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RÓSA GUÐJÓNSDÓTTIR Personas and Scenarios in Use

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Personas and Scenarios in Use

Rósa Guðjónsdóttir

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Abstract

Personas are fictitious characters that represent the needs of the intended users, and scenarios complementing the personas describe how their needs can be met. The present doctoral thesis considers the usage of personas and scenarios and how they are used in system development projects. The study is motivated by the relative lack of empirical data on the persona method in actual use.

The study was carried out in the context of a large international research project called Nepomuk and involved two conceptually different field studies. On the one hand, field studies in user settings were conducted, which aimed at creating personas and scenarios, and for which a user-centered design approach was applied using participant observation, contextual interviews, video brainstorming and prototyping. On the other hand, a field study in the setting of the Nepomuk project itself was conducted, which aimed at observing how the personas and scenarios were received and used in the project work. The work conducted in the project setting was a multi-sited ethnographic field study, which was documented through ethnographic writing.

The project setting field study showed that the persona method was difficult to put into consistent use, and the support of persona advocates guiding usage would have been helpful. The method was used without much effort to communicate about the needs and desires of the intended users, but was less successful in compelling project members to use personas and scenarios during various design activities. The field study also revealed alternative usages of the method that can be supported and utilized.

The contributions of the thesis include an account of the effect the storytelling aspect has on the creation as well as usage of personas and scenarios. Also, the essential elements of constructing personas and scenarios are discussed as well as the prerequisites for making personas and scenarios support the design process in system development projects. Lastly, the thesis describes how personas and scenarios can support the communication of user needs and desires to project members and stakeholders as well as support design activities in system development projects.

KEYWORDS: Ethnographic fieldwork, multi-sited fieldwork, participant observation, user-centered design, user research, personas, scenarios.

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I am indebted to all my lovely friends and family who have heard far too many times: "No, I can't. I have to work on my thesis." I hope you are still there when I get back from Thesisland.

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Uppsölum, en á Sólvöllum í anda, Apríl 2010

Rósa Guðjónsdóttir

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Chapter 1

Introduction

I began working with the persona method early in my usability career. What I found attractive about the method was the seemingly playful, yet fundamentally careful and methodical, way of documenting and presenting user research results. Earlier I had struggled with trying to make my user research reports appealing and easily accessible to clients, project stakeholders and other recipients. After using personas in several of my projects, I found the method to be a useful addition to traditional usability methods. Still, I felt that some aspects of the method could be improved. For example, in the first persona project I carried out, we created life-size personas to increase the presence of the personas during the project and to make the introduction of the personas to the project group easier and more effective (Guðjónsdóttir 2001).

I became curious to see what happens to the personas after I leave a project. The usability practitioner often leaves a project when the initial user research has ended. My interest in following up the use of personas within a project began after I had delivered the results of a persona project and later became aware that the client's marketing department was using the personas to communicate who the target groups were with the board and the ad agency (cf. Markensten and Artman 2004).

Later, for my PhD thesis, I knew I wanted to do research on common problems I had experienced in my usability work. Having a background in social anthropology, I was particularly interested in subjects connected to user research, areas where I have always felt that a usability practitioner with a social anthropological background has a great deal to offer. By user research I am referring to the initial user studies

performed at the beginning of a project to get to know the prospective users, to discover their needs and desires and the ways in which these can be fulfilled by the system that the project will build. User research should also provide answers to the questions of who the users really are, what their background is and what kind of culture or community they belong to. To obtain all this information, one can use several different research activities, for example interviews (often contextual), focus groups, video brainstorming, workshops and observations. In addition to studying users' needs and desires an analysis needs to be done on other project stakeholders such as clients and system owners.

It has been claimed that human–computer interaction (HCI) research has not delivered results that are useful for practitioners. Rogers (2004) argues that the contributions of HCI research have been considerable, but they have also been problematic. They are, amongst other things, often not practical enough and focus too much on theory, they are often difficult to understand in order to use efficiently, and it takes too long for the field of HCI research to communicate their results to the practitioners. Stolterman (2008) argues that if HCI research has a better understanding of and is grounded in the "nature of design practice" (ibid.: 56) the research results have a better chance of supporting design practice with appropriate approaches and methods.

One common problem that many usability practitioners experience is the gap in communication between the initial user research and the actual implementation (Markensten 2005). It is common that the documented user needs and desires fade away somewhere along the line and that they are thus not met in the final system. Having worked with personas and scenarios, I knew that the method had the potential to, at least partly, bridge that gap and alleviate the communication problem that often arises. When I got the chance to participate in a large EU project at KTH, I saw this as an opportunity to see whether the persona method was helpful in communicating the user needs identified through user research to those responsible for implementation as well as an opportunity to observe to what degree the persona method supported the design process. However, implementing this research plan was a deceptively complex exercise. As a member of this EU proj-

ect, I was to conduct the user research needed to create the personas and scenarios as well as fully participate in the project working on usability issues. However, in my role as a researcher, I simultaneously needed to observe and follow the usage of the persona method in the project, in order to see whether it worked in the way I expected it to. Tackling these two different roles in the project was difficult, and at times, especially at the beginning of the project, my research role in the project suffered owing to my practical project workload.

The persona method, a term which throughout this thesis implies a combination of both personas and scenarios, has become increasingly popular among usability businesses out in the industry. However, there has been surprisingly little research into the method, and research demonstrating the method's effectiveness when it is used in system development projects is scarce (Chapman and Milham 2006, 2008; Long 2009). In academia, the persona method has received relatively little attention even though it is taught at many universities in various HCI courses. The literature available is mostly focused on advocating the method and explaining how to use it (cf. Cooper 1999; Cooper and Reimann 2003; Pruitt and Adlin 2006). The lack of research into the persona method, despite its widespread usage, is reason enough to investigate its merits.

The work in this thesis is based on data collected in projects in which I conducted the user research myself and for which I created personas based on the user research. This, combined with my basically positive attitude toward the persona method from the outset, begs the question of whether my findings are positively biased toward the method. To this I can only say that I have strived to avoid any bias in favor of the method in my research, in terms of both evaluating the results of my efforts within the projects and evaluating the persona method itself. My ambition has been to take this opportunity to look critically at the method, learn more about it, how it works, when it can be used and how is it best used. In addition, I wish to include results that are useful for usability practitioners and describe how the method can be improved and, finally, which caveats exist and which pitfalls one should try to avoid in order to make the persona method more effective in system development projects.

1.1 Personas and scenarios

Visualizing, communicating and realizing user needs and requirements is a known problem in user-centered design and frequently written about in the field of HCI. All too often, the elicited user needs disappear during system development and do not appear to have been taken into account in the final system. Personas and scenarios are methods that attempt to bridge this gap and facilitate serious consideration of user needs and desires throughout the whole system development process.

Personas are fictitious characters that represent the needs of larger groups of users in terms of their goals and personal characteristics (Cooper and Reimann 2003; Cooper 1999; Pruitt and Adlin 2006). Personas are based on knowledge of real users, and comprehensive user research is needed before personas are created to ensure that they are good representations of the end users rather than reflections of the opinion of the person writing the personas. Personas act as stand-ins for real users during phases of a project when real users are not easily reached, and they allow the design group to concentrate on designing for a manageable set of personas knowing that the personas represent many users.

The scenarios are usually the first design efforts in a project and are the result of several important contributions: the users' needs and desires; the ideas the design group has accumulated through user research; and the limitations of the design space. Each persona has several goals they want or need to reach, and the scenarios are written to show how the persona could accomplish these goals using the system being designed (Cooper 1999; Pruitt and Adlin 2006). Scenarios are generally seen as a separate method from personas, and they have an even longer tradition and a more widespread usage (cf. Carroll 1995) than do personas. Scenarios are beneficial to completing the persona, particularly if the personas are going to be used in a project where the plan is to develop some kind of tool or system. Together the persona, her goals and the complementary scenarios build a story of the intended user and how the system supports her in her work or leisure.

When personas are created, they are initially used to communicate to project stakeholders who the users of the system are and what they

are like; what their needs and requirements are and what kind of background and experience they have that needs to be considered in the design. Personas are representations of the users, and their purpose is to give the project group *a unified view* of the user groups, instead of the varying imaginary visions that come about naturally when users are not adequately defined. When personas and scenarios have been introduced to the project, they are used to support the design activities; it is easier to design a system when considering a limited number of personas than when considering large groups of anonymous users. Personas help designers determine which functionality the system needs to include if it is to meet users' needs, and when it comes to the design of prototypes and interface, they, with the support of scenarios, help designers focus on user needs and achieve a design that suits the users. They depersonalize discussions between the designers, who can concentrate on the needs of the personas, instead of on their personal opinions. The persona method will be discussed in more detail in Chapter 4.

1.2 The subject of the thesis

The present thesis is a critical examination of the persona method. The purpose of my research was to apply, observe and analyze a method that could possibly alleviate the problem of ineffective communication of user needs and requirements to project stakeholders as well as promote the continual consideration of user needs during the design phase of a project. My central hypothesis is that visual and story-based communication of user needs and desires – like personas and scenarios – in addition to textual information in the form of reports is more effective than communicating solely through reports. I do not claim that reports should be dismissed. At any rate, different types of communication work differently for the diverse project stakeholders within a project, and it should therefore be constructive to use different types of documentation of user needs and desires in projects. However, I do believe that visual and story-based communication is an excellent and very effective complement to textual reports.

Obviously there are many ways to visualize or otherwise complement written reports. In system development, personas and scenarios

are already an integrated part of the professional, user-centered design process. Using personas and scenarios to communicate user needs and desires to project stakeholders does not require additional observation or analysis – the user research done during the pre-study phase of the project should already have yielded the required material. Therefore, personas and scenarios are an understandable choice when it comes to complementing reports in order to visualize user needs and support design.

In this thesis, I report from experiences and observations made during several projects in which I have used personas and scenarios. The main focus is on a large international research project called Nepomuk, in which I participated for three years (2006–2008). Within Nepomuk, I created personas and scenarios based on user research performed with four groups of representative industrial users. Subsequently, I presented the personas to the project partners who were to benefit from using the personas in their system development. During the project, I made an effort to keep the personas and the scenarios present in the project and to help the project partners make use of the material in their work. Parallel to this, I conducted a field study in which I observed the project partners' usage of the personas. These observations were made by participating in meetings and workshops in order to study the use of personas (or sometimes more importantly their lack of use) and by examining documentation, the project wiki and e-mail conversations. During the last year of the project, I carried out interviews with the project members to discuss their view of the persona method.

The settings in which I performed my research were complex. There were a number of stakeholders to consider – a collection of project partners whose goals, organizations, cultures and work methods differed quite radically. This project situation created a setting that challenged the user-centered design approach in many ways. The project plan did not really include a phase to elicit user needs, instead there was ample time planned for evaluations of the final interface. In addition, many project partners participated in the project, and they were geographically spread out throughout Europe, which made efficient communication difficult. But the focus of the present thesis is

on the method of personas and scenarios; it is not on how to perform user-centered design in large international technology-driven research projects, and it is not on how these specific types of projects affect the usage of personas and scenarios, even though both these aspects have affected and shaped the results.

1.3 Research topics

In short, the research topics that will be examined here are the following:

- What effect does the storytelling aspect of the persona method have on the usage of personas and scenarios in system development projects?
- Which considerations are important when constructing personas and scenarios and what needs to be in place for personas and scenarios to support system development projects?
- How can personas and scenarios support the communication of user needs and desires to project members and stakeholders?
- How can personas and scenarios support design activities in system development projects?

1.4 Personas representing my intended readers

In order to help me write this thesis, I have created two personas that represent my intended readers. I base the primary persona, Claire, on interviews I conducted with usability practitioners during my thesis work where we discussed their usage and experience of working with personas and scenarios. Although the original purpose of the interviews was not to collect material to write personas, they yielded enough information to create Claire. Other data I used to create Claire were my own experience of working with usability practitioners and the frequent methodological discussions I have had with them over the years. The secondary persona, John, is based more directly on my experience with real persons in my work environment: my supervisors and other professors and researchers I have met during my time as a PhD student.

I created these two personas mainly to help me write my thesis. I wanted my thesis to contain concrete practical advice for usability

practitioners who want to know more about the persona method in order to help them use the method more accurately and with greater impact on the design process and usability within projects in general. This is why I created Claire. But I also wanted my thesis to provide relevant new research results about the persona method for the field of HCI – results that are grounded in methodical research in real projects involving actual users and stakeholders. This is why I created John. The persona descriptions for Claire and John are given below.

Claire – primary persona

Figure 1. Portrait of Claire.

Claire is in her late twenties and lives with her boyfriend in a tiny rented flat in a nice suburb. She has a Master's degree in behavioral science with a focus on human–computer interaction.

Claire is now an interaction designer working in a medium sized ICT company. She specializes in pre-studies in which she performs user studies, observes and interviews users and initiates and performs prototyping activities, during and after which she collects and documents user needs and requirements, which she then communicates to project stakeholders – art directors, copywriters, clients, developers, project managers, etc.

Claire has worked at the company for two years and is increasingly disillusioned about how difficult it is to successfully communicate user needs – the systems that get built do not always fulfill the user needs that she has elicited. To solve the problem, Claire is searching for methods

that are useful and have been tested by her peers. She has heard of the persona method and finds it interesting, but before trying it she wants to find literature to learn more about how well the method works, what its strengths are and which pitfalls to avoid.

Claire's goals

- Deliver quality projects to clients
- Successfully communicate user needs to project stakeholders
- Use proper user research methods in the appropriate way

John – secondary persona

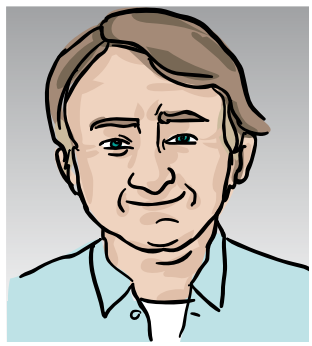

Figure 2. Portrait of John.

John is in his late fifties and lives with his wife and three dogs in a nice house with a garden in an "academic" suburb. Their kids are all grown up and are living around the globe, studying and working on all sorts of things that John didn't even know existed.

John is a psychologist who got his PhD ages ago. His research interests are within the field of human–computer interaction and he has been a professor in an HCI department at a technical university for several years. His research focus is on processes and methods that can be improved to increase user involvement. But since becoming a professor, he has not done much "real" research. Most of his time is spent running the department, applying for funds (for junior researchers – not himself), attending conferences, teaching and supervising.

John will retire in a few years, and he has started to allow himself to look

forward to doing things he hasn't had time to do in the past owing to his busy schedule and frequent traveling. He wants to work more in the garden, take the dogs for long walks and visit his children who all live abroad.

John's goals

- Run a department that produces cutting edge research
- Make sure that his PhD students proceed with their work and finish their PhDs
- Learn new things by reading brand new PhD dissertations

1.5 Overview of the thesis

This thesis consists of nine chapters including this introduction. Chapter 2 describes the settings in which I performed my two separate field studies. I describe first the user settings in which the user research was performed and which had the aim of getting to know the users and eliciting the user needs to be able to create the personas and accompanying scenarios. I then describe the project setting in which the personas and scenarios were utilized.

Chapter 3 describes my research approach – the lens through which I observe and analyze my material – and discusses the field study methods that I have used. In addition I discuss the user centered design approach and the methods that were used in the Nepomuk project in order to explain the circumstances in which the personas and scenarios were created and subsequently used.

Chapter 4 describes the method of personas and scenarios in detail as well as the history of the method, previous research, general critique that has been presented in the literature and finally the strengths of the method. Chapter 5 gives an overview of the specific user research that I performed in the Nepomuk project and the actual activities carried out. Chapter 6 gives an account of the personas and scenarios that were the result of the user research carried out in the Nepomuk project.

Chapter 7 contains the main study, the observations and other activities that I performed in order to see how the personas and the scenarios were received and used in the Nepomuk project as well as

other projects that I have created and used personas and scenarios. Chapter 8 considers the usage of personas and scenarios within the Nepomuk project and gives an analysis of the factors that may have influenced the usage of the persona material within the project. Finally, in Chapter 9 I summarize my findings.

Chapter 2

The field settings

This chapter deals with the settings in which I conducted the Nepomuk field studies and describes the project setting for the Nepomuk project itself, on the one hand, and the user settings, on the other. Figure 3 gives an overview of the entire study. The purpose is to give comprehensive information on the background of my field studies to make it easier for the reader to understand where I collected my data and did my analysis. First I describe the nature of the Nepomuk project setting and the aims and ambitions behind it. I then go on to discuss the user settings, i.e. the settings in which the user research was performed.

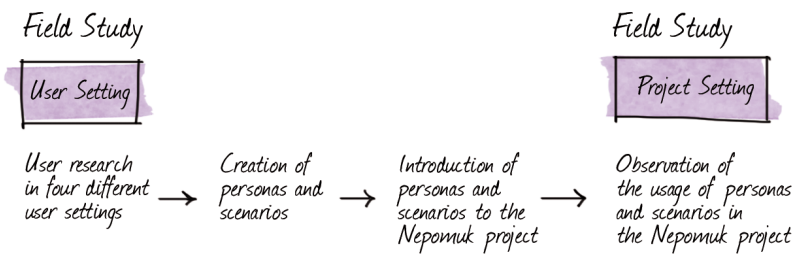

Figure 3. Overview of the field studies in this thesis.

2.1 Project setting

2.1.1 Project background

The inspiration for the project name comes from "John of Nepomuk who is the patron saint of bridges, since we bridge the applications on the desktop" (chat communication with a Nepomuk Developer

2008-02-27). Nepomuk officially stands for Networked Environment for Personalized, Ontology-based Management of Unified Knowledge. It was a European project that ran from January 2006 to December 2008, consisting of various partners from small-scale companies with a handful of employees to big international corporations with thousands of employees. All partners came together in an open-source project working toward the Social Semantic Desktop, which was described as an enlarged supplement to the user's memory, linking together digital information and actively supporting personal information management (Nepomuk 2009). There were two types of project partners in the Nepomuk project, *technical partners* who were responsible for the development of technical components and *case study partners* who utilized the technical components to develop applications to be tested and used in the user settings. The case study partners acted as the link between the user settings and other project partners.

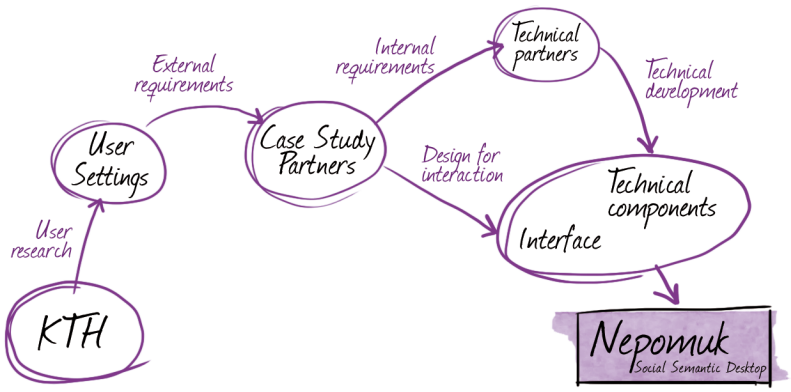

Figure 4. A simplified overview of the Nepomuk project and major project activities.

The activities of the partners, whether a university department or a product/service developer and provider, varied depending on their interests and goals within Nepomuk. The aim of Nepomuk was to develop the Social Semantic Desktop and to "realize and deploy a comprehensive solution – methods, data structures, and a set of tools –

for extending the personal computer into a collaborative environment, which improves the state of art in online collaboration and personal data management and augments the intellect of people by providing and organizing information created by single or group efforts" (Nepomuk 2009).

The Social Semantic Desktop was intended to empower individual knowledge workers to better exploit their personal information space and to maintain a fruitful communication and exchange within social networks across organizational boundaries.

The Social Semantic Desktop was planned to include a set of technical and methodological solutions for supporting the knowledge life cycle and the generation and exchange of personal thoughts via structured articulation in extended, wiki-based semantic tools. It should help manage all relevant information in the personal workspace via different media and applications linking information items based on standard semantic web data structures, together with non-intrusive metadata generation support.

The last partner to join Nepomuk was my own research group: the multi-disciplinary research group from the Department of Human–Computer Interaction at the Royal Institute of Technology, KTH. The KTH group was asked to assume responsibility for the usability aspects of the intended system, concentrating their work on the final year of the project to assure a user-friendly interface. However, usability research and the Scandinavian tradition of cooperative design have demonstrated that successful system development is dependent on early user input: when designing and implementing a system, the users of the system need to be involved in the early stages of the design process to ensure that their needs and requirements are met in the final system (Greenbaum and Kyng 1992; Bødker et al. 2000).

Within Nepomuk, a philosophical, overarching idea was emphasized concerning how the Social Semantic Desktop should be developed and how technology could help achieve the goal and bring the system to the users. There was an awareness of the need to understand users in order to make a useful and usable system, but it was not necessarily clear how this was to be accomplished.

2.1.2 Project partners

The full list of Nepomuk partners is as follows: Deutsches Forschungszentrum für Künstliche Intelligenz (Kaiserslautern, Germany); IBM Ireland Product Distribution (Dublin, Ireland); SAP (Karlsruhe, Germany); Hewlett Packard (Galway, Ireland); Thales (Paris, France); PRC Group – The Management House (Athens, Greece); EDGE-IT (Paris, France); Cognium Systems (Paris, France); National University of Ireland (Galway, Ireland); Ecole Polytechnique Fédérale De Lausanne (Switzerland); Forschungszentrum Informatik an der Universität Karlsruhe (Germany); Gottfried Wilhelm Leibniz Universität Hannover (Germany); National Technical University of Athens (Greece); Royal Institute of Technology, KTH (Stockholm, Sweden); Universita Della Svizzera Italiana (Lugano, Switzerland); and Irion Management Consulting (Kaiserslautern, Germany).

All project partners had mainly technical backgrounds, with the exception of our own group at KTH. The academic partners were all from technical departments, such as computer science or artificial intelligence, and the corporate partners were mostly from technology-oriented companies of various sizes, ranging from just three to over 50 000 employees. Most of the participants either had or were working toward a PhD degree in either computer science or artificial intelligence. The most active project participants were PhD students, many of them working on a thesis based on material collected or tested in the Nepomuk project. The majority of participants were male. Although the male-to-female ratio varied during the course of the project, an estimate for the project as a whole would be five male participants to one female participant. Here as well, the KTH group was an exception, with three female and five male project members. As an example of the male-female imbalance, attending the final EU review of the project were 32 Nepomuk project members, only three of whom were women.

The project members communicated using various tools. We had an e-mail list to all members of the project that was frequently used to communicate and to prepare for the face-to-face meetings that were held on a regular basis. Most project members had access to each

Figure 5. The Nepomuk Project group during a General Assembly in Lugano, Switzerland, February 2008.

other through chat and/or Skype. There were several types of recurring meetings, and in addition to those we had a general assembly (usually with around 50 participants) once a year, in part just to meet other participants in person – to touch base – but most importantly to plan for the EU review that was held once a year with two representatives from each project partner. The annual review meetings were the project's most significant meetings, at which we presented the previous year's progress in the project to three reviewers appointed by the EU as well as the project officer for Nepomuk. The review meetings were followed by a report from the reviewers listing things that needed to be improved or changed in some way. Besides these channels, we had a project wiki where all information was documented. Many partners used the wiki to cooperate internally, whereas others only used the wiki to present results to other partners. One final communication channel was a weekly telephone conference with representatives from the more technologically oriented partners. The KTH group had a representative in the telephone conferences, which was important for keeping us up-to-date on what was going on in the project. Other smaller meetings were held, many of them with a technological purpose, like finalizing the system architecture or figuring out the various partners' requirements regarding the different technical components being developed.

2.1.3 Usability perspectives in Nepomuk

The KTH group emphasized, from the beginning of the project, that we needed to work with the users throughout the whole development process, and that the users should not only be brought in toward the end as mere test persons and evaluators. We argued for our approach by explaining our view of the user-centered design process, discussed in Chapter 3.3, by showing examples from previous research projects and by providing hands-on experience of our methods.

As in other projects with a number of different research groups involved, the way to conduct work was through continuous negotiation. Still, our relations with the other partners were good, and we were welcomed and accepted into the project, albeit with some degree of skepticism. It is possible that our methods seemed non-scientific and non-measurable to the other project partners, too inaccurate, perhaps, to be taken seriously. The KTH research group is multi-disciplinary, consisting of computer scientists and engineers, industrial and graphical designers, as well as social scientists. The cooperative design agenda is strong within the group (Bødker et al. 2000; Lindquist 2007), and design methods and processes are an important part of our research. We assume that we differ significantly from the common picture of a research group in the field of computer science, system development and research.

The project partners varied greatly, but the greatest difference was between the KTH group and the remaining partners, as we differed considerably from the other partners with regard to research culture as well as system and technology development and methods. One project member even called us "exotic" (interview with a Nepomuk project manager 2008-04-01), which is not a term I have often heard associated with a Swedish research group. We are a multi-disciplinary group and prefer to share our results and validate them through workshops, prototypes and other activities.

The other partners' experiences of and opinions on user-centered design differed greatly from the usability philosophy embraced by the KTH group. The other project partners had a more technical background

and the academic partners were all from technical departments, such as computer science or artificial intelligence, with limited experience of user-centered design. Moreover, their interest in the user-centered way of working was generally low and in some instances non-existent. Many of the technical partners were not focusing on creating a usable system. Their interest was instead focused on using and determining the quality of the technical solutions they created, and wanted to collect empirical data they could document and use to prove that their algorithms were efficient or worked in a certain situation. Some partners were even openly opposed to user-centered design methods, completely disregarded our methods and did not participate in the activities we planned and carried out in an effort to include the user needs and requirements in the project. The project management was also firm in reminding the participants that Nepomuk was "Technology-Driven but Motivated by Needs of Knowledge Workers: Vision is motivated by technical possibility, Majority of partners are technology providers, Goal of the project is the realization of innovative technology suitable to solve user needs" (presentation at the first EU review 2007). This meant, in practice, that the technology was the main driving force in the project, and if it turned out to be useful for knowledge workers, this would be an added bonus.

Consequently, when we joined the project, we had to fight an uphill battle to try to convince our partners that we should develop the system according to the user-centered design process we were experts in. When we explored the project plan, we realized that our activities were mainly planned for the end of the project, at which point we were supposed to evaluate the final prototypes (running code). This is a typical "hostage" situation for usability specialists, when we are taken captive in projects to put an "approved" label on the final system. We had assumed that our competence was the reason we were invited to join the project, but we found instead that our presence was required to give the impression that the end users had been considered.

Kurvinen et al. (2006) reported related issues in a setting where they tackled technological problems in a project with a large coalition of geographically distributed partners – large projects require planning

and resist change. Similarly to us they had a challenge training the partners in user-centered design, which brings with it new ideas and iterative changes.

This unofficial hostility toward user-centered design made our work difficult and we had to work hard to convince the project management that we should be involved in the project from the beginning rather than merely as evaluators toward the end. We managed to convince our partners and started to carry out comprehensive user research and visit the different user settings (discussed more closely in Chapter 5). It soon became clear, however, that most of our technical partners did not really take our research and our results seriously – because they were going to use and evaluate their technology anyway – and it became apparent that we would not be able to affect the design and functionality of the final system to any great extent using the results from the user research. Our work therefore became a parallel activity that was allowed to continue. There were complaints about the fact that we were not coding the graphic interface of Nepomuk, because many partners assumed that we were the "interface people", a situation that is not at all uncommon according to Boivie (2005). But we made it clear early on that our specialty was in user-centered design and in making sure that the Nepomuk system would meet users' needs. Because of the preconceptions about our competence and role in the project, it must have been surprising to the technical partners when we introduced our qualitative methods and activities like contextual interviews, workshops, video brainstorming, personas and such, which did not directly result in a concrete list of functionalities and technical requirements or interface plans.

It was within this environment that we undertook our user-centered activities, and it is actually quite surprising that we got any positive reactions from our partners at all. As it turned out, some partners became very interested in our design philosophy and methods. This will be discussed more in Chapter 8.

2.2 User settings

The user settings consisted of four groups of representative industrial users who participated as informants in Nepomuk. Although all four

user settings were involved in different business areas, they were all knowledge workers, i.e., they worked with creating, capturing, organizing, accessing and using knowledge on a daily basis (Drucker 1973). The concepts *knowledge* and *knowing* are not new, but *knowledge management* and *knowledge work* are fairly recent terms, appearing in the second half of the 20th century. Knowledge work is best described as work realized through the development of information and communication technology that requires a new method of work organization and execution (Kumar 1995). While knowledge does not necessarily rely on data, information always relies on underlying data as its source.

The four user settings participating in Nepomuk were: Time Manager International (TMI) in Greece, the UK and Denmark; SAP Research in Karlsruhe Germany; a department at the Institut Pasteur in Paris, France; and the Linux community Mandriva Club, based in France but with members all over the globe. I was active in the user research at TMI and SAP Research, planned most of the activities and was involved in all of them, except for two evaluations carried out toward the end of the project. I participated in activities in the other user settings, but my activities there were limited to a few interviews, some workshops and prototype evaluations.

The user settings acted as information providers through field data, and served as test beds for applications created within the project. One of the user settings was also a case study partner and a user of the information collected, as they were involved in the development of technical components to be used by the technical partners. The boundary between user and developer was sometimes unclear, and on a number of occasions, the people who were observed, interviewed and participated in prototype evaluations turned out to have a strong effect on prototype functionality and visual form – even though these informants did not, strictly speaking, belong to the target audience.

2.2.1 Institut Pasteur

Institut Pasteur in Paris, France, is a non-profit, private foundation dedicated to the prevention and treatment of diseases through biological research, education and public health activities. The International

Network of Institut Pasteur consists of 29 independent institutes around the world united by the same missions, culture, and values (Institut Pasteur 2009). In the user setting we observed at Institut Pasteur, the focus is on biomedical research, doing experiments, analyzing the material and writing up the results in scientific papers. The work varies, and can involve focused, individual work in the lab or collaborative work on papers or meetings where the experimental data are analyzed and documented. The work adheres to strict scientific guidelines and follows a rigorous work process in order to ensure the validity of the outcome as well as to enable comparisons with results from other labs doing the same experiments.

Other activities consist of patent licensing and training. Trainees, such as students and postdoctoral fellows, carry out a large part of the research work. Other roles include researchers, scientific technicians and academic advisors. Frequent activities are, for example, literature/state-of-the-art analysis, project and experiment design, and project management as well as experiment implementation. During experiments, meticulous logging activities are performed, and when

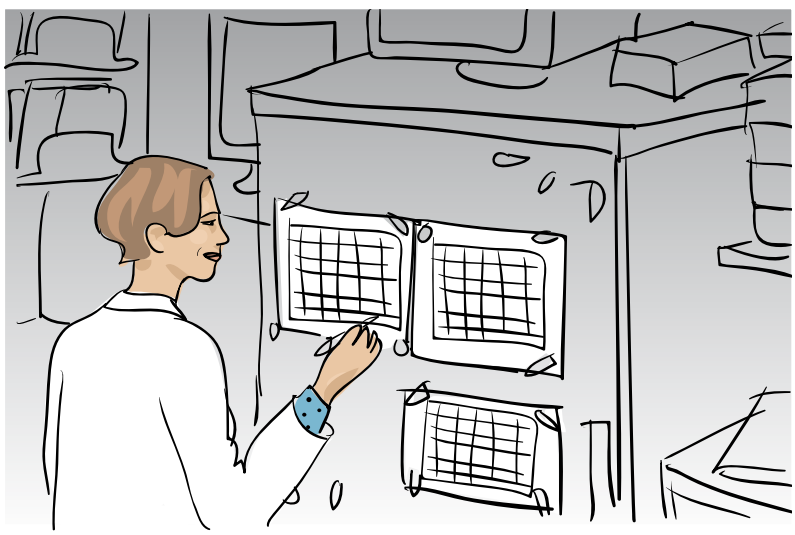

Figure 6. A scenario picture based on our fieldwork at Institut Pasteur depicting Marie booking the lab to carry out experiments.

experiments have been carried out, the activities turn to analysis and interpretation followed by informal presentations and, lastly, scientific publications (Polonsky et al. 2006).

The setting the KTH group visited is a research lab, which is part of the larger research Institut Pasteur. The lab team we visited consisted of six to eight employees (this varied between visits), all biomedical scientists. There was one lab leader, two PhD students, one lab technician and up to four student trainees. Two lab teams shared the facilities used by the lab team we visited. The rooms were quite narrow and small with a lack of open, non-dedicated spaces. Sharing the limited space required planning how it would be used for different activities. For example, there were joint rooms for leisure, small talk and work, and there was a shared paper calendar on a refrigerator in the lab office for booking equipment and rooms.

2.2.2 Time Manager International

Time Manager International (TMI) was founded in Denmark by Claus Møller in 1975 and today it is one of the world's largest learning consultancies, with partner offices in close to 40 countries and its headquarters in Athens, Greece. TMI is organized according to a licensor-licensee model. TMI licensor organization is responsible for the development of TMI's strategy and its dissemination to local partners. The first product launched by TMI was the *Time Manager®*, a goal-based planning/calendar tool with a unique philosophy. The tool did not just focus on managing time, but activities and tasks, lifestyle and attitudes. Every year, thousands of people from large and small organizations all over the world attend TMI programs to learn how to better manage their time, people and performance, so as to deliver exceptional service and quality – and to manage culture change (Papailiou et al. 2006).

TMI employs management consultants who work for diverse clients offering training and consulting within the area of organizational development. The work is mainly divided between sales and delivery of projects. A large amount of the daily work activities focuses on managing training or consulting projects. TMI consultants produce and/or adapt presentations and training material on topics based on their client

profile as well as on the needs they discover during the preparation phase for each project. TMI project managers and administrators usually work together, while the consultants and trainers work individually or in smaller groups on each project. All TMI office employees involved in product development are responsible for updating their material, categorizing it, keeping international and localized versions of products offered in their offices and for adhering to the standards of quality and security.

When a new idea for a product or service materializes within the network, usually from a partner office that launches the new product in a local market, the new concept is often presented at the Annual World Conference where the licensor and all other partner offices participate. Several discussions and interactions between interested parties are initiated at this point, the aim being to adopt the new product and use it in other geographic markets, depending on its applicability.

We visited TMI offices in Denmark, Greece and the UK, and the three settings varied greatly. The offices in Greece and Denmark employed around seven people each, but there were around 30 employees in the

Figure 7. A scenario picture based on our fieldwork at TMI depicting Alistair in a sales meeting with a new client.

UK. Most employees worked in a designed and carefully branded open office environment with access to conference rooms and common areas where they took coffee breaks. Coffee breaks, especially in the UK, seemed to be an important social activity, with people taking turns preparing coffee or tea for each other. Two of the three offices we visited were located in a rather isolated area in the outskirts of larger cities; this was possible because most client activity – courses and consultancy – was based at the client sites. Some of the offices were decorated with TMI slogans and philosophy, which attempted to accentuate every employee's individuality – everyone's strengths and weaknesses.

2.2.3 SAP Research

SAP Research is the global technology research unit of SAP, with a network of 13 research centers on five continents. The group contributes significantly to SAP's product portfolio and extends its leading position in the market by identifying and shaping emerging IT trends and generating breakthrough technologies through applied research (SAP 2009). SAP Research performs projects in-house or with external partners,

Figure 8. A scenario picture based on our fieldwork at SAP Research depicting Martin hard at work writing or reading a project deliverable.

trying out new ideas and testing and evaluating products with the purpose of both contributing to SAP's product portfolio and publishing research papers. SAP Research's work environment is somewhere in between research and industry, and the projects represent high-quality research. The results, on the other hand, are more readily used by the industry than are typical research project results, given that the aim is to contribute to SAP's product portfolio (Grebner et al. 2006).

The SAP Research setting we visited was based in Germany and had about 80 employees. Globally there were about 300 employees at SAP Research (personal e-mail communication with an SAP Research employee and a Nepomuk project member). Many of the tasks performed consisted of reading and/or writing scientific papers or project deliverables, either together with colleagues or individually. There was a great deal of traveling involved in the work, and many trips were made to nearby SAP headquarters, where all developers were based and where they built prototypes that were the result of the research carried out. There were also many trips to cooperating projects, especially other EU projects with regular assemblies and review meetings. The work was divided between individual research and meetings with colleagues, either physical meetings or via telephone or videoconferences. Meetings were often scheduled at odd hours to coincide with relevant meeting times on several different continents. Many of the colleagues at our field setting were cooperating with colleagues in Australia, which meant difficult working hours for both teams. There were three major work roles at SAP Research: Project managers, PhD students and Master's students. Researchers from nearby universities normally supervise the students.

The office environment consisted of long corridors with offices shared by up to five people. At first we perceived the office environment to be colorless and void of decorations. Later on we noticed personal decorations in the offices: many have postcards from colleagues and Dilbert cartoons on their walls as well as the SAP activity calendar. The informants explained this lack of decoration by the fact that they frequently share a desk with other people and often move offices to fit the projects they are working on. Initially we did not notice a great

deal of social activity in the office, but after spending time in the field and visiting it a few times, we realized that people often socialized in their offices and people always went to lunch in larger groups. The staff also socialized a great deal digitally, via e-mail, calendar and different project wikis.

2.2.4 The Mandriva Club

The Mandriva Club is an online community whose members are Linux users utilizing the community mainly to search for information about new downloads and to download new software. Another activity is to search for information to solve problems with one's own Linux installation. Advanced members provide the community with solutions to problems they have experienced and solved themselves. These activities are almost always carried out individually and with virtual conversation in the discussion forum. The Mandriva Club consists of the following main modules: a knowledge base; a forum (available in 6 languages); an e-learning module; a P2P download module; a blog

Figure 9. A scenario picture based on our fieldwork at Mandriva Club depicting André at home in his office about to go to the Mandriva Club to post solutions he has solved recently.

module; a chat; and a calendar of Linux-related events all over the planet (Laurière et al. 2006).

The Mandriva Club members are often driven by the open source philosophy of the different Linux solutions. Their work for the community is often a hobby they perform in their private time parallel to their work or other activities. Many of the Mandriva Club members we met turned out to be retired men who were active with several hobbies and responsibilities. The typical Mandriva Club member we met often had a rather messy office, or a tiny space in the corner of the bedroom at home where they worked and experimented with several computers with different operating systems.

2.3 Other projects settings and data used in this thesis

To complement the data gathered in the Nepomuk project, I have also analyzed data from other projects that I have carried out before, during and after my work on the Nepomuk project. Since I decided to write a thesis about personas and scenarios I have attempted to follow up on the projects in various ways.

The project settings for these projects varied but were mostly offices, open office environment and conference rooms. The target audiences consisted mainly of employees at the different companies and/or their clients. The user research was carried out mainly in the greater Stockholm area, but also in Northern Sweden.

Chapter 3

Research approach

This chapter discusses my research approach – the theoretical lens through which I observe, gather and analyze my data. Given my background in social anthropology, I have used ethnographic fieldwork and ethnographic writing in order to understand and write about the field settings in which I was involved. Here I will discuss how I have used these approaches in my study. I will also describe the user-centered design philosophy and methods specifically used to understand the user settings and to perform the project-specific work tasks that needed to be completed. Furthermore, these methods were a complement to the ethnographic fieldwork within the project setting.

The research I performed within the Nepomuk project involved two conceptually different types of field studies (see Figure 3). On the one hand, I conducted field studies in user settings, which aimed at fulfilling the requirements of the Nepomuk project, i.e. creating personas and scenarios that would guide the requirement specifications and the design process. On the other hand, I conducted field studies in the setting of the Nepomuk project itself, which aimed at observing how the project partners actually used the personas and scenarios in their project work. The research approaches used in both field studies were similar, but the purpose of the studies differed and one of the field studies was a prerequisite for the other: In order to observe and analyze the usage of personas and scenarios in the Nepomuk project, there had to be personas and scenarios created in the project. And in order to create the personas and scenarios, I needed to perform the user research to understand the users.

3.1 Ethnographic fieldwork

My theoretical background stems from my studies in social anthropology, and my research approach is ethnographic. The word ethnography has a double meaning in social anthropology. In one sense, ethnography is a product, i.e. the writings of anthropologists. In another sense, ethnography is a process, i.e. participant observation and fieldwork. In writing ethnographies, anthropologists do more than merely write up the field notes they record as part of the process of doing fieldwork (Sanjek 2002; Seymour-Smith 1986), the ethnography is a result of how we write as much as how we carry out the data collection and analysis (Hammersley and Atkinson 1995).

Social anthropology is a discipline concerned with the exploration of human diversity, and the field uses quite distinctive methodologies, such as participant observation and fieldwork. "Doing ethnography" (Hannerz 2001: 515) has become common in other scientific fields, so it is difficult to claim that social anthropology is the only discipline using the methodology. However, the notion of doing research in a natural setting and keeping a holistic view can be credited as unique to social anthropology. Traditionally, this has meant that the social anthropologist has tried to understand all activities in relation to each other, keeping the focus on the whole society under research. Today, and especially regarding the role of social anthropology within user-centered design, this means that the researcher does not focus on activities in isolation (Blomberg et al. 2002).

Still, data and facts cannot be collected, as Rabinow expresses it, "as they were rocks, picked up and put into cartons and shipped home to be analyzed in the laboratory" (Rabinow 1977: 150). What we often casually call facts or data, the material we observe and gather when we are in the field, are already interpretations; they are made in our field by our subjects and then remade when we, the anthropologists, come to the field and interpret them.

Hammersley and Atkinson (1995: 1) refer to ethnography as involving "the ethnographer participating, overtly or covertly, in people's daily lives for an extended period of time, watching what

happens, listening to what is said, asking questions – in fact, collecting whatever data are available to throw light on the issues that are the focus of the research." To perform ethnography, one needs both patience and a genuine interest in the lives and work of the people in the field in order to access the relevant information. What is of most interest are people's intentions and their interpretations of the different activities and behavior that occur. This understanding is achieved slowly but steadily through observation, reflection, conversation and participation (Barth 1993). Patience is important, as our understanding of our field gradually grows and develops. Rabinow claims that the anthropologist spends much of her time in the field "sitting around waiting for informants, doing errands, drinking tea, taking genealogies, mediating fights, being pestered for rides, and vainly attempting small talk—all in someone else's culture" (Rabinow 1977: 154). He maintains that these interruptions are highly revealing and informing, they force us to stop and think, move to a different place or do something else, and all movement and change is informative and helps us get a better understanding of our field.

Reflexivity is an issue for many researchers, but it is of central importance when performing ethnography, where the relationship between the researcher and the researched is relatively long term and intimate (Davies 1999). Reflexivity occurs when the observations or activities of the researchers in the field affect the situations they are observing. It is important to recognize reflexivity, and to realize and keep in mind that the ultimate goal of the field study is to generate knowledge about the field and its participants. As researchers, we are trying to describe the field as it is, not as we would like it to be or how we expected it to be (Hammersley and Atkinson 1995).

The researcher not only affects the field with her presence and the way in which she builds a relationship with her informants – the starting point is also the very choice of which study to perform and where to perform it. There are many insights that need to be incorporated into the research practice, and reflexivity needs to become part of the research and be both acknowledged, understood and utilized. How informants react to the researcher can tell us a great deal about how they react

in other circumstances. The literature (e.g., Davies 1999) suggests that one of the ways to minimize the effect is to develop a role whereby the ethnographer steps in and out of the field.

During my field studies, I was very much a part of the field I was studying. Not only did I participate in various activities in the user settings, but I am also aware that my presence and my individual attributes had an effect during the interviews and other discussions. The informants always acknowledged my presence in all the user settings, those I spoke to as well as those I didn't speak to. In most user settings, the visits made by me and my colleagues became curious subject matter, and people often came by to talk and to ask who we were, what we were doing and when we were going to deliver some results.

I was an even more integral part of the project setting. Not only was I a member of the project group I was observing in the project setting, but I also delivered results – personas and scenarios as well as prototypes – to the project group based on our research in the user settings. To further complicate the issue, it was the usage of those very results that was the main object of investigation in my project setting field study. Obviously, this was a challenge I had to tackle and one that I considered continuously during my analysis of the data collected in the project as well as during the writing process.

Within the project I was open about my scientific interest in the persona method. I took on, what Fine (1993) calls explicit cover (not deep cover or shallow cover) where I was totally honest about my intentions and hoped that it would not have and reactive effect. I e-mailed all the project participants and added the same information on the project wiki. I told them "I use an anthropological method called participant observation which means that I participate in the project and observe at the same time. This means that everyone in the project, both the users and all the project members (even my own colleagues at KTH) are my research subjects. I listen to what you say during meetings and I read and interpret the e-mail discussions that are relevant to my research." (Nepomuk 2010).

Besides this, I did not make an effort to stay unnoticed in the project settings, during meetings and other discussions. Every group

is a mix of personalities, which affects what happens and I felt that my presence was not worrisome as long as my impact was not too direct or substantive (Fine 1993).

In the project, I was often required to explain and defend my work, which was not well understood and sometimes not at all appreciated by many of the project members. I was a member of the "exotic" KTH group that talked to people in the user settings and the other project partners were not used to working with researchers who apply a user-centered development approach like we did.

Hannerz (2003) describes a radio lecture by Professor Edward Evans-Pritchard relating how an "Oxford man" would become an accomplished fieldworker in social anthropology. He illustrates a study, focused on a single society, that could take about 10 years from start to finish, spending a few years preparing for the fieldwork, two years in the field itself and then about five years to write up the research and publish. This has been the view of the prototypical social anthropologist within the field, and this has been "the model for field work, and for becoming and being a real anthropologist" (Hannerz 2003: 202).

This view has changed since the later part of the 20th century, with fieldwork becoming more multi-sited, where the boundaries of the field have been changing and where the fieldworker either travels between several locations that constitute one field or travels back and forth between the field, which is in one location, and home. The reasons for this change are many. The objects of our research have changed and are often spread out in many locations. Another reason is that the possibility to travel has increased; it is both less expensive and easier to travel nowadays – even over long distances. It is furthermore a way to fit fieldwork into other professional or private obligations, when fieldwork lasting a year or two is simply not possible (Garsten 1994; Marcus 1998; Wulff 1998; Wulff 2000; Wulff 2002; Hannerz 2003).

The fieldwork I performed in the Nepomuk project was a prime example of multi-sited fieldwork. The user groups were spread throughout Europe, as were the project partners. The different sites studied were interconnected by the fact that they all participated in the Nepomuk project. The two distinct sets of field studies I performed

– the user settings study and the project setting study – both had the characteristics of multi-sited fieldwork. The user settings fieldwork aimed at generating personas and scenarios with a common goal in mind, the creation of the Social Semantic Desktop. This common goal was thus a unifying aspect for the different sites. In the context of the project setting fieldwork – the meta-study of how personas and scenarios were actually used – the ultimate goal of the Nepomuk project as a whole was still the main unifying factor, but in addition

Figure 10. KTH group members in Dublin on their way to an architecture meeting in Galway. There was extensive traveling involved in this fieldwork, and it was interesting, rewarding and pleasant most of the time. But sometimes, and especially toward the end, when the novelty had faded and things started to repeat themselves, the traveling became tiresome.

to this there was an ever-increasing cooperation and communication between the project partners on the project work itself.

My base was in Stockholm, Sweden, and I visited the different sites quite frequently. I visited the user settings 16 times and participated in project-related activities with project partners other than KTH on 24 occasions, both in Stockholm and at different locations around Europe. During the three years of the project, I travelled extensively, usually accompanied by a colleague who participated in the activities. (This fieldwork reminded me of Wulff's (2002) "yo-yo fieldwork", a term coined with reference to popular and relatively cheap flight tickets at the time).

There are both negative and positive sides to traveling back and forth between field settings. The negative side is the lack of continuous observation and participation; it usually means that the amount of time spent in the field is not extensive, at least not by the standards of Professor Evans-Pritchard. The positive side is that one does not become overly accustomed to the field setting, which means there is less danger of becoming blind to the behavior, practices and customs of the people being observed – that is, of beginning to see the extraordinary as ordinary.

Hannerz (2003) discusses different methodologies used in multi-sited ethnographies. A great deal of the material is collected through interviews, which is a fairly universally applicable method in fieldwork. However, when it comes to pure observations and participant observations, issues that hamper or prevent the anthropologist from gathering data may arise. He comments: "What do you do when 'your people' spend hours alone at a desk, perhaps concentrating on a computer screen?" (Hannerz 2003: 211), which is exactly the situation social anthropologists working with usability have to deal with on a regular basis.

Almost all of the activities carried out by the members in the Nepomuk user settings were done in front of a computer screen. Activities that were not connected to the computer were face-to-face meetings (although many meeting participants were actually using a computer during the meeting), presentations, seminars and courses, socialization (such as coffee or lunch breaks) as well as a great deal of

traveling. The methods of observation used were therefore varied in order to get access to as much information as possible. For example, for my user settings fieldwork, I conducted contextual interviews in the users' work setting, workshops and usability evaluations, and participated in meetings and other socialization, and (in some user settings) I gained access to documentation used in the work, such as official project documentation and company presentations.

A similar story can be told for the project setting. However, for the project setting fieldwork, I took part in the activities on a different level. I was an integral part of the project and I had work to perform that was not, essentially, related to my research. I took part in meetings and visited different project partners to discuss the work. Also, toward the end of the project, to complement my observations, I interviewed several project members from most of the partner organizations.

The multi-sited nature of my fieldwork also allowed me to triangulate, i.e. apply a combination of several research methodologies to study the same phenomenon. I used several approaches to confirm my ideas and hunches, such as participant observation, interviews and reading documents to name but a few activities (Hammersley and Atkinson 1995; Ellen 1984). The purpose was to see things from different perspectives and experience different activities during the development process, and I also shared my ideas and hunches with many of my project colleagues to get their feedback.

Another benefit of spending time away from the field is that it allows one to balance data gathering and data analysis better than one can when immersed in the field. Both fieldwork and the subsequent analysis are time-consuming activities, and while in the field, fieldwork naturally tends to occupy one's time at the expense of analysis. By spending time away from the field I could avoid this problem. Typically, I visited the field, participated in an activity, i.e. a meeting, or performed interviews or workshops and then returned to Sweden. In this way, I managed to keep a certain distance from the field and in the periods between the field visits I had time to reflect, discuss with my colleagues, plan the next step in the fieldwork and write papers (such as Guðjónsdóttir and Lindquist 2008), reports and deliverables in the Nepomuk project.

Data analysis is time consuming and needs to be done iteratively and throughout the fieldwork. How I analyzed my data differed depending on the type of data. I read the field notes and wrote up ideas and theories that surfaced through reading them, and then I usually noted them down in mind maps or simple text summaries. I made field notes in a notebook or using software called Journler (journler.com), which allowed me to tag the entries and sort them in chronological order or according to tags. I listened to the interviews and transcribed them largely verbatim, although Fine claims that the transcription is never verbatim as it "represents […] an analytic interpretation and selection" (Fine 1984, cited in Emerson et al. 1995: 9) and is a product of an ongoing interpretation and analysis. I then read through the interviews and tagged them with keywords, attempting to keep a consistent tagging strategy that would prove useful later on in my continuing analysis and writing.

During my fieldwork I took approximately 2500 photographs as complementary documentation of all the field visits and most activities that the KTH group participated in. These pictures document informants in the user settings as well as in the project setting, during meetings and other activities. The pictures were also a way to document the localities (and their surroundings) as well as the equipment that the informants were using. I used iPhoto (http://www.apple.com/iphoto) to organize the pictures, tag them with relevant keywords and view them during my analysis. During the project, I published a number of those pictures on Flickr (www.flickr.com) and shared them with several of my project colleagues who used Flickr.

In analyzing the data, the pictures were a necessary tool for me to keep track of the different field visits and the activities undertaken during those visits as well as to recall the individual participants. The most useful function in iPhoto was also the simplest one, the ability to arrange the pictures in chronological order. All Nepomuk pictures were tagged with the term "Nepomuk" as well as other relevant terms, such as the setting in which the picture was taken and the activity being done, e.g. "field study" or "meeting". I consulted the pictures repeatedly, both to help me keep track of the field visits and to help me remember

details from each visit. I also consulted the pictures extensively when listening through the interviews, tagging the field notes (often adding pictures to the field notes themselves when using Journler) and analyzing other types of data. Depending on my current focus, I was able to see different things in the pictures and reanalyze them in a way that supported the hypothesis I was developing. I also used the pictures when presenting my work to other project members, both within the KTH group and in the whole project.

The thesis includes several of these pictures as well as pictures taken by my colleagues and illustrations of the personas and their work environment. The reason for including this visual material is to allow the reader, primarily the likes of Claire and John (see section 1.4), to get a better feeling for and understanding of the work I did. The pictures taken in the different user and project settings add a visual dimension to the situation in those settings and the activities we performed there. The illustrations of the personas and the scenarios, which are discussed in more detail in Chapter 4, are included to allow the reader to better understand the settings we conducted our user research in.

3.2 Ethnographic writing

When an anthropologist has performed her fieldwork, she writes up the study in ethnography, or an ethnographic monograph, which can be defined as a "the scientific description of individual cultures" (Webster's Encyclopedic Unabridged Dictionary of the English Language 1989: 489).

The analysis and writing-up of the fieldwork is not a distinct stage in the research, but is instead an integral part of the whole process that starts when the researcher chooses her field of research, before the fieldwork even begins, and continues until the research has been written up in reports, articles or an ethnography. The analysis is iterative and develops both formally and informally throughout the fieldwork through the researcher's ideas and hunches as well as through field notes and other data collected (Hammersley and Atkinson 1995; Strauss and Corbin 1990; Emerson et al. 1995). Ethnographic writing has emerged as central to what the anthropologist does both in the field and afterwards. It is no longer a marginal activity as it was

previously portrayed. It used to be the participant observation that was in focus, where the anthropologist was usually portrayed interacting – playing, talking, interviewing – with the informants. And participant observation was often portrayed as leaving "little room for texts" (Clifford 1986a: 1).

It is relatively recently in the history of social anthropology that ethnographic writing has gained the well-deserved attention it enjoys today. This was apparent in most teachings of anthropology, where there was little or no advice given to students on how to write up the results of the fieldwork, as this was considered as something "straightforward, a matter of general writing skills" (Hammersley 1993). Nowadays, there are several books on the subject available for students (cf. Becker 1986; Wolcott 1990) as well as literature of a more theoretical nature covering important issues, such as how *realistic* ethnographic accounts are or should be (Tyler 1985; Webster 1986; Marcus and Cushman 1982; van Maanen 1988). Further, the literature considers how the texts are structured by assumptions of gender and how the anthropologist constructs the field textually (Hammersley 1993). The most influential texts of this type are *Writing Culture* by Clifford and Marcus (1986) and *Works and Lives* by Geertz (1988).

Ethnographic writing can be treated "as a performance emplotted by powerful stories" (Clifford 1986b: 98), meaning that the textual result of the ethnographic fieldwork is a description of the cultural events (content) and at the same time a story about the field in question (form). The literary or poetic effect is often primary, and narrative creativity is encouraged (van Maanen 1988). But unlike most other forms of social science, in which theory is usually supported by data, in social anthropology the theoretical discussion is usually located at either end of the ethnographic story as "merely and enhancer and rationale for that story" (Marcus 1988: 68). Marcus goes on to argue that theoretical concepts are conveyed through strong ethnographic images and stories that are embedded in the ethnographical narrative.

Telling a story is powerful and creates more immediate closeness with the material. There are quite a few examples of this in the anthropological literature. One is the way in which Marjorie Shostak begins

her ethnography, with a story of a !Kung childbirth in *Nisa: The Life and Words of a !Kung Woman* (1981). Clifford calls for recognition of the storytelling elements of the ethnography because the realistic portraits are "extended metaphors, patterns of association that point to coherent (theoretical, esthetic, moral) additional meanings" (Clifford 1986b: 100). Recognizing and accepting this changes how ethnographies can be written and read.

A Norwegian anthropologist, Fredrik Barth (1993), was confronted with the difficulty of comparison after reading several ethnographies about Bali, where he had performed fieldwork and written up his research in ethnography. It seems to have frustrated him that the different ethnographies could not really be compared because they had been written so differently. He also opposed the general description in the literature according to which the culture in Bali was similar and uniform. He therefore tried to model a set of empirical components and processes from his observations in the field. His aim was that the model would "generate the particular range of events that take place and the aggregate forms that characterize the region and its civilization" (Barth 1993: 164). Only by modeling our descriptions in a way that captures different connections can we understand the processes whereby lives are shaped, and ideas and knowledge reproduced and changed.

Barth's primary purpose with the model was to depict the patterns one sees in the culture one is studying – to visualize how the members of the culture put into practice the culture's institutions and traditions. How this is accomplished usually varies greatly and, according to Barth, needs to be documented and communicated. He also stresses that these formal institutions and traditions are not "*what* is happening" (Barth 1993: 157). It is their practical application that should capture our attention, and writers need to convince their readers that they have identified how people interpret each other's acts.

Barth's model is constructed by generating "complex and comprehensive patterns of behaviour (roles)" (Barth 1966: 3) from specifications (statuses), according to a set of rules. Barth further explains that the "role thus generated should represent the optimum around which empirical behaviour may be seen to cluster" (Barth 1966: 3). He op-

poses the way in which social anthropologists have been too eager to produce specific explanations for everything they observe. Instead, he claims that it must be the object of our analysis to reduce this plea for uniqueness, to see how little variation is needed and to explain the differences we observe (Barth 1966).

When reading Barth's attempts to explain how and why he wants to generate these models, it is easy to see the resemblance with my own work in the user settings, i.e. the work I did with personas and scenarios. Personas are an attempt to capture the diversity observed in the field, but their purpose is also to yield a clear and understandable description of an otherwise unmanageably complex field. "Our problem is to conceptualize all of them in such a way as to capture their diversity, yet make them amenable to coherent and connected representation." (Barth 1978: 165).

Barth's description of how he goes about creating his models is closely analogous to the persona method and thus to the way I create personas based on user research. He begins by mapping the main units – in his case households producing wheat and rice versus wheat only. He then aggregates the material into a larger description displaying the total variation in main forms of units, and makes an estimate of the respective numbers of different types of units found in the region. Having done this, he generalizes based on case stories to show the dynamics within each unit and studies these units both in isolation and in relation to other units. He then combines the knowledge into a dynamic picture of unit relations and simulates how the units cooperate (Barth 1978).

Creating personas (or models, in Barth's terminology) not only helps to communicate the results of the field study, but the activity is also a way of understanding and analyzing the field material (Barth 1978). This is supported by Gubrium and Holstein (2008) who claim that narratives communicate not only experience, practices, and so on but also provide us with analytical tools that help us capture the variation of everyday practice. Through the personas, we can see how events are connected and how people interpret the events. To understand the processes and constraints of the actual work, we investigate

these features during the construction of the persona. The need for this analytical process is a possible explanation for why the usability practitioners I interviewed reported that it is very difficult to work with personas that they have "inherited" from someone else. In such cases usability practitioners do not carry out the user research, nor do they go through the process of writing the persona material, and it is during the writing that one develops a further understanding of the users and their context.

Barth does not only use his models to communicate the results of his field studies. The model makes it possible to encompass the variety of data, but most importantly the model directs our attention to processes that give rise to forms of behavior. "It is a model whereby one may *generate* forms according to the rules of strategy, given the parameters of value; and these forms generated by the model may then be compared to the empirical patterns which one has observed" (Barth 1966: 5; his italics). Barth claims that this cannot be done with detailed lists and comparison of those lists.

The citation above can actually be adapted quite easily to describe the persona method. Just replace *model* with *persona* and *form* with *scenario* and it reads: It is a persona whereby one may generate scenarios according to the rules of strategy, given the parameters of value.

Grudin (2006: 661) argues that "personas and ethnography have striking parallels. Each excels in the underlying psychological mechanisms of representations and engagement. Both face the twin challenges of forming and communicating a veridical understanding." Stories are a powerful way to communicate this understanding since they create immediate closeness with the material presented. Ethnographies have been written about storytelling (cf. Busse 2005; O'Nell 1994; McDonald 1993; Lewis 2001), which is an anthropological subject, but in a sense ethnographies are stories. And anthropologists are increasingly turning their attention to studies grounded in narrative ethnography (Gubrium and Holstein 1999, 2008; Goodall 2000).

A storytelling or a narrative element is frequently used within social anthropology when writing up results in ethnography and, according to Clifford (1986b: 99), it should not be seen as an addition

to the ethnographical account, but rather as something that makes it meaningful. These stories are told either from the ethnographer's or the informant's perspective with the purpose of documenting the field research (Gubrium and Holstein 1999).

I would argue that personas and ethnography can be even more similar than Grudin claims above. Like the ethnographic writing suggested by Barth and others, I feel that it can be appropriate and helpful to use personas and scenarios to analyze and document the results of field studies, whether it is a study of Balinese worlds (Barth 1993) or knowledge workers at SAP or TMI.

3.3 Design approach

User-centered design is a design philosophy and a process that pays close attention to the needs and desires of the end users of a system throughout the design process. This requires end user involvement throughout the entire design process, from the initial user research intended to elicit user requirements to the evaluation of prototypes as well as the final system. The aim of this process is to see to it that the system is optimized for end users and that it respects their ways of doing their work or leisure, or whatever the system is going to support them with.

Within the Nepomuk project, the KTH group exploited several different user-centered and design philosophies. Some of these called for full user participation, while others did not. There are two main reasons for developing systems in a user-centered manner. At the core of one key philosophy is the desire to improve the work environment of the users and allow them to have a real effect on the tools they use in their work. This philosophy has been strong within cooperative design in Sweden (Bødker et al. 1987; Bødker et al. 1993; Bødker et al. 2000; Bødker and Sundblad 2008), where workers' rights are protected and where the right to affect the tools used is stipulated in the Swedish Work Environment Law (Arbetsmiljöverket 2009). This philosophy has also been a strong force within participatory design, the American counterpart of cooperative design (Schuler and Namioka 1993).

Another philosophy is more economical in nature, where the central argument is that user-centered development saves money, both

during the development and design of a system and during system usage. The argument is that users perform their tasks more efficiently and accurately with fewer failures if the system is developed with a user-centered approach, and in the case of electronic commerce, sales are higher if the web shop has high usability. Moreover, design mistakes can more easily be avoided, which saves money and provides better systems for users (Cooper 1999; Rhodes 2000; Karat 1990; Bias and Mayhew 1994).

I identify with both of these lines of philosophy and feel that it is important to involve users in all stages of development. I sympathize with the democratic guiding principle of cooperative design, but I am skeptical of how realistic the user participation policy of constant user involvement during the development of a system is (Bødker et al. 1987). I certainly understand that this is an excellent way of working, but as a usability practitioner, I know that this is at times difficult to implement. Besides I feel that user participation needs to be carefully planned, as the users who participate for too long in the design process stop thinking about their own needs and start thinking about the needs of the designers and/or project owners (Boivie 2005). There have also been examples that show that participatory design does not fit well in certain kinds of projects and Grudin (2006: 661–662) comments that "it does not work well with a large or distributed development team, or a diverse and distributed user population." Furthermore I do recognize the economic philosophy of user-centered design, because I feel that the arguments are solid and that the user-centered approach does indeed save money, both during system development and during system usage. Because these two philosophies are quite compatible and not conflicting, I feel that a user-centered approach should incorporate both philosophies, and that when they are made to work in unison, the user-centered approach will be all the more successful.

During our user research in Nepomuk, we applied field study methods, namely participant observation, contextual interviews, video brainstorming, and prototyping as well as usability evaluations. Participant observation and contextual interviews were performed so that we could create the personas and the scenarios. At a later stage

in the project, during the video brainstorming sessions, prototyping activities and usability evaluations, personas and scenarios were used as a design aid to support the planning and execution of the activities. The method of personas and scenarios will be discussed in Chapter 4. The specific user research activities listed above will be described below. The primary purpose of these activities and methods was to improve our knowledge of the end users, but they were also a considerable complement to the ethnographic fieldwork within the project setting.

3.3.1 Participant observation

In user research, participant observation is a powerful way of understanding the work environment and the informant's situation. The method involves spending time in the workplace (or some other relevant project context), sitting in an office like other employees (if possible) and participating in all activities, such as work, meetings and socialization. The observations are an important complement to interviews because they give us opportunities to validate what the informants have discussed in interviews (Crabtree 2003). The goal is to talk to the informants and then observe them to see whether they work and act in the way that they have explained (Agar 1980).

All senses are present and active when observing, and different kinds of equipment can be used to collect and save the data acquired during the observation. The researcher may or may not have direct contact or communication with the informants whose behavior is being observed. There are different ways of classifying observation methods, but two major distinctions are made: between participant observation – in which the observer actually takes part in what is observed – and non-participant observation – in which the observer does not attempt to participate and avoids interfering in the observed activity.

One distinct advantage of using the observation technique is that it allows the researcher to record actual behavior, not what the informants say or believe they do. Thus, the actual recorded behavior can be compared to the informants' statements revealing possible discrepancies between the two. This means that the observation technique can provide greater insights than many other techniques

can, particularly when dealing with behavior that might be subject to certain social pressures or behavior that deviates from the official (or regulated) work process (Preece et al. 2002; Denscombe 2003).

Observations do not provide complete insights into what the informant may be thinking or what might motivate a given behavior or a comment. Such information can only be obtained by directly or indirectly asking the informants (Denscombe 2003).

3.3.2 Contextual interviews

Contextual interviews are an efficient method to elicit user needs and desires because they are a combination of an interview and an observation. The method is sometimes more useful than regular interviews, because it is performed in the informants' own work environment, which facilitates in-depth understanding of the informants' situation as well as their needs and requirements. This method makes it easier for informants to give details about their situation because they are in their work place and have all the tools they use nearby. It gives the interviewer a better chance to ask relevant questions, to understand the work environment and to observe first hand all the tools used to carry out the work (Beyer and Holtzblatt 1998).

The key strength of the method is that the interviews are conducted in the physical context in which the system is being or going to be used, which within system development is mostly in front of the computer or using a computerized device. Sitting beside informants at their own computer, the observer can see how they use the software and get a more precise idea of their problems.

A contextual inquiry is based on three principles: context, partnership and focus (Beyer and Holtzblatt 1998). It is important to understand and observe the context in which the system is used. There are many problems with a system or a situation that are hard to extract in an ordinary interview. This is why the questions have to be asked in the right context. The interviewee is seen as a partner in the design because she is the expert on her work situation, and the interview should be a dialogue in which the interviewer is trying to learn from the interviewee. The focus is a combination of assumptions, beliefs, and concerns about

a particular situation. All that is seen or heard is filtered through this focus, and the goal of the inquiry depends on the focus. This focus has to be dynamic and flexible, i.e., the interviewer has to be able to expand and shift her focus.

3.3.3 Video brainstorming

Video brainstorming is a method that helps us further explore the work situation and the users' needs and desires as well as confirm findings from the observations and contextual interviews. Participants not only write or draw their ideas, they also act them out in front of a video camera. The goal is the same as in other brainstorming exercises: to create as many new ideas as possible, without critiquing them. The use of video, combined with paper or cardboard mock-ups, encourages participants to actively experience the details of the interaction and to understand each idea from the perspective of the user.

Video brainstorming requires that informant analyze and implement an interaction idea. Acting out the interaction in front of the camera forces participants to seriously consider how they would like to interact with the system. The method encourages both designers and participants to think about new ideas in the context in which they will be used. The resulting video clips provide a visualization of each idea that are easier to understand (and remember) than hand-written notes (Westerlund 2009; Beaudouin-Lafon and Mackay 2002; Mackay et al. 2000; Westerlund and Lindquist 2007).

Participants in video brainstorming should be from different groups of stakeholders: users, designers, developers and system owners. This combination of participants also makes the video brainstorming session a perfect opportunity for project stakeholders to get to know users first hand if they do not have the opportunity to participate in the other user-centered activities.

3.3.4 Prototyping

Prototyping is a central activity in user-centered design and are regarded as essential throughout the whole design process and a necessary part of all kinds of evaluation. Prototypes or sketches (Buxton 2007) are a

concrete demonstration of a part or all of the system, which the project stakeholders, designers, developers, system owners and end-users can use and review in order to develop it further (Beaudouin-Lafon and Mackay 2003).

Prototypes are used to learn about how users want to use a system, or whether they want to use it. Prototypes usually have only a number of the qualities or functionalities of the final system, but they should be both constructed and experienced as complete. Deciding which functionality to leave out is often difficult, and is guided by relevance. Prototypes are used to create knowledge about how the system will fit into the future situation (Beaudouin-Lafon and Mackay 2003; Westerlund 2009). There are different approaches to the use of prototypes. One approach is to use them merely to test whether the system works as expected. Another approach uses prototypes throughout the whole development process. The latter results in prototype-driven specifications (Schrage 1996) and is the approach that we adopted in Nepomuk. The approach consists of a series of simple prototypes of increasing precision, all of which are evaluated with the help of prospective users. In this way, one has an ongoing evaluation of the final product, as all prototypes are attempts to test some aspect of the final system. In order to judge the qualities of a prototype and to see whether it is relevant in a specific context of use, we need to see people accomplish relevant activities with it. Merely discussing usage is of limited value because it is practical usage we are interested in (Argyris and Schön 1974).

The simple prototypes help us generate insights into system usage early on in the project. They allow us to explore and fail early without any serious economic damage, because in this way we acquire a great deal of knowledge, which increases the chance of later success. Prototypes can have a range of different aims at different times. Usually they tend to be more exploratory at the beginning of the project and more experimental toward the end.

3.3.5 Usability evaluations

Personas can be used as recruiting profiles for participants in usability evaluations (Pruitt and Adlin 2006), and the scenarios are an inspiration

for the evaluation itself. A typical usability evaluation session consists of a pre-interview, a task performance phase and a post-interview (Rubin 1994). The pre-interview is performed to collect demographic data about the informant and to discover her expectations of the system being evaluated. During the introduction, the moderator emphasizes that the evaluation is of the system and not of the informant's ability to use the system. The pre-interview also functions as a way for the informant and the moderator to get to know each other before moving on with the evaluation itself.

The task performance phase consists of the moderator observing the informant while she performs pre-defined tasks with the system under evaluation. The tasks chosen for the evaluation are often based on scenarios that have been written for the project's personas, and the tasks are often introduced using the persona as an example. In addition, the informant may be asked to imagine herself in the persona's situation. While the informant is performing the tasks, the moderator collects data on how the informant is doing, which path she uses to accomplish the tasks, whether she takes a long time to perform the tasks, or how many errors she makes. All informants perform the same tasks, which makes usability evaluations of this sort powerful in identifying usability problems. Such an evaluation allows the moderator to compare the different informants on an equal scale and gives the moderator an in-depth view of the tasks that were performed.

The tasks chosen for the evaluation should be functionalities that allow the target users to fulfill their needs and requirements and that are important to the intended users. They should be tasks the users would normally perform if they were using the system. The evaluation situation is not typical of the normal circumstances in which the informant interacts with the system. Therefore, when introducing the tasks to the informant, the moderator sets up a relevant scenario so that the informant understands the kind of circumstance she should imagine herself being in. It is also important to specify what signifies a completed task, so that the informant can judge for herself when the task is accomplished. The moderator only helps the informant if she asks for help or when she has given up on the task.

The post-interview is conducted after the tasks are finished, and it allows the moderator to discuss the experience with the informant. The post-interview gives the moderator a chance to discuss how well the system has met the informant's expectations, which were discussed in the pre-interview.

There are several usability evaluation approaches to choose from, but the most common approach is a formative usability evaluation using the think-aloud protocol (Dumas and Redish 1993; Nielsen et al. 2002). The goal of a formative evaluation is to learn about the system design in order to improve it for the next iteration. The formative evaluation method focuses on finding usability problems before a system is completed, the purpose being to make it more successful and better adapted to the target audience. Formative evaluation can be contrasted with summative evaluation, which focuses on the final judgment of a product's usability, often a comparison between completed or competing products (Redish et al. 2002).

Chapter 4

Personas and scenarios

In this chapter, I describe the persona method. My intention is to provide a short history and an overview of the method, describing its origins and how it is related to similar methodologies within user-centered design. I will go on to describe the scenario method and how this method is usually combined with personas. I will then present various critiques of the persona method based on the relatively small amount of research that has been conducted and describe how the persona material is created, as well as what kind of data are needed to create them. I will show how the method is usually applied in system development projects. The chapter concludes with a discussion of the strengths of the persona method, which lies partly in the storytelling effect of personas and their scenarios as well as in how the persona material appeals to us as designers.

4.1 A short history of personas

In his *The Inmates Are Running the Asylum: Why High-Tech Products Drive Us Crazy and How To Restore The Sanity* (1999), Alan Cooper created and popularized the term personas, but the method (or similar methods) has been used in different forms and under different names for quite some time. Pruitt and Adlin (2006) provide a good overview of the different ways in which the tool has been used. Personas and other methods of user representations have been used quite extensively in user-centered design as well as marketing and branding, although the exact construction and usage of the *persona* has varied in detail and description.

As early as in the 1960s (Sissors 1966), user representations were used to define a market and the importance of discussing *whom* you are trying to sell things to, arguing that a clear definition of the market helps when targeting different markets with messages and suggestions. Later, Moore (1991), Upshaw (1995), Weinstein (1998) and Mello (2002) offered different approaches to representing a given market segment with the help of persona-like descriptions.

Usability specialists and researchers working with system development have also used representations of users to a considerable extent, within both usability engineering and user-centered design (cf. Pruitt and Adlin 2006: 28). All these efforts have the common goal of increasing the focus on the needs of users instead of focusing primarily on the technology. Hackos and Redish (1998) introduced the concept of user profiles, which are representations of users in the form of an "accurate and terse summaries of the data from which they are derived" (Pruitt and Adlin 2006: 28). Sometimes user profiles are a mere list of abstract characteristics, without any personality. Constantine and Lockwood (2002) used the concept of user roles and according to them such roles should not look or sound like real persons, but instead reflect a relationship, job description or function. Beyer and Holtzblatt (1998) also use the term user role and apply it like Constantine and Lockwood do, perhaps with more focus on analysis and understanding of users in the context of their work/leisure environment or organization. McGraw and Harbison (1997) used the term user model, referring to information about users' preferences, their computer and domain expertise as well as their responsibilities and work process. Earlier in the 1980s, Card et al. (1983) developed the GOMS model, where they modeled users and interface usage, concentrating on measuring the mechanistic and cognitive load and the time it takes the user to complete a task.

However, none of these efforts describe the personas in such depth and detail as is done in Cooper's approach. Also, some of these approaches do not base their descriptions on data collected by performing qualitative studies with real users, and none of them yield a result that is intended to resemble real people, as one does with personas. Instead, they are generally more technical and formal, focusing on tasks

instead of goals (Constantine 2006). User roles are an abstraction that, as such, makes it more difficult to develop the kind of empathy that one feels for real people or fictitious (but realistic) personas (Grudin 2006). In addition, these efforts lack the power of storytelling and narrative that is offered by Cooper's personas (Cooper and Reiman 2003; Quesenbery 2006).

Other approaches have focused on scenarios and not on personas, using relatively anonymous users or actors relevant to the scenarios (e.g., Carroll 1995 and Jacobson et al. 1992). There are a few claims in the literature that a scenario without a persona is not as effective as a scenario with a persona (cf. Grudin and Pruitt 2002; Bødker 1999; Cooper and Reiman 2003). The argument is that scenarios without personas are not as engaging and that they are less memorable than scenarios based on a specific persona. The same has been said about personas, "The persona is static, but the figure becomes dynamic when it is inserted into the actions of the scenario" (Nielsen 2003, cited in Pruitt and Adlin 2006: 379).

Within anthropology, Barth developed an approach that constitutes an attempt to explain patterns of behavior in terms of a *model* that is essentially equivalent to a set of persona descriptions (see section 3.2). One of Barth's objectives with such models was to provide an alternative to the "meticulous enumeration and comparison of the formal features of a body of data" (Barth 1966: 11) that would give the researcher a relatively simple way to represent the complexity of the actors that generated the behaviors he was trying to explain.

Barth's framework was generative, i.e., it aimed at generating behaviors, or *forms* in his terminology. These forms can be equated with scenarios. A scenario is, essentially, a set of behaviors that arise (or are created) out of a set of goals and constraints that are related to a given persona. Similarly, Barth's forms are behaviors that can be generated from a model. Barth's forms and models are intertwined, and one is meaningless without the other: forms are the behaviors that have to be explained and the model yields the forms.

Thus, although the aims differ, there are number of parallels between personas and scenarios in the field of usability, on the one

hand, and models and forms in anthropological theory, on the other. Barth's theories can therefore provide theoretical insights into the use of personas and scenarios in HCI research.

4.2 Personas

Personas are fictitious characters that represent the needs and requirements of larger groups of users in terms of their goals and personal characteristics (Cooper and Reimann 2003; Cooper 1999; Pruitt and Adlin 2006). Although personas are fictitious, they are based on knowledge of real users. Comprehensive user research is needed before personas are created to ensure that they are good representations of end users rather than reflections of the opinion of the person writing the personas. Still, there are those who claim that made up personas are better than no personas (Danzico 2007, interviewing Steve Mulder). Personas support and amplify, but do not replace, other user-centered design activities (Grudin and Pruitt 2002: Pruitt and Grudin 2003), even though personas alone are capable of facilitating design. Still, in order to create good quality, believable personas, one needs to work in a user-centered manner and carry out the required methods, just as one would in an ordinary user-centered design project.

Personas act as stand-ins for real users during the phases of a project in which users are not easily reached. In projects in which personas are utilized, there is still the need for user participation during the initial user research, when the user requirements are elicited. It is during this initial phase that the data needed to create the personas in the first place are collected. Members from the intended users groups participate in prototyping activities and in the evaluation of prototypes. Personas, on the other hand, support prototyping activities when the designer does not have the opportunity to approach users for feedback. Personas are intended to be a constant reminder of the users to all project participants, during all activities. They allow the design group to concentrate on designing for a manageable set of personas, safe in the knowledge that they represent many users.

When creating personas one prioritizes their needs, and the most important persona is called the primary persona, while the others are

secondary (Cooper 1999). When discussing functionality as well as designing the interface, the primary persona is prioritized and is the one that, above all others, needs to be able to use the system. This does not mean that the secondary persona is disregarded; he will also be able to use the system, but perhaps not as easily or straightforwardly as the primary persona can. Personas can have two, intertwined roles in a project; they are a *design aid* as well as a *communication device*. Both roles are part of the design process, but they call for different activities and methods, which are discussed below.

A persona consists of a persona description and a goal. They are brought to life by being given a name, a life, a personality as well as a portrait. Meet Dirk (see Figure 11), a persona we created for the Nepomuk project.

Dirk – a Nepomuk persona

Figure 11. A portrait of Dirk.

Dirk is from Offenburg in Southern Germany and now lives in Karlsruhe. He is 28 years old and has a girlfriend named Anna. Their relationship is getting more serious, and they have decided that it's time for Dirk to move in with Anna in her apartment in Südstadt. When not studying, Dirk likes to do sports, mostly running, but he also likes to spend time with his friends.

Dirk has a diploma in computer science and is doing his PhD at SAP Research in Karlsruhe. He has been working on a project that has just finished, but now he's starting to work on a project called CID, a large EU project with partners from many European countries. He reads and writes

deliverables for projects, and he travels a lot to the different partners and to SAP's headquarters in Walldorf, where he has meetings with developers to coordinate the transfer of project results. Being creative and coming up with different ideas for a prototype is his favorite part of the job.

Dirk doesn't have much control over how he spends a large part of the working week. He gets meeting invitations in his calendar and they become his to-do list for the week, because he usually has to prepare for those meetings by reading or writing a report, a deliverable or a presentation. He has a real to-do list as well, where he adds tasks that are more general or long term. In the meetings, he has a notebook where he writes down things that he needs to remember or when he gets an idea about something to do in the project.

Based on Dirk's persona description, one can get to know him and understand his work situation. His major problem is that he has limited control over his own time and that makes it difficult for him to find enough quality time to work on his PhD thesis – most of his time is spent working on different projects, attending meetings and traveling. This information, which is the result of user research, helps us design software that can support him in his daily work and help him fulfill his goals of getting a PhD and securing a good job afterwards.

Current goal: Get more information on the project he just started to work in

Current goal: Get to know the tools that are used in the project

Current goal: Manage the tasks he has in the project

Current goal: Do good work in project CID

Long-term goal: Make contacts in order to get a job after he is done with his PhD.

Dirk has several goals that are mostly connected to the project he just started on. He needs more information on the project and on the tools used in the project. He also needs to manage his tasks in order to be successful in his work in the project, which is connected to his long-term goal of making contacts for his network so that he can get a job after he is done with his PhD. For each of Dirk's goals, we created a scenario in which Dirk uses the system we were developing to fulfill his goals.

4.3 Scenarios

In the context of personas, a scenario is usually a description of an activity in which the persona fulfills one of his goals by using the system being developed (Cooper 1999; Pruitt and Adlin 2006). This is one way of using scenarios, but they can also be used to illustrate the present situation of the persona or a vision for the future.

The scenarios are based on the needs that are discovered during user research, and they illustrate and describe the feeling of using the new system, but scenarios do not include detailed design decisions. Those decisions are made later in the process when the scenarios are analyzed further by the design team, prototyped and evaluated. It is more important that scenarios describe the usage of the system from start to finish than that they describe every stage in detail. The scenarios are often illustrated to make the story more descriptive (see Figure 12). Scenarios are usually the first design efforts in a project and are the result of several important contributions: the users' needs and desires; the ideas the design group has accumulated through research and analysis of user research; and lastly, the limitations of the design space.

Dirk is attending a meeting where he is getting a first look at an EU project he is starting to work on called CID. The meeting is a regular meeting in the project, but Dirk has trouble following what is going on because he's new to the project.

The meeting is called CID Weekly Meeting and takes place at the SAP research office Karlsruhe. Participants are Claudia Stern, Dirk Hageman, Marco Andriotti (who is usually in Belfast, but visiting for two weeks at the moment).

When the meeting is over, Dirk wants to know more about the CID project, and because he's now a member of the project team, he has access to all the project information from start till today: files, communication, meetings and tasks. He can choose how to access the information by map with the offices and partners that are involved or to see how CID is related to other projects at SAP Research. He can see an overview of everything that is written in the project or the code that has been produced. He can also see the project by calendar, both past and future.

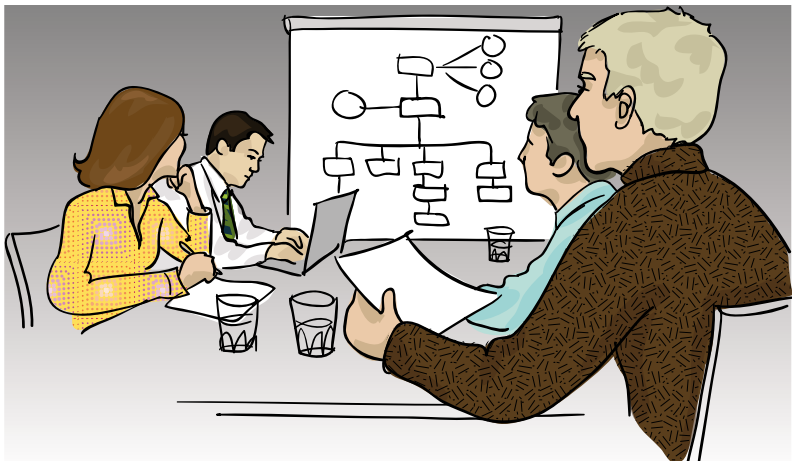

Figure 12. A scenario picture of Dirk attending a meeting in a project called CID, which he is just starting to work on. The scenario describes how Dirk uses the Social Semantic Desktop to get an overview of the project after attending the meeting.

Dirk chooses to view the project by calendar and then he can choose to focus on some different events, like review results or when certain persons or offices started participating in the project. He can also see when deliverables were produced, which is the view he chooses. He adjusts that view to see deliverables that are due in the future as well as the past. In that way, he can get more information to help him see what kind of role he can play in the project. He goes back and forth in the time line to see what deliverables where produced and when others are due.

He starts to read about the future deliverables and sees what issues Claudia, the project manager, thinks he should focus on. He explores some more and then he sends an e-mail to Claudia, asking her whether they can meet to discuss this in more detail.

4.4 Persona critique and research

There has been relatively little research done on the persona method, and the literature does not provide much verification for the effectiveness of the method when it is used in system development projects (Chapman

and Milham 2006; Long 2009). The persona method is very popular among usability practitioners in the industry and is frequently discussed and debated in different usability forums. Not all usability practitioners are in favor of the method. Portigal (2008) admits that he finds personas frightening and is wary of how easy it is to misuse them. He claims that personas are misused to keep a "distance from the people we design for" and to create "the facade of user-centeredness" (ibid.: 72). Real people are messy, he says, and therefore we should "Look for ways to represent what you've learned in a way that maintains the messiness of actual human beings" (ibid.: 73).

Relatively little attention has been given to the method in academic circles, even though it is taught to students at many universities in various HCI courses. The literature available is mostly focused on advocating the method and its qualities and on explaining how to use it (cf. Cooper 1999; Cooper and Reimann 2003; Pruitt and Adlin 2006). Many advocates of the method, Cooper included, have noted the method's success without exploring the source of its effectiveness (Grudin 2006).

Chapman et al. (2008) have called for more research that demonstrates a relationship between personas and the verifiable user data on which they are based. They suggest that without the necessary evidence, one cannot claim that the method is a source of reliable information for development teams. In another paper, Chapman and Milham (2006) state that it is unlikely that the persona descriptions represent any real people and that, at any rate, it is difficult to prove that the personas are an accurate description of the user group. According to Cooper (1999: 128), it is more important to be specific than accurate in the persona description, because the power of the description lies in our ability to remember the persona and not necessarily in the persona details being exactly based on the user group they represent.

Chapman et al. (2008) also present the caveat that their work does not address "the *utility* of personas" (ibid.: 1107) and state that it is "possible that the method could be useful for inspirational purposes even if the information claims are wrong, i.e., even if personas do not actually describe people" (ibid.).

Personas may not always be applicable within a project. For example, Rönköö et al. (2004) attempted to use the persona method in a commercial project developing mass-market software for mobile devices. They show how the project failed, despite a positive attitude toward the method within the organization and the project group, owing to patterns according to which the telecom branch functions and its "patterns of power" (Rönköö et al. 2004: 112). Some of the reasons were branch related, as the telecom branch was, essentially, focused on the market and the competition, not on the end-users, i.e. not on the persona goals (ibid.).

Rönköö et al. also encountered another persona problem, which was related to the purpose of the personas within the project. In the project, a disagreement or confusion arose as to whether the personas should be created for the marketing department or the interaction design department. The aim of the personas in the project Rönköö et al. were working on was to "define personas for creating use cases, user case tests and performance testing in a development project as well as to refine personas for Marketing & Sales (M&S) purposes" (Rönköö et al. 2004: 115). Thus, they were aiming to create personas for both design and marketing purposes. During meetings, the discussion revolved around the question of whether to develop "design personas […] for interaction designers and marketing personas for marketing people?" (Rönköö et al. 2004: 116). It is rather straightforward to see how this could lead to problems in using personas within the project. In my experience, one needs to collect different types of information for marketing personas and design personas, which necessitates writing different personas for marketing and design. When one assembles a persona description for a design persona, one should include those aspects that affect design decisions, for example, computer or work-specific experience. Such information is usually not relevant to marketing personas, who instead are centered on information related to consumer behavior.

Blomquist and Arvola (2002) carried out a twelve-week participant observation during a persona project in an interaction design team, their aim being to try to discover how such teams use personas. Their study shows that the personas never became a natural part of the project,

and they found that the primary reason for this was that the team did not participate in creating the personas. If they had done so, they would have had a better chance of getting to know the background material, and they would have believed more strongly that the personas were a good representation of the users. Furthermore, their study shows that even though the personas did not contribute a great deal to the design activities, they were used more successfully for communication of who the end users were and were very helpful when new members joined the project and needed to familiarize themselves with the purpose of the project and the potential end users (Blomquist and Arvola 2002; Pruitt and Adlin 2006: 483–484). Johansson and Messeter (2005) go one step further than Blomquist and Arvola and suggest that the personas should be created in cooperation with the users themselves, claiming that this approach makes the designers become more engaged in persona development.

4.5 Creating personas

As mentioned earlier, personas and scenarios are created on the basis of thorough user research, using methods such as interviews, observations, focus groups and workshops, which results in in-depth knowledge of the users, their needs and requirements. The patterns observed during user research are the basis for the persona material. The data collected during user research often need to be complemented with other data, such as literature on the users and their work, facts and figures and other material.

Creating a persona requires both detailed examination of the collected material and creativity. It is much easier to create personas when one has performed comprehensive and in-depth user research than when one has had difficulty accessing and approaching the target users. Below, I describe the process recommended by Cooper and Reiman (2003: 67–73). They propose a standardized process to aid in persona creation and recommend creating a persona hypothesis before venturing into user research, a hypothesis that incorporates initial assumptions about the users. These assumptions can form the basis for interviews and other activities. When the user research is conducted,

this persona hypothesis is revisited and revised according to the knowledge accumulated in the user research.

Cooper and Reiman (ibid.) then recommend mapping the interview subjects to behavioral variables. This can be done continuously during the user research activities, both developing the set of variables and mapping in relation to a range of behavioral variables that are modified continually when the informants present new behaviors of interest to the project. When the informants' behavior has been mapped, it is possible to identify significant behavior patterns and clusters that emerge in the material. These clusters and patterns form the basis for the personas.

The next step is to create characteristics and relevant goals for the personas, all of which should be based on the information gathered during the user research. This encompasses the persona details, geographical information, age etc., as well as descriptions of the environment in which the users perform their work or leisure, of a typical day or week, of their current situation and of the tools they use to carry out their assignments. During this phase, the personas are given their names, after which they are only referred to by their names and not the type of cluster or pattern they were based on.

Finding an appropriate name has been an important element in the personas that I have created and used in projects. Like the population of many other cultures, Swedes are quite influenced by name trends. In Sweden, it is relatively unlikely that one will meet a person who is 25 years old that is called Bertil, Ulla, Åke or Gunilla, or a 65-year-old who is called Lucas, Julia, Pontus or Linnea. In order to create a believable persona of any age, it is essential to research the name trends for the relevant age.

Creating goals for the persona is a crucial step, as meeting the users' goals is necessary to ensure the success of the system. Like the persona characteristics, the goals are derived from user research, and the objective of the system under development is to fulfill these goals. Cooper and Reiman (ibid.) suggest three different types of goals: experience goals, end goals and life goals. Experience goals concern how the persona wants to feel when using the system – to have fun

or to not feel stupid while using it. End goals express practical goals the persona wants to fulfill by using the new system, such as finding a document or processing an order. Life goals are the more long-term objectives of a persona that can explain why the persona wants to use the system, for example, to get a promotion or a new job. Whether one should use all or some of these goals varies according to the type of system being developed. Life goals can be valuable, but one should perhaps avoid using them when the project stakeholders who will be using the personas in their work seem unconvinced as to the merits of the persona method. Such doubts among project stakeholders have to be considered in the persona creation, as a simple factual mistake or a persona detail can be objectionable or off-putting to the individual project members who most need to believe in and use the personas.

It is critical that the persona description be detailed and realistic – that it is just like the description of a real person. If it is not, the persona may become the "elastic user" that one is trying to avoid (Cooper and Reiman 2003: 58) or what Rönköö et al. (2004: 114) call the "shadow persona", which is a persona that changes over time and can become both a teenager and a middle aged businessman at the same time.

By now, the personas should be close to complete, and the only thing left to do is to develop narratives in which the persona is described when performing a specific activity or having a typical workday. This description can be included in the persona description and/or scenarios. Before creating the narratives Cooper and Reiman suggest that it is time to choose photographs for the persona because they help with the narrative creation, make the persona feel more real.

When the personas are ready the scenarios can be written. Cooper and Reiman (2003: 75) call this "the process of translating this knowledge into coherent design solutions". The inspiration for the scenarios is the user research and the scenarios contain a translation of the knowledge acquired into design solutions (ibid.). Cooper and Reiman (2003: 77–90) suggest three types of scenarios that are used and developed throughout the design process; context scenarios, key path scenarios and validation scenarios, where the scenarios gradually evolve from story-like context scenarios that describe the context in which the

persona carries out the activities relevant for the system we are developing that do not include any detailed design decisions. The key path scenarios describe the how and where the persona navigates through the system while using functions they need to use regularly – they are a more detailed description of the system and its behavior. Finally, validation scenarios are similar to key path scenarios, but the focus is on functions that are not used on a daily basis.

The process described above is the process Cooper and Reiman (2003: 67–90) suggest and when I create personas I follow this process albeit with some adaptations. For example, I rarely create a persona hypothesis, which I believe stems from my background as a social anthropologist and the focus on induction, of the fieldwork informing the ethnographic account and not the other way around. Neither do I often work with the behavioral variables as they describe, instead I use grounded theory (Strauss and Corbin 1990) and tag my research material from the user research with codes and concepts and group them into clusters, which I then use to create personas, their goals as well as their scenarios.

Many persona practitioners use and recommend the use of photographs to visualize the personas (cf. Cooper and Reiman 2003; Mulder and Yaar 2007). Long (2009) claims that illustrations seem to reduce effectiveness and introduce the risk of self-referential design. And there are others, like myself (Guðjónsdóttir 2006) who prefer illustrations instead, because it demonstrates the fact that the personas are fictitious, that they are representations of real users.

In regard to the narratives and scenarios I also use a different approach. I rarely write the long narrative Cooper and Reiman recommend, instead I add similar, but much shorter, content to the persona description. In addition I create more focused context scenarios, although some of the context is written in the persona description, where I describe the feeling of using the system to fulfill a specific goal a persona has. I do rarely write the key path and validation scenarios, those activities fit well, in my opinion, during the prototyping phase of the system using the personas as support. In a sense I create those scenarios using a prototype instead of text.

Sometimes creating personas requires "cultural material", i.e. various artifacts that come from the culture in which the users are active and pursue the activity relevant to the system under development. This can be fiction, magazines, TV programs and such. Several years ago, I participated in a project for which we created personas when designing a content rich portal for a number of diverse target groups within and outside the African Continent (Guðjónsdóttir 2001). We had limited access to the users in the project, as the focus group discussions were outsourced to a company based in Kenya, but we had access to the video of the focus groups as well as verbatim transcriptions of them. In order to get a better feel for our users, we requested that our partners send us diverse material that could inspire us and tell us more about our users. We received boxes of different objects from ten different countries from Sub-Saharan Africa, varying from candy and jewelry to newspapers, popular magazines, and radio and TV programs. We examined these objects using all our senses and many of them were very inspiring when creating the personas – the magazines and newspapers were especially helpful when trying to create believable names and wardrobe for our personas.

4.6 Application of personas and scenarios

Personas and scenarios are intended to help designers and project stakeholders focus on the users and their needs during design and development of the system. There are two main aspects of the usage of the persona method: on the one hand, they are used as a communication device and, on the other, they are used as a design aid. This is not a distinction that is clearly made in the literature about personas (e.g. Cooper and Reimann 2003; Cooper 1999; Grudin and Pruitt 2002; Blomberg et al. 2002), but has rather emerged from the usage of the persona method in various projects over the years, where these two distinct roles have become apparent. Pruitt and Grudin (2003) describe the way they have extended the usage of personas to include communication of information to project stakeholders. Another attempt at including this distinction is present – perhaps not very explicitly – in Pruitt and Adlin (2006), who describe the lifecycle of personas as ranging from family

planning through conception, birth, maturation and adulthood, highlighting the critical aspects of persona use during each phase.

4.6.1 Communication device

The most common interpretation of the persona method centers around the fact that creating personas and scenarios is an effective way of communicating the results from user research. The persona material can be used to understand and focus on user needs and desires and to communicate these among the stakeholders in a project: designers, developers, project managers, clients and others (Pruitt and Grudin 2003). The personas represent the intended target users and are a description of what the users are like and what kind of a situation they are in (family, single, working, unemployed, etc.). They also describe what kind of work or leisure activities the users do, depending on which activities the system is intended to support. The argument is that it is easier to get to know a handful of fictitious persons than to read a (long and detailed) report that contains a general description of the target users (Pruitt and Adlin 2006).

The word *user* is not really helpful as such, because it is a fairly general term that can mean entirely different things to different people. Members of the project group may have various assumptions about the "user" and they may have personal, cultural and corporate biases that are neither apparent to colleagues nor to the persons themselves (ibid.; Cooper 1999). By using personas, the project group can unite around a set of a small number of individuals that represent the anonymous group of target users for whom the system is being designed and developed. Personas thus make it easier for the project group focus on the specific intended users instead of on *everyone*.

Personas can also help make the project group generally more oriented toward end users. The personas can function as a healthy reminder to everyone in the project group that there are users who are going to make use of the system and that the members of the project group are not necessarily the target users (Long 2009).

Perhaps user-centered design is inherently difficult because it is easy to extrapolate on the basis of our own individual needs and desires

(Pruitt and Adlin 2003). While "self-referential" (Cooper and Reiman 2003: 58) design may be better than technically centered design, it is user-centered design that brings about good quality systems that actually meet users' needs. Thus, personas are meant to help us avoid our unconscious, individual biases and focus on the needs and desires of the intended users.

4.6.2 Design aid

Understanding users is key when designing and developing systems that are intended to meet their needs. But such an understanding alone is not sufficient, as we need support that helps us incorporate this understanding during the entire design and development process. Using personas is one way of working toward this goal (Cooper 1999).

Personas can help the project group in making design decisions when the target users are not accessible, and at times the personas can be more powerful than the actual target users because they are more consistent and have fewer "quirks and behavioral anomalies that interfere with the design process" (Cooper 1999: 129).

Personas are intended to assist the project group develop a system that supports the users, and serve as a guide in decisions about functionality and design. The theory is that it is easier to prioritize, discuss and explain design ideas and functionality when these are based on persona goals. Personas can also depersonalize and improve discussions within the project team; while discussing whether to include different features or how to design the interface, team members are able to focus on the preferences of the personas. When discussing whether to include a feature in the system, team members can ask themselves: "Is Claudia interested in delegating a task to Dirk?" And when designing the actual logic of the interface, they can ask: "How would Dirk prefer to search for his documents?"

This allows the team to focus on personas instead of on the "elastic user" that each member of the design team instinctively imagines, or on their own individual preferences. Furthermore, personas can function as a common language and aid understanding in discussions on design and help the design team focus on the users instead of on other project

stakeholders. It is also possible to test the design on a persona as one would on a real user during a formative evaluation, but this does not eliminate the need to test the design with real users (Pruitt and Grudin 2003; Cooper 1999; Cooper and Reiman 2003).

In order to have an impact on the project, personas should have a continuous presence at the project site; this can be done in many ways, usually by hanging posters with the persona images on the walls and consistently using them in discussions and presentations. Another method is to create life-size personas that are present in the project room, looking over the shoulders of the project group while they are working (Guðjónsdóttir 2001).

Figure 13. Nepomuk developers discussing an Applet for text analysis during a workshop in Paris. Behind them there are life-size personas looking over their shoulders while they are working.

4.7 Strengths of the persona method

Even though many claim that the persona method is an effective design aid and has the power to engage and inform project stakeholders, the source of this power has not been considered much in the literature. As I see it, there are two distinct elements that combine to make the

persona method a useful and valuable tool in the usability practitioner's arsenal. First, the personas themselves can capture the interest of project stakeholders and engage them in a way that more abstract descriptions of user groups cannot (Grudin 2006). Second, the storytelling aspect of the persona method taps into a basic cognitive process in human beings (Quesenbery 2006), a process that relates to memory and reconstruction. Together the persona and the accompanying scenarios become a story that describes either his present or future situation, for which we are designing.

Grudin (2006) explored psychological evidence of how personas work and argued that by better understanding their power we can become better at designing personas and choosing which methods best fit to be used in the design process. He claimed that people naturally create and engage with representations of people, both real and fictional, and illustrates this by examples of how both writers and actors make use of similar mechanisms as personas: "People shout advice to fictional characters [and] argue over what the characters did off-screen or after a novel ends" (Grudin 2006: 659). Personas can thus engage the designer in a way that factual results from market research or statistical analysis of the user group rarely do. They make it easier to reason how a person would react in certain situations and create scenarios of how a persona behaves when introduced to the tools we are designing for him.

Quesenbery (2006: 523) argued that when we use personas and create stories for them, we tap into a deep core of human cognitive process. All cultures have a tradition of telling stories – folktales, myths, history, etc. – as a way to communicate and to learn. They contain our history and traditions, our values and lessons for living, our hopes and dreams. We have told stories since time immemorial and we are used to communicating and teaching through stories. Crucial elements of stories and storytelling include plot, characters, and narrative point of view. A good story can be inspiring and help the designer to "explore the possibilities for interaction, whether you are working on completely new feature ideas or on details of the design" (Quesenbery 2006: 554).

Further, studies (cf. Reisberg 1997) have shown that it is easier to remember facts presented in the context of a meaningful situation or a

story than when presented in factual presentations. Stories can function as mnemonic devices that help us learn and remember certain facts, as, for example, how personas help us understand and remember facts about the intended users of a system. When asked to recall a story that we were told, we are often able to reconstruct the meaning of the story, but not necessarily the exact sentences. We remember the story by actively constructing a meaningful representation of the story in our memory. Given this power of storytelling, stories (or schemas) are increasingly being used in education to assist in learning (cf. Anderson 1984).

Commenting on the use of stories in ethnography, Geertz says that we understand one another by creating a story "like 'X'. That's just like 'him' to do that, 'it's just like us Javenese to be polite', and so on" (Panourgia 2002: 427, interviewing Clifford Geertz). He calls this "textualization of others" (ibid.: 427). This is happening all the time – we are continually creating stories – but there is a fundamental difference between the anthropological author and the fiction author, which is that the anthropologist cannot (at least should not) force the characters in the ethnography to act to suit the story, as a fiction writer is certainly able to do (Trencher 2002).

To conclude, we can present a strong case that the persona method has the potential to engage designers and help them contextualize their notions of the users and memorize the users' varying agendas. The persona method draws on fundamental human attributes – our interest for others and what others are up to – and uses these as a means to an end. Characters and stories come naturally to us humans, we become engaged in the persona and, in the best of worlds, come to care more strongly about how well the system we are developing works for him.

Chapter 5

Nepomuk user research

In this chapter, I describe the user research carried out by the KTH group to elicit user requirements and to create personas and scenarios in the Nepomuk project. The term user research refers to the initial user studies we performed at the beginning of the project to get to know the users, their needs and desires and how their needs and desires could be fulfilled. We performed these user research in the four user settings described in Chapter 2: Time Manager International (TMI) in Greece, the UK and Denmark; SAP Research in Karlsruhe Germany; a department at the Institut Pasteur in Paris, France; and the Linux community Mandriva Club, based in France, but with members all over the globe.

In total, I made 16 field visits during which I conducted interviews and observations of the workplaces and the work being done. I carried out 30 interviews, most of which were contextual, in the informants' work environment. A further 10 interviews were carried out by other members of the KTH group. After the initial user research and creation of the persona material, the KTH group conducted seven workshops using different types of workshop methods, mainly video brainstorming and prototyping. The basic purpose of our user studies was to understand the users in their work context and to elicit and document their needs and requirements to improve their work.

During the interviews, a colleague from KTH was also present and documented the interview on video. During other observations, we usually participated together and discussed the experience afterwards. Having a colleague in the field was extremely beneficial, because it

meant that we could compare notes and discuss the material directly after the interview or observation, when it was still fresh in our minds. It was evident from our discussions that we tended to note and observe different things, which we felt enriched the material we took home from the field.

The material from these initial user research activities was analyzed and formed the basis for the creation of personas and scenarios. A large amount of varying types of material was collected, such as field notes, video recordings of interviews and meetings, photos of employees and their work environment, written work-related reports, presentations and other work material as well as e-mails.

To analyze the material, we watched the video recordings from the contextual interviews to extract key pieces of information that were noted in a simple spreadsheet. We worked through our field notes and our impressions as well as observations during the field visits. Afterwards, the fieldworkers and other members from the KTH group discussed and analyzed the material in workshops. The primary purpose of these workshops was to elicit user requirements and get inspiration for design ideas and prototypes to develop that would later be developed further and evaluated in collaboration with the informants.

The Nepomuk user research resulted in 14 personas and 40 scenarios, which are described in Chapter 6, as well as several written reports (deliverables) and presentations.

5.1 Contextual interviews

The initial user research activities performed in the Nepomuk project were contextual interviews and participant observations, which meant that we visited the different user settings in order to conduct the interviews and perform the observations.

During the interviews, we discussed the informants' role at the workplace as well as their typical workday, their work duties, what tasks they carried out as well as what problems they experienced. We asked them to show us the tools they used to get their work done, both digital and analogue tools, such as software, telephones, notebooks and whiteboards. In some user settings this proved to be problematic for

security reasons, and several informants did not want to show us their IT tools in case we saw any sensitive information.

In order to collect material to create personas and scenarios, we asked the informants to describe both positive and negative aspects of their work in general and to describe a specific workday or workweek that they remembered as particularly bad or good. After the interview, we mapped each informant with a set of behavioral variables that evolved throughout the interview process in order to identify behavior patterns that could support us in the creation of the personas (Cooper and Reimann 2003). Most of the interviews were individual and lasted for about one hour. Aside from the occasional security issue, the interviews worked very well and the informants were forthcoming and cooperative. What the informants found surprising was that they did not need to prepare anything for the interviews, and some seemed to find it strange that their ordinary workday was interesting enough for us to talk to them about it.

In most cases, the interviews were contextual, performed in the informant's workplace (see Figure 14) or, in some cases, in a nearby conference room. An interview script was prepared, but the interview was kept flexible and the informants were allowed to control the pace. They were not forced to answer questions in a particular order and they were allowed to steer the order of the topics based on how important a topic was to them. Thus, if they wanted to talk about a particular issue they were free to do so. This let them to get this particular issue out of their system, which made it easier to focus on our interview topics afterwards. This is somewhat similar to the reflexive interviews described by Hammersley and Atkinson (1995) or the ethnographic interview described by Spradley (1979).

The interview situation, although located in the informant's workplace, cannot be judged as an entirely normal situation. We were two strangers visiting and we sat close to the informants, face-to-face or beside them, in front of their computer. Obviously, this was not a typical work situation because normally the informants do not have two strangers sitting right beside them observing and asking questions while they are at work (Briggs 1989). I try to see my role in an interview

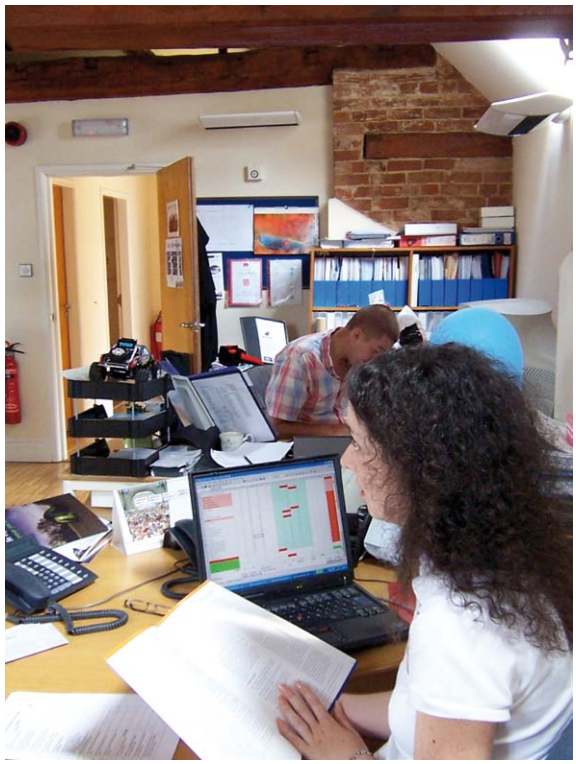

Figure 14. An informant at her desk.

as a "co-participant in the construction of a discourse" (Briggs 1989), because I realize that I do influence the interview situation by being there. I am an outsider and the whole situation is somewhat unusual, especially for the informant (ibid.).

During the interview the informants were asked to describe a typical workweek, including what kind of tasks they performed and which tools and/or systems they used to get things done. Most interviews were related to their work in general, while the interviews at SAP focused on tasks and their task completion strategy. Furthermore, all informants were asked to describe a workday or workweek that they felt had gone particularly poorly and what had caused these feelings of failure.

Interviews such as these sometimes require a measure of creativity, because discussing work with informants who have little confidence in

their ability to use computers can be a delicate matter. In such cases, I often take on the role of someone who knows nothing about their work situation, and in that way, I try to make the informant feel like an expert who needs to guide me (Hammersley and Atkinson 1995; Beyer and Holtzblatt 1998). It is not sensible for me, however, to try to convince the informant that I am computer illiterate, because that would diminish my credibility – I cannot expect the informant to believe that I work with interaction design and know nothing about computers. In the Nepomuk project, I was careful to stress that I was unfamiliar with their specific situation and that their work was specialized. I sometimes used my status as a foreigner to try to encourage the informants to describe their work in more detail. I would say, for example, that in Iceland (or in Sweden, depending on the circumstances) the particular situation was different and then the informants usually felt that there was a great deal they could teach me.

The interviews were, for the most part, very informative, and we felt that we got a relatively clear picture of the informants' work situation. The variation in work methods used to complete similar tasks was enormous. We felt that it was vital to convey this information or variation to our project partners, but most of them were unfortunately not very receptive to this information. In certain user settings, the level of the IT systems was surprisingly low. In one user setting, the economy system was stored on magnetic tape, which crashed during the summer because of the extreme heat. In another, shared files were stored in several places, inconsistent with the official strategy. This caused huge problems for the employees when they were searching for documentation to use or reuse. When these informants were asked what could improve their work, they simply answered: "A Google search for our documents". Other user settings had highly developed systems, but it was interesting to observe in those settings how many informants used analogue tools and tricks to get their work done.

5.2 Observations

During our field visits, we conducted both participant and non-participant observations and attended meetings and seminars and

in as many work activities as possible. The observations were made during the same visits as the interviews and workshops. This meant that we spent two to four days in the user setting during each visit. We spent the whole day in the office and tried to observe work and other activities when we were not engaged in interviews or workshops. When planning the trips, we tried to allow ample time for observations and social activities.

During field studies, the purpose is to gain a holistic understanding of the activities the informants are carrying out (Blomberg et al. 2002). To do this, the usability practitioner visits the context in which the informants do these activities and applies the relevant methods and techniques to achieve such an understanding. When designing systems, it seems imperative to me that the designer has spent time in the field. I agree with Hannerz (1983), who suggests that by being present in the field, the researcher gets a better insight into the data and the significance of each individual piece of data. The impressions that I get in the field, those that are not written down or that are difficult to even put into words, are important when the project has advanced into the design phase. During the field study, the researcher tries to look beyond the use of the system that is the focus of the project in order to understand its broader relations and to connect micro and macro analyses (Räsänen and Nyce 2006: 182). Räsänen and Nyce are critical of how field studies are performed within HCI and call for a move beyond the immediate situation within the workplace or the organization. They suggest a need for a more analytical and inclusive way of understanding the technology, its design and implementation.

At SAP Research, we participated in meetings as well as seminars. One meeting was particularly interesting (see Figure 15). Its subject was how to merge two projects. The two projects were being carried out in two different offices, and it turned out that they were very similar. During the meeting, project participants from both projects were discussing how to gain results from cooperating and to prevent double work. This observation supported the data from the interviews and inspired scenarios for Dirk and Martin (see Chapter 6), who were struggling to get an overview of their own work as well as the project work in the office in general.

Figure 15. A meeting we participated in at SAP.

At TMI, we spent a great deal of our time in the office during our visits. We also participated in a training course that TMI was giving for a healthcare company in Uppsala, Sweden (see Figure 16), at which we got basic guidance in becoming more efficient in our work and planning. Participating in the course was a great opportunity, because it meant that we were able to observe and participate in TMI employees' work from the initial project conception to its execution. During the interviews and observations at the TMI offices, we discussed and observed activities in which the employees were selling, planning and preparing training material for courses precisely like the one we had participated in.

During the observations, I collected much of what Hammersley and Atkinson (1995: 126) call unsolicited accounts, where I observed the workplace, the people and their behavior. The observations I made to complement contextual interviews were helpful in designing the Nepomuk system. Many of these observations enabled me to ask relevant questions, formulate new ideas and find areas that we should consider in the development of our design ideas as well as the design for interaction of our prototypes (Hammersley and Atkinson 1995). I felt that my observations were usually informative, and the effects they had on project deliverables were positively received by the project members.

Figure 16. Participants in a TMI course in Uppsala, Sweden.

I differ from researchers who claim that it is difficult to use the results of field studies of this kind in interaction design (Shapiro 1994; Schmidt 2000; Rogers 2004), but I agree with other researchers that there is a need to do more in-depth analysis of the material (Räsänen and Nyce 2006; Räsänen 2007) and that there should be ways to handle important results and findings that are relevant to informants and their situation, but not perhaps to the specific IT system being developed (Lindquist 2007).

5.3 Other sources of data

In addition to the data collected in the Nepomuk project, in my analysis I have considered data from other projects I have undertaken before,

during and after the Nepomuk project. I have also collected data from projects that I have not been involved in as well as interviewed usability practitioners. This material has been used to complement the data from the Nepomuk project and has allowed me to compare different types of projects and project stakeholders with varying involvement with the persona method. The Nepomuk project stakeholders never explicitly asked for personas to be included in the project, as opposed to all the other projects in which the stakeholders – primarily the clients – requested that personas be created and used.

Before Nepomuk, I completed projects for two large electrical companies in Sweden. The project settings consisted mainly of employees at the different companies and/or their clients. Most of the user research was carried out in an office environment and consisted of participant observation, contextual interviews, workshops and focus groups. In one of the projects, I followed up what project participants felt about project delivery via an e-mail query sent to all project stakeholders at that company. In the other project, I attempted to observe the project participants and their reactions to our delivery during all meetings and other activities and wrote a short unpublished paper (Guðjónsdóttir 2005) comparing my work with the customary fieldwork and analyses carried out by social anthropologists. Both projects delivered personas and scenarios as well as a preliminary simple PowerPoint prototype visualizing the users' needs and desires.

I have also included data from a project undertaken for a Swedish Funding Agency that wanted to use personas to assist them in developing a communication strategy directed toward their main target groups. This project was completed during the Nepomuk project and was followed up by an e-mail query with the procurer of the project in which I asked how the personas were received at the agency and how they have been used afterwards. And finally I have included a persona project I carried out for a large Swedish telecom company and there I also followed up by an e-mail query with the procurer of the project.

In addition to this project-related data, I have included data from interviews with ten usability practitioners in the Stockholm area in which we discussed their experience of and views on the persona

method. Other interview data I have included derive from interviews with three different clients who have procured persona-related projects from usability practitioners in the Stockholm area. These are projects I have not carried out myself.

Chapter 6

Nepomuk personas

Figure 17. An image of all the personas created in the Nepomuk project. From left: Ella, Pierre, Marie, and Keith from Institut Pasteur; Claudia, Dirk, Ambrosia and Martin from SAP Research; André and Kim from Mandriva Club; Karen, Alistair, Nasim and Josephine from TMI.

In this chapter, I will report the main results of the user research in the Nepomuk project, i.e., the personas and the scenarios. I will introduce the personas we created in the Nepomuk project, as many of them turn up in anecdotes and analyses later on in the thesis. In addition I describe how the persona material was introduced and maintained in the project as well as the design ideas that were elicited based on the persona material and the user research.

The Nepomuk personas vary in the tasks they perform during a typical workday as well as in their needs and behavior. Some personas want to understand how the system works, while others do not care and simply want the system to help them perform their tasks without difficulty. The following examples illustrate how varying the tasks, needs and behaviors of the different personas are.

At the Mandriva Club we have André who is used to searching for material in the Mandriva Club, and then we have Kim, who is not as experienced and needs a different type of support to use the community for his purposes. At TMI we have Alistair who travels a lot, while his colleague Nasim works more in the office supporting Alistair in his endeavors as a salesman at TMI. When Karen, also from TMI, is working on a training course, she is responsible for performing the right kind of quality training, and Josephine makes sure that all the practical aspects work out. Claudia from SAP has relatively good control over how she spends her workday and takes care of all her tasks. Dirk, on the other hand, struggles more with finding time between the tasks he has to perform in the EU project and writing his PhD thesis. Martin is a senior researcher at SAP with a busy workday, participating in many projects with colleagues from different offices of SAP. Because Ella is Marie's supervisor, they use the Social Semantic Desktop to assist Ella in giving Marie optimal supervision and guiding her to the final goal of getting a PhD.

The KTH group wrote one or more scenarios for each persona. These scenarios were all based on our analysis of the user research material we collected in the case studies as well as on our design experience and previous knowledge. During the field studies, we identified several problems and bottlenecks that prevented users from doing their work in a way that suited them and their personal or professional goals.

We knew we would not be able to solve all of the problems because many of them were outside the scope of the project. But others could be solved with an improved desktop environment in which the tools are easy to use and the data are semantically annotated. In the scenarios, we demonstrated how the Semantic Social Desktop could support the persona in her activities. We did not make any detailed design decisions in the scenarios; instead they were a description of a design of what

the user could do in the new system. Each scenario consisted of one or several design ideas that needed to be explored further. The design ideas were created through workshops by the KTH group in cooperation with several other project partners based on the elicited user needs. The scenarios showed how the system could help users in their work to perform their tasks more efficiently, with more ease or to make space for other work tasks or other activities, such as coffee breaks.

6.1 Institut Pasteur

Figure 18. Marie, Ella, Keith and Pierre.

For the Institut Pasteur case we developed four personas. Thus we have Marie Trembleau, who is our primary persona at Pasteur, Ella Sanches, Keith Morgan and Pierre Francois (Figure 18). Marie is a PhD student working on her thesis at the lab and Ella is her supervisor as well as a

senior researcher at the Institut. Keith is a lab technician and Pierre is the vice-president of Financial and Technical Resources. All of them, except Pierre, work in the lab doing experiments, and when they are not in the lab they are preparing experiments or writing up their results in scientific papers and reports. Pierre is what Cooper and Reiman call a "negative persona" (2003: 73), as he is not someone who is likely to use the system we were developing. Several scenarios were written for the Pasteur personas. In one Ella gets a notification through the system, when she is away at a conference, that Marie has a problem with her analysis, and because Ella has been made aware of the problem she is able to use the system to assist Marie. In another we describe how Marie marks her results as problematic and how Ella is automatically notified that Marie is asking for her help. In the other scenarios, the Pasteur personas use the system to see which old biomedical samples they can get rid of, to plan meetings to discuss results, to prepare experiments and to record and address different incidents during experiments.

6.2 SAP Research

For the SAP case we developed four personas. We have Dirk Hageman, Claudia Stern, Martin Williams and Ambrosia Fischer (Figure 19). Dirk is the primary persona at SAP. He is a researcher and a PhD student at SAP Research in Karlsruhe. Claudia is a project manager who works closely with Dirk. Martin is a senior researcher who works in Brisbane, Australia, and Ambrosia, also in Karlsruhe as a senior researcher who nowadays mostly works with coordination of the acquisition process for projects. All the SAP personas work with classical knowledge worker tasks, albeit with varying demands and experience. Dirk is new at the job and is struggling with finding time to write his thesis, and he has rather limited control over his time, whereas the other personas have more experience and more control over their own time. All the SAP personas work a great deal with carrying out projects, planning and implementing prototypes and writing up the results in internal documentation or scientific papers. The SAP personas are rather similar to the Pasteur personas in this regard, even though the subject matter and procedures differ significantly.

Figure 19. Dirk, Claudia, Martin and Ambrosia.

Many scenarios were written for the SAP personas, as the user research performed in that particular setting was rather extensive compared to some of the other user settings in the project. Many of the scenarios involved Dirk, Claudia and Martin because they already have a working relationship (Cooper and Reiman 2003: 69–70), and many of the scenarios were linked to illustrate the work process at SAP and show how our system could be of assistance in several of the typical tasks that are performed. Because the system we were developing at SAP was focused on task management, we wrote scenarios connected to this. There are scenarios where Claudia delegates tasks to Dirk and where Dirk receives and reviews these tasks. One scenario, which was very popular in Nepomuk, is about a trip to Belfast that Claudia is planning and preparing, booking tickets, planning train rides as well as finding someone to take care of her cat while she is away. There are

also scenarios where Dirk, Claudia and Martin are writing deliverables and scientific papers, both on their own and in cooperation with other colleagues and project partners. Other scenarios involve all the SAP personas, in different ways, using our system to get a better overview of their tasks, meetings, projects and other processes they are involved in.

6.3 Time Manager International

For the TMI case, we developed four personas. We have Karen Kiersted, who is our primary persona at TMI, Josephine Andersen, Nasim Mabon and Alistair Huntington (Figure 20). Karen is a trainer at TMI, which is one of the central roles you can have at the company. She performs training and creates new courses and course material that is used in many offices. Josephine is a project manager who works closely with Karen at the Copenhagen office, taking care of practical issues regarding

Figure 20. Karen, Josephine, Nasim and Alistair.

the courses. Then we have Alistair and Nasim, who are colleagues in the UK office. Alistair is a sales person who works mostly in the field meeting clients, selling training, consulting and following up on finished projects. Nasim is a sales person as well, but his work is mostly done at the office and he books meetings, for Alistair and the other sales persons, with new, present and former clients.

Many scenarios were written for the TMI personas, as the user research performed was rather extensively compared to some of the other user settings in the project. Most of the scenarios connect Karen and Josephine, who work closely together in Denmark, and some connect Alistair and Nasim who are colleagues in the UK. Alistair uses our system to prepare for sales meetings and to plan follow-up meetings after the projects are finished, and he uses the system to see what has been done for a specific type of client at TMI internationally. Nasim uses the system to help him plan the call sheet for the day as well as to update the customer relationship management system with relevant information. As mentioned above, Karen and Josephine work closely together. Karen runs the training sessions and Josephine makes sure that all the practical issues are taken care of, that Karen gets to the right place on the right day with the right kind of equipment needed for the training session, and she calculates the distance to decrease driving time for Karen. Josephine follows up the project plan to see if there are any significant changes. She also takes care of all the information material and props that Karen needs for her training sessions. While Josephine is taking care of this, Karen changes and adapts a standard training course or creates a brand new cutting edge course. She prepares for her training sessions, edits documents with another person and finds anecdotes to use during her training sessions. When Karen is happy with a training course she has given and is sure that it could be of some help to others, she shares the experience with her colleagues.

6.4 The Mandriva Club

For the Mandriva case we developed two personas: Kim Lindström and André Löfgren (Figure 21). Kim is a fairly recent Mandriva Linux user, who is not very skilled in searching for information, and

Figure 21. Kim and André.

may not contribute very complex information. Kim was our primary persona at the Mandriva Club. André, on the other hand, is a skilled Mandriva Linux user, who develops open source software and is very knowledgeable when it comes to searching for information.

The scenarios involving the Mandriva personas transpired around André and Kim's usage of the Mandriva help desk where Kim submitted questions and André his solutions and "how-to" information.

6.5 Introducing personas and scenarios in Nepomuk

The personas were introduced to the project during the first General Assembly in Stockholm, four months after the project began. The General Assemblies were yearly project meetings with many participants at which the project members reported to each other from their completed work, prepared for the coming year and planned the EU review Meetings. The project's first General Assembly was held in Stockholm with 60 participants representing all project partners. The meeting itself ran for two days with an initial extra day for separate meetings where different project partners worked together on open issues.

The persona material was introduced to the case study partners during an initial workshops before the General Assembly. I presented the work we had done during the initial user research and gave a short presentation (one slide with five bullets) on the persona method, and then I introduced the personas with their portrait and gave a verbal description of their persona, goals and scenarios.

During the General Assembly itself, I introduced only two personas to all project members, Dirk and Claudia, and gave the same presentation on the persona method and how it can be of use in system development projects. During this presentation, I also showed them a life-size Dirk who was standing in the room during most of my presentation (I actually forgot Dirk in the project room when I went to the lecture hall to give my presentation. This put more attention on Dirk, which was a good thing, because my colleague ran upstairs to fetch him. I was extremely embarrassed over this, I was telling the project partners that we should remember the users and I had totally forgotten to take Dirk with me.) After the General Assembly, I put all relevant documentation, the persona descriptions, their scenarios, all illustrations as well as a description of both the terms persona and scenario, on the project wiki and e-mailed the links out to the project. During the same presentation slot the KTH group gave presentations on other user-centered design methods such as paper and video prototypes. In addition we showed short videos with clips from interviews taken during our field visits.

In hindsight, it is easy to see that the introduction and education about the persona method was completely inadequate. This became apparent during the project when I saw how the persona material was used as well as through the questions I received from my project colleagues. This will be discussed in more detail in Chapter 8.

Based on my interviews on the persona method with ten usability practitioners in the Stockholm area, I found that this type of introduction seems to be rather typical. Generally there is not enough time spent on educating the persona recipients – clients, project colleagues, other stakeholders – on what personas are and how they can support the design process.

After introducing the personas to project partners, the KTH group continued to write additional scenarios, initiated design idea formulation and prototyping by performing video brainstorming and workshops with both project colleagues and users. Throughout the project, we continued to use the personas and the scenarios during most design activities in our lab as well as activities we initiated with our project partners.

After the initial user research phase, we held a workshop with

representatives from all project partners in Paris, France, where we discussed the design ideas thoroughly (see Figure 22). We tried to make it clear to the project partners how the design ideas were connected to the user research results and the personas and scenarios. During the discussions on the design ideas, additional new ideas emerged and others were changed and complemented, as it became evident that some things were missing. Some ideas could be merged because they were considered to overlap one another. After the refinement, some of the most important functionalities were further prototyped using simple paper prototypes or video prototypes.

During the whole project, the KTH group consistently used the personas during all presentations and project discussions. We always included a description of our work methods and tried to affect the work that was being done at our project partners' sites. We had good opportunities to influence those project partners we were directly

Figure 22. All the proposed design ideas were discussed, adjusted and variations were constructed at one Design Idea Workshop in Paris 2006 (photograph courtesy of Bo Westerlund).

involved with, such as the case study partners, but it was more difficult to influence the highly technical project partners who were working on their own with no connection to us. Still, we used the persona material when discussing any functionality or an interface idea and prompted for the personas when possible and relevant during discussions and meetings. We described our work and the persona material in all project deliverables, when at all possible, and during the EU review meetings. Furthermore we brought life-size personas with us to all meetings (see Figure 13, section 4.6.2).

In addition to this, we tried to remind the project partners of the personas regularly. I sent out e-mails to all project members telling them news of the personas. Below is an example.

> Hello all,
>
> I bring you news from our personas in Nepomuk. Several things have happened recently:
> – Dirk is moving in with his girlfriend Anna in Südstadt
> – Karen is back at work after a relatively short maternity leave, she had a baby girl named Linn
> – Claudia has got a new cat
> – There is now more information about Ella, Marie, Keith and Pierre at Pasteur
>
> You can find all our personas here: [a direct link to a wiki page]
>
> I also attach an image of all the personas. If you want, you can use it as your desktop image (I attach a more colorless version for those who have a lot of stuff on their desktop).
>
> Greetings from a dark and wintery Stockholm,
>
> *Rósa*

Chapter 7

Nepomuk project observations

In this chapter, I describe how I followed and observed the usage of the persona method in the Nepomuk project. I carried out observations and took field notes during meetings and workshops, read documentation and e-mails. The purpose was to see how – or if – the personas were received and used by the project partners. In addition to this, I conducted interviews with project members discussing their opinions on the persona method as well as other methods introduced and used by the KTH group. To balance the interviews, I performed additional interviews with my KTH colleagues.

7.1 Project meetings

I participated in 24 project meetings during the course of the project, such as General Assemblies, EU review meetings and other work meetings discussing specific issues like plans for the project work, architecture or functionalities. Most of these meetings lasted 2–3 days, with carefully planned and implemented agendas and with smaller workshop-like meetings with selected partners participating before or after. In connection with the meetings, social activities were always planned during one or more of the available evenings. During several of the meetings, I participated and gave some kind of presentation as a member of the KTH group, but I rarely influenced the agenda or the discussion during the meeting in any significant way.

Other project-related gatherings were, for example, workshops where the KTH group presented their work to the project partners and prototyping sessions at the partner site or in our lab in Stockholm. The

latter type of gatherings could last several days or weeks. We worked together with the project partners on certain scenarios or specific prototyping ideas that were inspired by the user research we had done early on in the project. In a few cases, we worked on other ideas that stemmed from the specific goal the project partner wanted to achieve during the project, used a specific application or solved a specific problem that had been defined before we entered the project and presented the results from our user research. These types of gatherings were always smaller than the meetings and usually included one or two members from our project partners and one or two members of the KTH group.

During the prototyping and workshop gatherings, I had an opportunity to lead discussions and participate in the prototyping work. During the more administrative project meetings, however, I was a participant observing the discussions and the presentations, trying to see how the persona material was used, discussed and perceived. To summarize, it can be stated that the personas were almost never used during any of these meetings or activities without me prompting for them or mentioning them in some way.

7.2 Documentation review

In order to get a more complete picture of the usage of personas and scenarios, I read several deliverables in which the project partners described the work they had done in the past year, trying to follow the usage of personas and scenarios, even though they were seldom mentioned. But there were interesting instances of persona usage, which will be discussed in Chapter 8. In addition, I read (and sometimes participated in the writing of) papers published by other project partners (Reif et al. 2007; Groza et al. 2007; Papailiou et al. 2008a), and it was interesting to see how they felt personas and scenarios could appropriately be used in the papers. Finally, I regularly reviewed and followed changes on wiki pages the project partners used extensively to communicate plans and changes and to coordinate coding efforts. Several interesting wiki behaviors were observed during the project where people changed each other's texts without asking and/or checking

whether the change was acceptable, but most of these observations and analyses lie outside the scope of this thesis. Another interesting observation was that wiki usage started to diminish when the project was in the second year, and toward the end, the wiki was merely used to plan and inform before EU review meetings or the General Assembly. Some project partners used the wiki to document their own efforts, not to communicate or cooperate with others. Complementing the wiki pages, the project partners used e-mail extensively, both to discuss application plans and changes and to notify about changes that had been made on the wiki pages.

7.3 Video brainstorming

We carried out various kinds of design activities with our project partners on seven occasions, usually meetings initiated by the KTH group at the project partner sites or at the KTH department in Stockholm. During these sessions, we worked on simple prototypes and performed several video brainstorming sessions (see Figure 23), and during most

Figure 23. Project members creating a video prototype at a video brainstorming session in Karlsruhe, Germany.

of these sessions we used relevant personas and their scenarios as a starting point for the brainstorming.

For some of the sessions we had chosen a few scenarios that participants could select to work on; they were asked to create a video prototype to formulate a solution for the chosen scenario. During these sessions, we could observe how the project members used the personas while they were discussing and designing their prototype and we also got feedback and in some cases confirmation that the personas we had created seemed realistic to the project members, although it was clear that they did not use the persona material with any ease.

7.4 Interviews with project members

I carried out interviews with twenty-four project members, discussing their opinions on the persona method as well as other methods introduced and used by the KTH group. To balance these interviews, I also interviewed my KTH colleagues, six in total. The interviews were conducted toward the end of the project, usually in connection with a Nepomuk meeting, during an EU review meeting or when project partners were visiting Stockholm for a design activity or a workshop. Ten out of 15 project partners were represented in the interviews.

These interviews were carried out individually in a conference room, and I made it clear to my interviewees that I was interested in a candid account of how the participants perceived the personas and some of the other methods introduced by the KTH group. Considering some of the highly critical responses I received, I believe I was able to get their honest opinion. At the beginning of one interview, when I asked a Nepomuk developer if he knew why I wanted to interview him, he replied: "Yes, I heard, you want the truth" (interview with a Nepomuk developer 2008-11-11).

7.5 Prototyping and evaluations

We performed a great deal of prototyping activities, both internally at KTH and in cooperation with a few of our project partners. At KTH, we created the prototypes Shared Information Space and NepoSimple

and participated in the design and evaluation of two prototypes called Kasimir and Sponge in cooperation with other partners. I will discuss the methods in more detail below. During these activities, I made an effort to observe and follow the persona and scenario usage to see how they were used in the design process.

7.5.1 Shared Information Space

The KTH group designed a prototype we called Shared Information Space, making use of both personas and scenarios. This prototype was also evaluated extensively with the help of end users.

The Shared Information Space prototype came about through continuous development and evaluation for over a year and resulted in a prototype that gave the user a view into the semantic data. Everything covered by this view (the semi-transparent window on the desktop in Figure 24) is used as a source for semantic data extraction, and the resources can be distributed along two axes (horizontal and vertical) according to the parameters set at the end of each axis.

Figure 24. Screenshot of Shared Information Space (screen shot courtesy of Henrik Edlund).

The original inspiration for this prototype were two simple prototypes we created to test design ideas called *perspective* and *pile*, which were largely based on the discoveries we made during our initial user research. These prototypes used conventional visual desktop metaphors that masked the fact that they represented semantic folders that behaved differently from conventional folders. During the evaluation of these prototypes, we discovered that the informants had trouble understanding that they were different because they looked like ordinary folders. Taking this into account in later versions, we made sure that the interface reflected the fact that the underlying functionality was novel and unconventional (Haller et al. 2009: 31).

When designing the original prototypes and during all subsequent versions, we used both the personas and the scenarios quite extensively. We used the scenarios to inspire the prototype functionalities and we used the personas in discussions when deciding which functionality to include and how to design the interface. It was easy to use the personas and scenarios during this process, as there were usually only two individuals involved in the work, both of whom had experience using the persona method and who were positive towards it.

7.5.2 NepoSimple

The KTH group designed and evaluated a prototype called NepoSimple, for which scenarios were used quite extensively (Haller et al. 2009). Several versions of this prototype were evaluated with the help of end users, starting from evaluating a scenario – where Ella gets notified about Marie's problem with her data – that was the main inspiration for the prototype, to testing the running code we delivered at the end of Nepomuk. The design of the NepoSimple prototype was based on experiences from the initial user research. The prototype was developed and evaluated using an iterative process with a continuous dialogue between developers, designers, usability experts and representative end users.

NepoSimple allows users to organize, annotate, search and browse their documents. It is based on the design idea *pile*, which means

that it can be used to manage several types of resources (files, address book entries, calendar entries, concepts and web links). Information is displayed in a specialized Views field, including a timeline and a map. NepoSimple has been integrated with other applications, one of which provides recommendations for related items. It has also been integrated with Mozilla Firefox (web browser) and Thunderbird (e-mail client) to facilitate the creation of piles (see Figure 25).

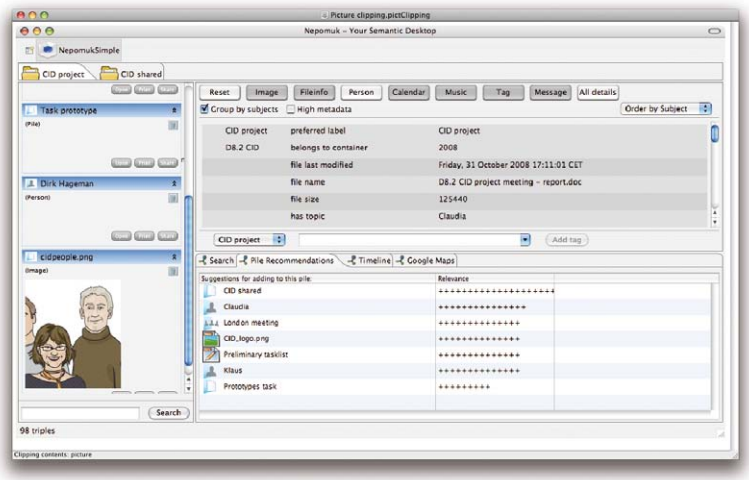

Figure 25. Screenshot of NepoSimple (screen shot courtesy of Cristian Bogdan).

As mentioned above, the scenarios were used during the design and evaluation of NepoSimple. As the prototype evolved technically it was based on the scenario of Claudia preparing for her trip to Belfast, a scenario that was used quite extensively by all project partners as it was chosen as a base for demonstrations for the second EU review meeting. This scenario was extensively analyzed and worked through by the KTH group to ensure that all the functionality in the scenario was present in NepoSimple, but it is not equally certain that the persona, Claudia, was as present during the design process. Nevertheless, Claudia was very much present during the evaluation phase, as she, along with the scenario, was used as a base for the evaluation and the tasks the informants were asked to perform.

7.5.3 Sponge

The prototype called Sponge was mainly designed and developed by one of our case study partners, but we cooperated in the work during various stages. The first version of the prototype was mainly designed and developed by our case study partner. It was based somewhat on the user needs elicited during the initial user research performed by the KTH group, the early simple prototypes we produced at the beginning of the Nepomuk project as well as considering the envisioned technology to be used in the project. After our partner developed the prototype, the KTH group evaluated it with several end users in three different office locations: Greece, the UK and Denmark. During the evaluation, we discovered that the prototype's functionalities were the ones the users needed, but they were very difficult to understand and to use. The goal of the next version of Sponge was therefore to make a simpler version, providing, for example, improved search functionalities and a completely redesigned user interface.

In Sponge, gadgets – minimal windows that assist the knowledge worker in her everyday work – are easily accessed. An important inspiration for Sponge was post-it notes. For this reason, Sponge consists of a combination of simple gadgets with dynamic pages that can be viewed using a standard web browser. The purpose of the gadgets was to provide relevant information to the user in a non-intrusive manner. The user can use Sponge – by sticking Sponge Notes on resources – for searching, annotation and collaboration. The visual metaphor of post-it notes is followed regarding the process of adding Sponge Notes.

The KTH group participated to some degree in the design of the second version of the prototype, which is a collection of tools – gadgets consisting of minimal lightweight windows – providing social and semantic functionalities customized for knowledge workers. During our cooperation, my colleague and I consistently used the personas as a reference and an argument for different types of functionality. We also referred to different scenarios when discussing the functionality and the graphical interface. Our project partner was also an avid persona and scenario user, and it seems as though the developers used the

personas as a design aid. For the development of Sponge, they used one persona and one scenario in particular, a scenario in which Alistair is preparing for a sales meeting. This partner also used personas and scenarios to explain the prototype to other project partners and the EU reviewers in the documentation they delivered at the end of the project (Papailiou et al. 2008b).

7.5.4 Kasimir

The prototype called Kasimir was mainly designed and developed by another case study partner of ours. In this case study, the focus was on the execution of tasks, and during the user research we focused on tasks during the interviews and other activities. The first version of Kasimir focused on individual task support for knowledge workers and the second prototype concentrated on task patterns. Task patterns were not directly requested by the informants who participated in the user research, but were more of an idea that the project partner wanted to develop further and evaluate. During the initial evaluation, we discovered that the informants had positive attitudes toward this idea, and subsequent evaluations of the running code showed that Kasimir, including the task patterns approach, was perceived as a useful and promising work tool. The central focus of the final prototype was placed on the reuse of task information and further support of users with respect to guidance in task execution.

The KTH group was mainly involved in the initial design phase as well as in most of the evaluations of the prototype. This project partner took our usability approach to heart and started the design of the prototype on paper. The first version of the prototype was also evaluated on paper, which is an approach that we recommended. Later on in the design process, we cooperated closely when determining what new functionality to add to the prototype when it was developing further and changing focus. During this phase, we used the persona material quite extensively. We worked together for two weeks brainstorming new ideas for the prototype using the personas and their scenarios for inspiration. We also developed new scenarios based on our personas' needs and the prototype's focus.

Figure 26. Storyboard for "Create pattern from a task".

The story of Claudia creating a pattern

1. Claudia is sitting in front of her computer. She is done with all the tasks for the Belfast trip. She is ready to go. So she checks the task "Belfast trip" as done.
2. Then the Kasimir program asks Claudia whether she wants to save the task "Belfast trip" as a task pattern in order to use it again for similar trips in the future. Claudia thinks this is a good idea and says yes to the suggestion.
3. The Kasimir program helps Claudia choose what she would like to save and what she would like to remove from the "Belfast trip" task before saving. She chooses to remove some things, like the hotel, and to keep others, like her credit card information. During this step, Claudia can decide how she wants to save the pattern.

This project partner did not work a great deal with the personas, but what was particular about this partner was that the personas they used the most, Dirk and Claudia, were very similar to the two persons working most actively in the project. One of them was a PhD student and the other was his project manager. During interviews they explained that the personas were very similar to them, which made them believe in the personas more. This type of recognition is not necessarily positive and the risk is that it results in the "self-referential design" (Cooper and Reiman 2003: 58) that personas are supposed to help us avoid. This will be discussed further in Chapter 8. But they also claimed that it was good to have Dirk and Claudia, because it meant that they did not need to use themselves and their own data as examples when working

and when explaining the work to other project partners (interview with a Nepomuk project manager 2008-02-06). What they did was to create new scenarios for the personas in which they included task management functionality. The new scenarios were quite short and did not include the overall context that was part of the scenarios we wrote. They felt that the task management scenarios were more specific than the overall scenarios. One project member claimed that the original scenarios we wrote were good and saved him a great deal of effort; the user research was already done which meant "that you don't need to do these interviews on your own" (interview with Nepomuk developer 2008-01-25). This project partner also used the personas and the scenarios to explain the prototype and its functionality to other project partners and the EU reviewers in the documentation they delivered at the end of the project (Riss et al. 2009).

Chapter 8

Using personas and scenarios

In this chapter, I report from my study of how the persona method was used in the Nepomuk project as well as other projects in which I have been involved. I discuss both the more successful aspects of using personas and scenarios in the project and things we could have done differently to make it possible for the persona material to have a greater effect on the end result of the project.

To summarize the usage of personas and scenarios in the Nepomuk project, we can say that they have been used quite extensively as a communication device, but much less for design support. This observation is in accordance with my experience from conducting a number of other persona projects as a usability practitioner.

8.1 Introducing personas and scenarios

The personas were introduced to the Nepomuk project partners four months after the project began. The introduction was made to the whole project group during a meeting with all project partners represented, and only two personas, Dirk and Claudia, were presented. Dirk was introduced as a life-size figure during that meeting. Included in the presentation of Dirk and Claudia was a short overview of the persona method. The other personas, specific to each case study, were introduced to the relevant case study partner during smaller workshops. The personas and their scenarios were documented on the project wiki, where all project members could access the information. Included in the wiki was a definition of the terms used as well as a description of the method (see section 6.5).

When the persona material was introduced in the Nepomuk project it was well received. I have rarely received negative feedback when introducing persona material, although I do get questions about the personal details – whether they are really necessary – and people sometimes wonder whether the personas are based on statistically valid data. In Nepomuk, the project members usually found the personas interesting and started talking about them as if they were real people rather than fictitious ones using their names and commenting on their lifestyle or work. Several project members suggested that the personas should have an e-mail account so that they could send e-mails to them if they had any questions. Consequently I set up e-mail accounts for all the personas, but they did not receive a single e-mail until the developers began testing applications to demonstrate for the final EU review. As the project progressed and it became clearer to me how important it was to give more background on why we were using personas, I took ever increasing care when answering questions to explain the method, how personas are created and how they can be used to help achieve high usability.

When I introduced the personas and scenarios to the different case study partners, I rarely received follow-up questions or any critical comments on the method. They generally accepted the personas and their scenarios without any criticism, as if just having them were enough. This I see as a problem. Perhaps the reason why people do not give serious consideration to what the persona material actually represents – the results of extensive user studies – is that the personas seem so easy to take in and understand that people think they automatically know how to use them. But my experience in Nepomuk – as well as in follow-up studies I have conducted at several other sites where I have delivered a persona project – indicates that the material is rarely utilized as much as intended.

During the project, I noticed that to encourage project members to use the persona method as proposed in the literature, we would have needed to work much more on the introduction of the method, as well as on continuous re-education (e.g., through hands-on workshops or video brainstorming), than we actually did. I think this is always necessary, but especially in large research projects similar to

Nepomuk. When the recipients of the persona material are in a smaller organization, where the material is actively procured, there is a better chance that it will be used more for design support and communication during the system development (interview with a procurer 2007-12-21; e-mail query with a procurer 2010-04-02).

Despite this, the personas were used considerably for communication in the Nepomuk project, and a number of project members found the persona method useful, even though many of them admitted they had not used the personas a great deal. A few of the developers claimed that they did not need the personas or scenarios, because they had a good view and knowledge of the users and what they needed, without using personas. Boivie (2005: 61) has come across similar views, and she reports that, even though few would admit to such attitudes openly, the view among developers themselves and others that developers are in a better position to define users' needs than the users themselves are is not uncommon.

During the project, we promoted the persona material in different ways, for example by bringing the personas up in discussions during meetings (both face-to-face and in digital communication), by sending out e-mails with news of the personas and by consistently using them during all project presentations we have given. During workshop and video brainstorming activities, we tried to promote use of the personas and suggested to project members that the scenarios could be used as inspiration for the video prototypes (sections 3.3 and 7.3).

One procurer I interviewed (2007-12-27) stated that the developers in her project did not get any introduction to or training in how to use personas because the developers were not expected to use them. No decisions regarding user interface or functionality were supposed to be taken by the developers. What they did in the project was to discuss all issues in a group "responsible for the target users" who knew the personas and the ultimate goal of the project, and who cooperated with the developers. Naturally, this was only possible because the developers were working in close proximity to this group. This means that if the developers have not been introduced to the persona material and do not have on-site access to the group specializing in knowledge of users and their requirements, one needs to plan for more and different work

to be done to bridge the communication gap – both regarding the needs and desires of users as well as the work on the user interface and functionality.

8.2 Writing and illustrating personas and scenarios

While interviewing a developer in the Nepomuk project, I asked him how I could improve the persona descriptions. He suggested that I could add headings to each paragraph in the persona description, e.g. *Personal details*, *Work situation*, and *Tools to perform the work*. The purpose, he said, was to allow him to go directly to the important things, the work situation and tools, and skip the unimportant things, the personal details. His suggestion was all the more interesting given that he understood quite well that the personal details were present in the description to make the persona "look more realistic" (interview with a Nepomuk developer 2007-08-07). When the Nepomuk developers were asked what they remembered about the personas, many knew the details and not necessarily the persona names: "the one at TMI with the nice voice, uh… Nasim!", "Alistair with the big car", "the one who had the baby, Karen" and "Claudia and her cat", etc. It was apparent that the persona details helped the developers remember the personas, even though they maintained that this was unnecessary information.

When I discussed the interest in the personas with another developer, he stated that it would have made the personas more interesting if we had spread more gossip about them (personal communication 2007-05-23). We have on two occasions sent out e-mails to the whole project telling them news of the personas, for example that Karen had had her baby and that Dirk had moved in with his girlfriend. But this news was apparently not juicy enough to spark much interest.

Project members told stories and jokes about the personas on several occasions, which I interpret as positive and as a signal of acceptance, even though some of the jokes were told to demean the personas or were lewd. Other jokes or stories showed that the project members accepted the personas and continued to develop their story. During the second EU review Dirk and Claudia were present (as they were at all review meetings), but on the way to Hanover they were delayed because my

luggage did not arrive, so we came to the meeting without the roll-up of Dirk and Claudia. When my colleague told the project coordinator that Dirk and Claudia had not arrived, he said jokingly, "Well, we know where they are. They are in Belfast!", referring to a popular scenario in which Claudia is preparing for a trip to Belfast. As discussed above, many developers were critical to the personal details in the persona descriptions, an observation that also applies to other projects in which I have used the persona method. For example, one of the personas, Claudia, had a cat in the initial persona description. Later in the project, I informed the project members by e-mail that Claudia had just gotten a new cat. The purpose of the e-mail was to provide general news of the personas to illustrate that they were changing and to remind the project members of their presence.

This news of Claudia, however, appears to have had the opposite effect, as it significantly increased the project members' criticism that there was too much personal detail in the descriptions. One project member told me in an interview: "We are computer scientists, we don't give a rat's ass whether Claudia has a cat!" (interview with a Nepomuk project manager 2007-08-07). The news of the cat seems to have hit a nerve. In the same e-mail, I also reported that Dirk was moving in with his girlfriend and that Karen was back from maternity leave, but the project members did not react in the same way. I believe that the cat was too insignificant a news item to be of any interest and therefore exacerbated an already present irritation over the details. Combined with this there was a great deal of project politics going on regarding what type of work the KTH group was delivering to the project. But this anecdote still serves to illustrate an issue that is important when writing the personas; it is vital that both the personas and the scenarios include relevant details and information. The details can be trivial and quirky, but they still need to be of interest to the project members, which means we need to know our project partners and their organization before we venture into the writing of the personas. A more efficient way of making sure that the relevant details are included in the persona description, and thus of making them more useful for the developers, is to get the developers involved in the creation and the writing of the persona material (Blomquist and Arvola 2002).

As discussed in Chapter 4, many persona practitioners use and recommend the use of photographs to visualize the personas (cf. Cooper and Reiman 2003) and there are claims (Long 2009) that illustrations seem to reduce effectiveness. Still, I prefer illustrations to photographs (Guðjónsdóttir 2006), mainly because illustrations emphasize the fact that the personas are fictitious representations of real users. Illustrations also allow more control over what the personas themselves look like and how their environment is portrayed. Other advantages are, for example, that you do not risk using a picture of someone the project group knows. Also, illustrations tend to look more professional, because they make it much easier to build up a coherent depiction of the whole group of personas you create in a project. Using illustrations was doubtless the best and the cheapest way to make professional and graphically unified portrayals of personas and their work environment within the Nepomuk project. I also believe that the high quality of the graphical work may have contributed to the use of the persona material for demonstration and communication (see below). A further advantage to using illustrations is that they allow one to create new visualizations more easily, such as scenario pictures and life-size images. It is easier to create new illustrations of the persona after a change to signify a stage in the persona life cycle, for example the Nepomuk persona, Karen, who was pregnant at the beginning of the project and had her baby during the project's first year.

In Nepomuk, as in all other persona projects I have carried out, we employed a professional illustrator, with experience of illustrating personas and scenarios, to draw the personas. When commissioning illustrations, I usually give some instructions as to what the illustrations should be like, for example whether the style should be conservative or more artistic. I also give a short description of the persona and his or her environment. In most cases, I also explain the purpose of the illustrations and what kind of people will receive and use them.

Many project members in the Nepomuk project wanted to include life-size persona figures in their work environment (see also section 8.5). One project member stated that she would like to have a picture of the personas in her work environment, but that she was not able to because the office did not have the wall space, just "windows and fake

bamboos". This is consistent with experiences reported in Guðjónsdóttir (2001) as well as experiences from other persona projects (e.g. interview with a procurer 2007-12-27) that personas, especially life-size personas, require a workspace that allows for persona presence. Presumably, people are reluctant to adjust their workspace in any radical manner just to allow the personas to be present. In recent projects, I have created smaller cardboard versions of the life-size personas, approximately 25 centimeters tall, that could fit on someone's desk. Observations during the latest delivery of such doll-size personas showed that people frequently asked who these people were when walking by the procurer's desk and she would proudly explain that they were representations of the users in her project. Also, it seems that they are in use for a long period of time rather than being stuffed into a drawer. The procurer stated that the personas were "still there" nine months after they were delivered to the project and were actually being used in a new project (e-mail query with a procurer 2010-03-31).

In the Nepomuk project, we travelled to the different project meetings with a roll-up of both Dirk and Claudia or of Dirk, Marie, Karen and Kim. This was a good reminder of the personas, but the roll-up personas in Nepomuk did not stimulate as much interaction as the life-size cardboard personas I have used before (Guðjónsdóttir 2001), which led to a great deal of contact. Project members put accessories on the cardboard life-size personas, and the project group fought to have the coolest persona, a laid-back guy called Mbabu, close to their desk.

8.3 Alternative use of personas and scenarios

It was common to use the personas and their accompanying scenarios in the Nepomuk project to create data for a demonstration. This meant that the material was used to demonstrate the different applications created in the project. The demonstration was organized around a persona and a scenario and, when applicable, all fields and content shown in the application contained information belonging to the specific persona. This type of usage of the persona material became clearer toward the end of the project, when the project began producing applications that were demonstrated at the EU review meetings.

The developers appreciated being able to use the persona material for demonstrations because the alternative, using their own personal information and documentation, "is very crappy and makes it difficult for others to demo" (interview with a Nepomuk developer 2008-02-08). Other project members stressed that the personas were used for demo data in order to "present coherence" and that the personas are "nice for illustrating things" (interview with a Nepomuk project manager 2007-08-07).

Another appreciated attribute of the persona material was that when one uses the same persona and the same, or connected, scenarios, one has the same test data in all demos: "You don't have one demo that talks about coffee machines, one about personas and a third about something else" (interview with a Nepomuk developer 2008-11-11). In order to achieve this coherence, the project members made an effort to decide on which personas and scenarios were relevant to use in the demos before the EU review meetings. Telephone meetings were held to decide on the material and wiki pages were created to write an exact manuscript for how the scenarios were to be realized between the different applications. Also, it was clearly stressed by the project coordinators that the demonstrations should follow the chosen scenario. During the meetings themselves, different project members played the role of the different personas, describing the scenarios while the applications were shown in parallel.

Interviews with the project partners revealed that a number of developers thought that this was the way personas and scenarios were intended to be used, and some of them still use the persona method in the same manner (chat communication with a Nepomuk developer 2010-04-14). And, when asked directly, they did not believe this way of using the persona method would have any effect on the design or implementation of the system. Still, following the discussions during the planning of the demonstrations and watching the demonstrations themselves, it was apparent that the personas had an indirect effect. Software that did not work properly for the scenario was fixed to be functional during the demonstration. The demonstrations also affected the persona material; a persona was promptly created just in time for

the last EU review in 2008 – suddenly we had Marco, who was added to the relevant scenarios on the project wiki. Last, but not least, the choice of a persona and scenario for the review meeting was surely determined by the things that we actually *could* demonstrate and not necessarily by the things we *wanted* to demonstrate.

In addition to using the persona material for demonstrations, it was documented in project deliverables (Papailiou et al. 2006; Polonsky et al. 2006; Grebner et al. 2006; Laurière et al. 2006), and the Nepomuk developers used personas to explain what Nepomuk was about when writing scientific papers. "I like them a lot when it comes to writing papers or presenting this to someone else. So they are good for demo and all kinds of documentation […] this is the main use in Nepomuk" (interview with a Nepomuk developer 2008-02-08). The persona material was used in these papers just as a presentation of Nepomuk and there was no analysis or interpretation of how the material affected the work in the project or its results.

Many Nepomuk project members had positive attitudes toward the personas' presence in the project, even though many of them did not know – nor did they ask – in what situations they could be useful or how the persona textbooks suggest they could be helpful. In some cases, however, project members did use the personas as an argument for different types of functionality. A developer in Nepomuk sent an e-mail out to the whole project detailing a messaging service for the Social Semantic Desktop. To motivate the service, he used a few Nepomuk persona scenarios, like "Delegate this task to Dirk". When asked why he had used the persona material as motivation, the developer argued that he was trying to "make everyone buy my story quickly and with little discussion" and then he added "in fact, I had no discussion in the end" (chat communication with a Nepomuk developer 2007-07-10). Even though the developer got what *he* (and not necessarily what Dirk) wanted and was pleased with how the persona method had helped him convince his fellow developers, it is not necessarily a positive effect because it reduces the design discussions within the project group. Still, this example shows clearly that the persona method can be helpful when suggesting and arguing for design decisions.

It is interesting to compare the usage of personas in the Nepomuk project – a large, technology oriented international effort – with usage in a small-scale project carried out within a single organization. In one such project I carried out for a Swedish Funding Agency, the persona material was used in an unexpected manner. Instead of using the personas to help in understanding the target audience, the procurer as well as the management team felt they had profited greatly from reading the actual transcriptions of the interviews conducted to create the personas. During the project, it hardly seemed worth the effort to deliver the transcribed interviews to the client, because I doubted that anyone would read any of it. But, in this case, I was proved wrong.

The interesting question – and one that is difficult to get an answer to – is whether they would have read the interviews with as much interest if they had not first been introduced to the personas. Also, one can wonder whether the interviews were an easier read because they were carried out with the express purpose of creating personas. Persona interviews are, in my experience, somewhat different from regular user research interviews. The focus is on the work or the context in question, just as in a regular interview, but in a persona interview there is more discussion about extremes, like a good or a bad work week (Cooper and Reimann 2003: 44–52). When I perform persona interviews, I try my best to get to know the person I am interviewing as well as to understand how he carries out his work tasks.

Besides reading the interviews, both the procurer and the management team expressed positive attitudes toward the personas. The procurer stated that she "recognized" most of the personas, but was surprised by some of the results. She felt that they had influenced and helped in adapting both the general communication and the web-based communication to the different target groups, just as they were meant to.

Use of the persona material in a project can take unexpected turns. For example, project partners may access the source material or use it for other purposes, such as for demonstrations. It is important to realize that project members bring different types of attitudes to a project, and these attitudes seem to influence how the persona material is used.

8.4 The effects of the project set-up

One reason for the dismissive attitude toward the work done by the KTH group within Nepomuk was that while almost everyone felt that the personas were a good representation of what Nepomuk wanted to achieve (at least officially), the developers felt that some of the scenarios written were completely beyond the scope of the project, i.e. the scenarios illustrated functionality that was not being developed within the project. Alistair, for example, uses a speech application in one scenario, which was not going to be developed in the project for specific reasons.

Faced with one scenario that was beyond the scope of the project, many of the developers ignored all the remaining scenarios. One developer said during an interview that when he first read some of the scenarios he thought: "Are they [the KTH group] in the same project as me?" (interview with a Nepomuk developer 2007-08-07). This developer was involved in writing the project proposal and was well aware of the technology that was within the scope of the project. The KTH group was applying a similar approach as Cooper (1999) suggests, namely "Pretend It's Magic" (ibid.: 185), by writing scenarios that were beyond the scope of the project and had almost magical powers or, as some of the Nepomuk developers said, "were science fiction". We were trying to help the designers and developers think outside the box in order to facilitate the design of simple interaction that would meet users' needs. But, apparently, this failed in Nepomuk and probably the reason for this failure is the intense focus all the partners had on pursuing the use and evaluation of the technology they had already decided on from the outset of the project.

As discussed before, in section 2.1.3, the project coordinators regularly reminded the project participants that Nepomuk was a "Technology-Driven" project. And even though Nepomuk was "Motivated by Needs of Knowledge Workers" (presentation at the first EU review 2007) the primus motor of the project was the technology – and not the target audience – and it was difficult to change the project goal based on the needs and desires of the personas.

In spite of the technological focus of the project, we in the KTH group carried on with our work and organized workshops and other activities within the project as well as in the user settings. This allowed our project partners to get hands-on experience of our methods. The interviews with the project members revealed that we had had an effect on a few of the project partners who had started working/wanted to work with the methods we introduced. One project partner had taken our prototyping philosophy to heart and had begun creating prototypes on paper, but later on changed the prototyping method to use Microsoft PowerPoint instead, as they felt working on paper was too cumbersome and slow (interview with a Nepomuk project manager 2008-01-29). Another project partner planned to carry out video brainstorming sessions to get ideas for a conference website he was partly responsible for (interview with a Nepomuk project manager 2007-08-07).

The Nepomuk project differed in many ways from all other projects for which I have carried out user research and created personas and scenarios. One of these differences was the fact that the Nepomuk project did not procure personas or ask for them directly. Using the persona method was the idea of the KTH group and the material appeared "ready for use" at the first General Assembly four months into the project. Not only did they not ask for personas and scenarios, the project members did not participate in the creation of the material. I do not believe the only way the persona method can be successful is if project stakeholders request the method, but it certainly helps to be receptive to the method from the outset – as well as the user-centered philosophy in general – and one way of getting used to the idea of using the persona method is to be involved in creating and writing the personas and scenarios.

When conducting the user research and creating personas and scenarios, the KTH group treated each user setting as a separate project, which was logical at the time. We created two to four personas per case study, which is a reasonable number of personas in a project (Cooper 1999). But the upshot of this was that, for the purposes of the project as a whole, we created too many personas – 14 in total. Treating each user setting separately worked well for the case study project partners who

were the main users of the user research results, but for the technical project partners, who were meant to incorporate the input from all case studies, it proved to be difficult to remember or even to consider all of them. An attempt was made to reduce the number of personas in year two of the project. We chose four personas for Nepomuk as a whole, one for each case study: Marie, Dirk, Karen and André (seen life-size in Figure 13, section 4.6.2). However, this attempt proved unsuccessful, and Dirk and Claudia, continued to be the personas most project members focused on. In addition, the personas we created were not the target users for the technical partners; instead the target users were open-source developers who would utilize components the technical partners developed to create applications that end users would interact with. The personas we created were not expected to interact with the technical components themselves. To forestall this, we could have created what those of us in the KTH group called a "hacker" persona.

The KTH group differed in culture and methods from the other partners within Nepomuk. We were a multi-disciplinary group with a preference for sharing our results and validating them through workshops and other activities. Not all project members appreciated this way of working. After a three-day workshop during which we worked our way through all the material produced by the KTH group in order to discover abstract functionalities for the Social Semantic Desktop, one developer wrote on his blog that the work done during those three days resulted in "a list of extremely general and obvious things like 'search', which again, we could have written down over lunch. (or maybe [developer's name] was right, maybe it only seems that way because I've been breathing the semantic desktop for a year)". In hindsight, one can see that it would have made a great deal of difference if we, in the KTH group, had made more of an effort to get to know our project partners, as suggested by Asboe (2008) and Mulder (Danzico 2007, interviewing Steve Mulder). This would have enabled us to see in what kind of environment we were trying to implement our user-centered design approach and to use that information to adapt our approach, which may have resulted in a better reception (Iivari 2004). It is necessary for the usability practitioner to obtain in-depth knowledge of the project

itself and its members as well as of any informal project politics that could affect the work (Löwgren and Stolterman 2004). This should be the customary procedure in projects of this kind, but for those of us in the KTH group it was almost impossible, as the project was not planned with this in mind, nor was it planned to allow time for a sustainable user-centered design approach.

8.5 Design support and a communication device

A Nepomuk meeting was held in month 17 to coordinate and discuss the case study partners' requirements for components from the technology partners in order to create prototypes that were to be tested in the case studies. This would in theory have been a good opportunity to use the persona material as an argument for a certain technology to be delivered to the case study partners. I observed this meeting to see how the personas were used to illustrate the need for the specific applications. During a two-day meeting, the personas were not mentioned once (and I did not mention them either). The word 'user' was expressed three times in a short, anonymous scenario to illustrate the need for technology.

When asked directly, most of the developers did not think that the personas and scenarios had any effect on how their components or applications were designed and which functionality was included. One exception was a developer at a case study partner who reported that when his team was preparing a demo – in their case a functional prototype – they used a persona called Alistair and that "while we prepared the demo and the scenarios we'd say that 'Alistair does this' and 'Alistair does that', sometimes we'd stop and say 'Is it possible really that Alistair does this?' or 'Would he ever think to annotate something he should drag and drop and really select something from a million items?'" He also claimed that Alistair sometimes saved them from making bad design decisions, because they realized that no one, not even someone who was "very educated and, you know, trained in semantics would be able to do this. So I guess we do it, we don't know it, but we get into his position somehow and we start thinking what would Alistair really think about this piece of software?" (interview with a Nepomuk developer 2008-04-02).

There were also efforts to extract internal requirements from the scenarios by writing "technology versions" of the scenarios (documentation on the project wiki). Many of them were written in preparation for the EU reviews, whereas others were written by members of the KTH group while prototyping the scenarios. The peer-to-peer project partner also made an effort to extract internal requirements from all the scenarios written by KTH.

During the interviews, most of the developers claimed that they had not used the personas or scenarios for making design and development decisions. When we discussed the reasons for this, they often explained that the persona material was not relevant for these decisions because they were about fundamental technological solutions and not about the graphical interface. According to Löwgren (1995), this is a typical dilemma, because traditional system development models and requirements are generally based on an engineering design point of view, which is quite suitable given that the goal is to construct the software, the internal design. Löwgren claims that problems and tension arise when requirements are interpreted as a model for external design, the design of the graphical interface and its behavior. It would therefore be more efficient if we could clearly separate the internal from the external design, which would create less tension and clearer communication. In Nepomuk, there was no clear distinction between these two types of design. The fact that the project initiators invited the KTH group to the project in order to design and develop the user interface of the Nepomuk system only added to the confusion, and I believe it caused the developers to automatically assume that the KTH contributions had no relevance to other, internal parts of the system.

Another reason why the persona method was not used to support design in Nepomuk is the fact that the KTH group joined the project too late to influence the overall project plan to any significant degree. The fact that the persona method worked well as a communication device may be mainly because we succeeded in describing and visualizing the users in a way the project members could imagine the users of the Social Semantic Desktop being.

The Nepomuk partner responsible for security was an avid persona and scenario user, and used the method support design as well as a communication device. This partner read all the personas and scenarios and used them to develop and communicate design decisions related to security. This partner also wrote new scenarios for the existing personas to cover areas of security that were needed, but that were not present in the original scenarios written by KTH. The security partner explained her work to the whole project: "the purpose of each scenario is to stress ONE aspect of the security functionalities needed. For a better understanding of the security functionality to be illustrated, the scenario might be simplified and not mention other functions or security features that would be necessary for a complete realistic prototype" (presentation at the second General Assembly).

During an interview later in the project, this project member stated that her whole persona effort had been unsuccessful. She got no responses about the work she had done and she realized that she could remove all her work from the project wiki, mainly because the scenarios she had created were beyond the scope of the project and were not going to be realized. She felt that no one had listened to her when she had given her presentation. In spite of this, she had positive attitudes toward the personas and maintained that they had given her a good understanding of what the users of Nepomuk needed after reading all persona descriptions and scenarios (interview with a Nepomuk developer 2008-02-06).

Because the Nepomuk personas were visual, looked professional and functioned as a description of what the project wanted to achieve, they were often used for communication – to present to others what the project was all about. As discussed in Chapter 4, the persona method can be used for both communication and design, and if it is to have a sustaining effect on the system under development, it should be used for both. After observing usage of the persona material in the Nepomuk project, as well as performing the interviews with the project members, it is clear that the persona method has been used as an efficient communication device within the project; everyone in the project is at least familiar with Dirk and Claudia. A number of personas

were used to inform both project members and others outside the project of what Nepomuk was all about and what the project wanted to achieve. Nevertheless, the persona material was not used to the extent originally intended, i.e., both for communication about target users and for making informed design decisions.

The fact that the persona method has worked well as a communication device became obvious when we were presenting the project progress to our reviewers from the EU. This presentation was crucial to the project, and the project coordinators decided that Dirk and Claudia should be employed as example users during the presentations as well as the demonstration of the different types of applications under development. Dirk and Claudia were present at the meetings in the form of life-size persona figures. When asked why he wanted to use Dirk and Claudia to represent the project, the project coordinator said that he felt that the personas and scenarios were a good way to illustrate what the project was about. He then added that it had also been vital to emphasize the work of the KTH group to show that we were really participating in the project and producing some results. What is interesting is that the project coordinators continued to use personas and scenarios to present the project for the two remaining EU review meetings and that usage of the material increased and became more systematic when there were demonstrations of the applications developed in the project.

Further evidence of the project members' willingness to use the persona material to communicate with external partners came a year after the project was finished. At that time, all the personas and scenarios created in the project were made public and accessible for use – as the technical components already had been – to everyone interested in the results of the Nepomuk project. An e-mail to all project members said: "I would also propose that we publish all persona descriptions and make them available. There is no confidential information in them (afaik) [as far as I know] and they are a valuable result of nepomuk for further research and work on the scenarios."

Early on in the project, we sent out a picture of all the personas to all members in the Nepomuk project (see Figure 17, p. 91). We suggested that they could use them as a desktop image on their computer. Several

Figure 27. A Nepomuk developer with a picture of the personas behind him (photograph courtesy of Leo Sauerman).

project members had the picture, either on their computer desktop or in their office space (see Figure 27). When asked why they have these pictures in their workplace, several project members stated that they find the personas "kinda cool" or "nice looking, even smiling".

Some project members commented that they had the pictures of the personas to help them keep the users in mind and to inspire them and help them stay in or switch to the Nepomuk context. Several mentioned that they liked having them visible to explain the Nepomuk

Figure 28. A Nepomuk developer working with Marie and Dirk observing him while he writes a project deliverable (photograph courtesy of Robert Jäschke).

project to people who wanted to know more about the project. One project member stated: "I use the personas to talk about Nepomuk to visitors as most of them ask about what those pictures are for." One project member did not want to have the pictures of the personas in his workspace because he did not want to think about Nepomuk all the time, "Because it means working". The most straightforward interpretation of these observations is that the personas functioned as a reminder of the project and the end users of the system we were developing.

This shows that there was a strong will in the project to have the personas present in the offices, either life-size personas or posters, and I received numerous requests for help on how to create life-size images. Some managed quite nicely and created professional life-size cardboard personas (see Figure 28), but others had fewer resources and were unable to print them out in life-size. Some just printed out images and put them on their walls, see Figure 27, while others improvised their own version of life-size images, see Figure 29.

All these efforts in the Nepomuk project to find a way and a space to include the personas in the work environment can be interpreted in many ways. One explanation could be that they simply found the illustrations nice and wanted to include them in their work environment as decorations or memorabilia (see the photo of sunflowers in Figure 28

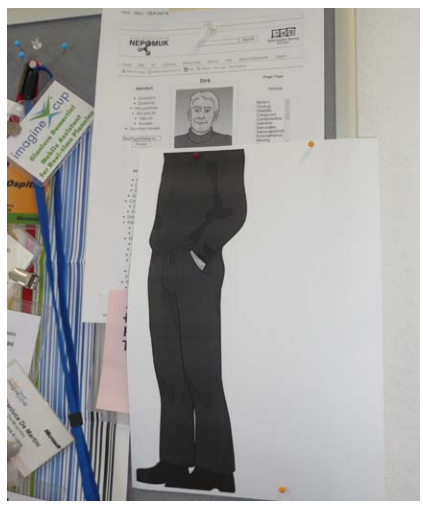

Figure 29. Nepomuk developers' message board with an improvised "life-size" representation of Dirk (photograph courtesy of Julien Gaugaz).

and the conference name tags in Figure 29). A more likely explanation is that they wanted to have something on the walls to remind them of the Nepomuk project, and the personas were among the few things that were visualized in the project; they were also easily accessible via the project wiki. But mostly, I believe, they displayed the personas in their workplace to show and to explain to visitors what they were working on. If someone asks me what I'm working on, I find it more helpful and informative to say "I'm helping Dirk get an overview of the project he is working on" than to say "I'm working on a project that is creating the Social Semantic Desktop".

Even though there were no many signs of the developers using the persona method extensively for design support or internal communication about users and their needs, it is difficult to claim that the presence of the personas in the workplace and in the project had no effect at all. I believe that just reminding the project group of the intended users was beneficial and possibly made the project group more aware of the fact that they themselves were not the target users for the system they were developing. Having the personas close by may also have made it easier to use the personas for design support if the situation or interest should arise.

As discussed above, the personas were often used, either in written or visual form, to explain what Nepomuk was about to people who were not directly involved in the project. The most critical use of the persona method within the project was to demonstrate the project during the EU review meetings. It is, of course, positive to see that the persona material was viewed as a good representation of the project and what it wanted to achieve. One question still remains: Why was the material not used as much internally in the project? Boivie (2005: 61) remarks that developers and other stakeholders often assume that developers are in a better position to define users' needs than the users themselves are is not uncommon, and I think that this could explain the relatively limited internal use of the Nepomuk persona material. Still I believe that the main reason was the outspoken technical orientation of the project and the focus on realizing technical solutions that had been decided upon before the project started.

8.6 Identifying with personas

To most project members – even the case study project members – using Dirk and Claudia to represent the whole project was acceptable. Only two case study project members mentioned feeling that Dirk and Claudia were not representative of their case studies, as neither Dirk nor Claudia worked in the user settings these case study partners were involved in (interview with Nepomuk project developers 2008-04-02 and 2008-01-29). Dirk and Claudia also differed from many other personas; they were working in a semi-academic environment, whereas the other personas worked in an industrial setting. The Pasteur personas also worked in an academic setting, but their daily tasks and activities differed greatly from the daily tasks of Dirk and Claudia.

So, why were Dirk and Claudia so popular? One reason, perhaps, is simply that they were the first personas to be introduced to the project members and the only ones who were given a proper introduction (see section 6.5). Another reason could be that, of all the personas, the project members found it easiest to identify with Dirk and Claudia because their characteristics and work situation were similar to that of the majority of the project members. Not only were they similar regarding some of the personal details and employment, but they also worked in a similar work environment as the project members. A large proportion of the project members were PhD students and Dirk is a PhD student who is struggling to balance his PhD work and his work on an EU project. He was entirely based on employees at SAP Research, and this was the exact situation that many of the informants we interviewed were in. Claudia, on the other hand, was Dirk's project manager in the EU project he was working on, which was the situation for many of the project members as well. Claudia was an excellent project manager, she was structured and she had good control over the projects she was working on, and these are traits that many of the project members perhaps wanted to emulate.

So what does this really mean? Are they working with the personas they find most believable or are they just choosing personas that are similar to them so they can work with themselves instead of the personas? The risk is that we are back where we started, back to the self-

referential design (discussed in Chapter 4) that we are trying to avoid by creating personas and scenarios. But there are some advantages to this identification with the personas; it helps the project group engage with them. I have seen this in other projects I have carried out, but mostly it has involved other types of recognition, where people recognize their colleagues or friends who belong to the target group; one might hear someone comment: "I know this guy, this is Anders in the economy department". Usually this type of recognition is positive; the project group knows that we have done our user research on and captured the intended users, and this type of recognition helps them remember the different personas (e-mail query with a procurer 2010-03-31). But on rare occasion, the person who they recognize in the persona is not popular or not liked. And such associations transfer directly to the persona as well.

8.7 Coming to terms with the persona method

During the first half of the project, the KTH group did not use the persona material for design activities to any greater extent than the other project partners did. This changed later in the project, but during the first half it was rare for any member of the KTH group to use or mention the personas without me mentioning them first.

This can possibly be traced to the group's strong roots in cooperative design and the Scandinavian tradition, which has the user participate directly in the design process as a regular team member (Bødker et al. 2000). Such an approach may make the persona method redundant or less useful. A more straightforward explanation could be that the KTH group members, apart from myself, did not have any extensive experience of the persona method. Also, initially we did not discuss the method in any detail within the group. A further, subtler explanation could be the basic opinion expressed within the group that the persona method is counterproductive because it tends to limit the design space and the design proposals (Westerlund 2009: 35) that could possibly be meaningful.

This hesitation with regard to personas may also be rooted in a common misinterpretation of the persona method, which is that personas are *made up* without any real contact with users and make user

participation redundant. This is hardly a plausible explanation in our case, as the whole group at KTH knew how much contact we had had with our informants and should therefore have had confidence in the authenticity of the personas. However, not everyone participated in the actual creation of the persona material, which, according to the usability practitioners I interviewed, makes personas rather difficult to adopt and apply. The reluctance within the KTH group could simply have been caused by a combination of their unfamiliarity with the persona method and a preference for using other types of design methods. Regardless of the reason, neither the personas nor the scenarios were used often during design activities within the KTH group, at least not during the first year and a half, without me mentioning them or reminding the group members of them. On some of these occasions, I suspect that the KTH group members used the persona material to please or support me, as everyone knew I was doing research on usage of the persona method.

This hesitation concerning the persona method diminished during the second half of the project, as the KTH group began to use the material more extensively and without me initiating it. Both KTH prototypes, NepoSimple and Shared Information Space (section 7.5), are based on the personas' needs, and their main functionalities can all be traced to scenarios written during the first year of the project. These scenarios had initially been realized in simple prototypes and evaluated with representative end users in the user settings. It was when we were creating more advanced prototypes that the usage of the persona material increased – prototypes that were also demonstrated at the EU review meetings. During these prototyping sessions, the KTH group started using the persona material more – the personas and their needs and desires were brought up, and their previous knowledge and preferences were discussed as well as how these affected the design of the prototypes. The scenarios were discussed – how would the personas want to cooperate with their colleagues, search for information or receive notifications? During these discussions, the group worked through the material to inspire the prototype development, and the material was also adapted to where we were in the project at the time and to the accumulated knowledge we had of the users since

the writing of the personas. The way the members of the KTH group wanted to work with the material differed as well. Some of them wanted to work systematically through the whole material, while others were satisfied with working through the material until they were inspired by it, moving on and coming back to the material when needed.

The question is whether this delay in more accepted use of the persona method was simply because the material was better suited to use during more advanced prototyping. I presume it was a question of progression; it simply takes time to get used to the persona method, to really get to know the personas and understand their scenarios. It also takes time, for the whole group, to get used to applying the method and working with it in unison. I also presume that there was a need for a persona advocate (myself) in the group; I doubt the personas would have been used in the way they were if I had not been working in the group, prompting the use personas and showing by example how I used them in my work.

Chapter 9

Summary and conclusions

Claire? John? Are you still with me? I hope so, because it is now time to summarize (for those of you wondering who Claire and John are, please refer to section 1.4). And Claire, if you are too busy to read the whole thesis and are hoping that reading the summary and conclusions will suffice, I recommend you read the previous chapter as well. I have tried to use a straightforward writing style and I have included a great deal of examples to illustrate what I have seen and come to realize during my research. I have taken a critical look at the persona method to learn more about it – how, when or if it works – so that I can write about what is useful for usability practitioners like you, Claire.

To cater to John's interests, I have written about my research approach, the theory behind the persona method and the research and critique that have been published. I have also described the field settings and the field studies that I have carried out for my thesis. Please don't hesitate to contact me if there is something you want to ask.

The research topics that I have explored here are the following:

- What effect does the storytelling aspect of the persona method have on the usage of personas and scenarios in system development projects?
- Which considerations are important when constructing personas and scenarios and what needs to be in place for personas and scenarios to support system development projects?
- How can personas and scenarios support the communication of user needs and desires to project members and stakeholders?
- How can personas and scenarios support design activities in system development projects?

In researching these topics, I began by describing the relevant activities involved in carrying out user research in order to become familiar with and understand users and their needs and desires (section 3.3). I then described the persona method, the process of how to make use of results from user research and create personas and scenarios as well as how they can be used in system development projects (Chapter 4). I described the specific user research we carried out in the Nepomuk project in four different user settings (section 2.2 and Chapter 5) and the results: the Nepomuk personas (Chapter 6). And in the preceding chapter (Chapter 8), I analyzed how the persona material was used in the project.

In order to conduct a more in-depth analysis of how the persona method was used, I observed the application of personas and scenarios in the Nepomuk project. To this end, I carried out participant observation during most activities in the project, conducted interviews with project members, and analyzed diverse documentation such as wiki pages, presentations and deliverables, all of which is described in Chapter 7. In Chapter 2, I described the contexts in which these observations were carried out, and in Chapter 3, I described the methods and theoretical framework I have used to perform my study and analyze it. And finally, in Chapter 8, I reported from my study of how the personas and the scenarios were used in the Nepomuk project as well as other projects in which I have been involved.

Below is a summary of my research and conclusions. I have organized the material into three sections. First, I consider the effect the storytelling aspect has on the creation and usage of personas and scenarios. Second, focusing on lessons learned from Nepomuk, I give my view on which components are important when constructing personas and scenarios and what needs to be in place for personas and scenarios to support system development projects. Lastly, I describe both how personas and scenarios can support the communication of user needs and desires to project members and stakeholders as well as how personas and scenarios can support design activities in system development projects.

9.1 Telling stories

When we write we think, and the process of writing (and rewriting) helps us analyze our data (Becker 1986: 16). The notion that writing is a creative process is acknowledged within social anthropology (Gubrium and Holstein 2008). Barth (1993), in an attempt to improve ethnographic writing, proposed a way to model a set of empirical components and processes based on observations in the field. By creating models (personas) from our descriptions, he argued, we are able to capture different connections and understand the processes whereby lives are shaped (Barth 1993). He argues that creating personas (models in his terminology) not only helps in communicating results, but that the activity is also a way of understanding and analyzing the field material (Barth 1978; see also section 3.2). Through writing the personas and their scenarios, we see how roles and activities are connected and we recognize the situation in which they are carried out. To understand the processes and constraints of the actual work, we investigate these features during the construction of the persona material. We start with rough sketches and gradually develop a story that includes the important elements that represent the discoveries made during user research.

The storytelling aspect of the persona method is considered powerful as it taps into a basic process that relates to memory and reconstruction (see section 4.7). The stories of the personas help us learn about and remember them and their situation and to engage with them during the design phase. We understand and get to know the persona through the story, and that makes it easier to think about how the persona would react in certain situations and to figure out how the persona will behave when introduced to the tools we are designing for her.

It was noticeable in the Nepomuk project that many of the persona stories written at the beginning of the project were adopted and augmented by the project members. We wrote the story of Dirk who is a PhD student at SAP Research and works closely with his new project manager, Claudia, as well as his colleague in Brisbane, Australia, Martin. Through the story of Dirk, we described how he needed help finding time to write his PhD thesis and carry out the tasks he was

responsible for in the EU project he was working on. We also wrote the story of Alistair, who drives around Britain in his fancy car selling training courses assisted by Nasim, who schedules sales meetings. Alistair's main challenge is to prepare convincing sales material that will woo clients during their meetings (see Chapter 6 for more stories).

The Nepomuk project members continually commented on the personas' stories and also created new ones. They discussed whether Claudia was ever going to get to Belfast, because we worked a great deal on that scenario on different occasions. They talked about how typical it was that Dirk should move to Südstadt, which is a part of Karlsruhe where many students live. Other stories were a continuation of the persona description; when will Claudia get herself a boyfriend, several developers asked me, and what else is she doing in Belfast besides attending a meeting?

It was also apparent that personas whose scenarios were interconnected were appreciated and used more than others were, especially when demonstrating the applications during EU reviews (see section 8.3). This was certainly true of the last EU review, where we had a demonstration in which Claudia schedules a meeting with Dirk. Dirk receives the booking on his end and proposes a new time that suits him better, because he is trying to keep certain days meeting-free to find time to write his thesis. Another popular persona connection was the one between Marie and Ella at Institut Pasteur. Marie needed help with solving a problem with her data, and Ella assisted her using the system even though Ella was away at a conference.

There were, of course, stories that did not work so well, such as the story of Claudia and her cat (section 8.2) and then there was Karen and her baby. There was a touch of disbelief that she could be a successful trainer at TMI with a newborn and two older babies at home. This is unrealistic in many countries, but in Denmark, where Karin lives, it is quite plausible. Other stories that were created were new scenarios the developers wrote to address the possibilities their applications could offer. In one such scenario, Dirk utilized a peer-to-peer component to share an interesting paper with his project colleagues.

During a project, the stories continue to be written and re-written, and this is the how the personas evolve. If the personas do not evolve, they become static and cease to be as engaging as personas that change and develop new skills. In the Nepomuk project, the project members created new stories for the personas. Arguably, application of the persona method benefits from including the developers and project stakeholders both in the creation of the persona material and in the rejuvenation of the personas through different types of activities, where the persona material is reviewed and rewritten to address new demands, new developments or an adapted project focus.

Further studies on the importance of stakeholder involvement are called for that look at what happens when project stakeholders participate in the writing of the personas and scenarios – whether the persona material is used differently and how the method is applied.

9.2 Constructing personas

I believe that projects, especially large international projects like Nepomuk, in which project members are geographically spread and have little or no access to the end users can benefit from adopting the persona method. Unfortunately, it is exactly in this type of project that it is particularly difficult to implement the method. The geographical distance between different project partners in Nepomuk had a considerable effect on how the persona method was utilized, as it was not possible to have a usability practitioner at all project sites to generate interest in the persona material and to help project members come to terms with the method and discover how it could help them in their work (section 8.7). An immediate improvement would have been to recruit and train a persona advocate at every project site who could answer questions about the persona method, create a sustainable persona presence (life-size or otherwise) and show by example how one can use the method during the design process. In a smaller, less complex project context the usability practitioner is the natural persona advocate, but still the same problem may arise if the usability practitioner leaves the project before the system has been prototyped and designed.

To maintain a continuous presence of the personas in the Nepomuk project, I used the persona material in all presentations and discussions I participated in and tried to remind the project members of the personas by e-mailing newsletters about them. In hindsight, this could have been done more often and the news items in the e-mails could have been more carefully tuned to the project; I only sent out news about the personas themselves, not their needs and desires (Chapter 6).

The experience from Nepomuk demonstrates quite clearly that the persona method has to be thoroughly introduced to the project members at the outset and that they need to be advised as to how they can make use of the method. The best way to do that is to involve the project members in the process of creating and writing the persona material (section 8.2). Optimally there should be workshop activities of some kind where the project group gets hands-on experience using the method. It is important that the project members understand that a personas is not a mere user "stereotype" with pictures. Besides educating project members about the persona method, it is of course central that they understand and accept the philosophy behind user-centered design.

It seems that personas are more easily accepted and therefore more readily used in projects where the persona method has been actively procured. In the Nepomuk project, no one requested personas – they just turned up in the project ready for use, which may have contributed to the low degree of acceptance at the outset. But when the procurer is expecting the persona method to be used, the reaction is more positive and in my experience the persona material is used more promptly and soon becomes a natural part of the project. The difference is apparent when Nepomuk is compared with other projects to which I, or the usability practitioners I interviewed, have delivered persona material (section 8.4).

The usability perspective in Nepomuk varied (section 2.1.3), and there was a clear divergence between the user-driven philosophy in the KTH group and the technically driven one among the other partners. In such a situation, where the main focus is on technology and not usability, it is not reasonable to expect the persona method to receive

any great degree of acknowledgment, especially when the personas represent different needs and desires from what the technology is optimized to deliver.

Within user-centered design, it is necessary for the usability practitioner to obtain in-depth knowledge of the project itself and its members. It is also helpful to become aware of any informal project politics that could affect user-centered design activities (Löwgren and Stolterman 2004). As discussed above (section 8.5), it is also helpful if one clearly separates the internal from the external design, as this is likely to create less tension and lead to clearer communication. In addition, it is essential that project management support the persona method and, of course, the user-centered design approach in general.

Most of these things may seem self-evident, but it is still not uncommon for the usability practitioner to focus exclusively on the end users, not taking the environment and other stakeholders into account, as the KTH group initially did in the Nepomuk project. At the beginning of the project, we focused on carrying out the user research and creating the persona material (Chapters 5 and 6). Afterwards, we worked through the material with our project partners (Chapter 7). In hindsight, it would have been advisable to start with the project members and then turn our attention to the end users. If we had done so, we could have avoided writing scenarios that were beyond the scope of the project, which caused some developers to shun the persona material (section 8.4). We should at least have tagged clearly the scenarios that were beyond the scope of the project as "future" or "inspirational" scenarios. Another example from Nepomuk is the fact that we created too many personas, 14 in total, and we would not have done so if we had realized earlier that most of the project partners – both technical partners and case study partners – would use the persona material (section 8.4).

To find a sustainable solution to the difficulty of applying the persona method in large and complex projects such as Nepomuk, more observational studies are called for. These studies should consider complex project set-ups in which project partners are not spread out geographically as well as projects that are geographically spread but that

still have fewer project partners than did Nepomuk. It would also be interesting to look more closely at how different procurer organizations affect the use of persona method as well as how the persona method is applied differently in open-source versus proprietary projects.

As discussed in section 8.2, I prefer using illustrations of the personas over using photographs. Besides illustrating the personas themselves, I believe that it is useful to illustrate their work environments and scenarios. This is especially important in projects in which the project stakeholders have no contact with the end users, like in the Nepomuk project. I also believe that life-size personas are an efficient reminder of the personas and a way to show their importance within the project (section 8.2).

9.3 Design and communication

There are two main aspects of usage of the persona method: on the one hand, it is used as a communication device and, on the other hand, as a design aid (section 4.6). The intention is to help designers, developers and project stakeholders focus on users and their needs during the design and development of the system. The persona material communicates the results from user research to the relevant groups. Later on the personas support the project stakeholders in incorporating the knowledge about the users during the design process.

The literature on the persona method shows that personas and scenarios are usually effective in communicating user needs and desires to project members and stakeholders (section 4.4). This is in accordance with the experience from the Nepomuk project (section 8.5). Not only are personas successful in conveying who the end users are, but they are also very helpful when new members join projects and need to familiarize themselves with the purpose of the project and the intended end users (Blomquist and Arvola 2002). There is less empirical evidence showing that the persona method is an effective design aid when prototyping and implementing an actual system.

Throughout the thesis, I have discussed these two separate usage areas of the persona method: communication and design (section 4.6).

The activities carried out in these two domains are different. An example of a communication activity is presenting the persona material to allow project members to get to know and understand the intended users. An example of a design activity is discussing a persona's needs and desires during a prototyping session of a specific functionality.

However, all knowledge of the intended users affects how their needs are catered to in designing a system; it is impossible to separate the two usage areas completely, and there is no particular reason to do so. As discussed earlier (section 8.3), the persona material was used as a base to demonstrate applications during EU review meetings. Even though, on the surface, this activity seems to be a solely communicative utilization of the persona method, it nevertheless affects the design of the system. Therefore one should, when appropriate, encourage alternative types of usage of the persona material, because this can have positive effects on the design.

Separating and recognizing the use of personas in these two domains, communication and design, can be beneficial to the usability practitioner and to how she implements the method within projects. This recognition allows the usability practitioner to plan project activities that help project stakeholders get used to the personas and get used to working with the persona method. It can also guide her while preparing different types of information material that can be useful in communication, for example presentation templates to introduce the personas and scenarios in different settings, introduction of the persona method or life-size figures.

Recognizing communicative versus design usage also helps the practitioner identify alternative applications of the method when they turn up during a project. And when this happens, one should assist and encourage this, as long as it seems relevant and useful. In Nepomuk, for example, the developers might have benefitted from more help from usability experts during the preparation of demonstrations in several different ways. These included finding and using the relevant persona for each demo, avoiding the extreme focus on Dirk and Claudia (section 8.6), and making it possible for other user settings and their personas to come to the fore (Chapter 6).

Personas are usually easily accepted when introduced in projects, and they are often received without any criticism, as if the mere fact that they have been constructed is sufficient. The reason is perhaps that personas seem easy to take in and understand, and people tend to think that they intuitively know how to use them. It sometimes seems that people do not give serious consideration to what the persona material actually represents – the results of extensive user studies – or why they are present in the project. It is relatively easy to start discussing the personas and to get to know them, but the next step of actually using them to inform design decisions is deceptively difficult. It is here that a solid and informative introduction to and continuous training in the persona method is helpful (section 8.1). In addition to – or through – these educational activities, project members should have the opportunity to get accustomed to the method, and the material should be allowed to mature within the group (section 8.7). In other words, the project members need to become familiar with the personas and understand where their needs and desires come from and what they mean in the context of the project. This was a process I observed within the KTH group during the Nepomuk project (section 8.7), in which usage of the persona method was very low during the first half of the project and increased toward the end.

If you are still reading, Claire, I'm glad. I hope that even if you only had time to read through the summary and conclusions it has sparked more interest, which is why I added chapter and section references when relevant. John, of course, has no excuse and has to read the whole thesis.

And so, Claire and John, this thesis is coming to a close. I hope the findings presented here will prove helpful in future projects and that they will help others avoid some of the pitfalls of using the persona method, especially in large and complex projects such as Nepomuk. Let us conclude by summing up the main points. Try to get to know your project partners at the very beginning and involve project members in the construction of the personas and scenarios. Write an engaging story and keep in mind that while you are writing you are analyzing

the user research. Plan for and find time to let the story of the personas grow within the project and give the project members a chance to contribute. Try to identify whether usage of personas and scenarios is communicative or whether they are used to support design; plan for problems regarding either type of usage. And, finally, do not hesitate to exploit interesting alternative usages that turn up.

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