the concept of online communities as one theoretical anchor for this deliverable. However, an overall agreed upon definition of an online community is lacking (De Souza & Preece, 2004, p. 1). Surely this is a result of the fluid character of online communities and the different disciplinary approaches addressing the phenomenon (be it a designer's, an ethnographer's, or a computer scientist's approach). Finding a definition that caters to all relevant disciplinary demands is beyond the scope of this deliverable. Nevertheless, a guiding definition for this deliverable will help to better frame the work that was conducted in this task and to connect it with other research that was conducted in the field of online communities.

Analysis of different definitions of online communities (Lazar & Preece, 2002) concluded that the phenomenon can be described to consist of the following features:

- (1) a shared purpose,
- (2) people who interact with each other,
- (3) policies, and
- (4) folklore and rituals

As these features do not indicate any connection to the term *online*, it remains the question though: What makes a community an online community?

De Souza and Preece (2004) suggest a following general definition of online communities:

“a group of people, who come together for a purpose online, and who are governed by norms and policies” (p.1).

Porter (2004) in turn defined virtual communities as:

“an aggregation of individuals or business partners who interact around a shared interest, where the interaction is at least partially supported and/or mediated by technology and guided by some protocols or norms”.

Strictly interpreted, according to De Souza and Preece the attribute ‘online’ refers to the interaction that takes place in an online environment. Porter agrees upon this characteristic but she puts it less radically by admitting that it is at least “*partially* supported and/or mediated by technology”. One advantage of Porter’s definition is that not all “real-world” actions are excluded. However, also De Souza and Preece acknowledge that there are communities that exist only online as well as communities that exist also offline and online. Thus, the often overly strict distinction between online and offline can be avoided. Interaction can take place face-to-face, via phone, and via online communication. A further advantage of Porter’s definition is the inclusion of “business partners”. Both definitions consist of the initial elements “shared purpose” or “shared interest” as the basis for the community. Interaction within communities is “governed by norms and policies” or “guided by some protocols and norms”.

Those theoretical approaches towards online communities seem to suggest that online communities are a social rather than a technological phenomenon. However, social and technological aspects are deeply interrelated. From the perspective of software development, social demands are translated into software (e.g. the registration process). In addition, from the perspective of the software users, their perceptions, experiences, etc. are the basis for the appropriation of the software at hand. Hence, software can always be considered to represent a product of social processes. This statement is epistemologically grounded in the social construction of technology (SCOT) theory (see e.g. Pinch & Bijker, 2003) and more generally in social constructivism (see Crone & Bräuer, 2008). Furthermore, in organisational and communication studies, social influence theories propose that the perceptions of the utility of software are (in part) social constructions (Fulk, Schmitz & Steinfield, 1990; Fulk, 1993).

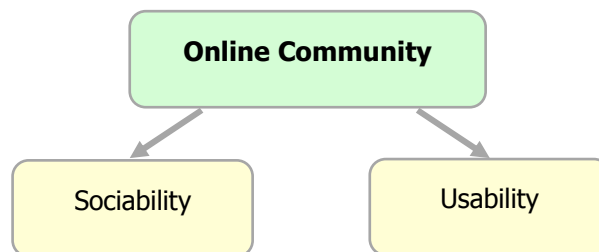
On a more pragmatic level, the following conclusion can be drawn from the aforementioned theoretical considerations: Any software is the product of its producers and its users. Software that is used or designed in order to facilitate (online) communities is clearly bounded to specific purposes. The perceptions of the utility of software may vary between the developers and the users. Nonetheless, it is possible to bring both perspectives together: (potential) software users can inform software development in order to improve the product. Keeping in mind that there is probably no optimal (technological) solution for a (social) problem (and this is what a socio-constructivist approach offers) opens an avenue for a productive dialogue between the developers of software and the users of the respective software.

In a next step it is necessary to clarify how social and technological aspects can be analytically differentiated in order to grasp the difference between the social aspects of a community (that are always existent, independently from the actual technological context), and those aspects that concern the technology used by the community (e.g. the software). This is not an epistemological question, but refers to an empirical question that is important in the context of our usability study: If a community uses a certain software application that mediates communication and collaboration in this community, then this application supports certain forms of behaviour while it constrains other forms of behaviour. However, also the software itself, e.g. the user interface design, influences the respective communication and collaboration in the community. This second aspect was the focus of the study conducted

under task T10.21. Lazar & Preece (2002) help to clarify those different aspects when they distinguish between the sociability of a community and the usability of a community. Whereas a good sociability refers to social policies that support a community's purpose, usability refers to the quality of the interfaces and whether they are consistent, controllable, and predictable (Lazar & Preece, 2002, p. 2). Sociability and usability together can evoke thriving communities. According to Lazar and Preece:

“...Sociability focuses on social planning and social processes, which jointly lead to good social policies. Sociability is concerned with planning social policies that encourage development of congenial and appropriate social interactions. By focusing on usability and sociability, community planners can influence the potential success of online communities. Communities evolve organically, influenced by the interactions of their members. However, carefully planned social policies have a big impact on the future development.” (Lazar & Preece, 2002, p. 7f.)

Sociability and usability are closely related: the need to register to an online community is based on a decision of the community builders that refers to the sociability of the community. In addition, the actual mechanism of the registration process is also part of the software design process and involves usability aspects (Lazar & Preece, 2002, p. 9). To understand how software design affects the evolution of a community is an important question that may help software developers to build technology that supports online communities (De Souza & Preece, 2004, p. 8).



**Figure 2** Online Communities: Sociability and Usability

The software that is used by an online community shapes the experience of that community. Hence, the success of a community depends on the quality of the software. Especially the policies of a community must be represented in its software, as sociability components become manifest through the software (De Souza & Preece, 2004):

“Decisions such as where to position a policy, how to present it typographically, and what kinds of navigation or interaction events to associate with it are all usability decisions related to sociability factors. Even conversation content has both sociability and usability dimensions to it.” (De Souza & Preece, 2004, p. 3)

De Souza and Preece build their framework to analyse online communities on the principles of semiotic engineering:

“In this perspective, the perceived quality of the technology that supports online communities is not only a function of how well systems designers understand and interpret the users' usability and sociability requirements, but also and very importantly of how well they communicate this back to the users through their designs.” (De Souza & Preece, 2004, p. 4)

According to De Souza (2005), software is the result of “choices and decisions guided by reasoning, sense making, and technical skills” (p. 4). Lapteva (2009) already introduced the semiotic approach to metaphors and user interfaces to OPAALS. Metaphors are used in software design in order to increase the initial familiarity of actions, procedures and concepts by making them similar to actions, procedures and concepts that are already known (Carroll, Mack & Kellogg, 1988, p. 67). The probably best-known metaphor in interface design is the desktop. Furthermore, many visual metaphors play an important role for the design of virtual environments.

From a semiotic perspective, communication takes place with the help of sign systems. De Souza and Preece provide three reasons why a semiotic approach appears to be helpful:

- Communities seek to achieve their purposes and manifest their policies with the help of communication (through signs) (De Souza & Preece, 2004, p. 4).
- The many varieties of signs that people can use to express themselves have different degrees of efficacy and effectiveness in different contexts and media (De Souza & Preece, 2004, p. 4).
- Designers communicate often indirectly with the user of the software. The interface “tells the designer’s mind”. (De Souza & Preece, 2004, p. 5)

With the concept of “semiotic engineering”, interactive software is regarded as a message of a designer to the user about how the users have to interact with the software in order to achieve goals and experiences. This message (the software) is constructed by the designer who takes into consideration what she has learned about who the users are, which preferences they may have, etc. (De Souza & Preece, 2004). And here, usability comes into play.

## **2.2 Usability as an imperative of successful online communication**

Preece has introduced three basic dimensions of usability: navigation, access, and information design. Undoubtedly, proper software usability is a success factor for a thriving online community. A well-developed usability ensures that users access the community and interact in the community without frustration caused by the software. As time for participation will be mostly limited, well-developed usability ensures active participation, as the community members do not need much time to find the information, to understand the navigation structure, etc.

The term “usability” is a well-established concept in software development and design. There is a huge body of literature on usability and on how to conduct usability research. For the sake of the deliverable, some core definitions and dimensions are briefly introduced.

Shneiderman (1998) has formulated the following three core principles of usability:

- Consistency: Software is consistent if the same terms and procedures are used for achieving the same functionality of the programme.
- Control: Software should support that users have the feeling of control.
- Predictability: Predictable software enables users to build continually on their experiences.

Further definitions of usability demand a usable software to be a) effective to use, b) efficient to use, c) sage to use, d) utilisable, e) easy to learn, f) and easy to remember how to use

(Preece et al., 2002). Preece and Krichmar (2003) have operationalised the following components of usability: dialogue and social support, information display, navigation and access (Preece & Krichmar, 2003).

A more “hands on” perspective towards usability comes from Rubin and Chisnell (2008), who define usability when:

“...the user can do what he or she wants to the way he or she expects to be able to do it, without hindrance, hesitation, or questions.” (Rubin & Chisnell, 2008, p. 4)

Rubin and Chisnell list the following attributes of usability:

- Usefulness
- Efficiency
- Effectiveness
- Learnability
- Satisfaction
- Accessibility

It can be expected that any software is always an achievement towards this “ideal” of usability that nevertheless is difficult to reach. A way to translate this into a practical agenda is to allow the possible users to participate in the design process. This is what the paradigm of user-centered design (UCD) suggests. According to UCD the following principles need to be considered (Mayhew, 1999, p. 4):

- An early focus on users and their tasks
- Evaluation and measurement of the product usage
- Iterated design (testing of conceptual models and design ideas)

Those theoretical considerations on online communities and usability are the background of the study that is introduced below.

### 3 RESEARCH QUESTIONS AND TEST DESIGN

Since the beginning of the task, the partners IPTI, LSE, and UniKassel collaborated intensely in order to formulate the appropriate research questions, which reflect the developer's and the community's needs and the respective appropriate test design. Reflecting the integration of (potential) users into the test-design, a dual approach was followed.

On the one hand, persons who are not part of the OPAALS community and did not use Guigoh before were regarded as one target group for research. The reason is that the OKS (and its main communication and collaboration platform, namely Guigoh) represents the *medium* with which new community members will be addressed. Those addressees contribute by means of first-usage scenarios directly with particularly important results concerning the usability of the software. Furthermore, this target group can be characterised as a critical group for the sustainability of the OPAALS community.

On the other hand, the second user group consisted of users who have used Guigoh before. This group comprised students from OPAALS institutions (SUAS and UL) who use Guigoh in their courses. There is a specific reason why it was decided not to integrate OPAALS researchers into our target group. It can be expected that their answering behaviour would probably be demonstrated in a biased manner, given that the development and usage of Guigoh and the OKS had been an ongoing point of discussions since the beginning of the project.

If new users would have difficulties using the software they will probably stop using the software. Software that succeeds in terms of good usability has a higher chance to facilitate exceeding the critical mass of users (for more information on the concept of critical mass see Markus, 1987; Lou, Lou & Strong, 2000). By means of the first approach it is possible to gain insights into the mode in which new users perceive the software. The second approach in turn provides deeper insights in the daily work with the software. The advanced users' experiences can also serve as indicators for similar software tools that might perform better in the perception of the respective users. Hence, when it comes to usability flaws in Guigoh the software packages that are indicated by the users can also serve as additional sources for improvement considerations.

Besides the experience with Guigoh, other dimensions that might influence the perception of the software are the general Internet experience and computer experience. The underlying assumption is that experienced users have a different view on a specific function and therefore would rate or use it differently. Thus, this aspect was integrated in our research strategy. The experience also helps to understand the sample better: If only experienced users will have answered the questionnaire, we still do not know how less experienced users perceive Guigoh.

#### 3.1 Task-Oriented Usability Test

To motivate new users and ensure that they will test the software comprehensively, it is helpful to provide them with tasks they have to perform. Paulo Siqueira, Anne English, Ingmar Steinicke, and Marco Bräuer jointly designed this task-oriented test based on the suggestion as to what features have the highest priority to be tested from the developer's perspective at IPTI. The test consisted of 21 tasks that focussed on editing the personal

profile, creating and editing a new community, accepting/sending invitations, adding/deleting own content (files, comments, discussions), and chatting with a contact. After a short introduction to the background of the study and the software, the users were asked to log into Guigoh. Afterwards they had three minutes to freely explore the software. This exploration task was meant to help the participants to become more comfortable with the situation and the software. The tasks were elaborated in order to answer the following research questions:

- Do users successfully use the toolbar icons and standard menus?
- How easily and successfully do users find the information and services they need for accomplishing the tasks?
- How quickly can users perform common tasks?
- How easily do the users understand what is “clickable”?
- Does the interface support a clear orientation?
- What are the major usability flaws that prevent users from completing the most common tasks?
- How helpful are the “help” documents perceived?

The test period was between the 26th of November and 3rd of December 2009 and the tests were accomplished on a PC (Windows XP) by using Mozilla Firefox 3.5.5.

A moderator instructed the participants to perform the tasks while their voice and the screen were recorded with Camtasia<sup>®</sup> screen recording software. The participants were requested to think aloud what they want to do, what they see, and what they expect the software to do. This method allows receipt of simultaneous feedback. Furthermore, feedback on how the testers think about conducting a task is gathered. This may help to facilitate the analysis of problems. However, the method can be also challenging: Some testers may find the thinking-aloud method as artificial and hence it could cause a bias (Rubin & Chisnell, 2008, p. 204f.) However, the “think-aloud” procedure is a well-developed method in usability testing. We decided to use this technique, as the advantages of this method seemed to provide very interesting data on the perception of the software. While the participants performed the tasks the moderator took notes for semi-structured interviews, to follow. A second moderator sat next to the participant and simultaneously operated Guigoh because some tasks required synchronised actions of a second Guigoh user (see Figure 3). The screen recordings as well as the guided interviews were used for the analysis of the performance of Guigoh.

An initial report of the results of the task-oriented test was sent to the developers in December 2009 so that the results could inform further development of the software at the earliest convenience. Chapter 4.1 provides an edited overview of the results and the corresponding recommendations.





**Figure 3** The test setting: (1) participant; (2) 1st moderator, reading out the tasks; (3) 2nd moderator, also using Guigoh for synchronised actions

### 3.2 Experienced User Questionnaire

For the second approach of the usability test a standardised online-questionnaire was developed. The questionnaire was designed in order to provide answers to the following questions:

1. How closely does the flow of the software reflect the user's demands of the workflow?

In a first block of questions, the participants were asked how important they rate (from 1 – 'unimportant' to 5 – 'very important') functions for collaborating/networking with people from their own or other institutions via Guigoh. To answer the research question the responses from the first block were compared with the responses from the second block where the respondents had to rate (from 1 – 'usage is very difficult' to 5 – 'usage is very easy') how easy they perceive the usage of these functions in Guigoh.

A probable critical issue can be identified whenever the usage of an important function (block 1) is not regarded as easy (block 2).

2. Which are the software tools that compete with Guigoh? In which concrete functions do they compete and how well do they perform compared with Guigoh?

The OKS is not the first software supporting the functions of an open knowledge space, i.e. a collaboration platform. That is why it competes with several other tools on the market. Therefore, we want to know which of the tools that we consider as most relevant in respect to competing with the OKS, are used by the participants.

The participants were asked how often (daily, several times a week, several times a month, less frequently, or never) they use Facebook, Skype, GoogleDocs or LinkedIn. Subsequently, for each tool that was used at least several times week, we asked how the respective participant perceived the accessibility of the particular functions in corresponding blocks of questions. If, for example, someone has a high priority on giving feedback on content and thinks the OKS does not provide an easy access to this function, we can check which tool is perceived as being better. These tools can then be used as an

example to gain insights for an improved usability ("give the users what they are used to").

By using the same items in all blocks, it was possible to directly compare the results of each question. The items in each block were derived from the "Specific requirements gathering"-survey (see Introduction) and are clustered around the main functionalities of the OKS:

Tool	Function
Community tool	To know what's going on in the community
Community tool	To be updated on the latest news from the community
Community tool	To express solidarity and belonging to the community
Community tool	To show others who I am
Community tool	To see who the other members are
Community tool	To show others what I do
Community tool	To see what others do
Document Editing tool/ Multimedia publishing tool	To receive feedback on content
Document Editing tool/ Multimedia publishing tool	To give feedback on content
Conference call tool/ Document Editing tool	To collaborate with other community members
Conference call tool/ Document Editing tool	To seek for (task related) help/information from other members
Conference call tool/ Document Editing tool	To contribute own content/provide information to the community
Conference call tool	To chat with other users
Agenda/Calendar tool	To manage my schedule/agenda
Multimedia Publishing tool	To share (multimedia) content with other users

**Table 1** Functions of interest for the performance of Guigoh

### 3.3 Computer/Internet experience as influence dimension

In addition to the actual experience with Guigoh, a second dimension that might influence the perception of the software is the users' general Internet experience and computer experience. The underlying assumption is that experienced users have a different view on a specific function and therefore would rate or use the function differently. Some of the items (see Table 2) are taken from the questionnaire published in Veenhof, Clermont & Sciades (2005), but are adapted to the purpose of this questionnaire, which means they concentrate on the tools of the OKS. For the interpretation of the answers each item was counted when the participant responded that he/she did the corresponding task at least once. That means that the participant has at least a little experience regarding this item. Finally, all these items were counted and the proportion to the overall number of items (16) was calculated. The resulting percentage value indicates the experience level. Additionally, we asked for the time the participants spend using a computer for private and professional purposes in a regular week. This value provides additional insights by respecting the time dimension.

Internet experience	Computer experience
Maintaining webspace	Writing or editing text
Maintaining webserver	Accounts, spreadsheets or statistical analysis
Maintaining weblog/podcast	Creating graphics, designs, pictures or presentations
Online banking	Programming or writing computer code/scripts
Online social networking	Keeping a schedule or calendar
Watching/sharing videos in the internet	Reading information on a CD-ROM or DVD
Publishing own videos in the internet	
Gathering information from the internet	
Online shopping	
Chatting or talking to others via internet	

**Table 2** Items used to identify the computer/internet experience

## **4 RESULTS AND RECOMMENDATIONS**

This chapter depicts the results of the usability test. A draft of chapter 4.1 was sent to the partner-institutions of task T10.24, LSE and IPTI, making sure that the results could already be considered for the further software development before the official submission of this deliverable.

### **4.1 Results from Task-Oriented Usability Test**

Generally, the participants of the task oriented usability test regarded the software as an easy and optically well-designed platform. The majority of the tasks were solved without problems. However, some issues occurred. Therefore the data from the “thinking aloud” audio recordings, the screen recordings, and the guided interviews were analysed and will be concertedly described in this section. The corresponding recommendations shall help to improve the usability and sociability.

#### **4.1.1 Sample description**

The test period was between the 26<sup>th</sup> of November and 3<sup>rd</sup> of December 2009 and was performed by ten participants (five German participants, one Austrian, one Brazilian, one Chinese, one Moroccan, and one Vietnamese participant) who had a social science, computer science, or an engineering background. Six participants were of female sex. Five testers were researchers (PhD students) and the other five were undergraduate or graduate students. Two participants were between 31 and 40 years old, whereas the other eight were aged between 20 and 30 years. Even though the sample reflects the target group of the OKS, it is not possible to draw any subgroup tendencies because the subgroups (grouped by age, epistemic background, gender, etc.) are too small.

The experience level of the testers varies between 54% and 100% whereas the median is at 84.5%. The minimum computer usage per week was indicated with 30 hours. It can be stated that the participants share a relatively high computer and Internet experience. Furthermore, as it can be seen in Table 3 there is no connection between the experience and the time that was needed for the test, the number of unsuccessful tasks, and the needed actions. In average the participants needed 128% ( $SD = 20.6$ ,  $Mdn = 123.5\%$ ) of the actions, which were basically necessary to solve the given tasks.

Tester	Experience Level (in %)	Computer usage per week (in hours)	Duration for tasks (in min)	Needed actions <sup>3</sup> for tasks (in %)	Number of unsuccessful tasks
9	54	47	19	124	0
6	75	42	30	138	3
5	75	54	27	122	2
8	75	55	19	132	1
11	81	32	25	114	2
14	88	30	31	103	2
12	88	70	43	179	4
7	94	45	22	123	1
10	100	65	24	114	0
13	100	30	30	130	2

**Table 3** Experience of participants compared to needed time and actions for the tasks

The fastest participant finished all tasks within 19 minutes – that is only eight minutes more than the reference time of eleven minutes. The average of the needed time is 27 minutes.

#### 4.1.2 Unsuccessful tasks

Out of the overall number of tasks (21), there were eight particular tasks not completed by some testers. Either the testers said that a certain task appeared to be nonsolvable or they did not even notice that the task had not been solved successfully. Only two testers completed all tasks successfully.

In the following paragraphs the task instructions and the circumstances under which the tasks were not completed are described. All in all, 18 times a task was not solved<sup>4</sup>.

##### *Task 5: "Please invite marco to your network"*

One tester did not find the option to invite a person to become a contact in her network and gave up. However, during a later task the tester found the option by chance.

##### *Task 6: "Check whether another user invited you to become part of his/her network"*

One tester was looking for the pending invitation in her profile and in the community overview (after clicking on "pending"-link on the start page). Given that she did not find any pending invitation from any user on these two sites, she concluded that there was no pending invitation.

Another tester could not find the way back to the start page because he was confused regarding the destination of the home-icon (which redirected the tester to the homepage of the last accessed community), so that he did not find the pending invitation and gave up.

<sup>3</sup> A user action is considered as a finite step for reaching the aim of the task. The optimal sequence of actions for each task can be found in the Appendix.

<sup>4</sup> Due to not solved tasks some following tasks might not be solvable accordingly. Those tasks have been skipped during the test and are not counted either as a necessary task or a not solved task.

*Task 7: "accept invitation (to become a contact)"*

Two testers could not accept the invitation because they did not find the pending invitation from task 6.

*Task 10: "In the Magical Community is a document called Test.doc. Please open it"*

Five testers did not download the document. Probably they did not understand that they should download it because task 10 and task 11 ("*and make a comment on Test.doc file*") were read out at once. For the other testers however, when the moderator emphasised to open the file they were more likely to understand the task correctly and downloaded the file. So at this point the task guide (see Appendix I) should have been clearer.

*Task 12: "In the Usability Tester community is a discussion going on. Please add a comment to the discussion."*

One tester misunderstood the task and created a new discussion topic in a different community. Another could not access the Usability Tester community because the link to the Usability Tester community was not working in his profile. So he was stuck in the community of the preceding task (Magical community) and finally he gave up.

*Task 14: "Go to the Usability Tester community and upload the file Test2.doc (can be found on Desktop)."*

One tester did not notice the option "send file" and created a new online document instead. She tried to upload the file Test2.doc as an image for the new online document but noticed that it did not work. After she summarised that she had not uploaded the Test2.doc yet and did not find an option to accomplish the task, she concluded that the task was not realisable.

A second tester also tried to upload the document as an image to a new online document. However he did not understand the error message. After a few more attempts he gave up.

A third tester also tried to upload the file as a picture for a new document for several times. During one of her attempts to upload the document in this particular manner, she found and clicked the option "send file" but obviously did not understand its function and ignored this option. Finally she had the idea to open the Test2.doc from the desktop and to copy the contents into a new online document. She was aware of the fact that this method was not intended by the task instruction. However, she stated that this was the only way she could accomplish the task best.

*Task 17: "Invite marco & ingmar.steinicke to this (My community) community."*

One tester did not see nor understand the differences between the list "contacts" and the list "All" for the invitation of persons to a community. She was using the search function to look for marco but the search terminated unsuccessfully and without any feedback. So she did not find marco in the contacts-list and hence did not invite him.

*Task 18: "Start an instant messenger chat with marco (resp. ingmar.steinicke)"*

One tester was looking for the chat option in Marco's profile, his own profile, and in a community in which Marco is a member. Since he did not find any chat option on these sites, he concluded that the task was not realisable.

A second tester could not complete the task due to a bug which occurred when trying to establish a chat with ingmar.steinicke (the chat window was broken).

#### **4.1.3 Core Problems**

The screen recordings as well as the guided interviews were used for the analysis of the performance of Guigoh. A report on preliminary results was sent to IPTI and LSE in December 2009. This report contained the major usability flaws that caused extra actions or prevented users from completing a task. For each problem, recommendations for improvement are provided that are derived from the analysis of the respondents' suggestions, personal experience, and literature consultation (Kalbach, 2008).

##### **Ambiguity of home-button and home-textlink**

Eight testers were confused regarding the difference of the home-icon and the home-textlink, which appears within a community. Moreover it appeared to be puzzling that the destination of the home-icon was not consistent. Sometimes it linked to the start (home) page of Guigoh, sometimes to the home page of a specific community.

##### *Recommendation:*

Links labelled "home" should always connect to the start page of Guigoh (first page after login). The home page of a certain community is already accessible through various other links.

##### **Meaning of icon bar**

Five testers were checking the icon bar repeatedly and often without finding the option they were looking for.

One tester was explicitly confused about the fact that the option "create community" kept appearing and disappearing in the drop-down menu dependent on the current location in the software.

One tester noticed that one icon has a drop-down menu where several functions are grouped and stated that it would be better that the icon represented only one specific function.

One tester stated that it is only possible to verify the function of an icon by hovering over it. As it is possible that one icon can cause ambiguous understandings the tester's suggestion was to display the icon and a text together.

##### *Recommendations:*

Options in the icon bar should not disappear. It is recommendable to disable the option in case it makes no sense in a particular location of the website.

We recommend not using too many icons but short keywords instead. Possible keywords are: Profile, Contacts, and Communities.

It would be helpful to make the number of functions of the icons more consistent. That means either the buttons in the icon bar get more options so that people who are used to concentrating on a navigation bar get a better idea about what can be done in Guigoh or the alternative option would be that no button in the icon bar gets a drop-down menu.

### **Way of working with the search function**

Five testers were using the search function for various tasks but could not understand how it works. One tester explicitly thought the drop-down list shows the auto completion from the browser. It was not clear that the drop-down list already displayed the search results.

#### *Recommendations:*

- While typing a search string and displaying the suggestions' list, it should be headlined according to the content where the search is performed. For example, when looking for other members: "Profile(s) which include <search string>". Otherwise the differences between the suggestions provided by the browser (based on former inputs) and the suggestions provided by the website (based on actual content of the site) are hard to distinguish and people tend to think the suggestions are provided by the browser.
- When entering a search string and hitting enter directly an extra page with the results should be shown.
- In addition it would be helpful that the search function provides a message when a search was not successful (e.g.: "there is nobody in the community whose name includes <search string>").
- When inviting somebody to become a member of a community, the search function should search in all possible users automatically and mark the results according to whether they are contacts or not.

### **Location of chat function**

Two testers were confused about the defected chat layout and a missing "send" button in the chat window.

Two testers were explicitly looking for the chat function in their own profile and in the profile of the person they wanted to chat with.

Two testers remarked that the meaning of the yellow bubble button was not very clear.

#### *Recommendations:*

With regard to the accessibility of the chat function, we suggest to:

- add a chat button to the profile page of a contact,
- add a chat button in the contact list of the own profile,
- add a chat button in the members list in a community's home page,
- make the chat-button bigger in size and more expressive if there is enough space on the webpage (e.g. on profile page).

With regard to the usage of the chat function, we suggest to:

- Add a "Send"-Button in the chat-window.

### **Information about recent news/pending invitations**

Three testers were expecting a small window or an "inbox" on the home page notifying them about pending invitations (according to Facebook). One tester was looking for a pending contact-invitation within his profile view. One tester remarked that he could not find the



invitation if he would not pay attention to the network. He recommended to add pending invitations to the home page too.

After login, one tester was confused about the “pending” link next to the communities headline: she was expecting something to be pending but actually nothing was.

One tester was confused about the labels “Extend network” and “Invited me”, as these can be understood as "Extended network" and "Invite me" when read quickly.

*Recommendations:*

- On the site where all communities are listed, the headlines should be changed. E.g.: “Extend network” to “Potential contacts”, "I invited" to "Outgoing invitations", and “Invited me” to “Incoming invitations”. On the start page it would also be a good idea to rename "Extend network" to "Add new contact".
- It seems to be appropriate to add a box to the start page where all recent news that the user has received since the last login is posted. This news could include: pending invitations (to communities or networks), new files, new online documents, and new discussions. Moreover the user should be able to choose that either only a certain type of news is displayed or all news is displayed. Each entry in this news-list should contain a link to the particular information.
- A pending link should be displayed next to the community list as well as next to the contacts list. These pending buttons should display the number of pending invitations and accordingly display "[0]" in case no particular invitation is pending.

**Visibility of "add-contact"-function**

Four testers remarked that the button to add a contact was too small and not explicit enough. One tester did not recognise the (+) button on the right side of the picture on the profile page as a function. In addition, because the tooltip of the (+) is missing in the profile one tester remarked that she would expect to find an explanation what the (+) means. She speculated the (+) symbol means to add a contact.

One tester also stated that she did not know how she would stay in contact with the person she added as a contact. It appears that the tester did not read the message “friend was invited with success”.

One tester wanted to “verify” whether she has successfully added the contact. On the start page she realised that she had no contact yet and that the person had just invited her.

One tester found it hard to find the place where he could find out whether another person had invited him to become her/his contact. He was looking for an “inbox” where a corresponding message would signal him that someone else had invited him.

One tester could not complete the task to find out whether another contact had invited him.

*Recommendations:*

- Provide the small red cross on the right side of the picture with a fitting caption.
- Move the button to the left side of the mini-avatar picture (so that it can always be in the same place, even when the "deny invitation"-button is also visible (on the right side).
- Try to enlarge the add-button in the profile.

- At the moment, an invitation from person X can only be confirmed with the (+) button in the section "invited me". It would be sensible to allow confirming an invitation also on the profile of the person X.

### **Visibility of feedback from Guigoh**

Four testers could not save their newly created community due to a server error. However, three of these testers did not notice the message regarding the server error: the top of the page was out of focus, however the message appeared on top of the page (and disappeared after a few seconds).

Four testers tried to upload a doc-file as an image of a new online document. Three of these testers did not notice nor understand the message "Could not upload file - maybe you're using an invalid file".

Two testers did not notice the message "invite accepted" after successfully accepting a pending invitation. The confirmation box requiring direct feedback and the confirmation box that the contact was successfully invited are displayed on different locations on the screen and have a different design/layout.

### ***Recommendations:***

- The boxes with coloured background (as seen in Figure 4) were generally well noticed. They could serve as the reference design for similar feedback (e.g. forms for editing profile, add comment to discussion/file, create/edit community etc.).
- We suggest changing the message (as seen in Figure 4): "You must fill this field" to "Please fill in this field".
- In addition we recommend that notification messages where direct feedback from the user is requested (e.g. confirmation dialogues) should always appear in the middle of the actual focus or above the area of the triggering mouse click.
- The confirmation box that appears when adding a new contact may contain the following information "An invitation will be sent by email to the person, who needs to confirm the invitation. Do you want to invite the person to become your contact?" In addition, the message "Friend was invited with success" could be displayed in the same place and style as the confirmation box.
- Furthermore we suggest changing the message after successfully accepting an invitation to "Invitation was accepted successfully".

**Magical community**

[Edit community](#)  
[Create discussion topic](#)  
[Create online document](#)  
[Send file](#)  
[Create conference](#)

**Participants**  
14

**Creation date**  
04/11/2009

**Community type**  
Close

**Text:**

You must fill this field

**Image topic:**  
Max size 300 kb  
[upload](#)

**Tags:**  
Tags are keywords that help in identification of your message.

You must fill this field

[Publish](#) [Reset](#) [Cancel](#)

**Figure 4** Highly visible feedback in Guigoh which could serve as reference for similar feedback

### Weak functions of personal profile

Two testers were looking for an "edit profile" option in their own profile.

Two testers were looking for a chat function in their own profile and in the profile of the person they wanted to chat with.

One tester remarked that the link to the profile of a person (mini-avatar) should receive a caption.

#### *Recommendations:*

With regard to accessing a profile page:

- A caption "Click to view profile" when hovering about someone's mini-avatar would be supportive.

Concerning the own profile view, we suggest to:

- add a chat option next to each contact in the contact list,
- include an "Edit personal info" option in the own profile view,
- include an "Add new contact" option in the profile view next to the contact list,

- include "Create new community" option in the profile view next to the community list, and
- include a link to the pending invitations (contacts and communities) in the profile view.
- Because the field of one's own picture is empty in the own profile before having uploaded a personal image, a picture notifying that one should upload a picture of oneself would be helpful.

Concerning the profile of someone else:

- It might be considered adding a chat option to the profile page of a contact.
- When a person is a contact, it does not seem appropriate to simply remove the "add"-button. Instead, we recommend displaying the information that the person is already a contact in the respective profile, for example by adding the text "Person X is a contact of you".
- Additionally, an indicator of being online in the profile would be helpful.

### Ambiguity of "send file" function

One tester was confused by the label "online document".

Four testers wanted to upload a word file as a picture to a new online document (the task was to upload the Test2.doc document from the desktop).

Three testers were confused by the "send file" option as they expected to send an email instead of uploading a file in this case.

One tester remarked that the original file name was shown neither in the file list nor in a file entry, so she was not sure what the Test2.doc was (the task was to delete Test2.doc which was uploaded previously).

One tester remarked that she was surprised about the button "upload" as she did not choose a file for upload.

### *Recommendations:*

- We suggest changing the caption "create a new document in this community" to "create a new **online** document in this community".
- From our observations so far, the questions arises: does it make sense to give an online document a picture? Maybe this function could be excluded. It caused confusion as many users thought they could upload a word-file.
- The option "send file" should be renamed to "Upload file". The following upload form should be changed accordingly: The headline could be "Upload file", button "send" renamed to "Save", and the "upload" button changed to standard dialogue button for choosing a file from hard disc.
- One tester remarked that it would be good to display the original filename from the hard disk of the owner when the owner opens the file entry. So that it is easier to find the correct file in case the owner wants to delete a file and cannot clearly distinguish or remember from the given title.

- It would be helpful if a file would be downloadable directly from the community homepage – maybe by means of providing the icon next to the document with a download function and caption (at the moment the image is a sensitive but dead link).
- The keywords <author> and "Comment(s)" (s. Figure 5) in the file list should be links to the adequate content.



**Figure 5** The file list on the home page of a certain community

### How to invite/delete people to/from a community?

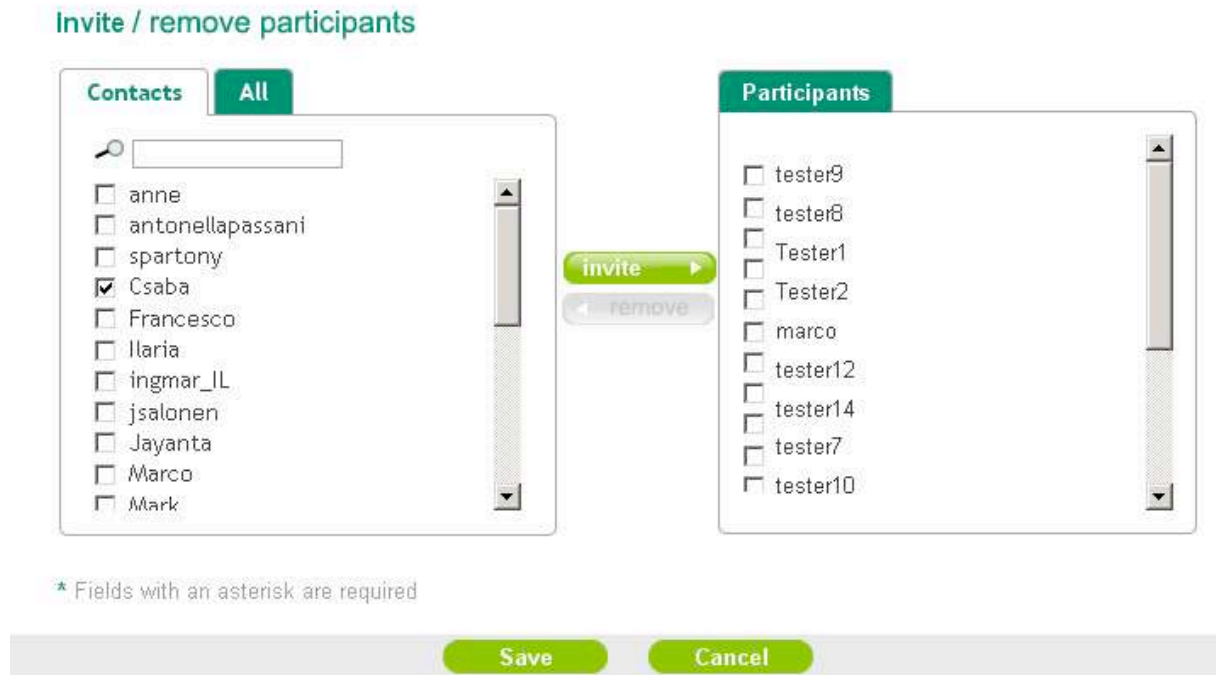
One person did not hit the "invite" button when inviting somebody to become a member in a certain community.

One tester stated that the “delete” icon (that looks like a garbage bin) in the create/edit community option was not appropriate. He originally had not regarded it as a “delete” symbol.

One tester did not notice the All-tab, which allows inviting users who are not contacts of hers. So the tester thought it was only possible to invite people who were contacts due to the fact that the search function did not show the requested person either.

#### *Recommendations:*

- We suggest designing the invite-function according to a standard dialogue: The invite button, which should be between the two boxes, should be disabled as long as nobody is selected. It should become enabled when one or more are selected. The delete function should be according to the invite function with a remove-button below the invite button. The headline should include "remove participants" (see Figure 6).
- When inviting somebody to become a member of a community, the search function should search in all possible users automatically (not only in the active tab) and mark the results according to whether they are contacts or not.



**Figure 6** Draft of improved invite dialogue

### Not working links

One tester was confused by the dead button next to an entry in the file list of a community (see Figure 5).

Two testers wanted to click on communities in a profile view but nothing happened.

#### *Recommendations:*

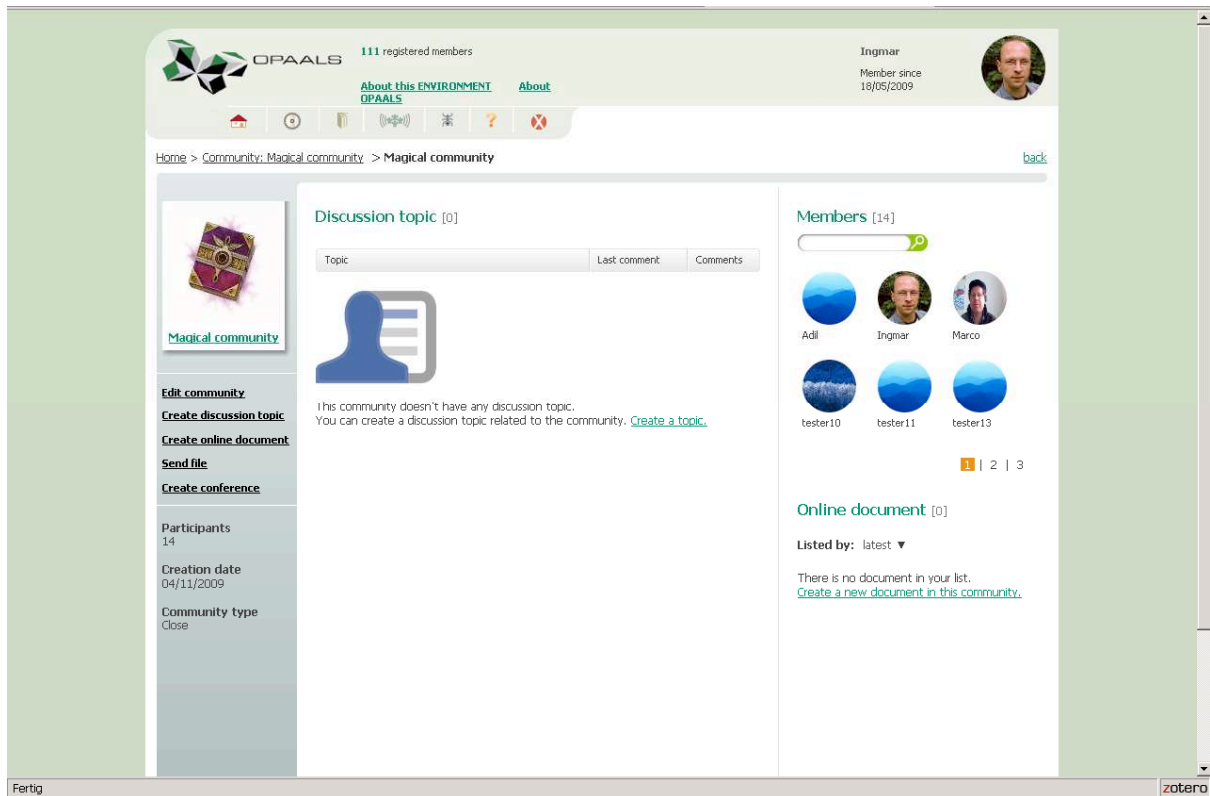
- We suggest linking the names and icons of communities in a user's profile to the respective community.
- We suggest that by clicking the image next to an entry in the file list of a community, the respective file should be downloadable.
- The image next to a discussion topic in a community should link to the respective discussion.

### 4.1.4 Further Issues

In addition to the core usability issues, smaller problems occurred as well. Some of these further issues seem to be simple bugs but others are also serious usability flaws.

- Two participants were using the help function. One stated that the entries of the help function should be interlinked more extensively. Another tester remarked that the help-instructions were too short in general.
- Contacts of a member (in profile) are not displayed correctly within a sub-community: only the contacts within this community are displayed, which is confusing.
- Indication of mandatory fields: Two testers recommended to consequently indicate fields which are mandatory (so far, this is missing for creating a new discussion in a community)

- When adding a comment to a discussion: the input fields are at the bottom of the list of comments, the new comment however appears on top of the list. So the new comment might be out of focus when adding a comment to a long list. It would be better to put the comment function on top of the list and at the bottom of the comment's list. By clicking a button like "Add own comment" the input fields could appear so that they are only displayed if an own comment is to be added.
- In community home (see Figure 7): change "Create a topic" to "Start a discussion".
- When a person contributes to the discussion with an own comment, only the default wildcard is displayed, not the picture the contact has chosen to illustrate her/his profile.
- In the community home view (see Figure 7): the list of members does not seem to be important enough to put them on top of the right sidebar. The file list and the list of online documents appear to be more crucial, so the list of members could move to the bottom of the right sidebar. Moreover the distance between document list and file list should be dynamic. At the moment there is too much space between the two boxes when the lists contain no entries. That is why a box could be out of focus and therefore could be overseen by users.

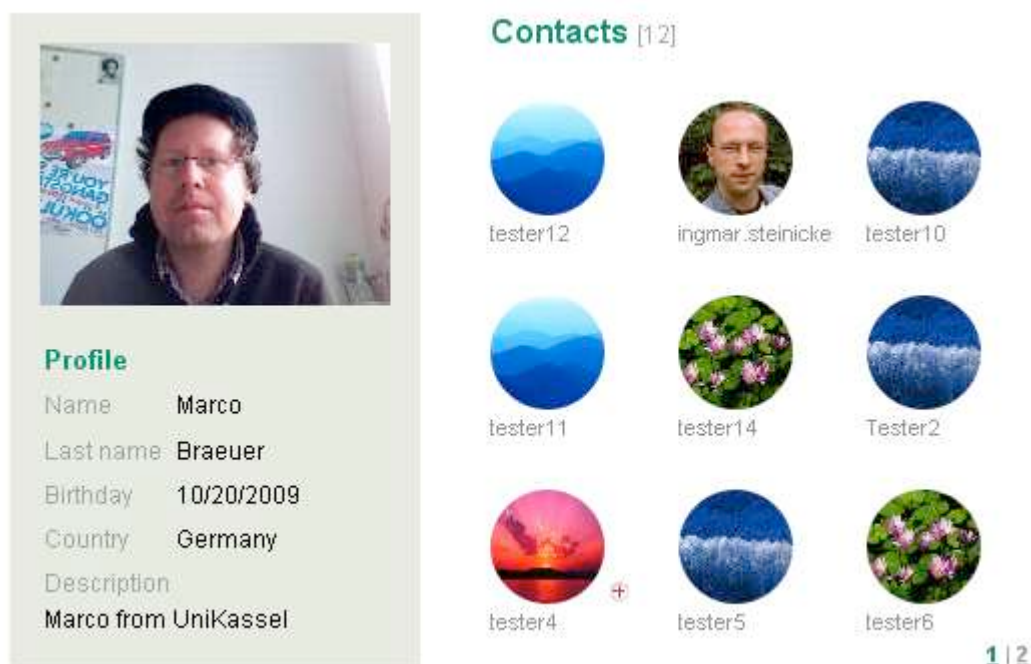


**Figure 7** Community home view: file list is out of focus

- Inconsistent handling of nickname and name: The identification of a user is confusing. The unclear identification seems to be in several lists, as sometimes the nickname is displayed, and sometimes the first name (probably sometimes even the login?). This varies for different views of the contact lists (see Figure 8 and Figure 9 to compare the labels "Ingmar" and "ingmar.steinicke").



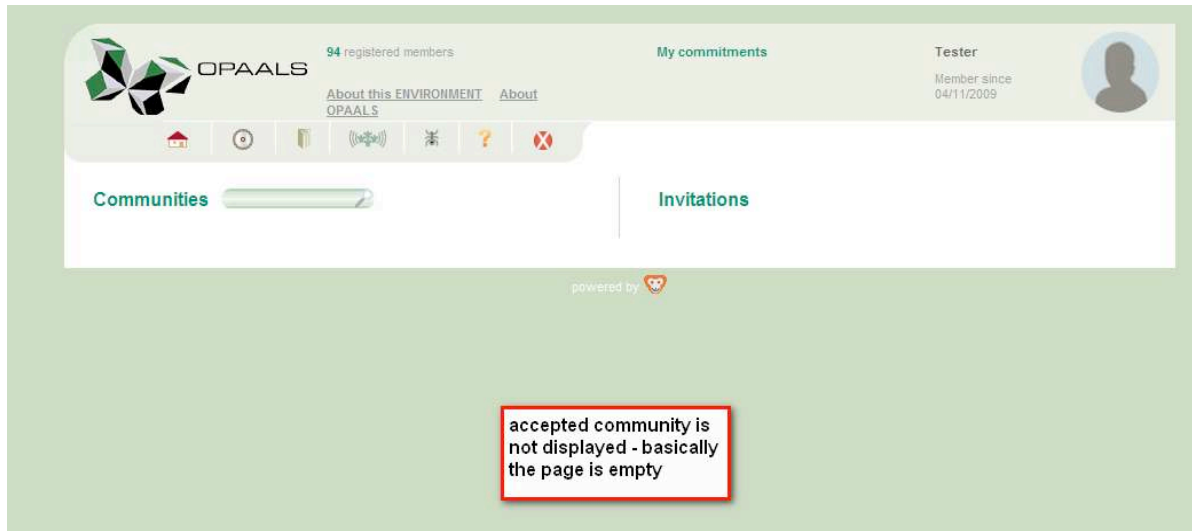
**Figure 8** Members of a community: Mini-avatar of Ingmar is labelled "Ingmar"



**Figure 9** Contacts of a user: Mini-avatar of Ingmar is labelled "ingmar.steinicke"

- We noticed that it is not possible to choose the nickname when signing up. However the nickname appears in the profile after completing registration. The problem which appears is that in the list of members (for example when we want to invite people to become member of a community) there are several persons with the same nickname. We created several test-users whose first name was "Tester" but the login always contains an additional identifier (e.g. Tester1). However in the list of members several people appeared who were named Tester, because they all shared the same nickname and the same first name: Tester. Hence, it was impossible to find Tester1 in this list.
- When accepting an invitation to a new community, the invitation will disappear, but the new community does not appear in the list of my communities on the left hand side (see Figure 10). That issue was also noticed by several testers but did not cause any problems.





**Figure 10** Communities page after accepting the first invitation to a community

- At the moment the only incentive to add somebody as contact in my network would be if I could start a chat with him or her. The problem is that this benefit of adding a contact is not documented. It is also the question whether it is enough motivation to get a bigger network?
- On many pages, the head title needs to be updated. For example the head title of the login page is “Guigoh –login” but on the site itself the word Guigoh does not appear anywhere.
- One Tester found the "latest" document section as confusing: He could not figure out what documents from what person were displayed.
- Tags should be “clickable” and hence provide a list of similar entries (discussions, files, etc.) with that tag. At the moment you are just requested to enter tags but it is not clear how you can use these tags for retrieval of tagged entries.

#### 4.1.5 Feature requests

In addition to the problems that occurred, several testers suggested extra features. We also figured out some more helpful functions. Hence the following suggestions focus on improving the sociability of Guigoh as they would enhance the options for interaction with the software and with other users:

- A preview before publishing a new discussion
- A drop-down list of possible tags when entering tags to comments etc. would reduce the chance that different tags with the same meaning will be used.
- A general overview-area, like a welcome page introducing where the user is and where the personal spaces are and where all relevant information is displayed: The own picture, the basic information, communities, all contacts, and also invitations to communities and other requests. Perhaps also news updates on the home page, when e.g. a new document is available in a community would enhance the overall orientation.
- An option to add tags for files as well
- Provide an option to add a personal message when inviting somebody to become a contact in my network.

- As the file list could grow immensely during the life period of a community it would be useful to get an own file list view where it is possible to search and sort the available files of a community.
- Add the option to invite another person to a community when I am not the founder of the community.
- Add the option to express my wish to become a member of a community.
- Add the option to quit membership of a community.
- Add the option to delete a community created by myself.
- Add the option to quit the membership of Guigoh.
- At the moment it is not possible to neither begin a discussion nor share a file with all members within Guigoh. It would be necessary to create a community and invite all persons first. Maybe it would be good to be a member in a default community, automatically with the registration in Guigoh. Accordingly it would be possible to start a discussion with all users of Guigoh in this default community.
- Deriving from the surveys conducted in T10.9 we know that email is regarded as a highly appropriate communication tool for many tasks. That is why we recommend integrating more email notifications in Guigoh. A user should be able to choose the events upon which she/he wants to receive notifications via email. It should be possible to receive notification from all events that touch a user (e.g. invitations, uploaded files, new documents, discussion topics, etc.). The majority of the respondents from the specific requirements gathering survey requested this feature with high or absolute priority for implementation. Moreover, email notifications can also encourage/remind the members to use the software regularly.

## **4.2 Results from Experienced User Questionnaire**

The second approach that was followed investigated the perception of Guigoh by means of focusing on a more general feature importance and their accessibility in Guigoh and competing software. The corresponding online survey was submitted to students of OPAALS member institutions. These students were instructed to use Guigoh for some courses and hence would have Guigoh experience when answering the questionnaire. We decided to focus on students' feedback instead of feedback from OPAALS members because they might provide new insights in addition to the surveys conducted in the consortium.

### **4.2.1 Sample description**

Seven participants answered the questions within the 2<sup>nd</sup> of December 2009 and the 12<sup>th</sup> of January 2010 questionnaires. Three respondents indicated their nationality as Austrian. One respondent was female and five were male. Six participants replied to the questions about their computer/internet experience and scored a median at 87.5%. The lowest experience level was 44%. Because of the low number of respondents it is very hard to draw any conclusion from the experience level of the respondents except that it can be regarded as high.

#### **4.2.2 Perception of Guigoh**

Regarding the means of the perceived effortlessness of the performance in Guigoh, it can be stated that the tendency points to an easy usage of the features.

However there are participants who perceived the usage of certain items as not so easy: One person rated the item “to show others who I am” as very important but the respective feature on Guigoh as not being uncomplicated. However, another person who rated the item “to show others who I am” as important too, perceived the corresponding feature on Guigoh as very undemanding.

One person who perceived the item “to receive feedback on content” as important rated that Guigoh does not provide an effortless usage for this feature. However, also in this case, another person with the same subjective perception of the importance rated Guigoh as uncomplicated. The same situation was found concerning the item “to give feedback on content”. The results suggest, that the individual perceptions of the effortlessness of the software vary in these three items (“to show others who I am”, “to receive feedback on content”, and “to give feedback on content”) and hence, at least for these features the usability could be improved in order to reflect the user's demands more sufficiently.

#### **4.2.3 Guigoh compared to other tools**

Because of the relatively low number of respondents, the number of tools comparable to Guigoh is limited to Facebook and Skype. Only for these two applications were there respondents (Facebook: N = 4, Skype: N = 3) who used them at least several times per week.

##### *Facebook*

The analysis of the answers revealed that Facebook was perceived as being (slightly) easier to use than Guigoh or as easy as Guigoh for almost every function. Only for the function "To see who the other members are" there was one user (out of 2) who perceived the usage in Guigoh as being easier than on Facebook.

##### *Skype*

For the functions where a comparison with Guigoh is possible, the participants basically rated the usage in Skype as being (slightly) easier compared to Guigoh or as being just as easy as in Guigoh. Only for the functions "To see who the other members are" and "To show others what I do" there is one respondent who perceived Guigoh as being better than Skype.

#### **4.2.4 Recommendations drawn from the comparison with other tools**

For a powerful application with a lot of functionalities – as Guigoh is one – it is always a very challenging task to arrange all features and functions in such a manner that an easy and uncomplicated usage is guaranteed. For an application with a more narrowed functionality this is easier to achieve. Hence the comparison of Skype and Guigoh is a bit misleading. However, if Skype would be perceived as being much easier than Guigoh, the chance would be high that Skype was used for chatting etc. instead of Guigoh. If a function is not used, this function would be futile. A futile function in turn can cause needless trouble for programming and navigation/usability issues. It does not need to appear in any menu and hence its removal would increase clearness. The data from the questionnaire however do not indicate that any function in Guigoh would be futile.

Nevertheless Facebook is a tool that has many functions in common with Guigoh. Its design can function as an archetype for the improvement of certain functions in Guigoh. The chat function, which is always visible on Facebook, and the news-feed on the start page after login appear to be good examples.

## 5 SUMMARY

The findings from both tests indicate that Guigoh is generally accessible and easy to use, but misplaced or missing feedback messages and notifications, inconsistent links, and ambiguous icons and labels still cause struggles. Problems occurred independently from the experience level of the participants, which was relatively high in both tests. As we do not have sufficient data from people with lower experience levels, we cannot draw any conclusion on their perception. However, the participants of the tests covered the target group of Guigoh very well. Accordingly we can answer the research questions as follows:

*Do users successfully use the toolbar icons and standard menus?*

The observation of the participants revealed that the icon bar serves as orientation for many users. However there are two important linguistic problems that occur with Guigoh's icon bar: 1) the icons are difficult to understand (the metaphors are not clear), 2) even when reading the labels of the icons, some users had problems to understand the functionality that can be expected when navigating to the connected page.

*How easily and successfully do users find the information and services they need for accomplishing the tasks?*

Only two users were using the help function even though they have never used the software before. Accordingly, this can be regarded as indicating an easy access of the services. However, for some participants a task appeared as not being solvable although they did not consult the help documents for the respective task. Hence, not using the help documents can also be caused by a general ignorance of the written documentation.

*How helpful are the "help" documents perceived?*

The observation of the participants revealed that two testers used help-documents. One who used the help documents remarked that the help entries were very short but in both cases the documents could help to solve the task.

*How quickly can users perform common tasks?*

The average time to solve all tasks was 27 minutes ( $SD = 7.1$ ) that is 245% of the reference time (11 minutes). In average the participants needed 128% ( $SD = 20.6$ ,  $Mdn = 123.5\%$ ) of the actions that were necessary to solve the tasks. Especially the relatively low number of additional actions that were needed to solve a task indicates an easy orientation which supports a quick performance. The more actions somebody needed the more likely he/she will feel lost in space. This feeling was neither observed nor reported by anybody.

*How easily do the users understand what is "clickable"?*

Basically the users understood very well which icons and functions were "clickable" and which were not. However, for some reasons there are several areas (e.g. images in a file list, community images in a profile) that seemed to be "clickable", but where nothing actually happened. Moreover, two "clickable" areas were hard to recognize: 1) the icon for adding a person to become part of my network, and 2) the icon through which it is possible to start a conversation.

*Does the interface support a clear orientation?*

Deriving from the guided interview which followed the tasks we can conclude that the interface generally supports a clear orientation. There is no need to change the interface fundamentally.

*Which are the software tools that compete with Guigoh?*

*In which concrete functions do they compete and how well do they perform compared with Guigoh?*

We expected that Guigoh would compete with Facebook, Skype, GoogleDocs, and LinkedIn and hence we included them in the questionnaire for the experienced users' survey. As an additional competing tool one participant mentioned studivz (a social networking platform). However, only for Skype and Facebook are there some data to which Guigoh can be compared. It reveals that the accessibility of Guigoh is only slightly behind Skype and Facebook. Nonetheless, the Facebook chat function and the news feed, as well as the information in a user's Facebook profile seem to be good examples which can provide hints for the improvement of Guigoh.

*How closely does the flow of the software reflect the user's demands of the workflow?*

In principle, the software reflects the user's demands of the workflow. However, the experienced-sample survey revealed that for each of the items "to show others who I am", "to receive feedback on content", and "to give feedback on content", one respondent rated the implementation of these items on Guigoh as not being easy. In conformance with the results from the task-oriented test, this signals that with regard to the personal profile and the discussion of content, developers could consider improvements.

Some participants did not seem to have many problems with the software and could cope with the tasks successfully and quickly. Others in turn were struggling with several problems. These differences show again that different people do not perceive software equally. The workflow and communication intended and designed by the developers of the software can be misunderstood. Hence it is necessary to conduct many different potential users for a sufficient analysis of the usability.

According to the Task 10.24 description this deliverable provides inputs for Task 10.21 and T6.11. The partner task 6.11 in particular will deal with usability aspects from a different, a linguistic, perspective. For this, a list of specific linguistic problems is being provided for the researchers of Task T6.11. A more profound visualisation of knowledge as T10.17 and T10.19 elaborate would increase the usability of the OKS. We hope that the results of this deliverable are of value for the further elaboration of visualisation features within the OKS.

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## APPENDIX

## I. Task guide for task oriented test

	Moderators actions	Tasks (will be read out by moderator)	Success Criteria	Optimal actions to reach success criteria
1.		<b>HOME</b> Please login to Guigoh using the following data: Login: <b>testerX</b> Password: <b>testerX</b> Take 3 minutes to freely browsing through the software Describe what you think when browsing through the website. Then go to "home"	Successful login and 3 minutes past afterwards	1. select login field 2. Type "testerX" in login field 3. select password field 4. type "testerX" in password field 5. hit enter <i>or</i> click "OK"-button
2.		<b>EDIT Profile</b> Please edit your personal profile by	Tester finds profile editing page	1. Click on "community"-icon and click "Edit profile"
3.		(a) filling in your hometown and	Tester can change the name in his/her profile	2. select "Name" field 3. Type name 4. select "Last name" field 5. Type last name
4.		(b) uploading a photo (choose a pic from the Desktop)	Tester uploaded the photo	6. click on "durchsuchen..." button and select image for upload 7. click "save"-button
5.	Ingmar invites tester to become part of his/her network	<b>EXTEND NETWORK</b> Please invite <b>marco</b> to your network	Tester can invite user	1. click on "home"-icon 2. click on "extend network" 3. look for <i>Marco</i> (probably on page 5) and click on little red-cross-button "add contact" 4. confirm dialogue box with "yes"
6.	Marco accepts invitation from tester	Check whether another user invited you to become part of his/her network and	Tester found invitation	5.
7.		accept invitation.	Tester accepted invitation from <b>ingmar.steinicke</b>	6. accept invitation from <i>Ingmar</i> through clicking on little red cross
8.	Moderator has invited the tester to the Magical Community"	<b>COMMUNITY</b> Please check whether you are invited to any community.	Tester finds the corresponding view	1. click on "home"-button 2. click on "pending"
9.		Accept the invitation from this community.	Tester accepts the invitation to the <b>Magical Community</b>	3. accept invitation to Magical community through click the "Yes"-button

10.		In the Magical Community is a document called Test.doc. Please open it and	Tester opened document with his/her PC	4. click the "home"-button 5. click on "Magical Community" 6. click on "Test [DOC]" 7. click on "Download"
11.		make a comment on Test.doc file	Tester submitted comment on file	8. select "title"-field 9. type title of comment 10. select "Comment"-field 11. type comment 12. click on "Send"-button
12.		In the Usability Tester community is a discussion going on. Please add a comment to the discussion.	Tester submitted comment to "Welcome to usability testing" discussion	13. click on "home" or "home"-button 14. click on "Usability Tester" 15. click on "Welcome to usability testing" 16. select "title"-field 17. type title of comment 18. select "Comment"-field 19. type comment 20. click "Send"-button
13.		Now, create a discussion topic in the Magical Community.	Tester has successfully created a discussion topic including all mandatory fields.	21. click on "home" or "home"-button 22. click on "Magical community" 23. click on "create a topic" or "Create discussion topic" 24. select "title"-field 25. type title 26. select "text"-field 27. type text 28. select "tags"-field 29. type at least one tag 30. click "publish"-button
14.		Go to the Usability Tester community and upload the file Test2.doc (can be found on Desktop).	Tester uploaded the file	31. click on "home" or "home"-button 32. click on "Usability Tester" 33. click on "send file" 34. select "Title"-field 35. type title of file 36. select "Description"-field 37. type description of file 38. click "upload"-button 39. select test2.doc from computer 40. click "Send"-button
15.		<b>COMMUNITY CREATION</b> Please create a community My Community and		
16.		customise the community through uploading a photo (choose a pic from the desktop)	Tester uploaded photo to community and saved community	1. click on "home" or "home"-button 2. move mouse to "community"-icon and click "Create community" 3. select "name"-field 4. type "My community" 5. select "Tags"-field 6. type at least one tag 7. select "Description"-field 8. type description of community

17.		Invite marco & ingmar.steinicke to this community.	Tester has invited marco & ingmar.steinicke	9. click "upload"-button 10. select image for upload 11. click "Save"-button
				12. click "Edit community" 13. enable "Ingmar.steinicke" 14. enable "marco" 15. click "invite >"-button 16. click "Save"-button
18.	marco replies to chat	<b>INSTANT MESSENGER</b>  Start an instant messenger chat with marco	Tester could send and receive messages	1. click "home"-button 2. click yellow bubble-button "Click to start conversation" 3. select input field 4. type message 5. send message (hit enter) 6. wait to receive reply 7. close chat window though red cross
19.		<b>CLEARING</b>  Delete discussion topic in Magical Community		1. click on "home" or "home"-button 2. click on "Magical community"-community click on discussion topic 3. click "delete"-button 4. confirm dialogue with "YES"
20.		Delete comment on Test.doc in Magical Community	Test.doc is deleted	5. click on "Test [DOC]" 6. click on "Delete comment" 7. confirm dialogue with "YES"
21.		Remove document Test2 from Usability Tester community.		8. click on "home" or "home"-button 9. click on "Usability tester"-community click on discussion topic 10. click on "test2 [DOC]" 11. click "delete"-button 12. confirm dialogue with "YES"