Getting to the Point with Participatory Video Scenarios

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Abstract. Participatory video scenarios can be used to facilitate user participation in the development of collaborative information systems. At the same time these scenarios promote the empathic understanding of the users. When scenario design is based on a contextual study of the users' work, the scenarios can be focused on the issues that are most challenging from the users' point of view. The number of scenarios can be minimized and their future relevance maximized, when the scenarios are built on key findings abstracted from the users' work.

Co-creating video scenarios in participation with users is at best both efficient and motivating. As users are experts in their field, they can relatively quickly come up with realistic and representative examples of situations for the scenarios. The richness and multimodality of video and the possiblity to augment the story afterwards with edited images and sounds support communicating the scenario performances in a vivid, detailed and emotion-evoking way. This paper describes a case study in which participatory video scenarios were used in the development of a bank's knowledge management system.

Keywords. Video scenarios, participatory design, user experience, improvised role acting, empathic design.

Introduction

Luotain - design for user experience is an ongoing research project at the University of Art and Design Helsinki (http://smart.uiah.fi/luotain). The primary objective of the project is to develop methodological tools to support user centred product concept design. Several case studies have been conducted in the Luotain project including such fields as snow sports, teleworking, patient transportation, laboratory analysis systems and knowledge management systems. This paper is about the knowledge management system case.

As people form an essential part of collaborative information systems, taking the people's point of view into account in the design of the new system is important. Achieving systems, services and products which are useful, usable and even pleasurable for people to use requires a user centered approach. User centered approaches vary in how they involve users, ranging from having the users as sources of information, as in Contextual Design [3], to having them as full participants in the development process, as in participatory design [22]. In addition to producing objective knowledge about the work system and users' roles in it, designers need to understand the more subjective side of work: what users experience, see and feel. The empathic design approach aims at seeing how users experience their material surroundings and the people in it, including themselves as key characters of their everyday lives [20]. For creating a more holistic picture about the users' point of view multiple approaches should be used to complement each other [32].

In order to create an understanding of the users they have to be involved in the process. Sanders and Dandavate emphasize that the path to the experiencer's world comes only through his or her participation [32]. In participatory design users are treated as full participants in the product design activities. Participatory design has its roots in the scandinavian design tradition, where users have been involved in design activities from the early stages on [22]. Participatory design activities are said to form a new space for design between the work domains of designers and end users [27].

Scenarios can be used to support participatory design activities [22]. Scenario use has even been considered to be the backbone of the participatory design process [8]. Scenarios as stories are not fixed to any particular media and they can be created for example with video. There are several studies in which video has been used to promote user participation in design projects [e.g. 6, 28].

In this paper a method for empathic design is presented in the context of the development of a large collaborative information system. The method uses participatory video scenarios, which are scenarios captured and edited on video co-created with potential future users.

1. Using Scenarios in Design

Scenarios have become a widely used tool for designing systems, services and products, and there is an increasing number of publications about scenario use [see e.g. 21, 9, 14, 19]. In addition, scenarios are used in futures studies to summarize the results of research about possible alternative futures [2]. Although scenarios are often assosiated with future use, scenarios can be created to describe current situations as well [6]. Due to the fact that scenarios are used for a range of purposes the definition varies considerably depending on the context. For example, there are numerous different specifying names for scenarios (e.g. type scenarios [6], brief scenarios, vignettes, elaborated scenarios and complete task scenarios [13]). This paper uses the definition by Carroll [9], which describes scenarios as stories about people and their activities including a setting, agents or actors, goals or objectives and actions or events.

The definition leaves the format and content of scenarios very open, which suits well the open nature of concept development activities. Scenarios can contain, comic strips [19], sound, moving image, toy characters [15] and they can even be presented in the form of plays acted out by real people [14]. The format of a scenario depends on the purpose and the skills of scenario creators. The format may affect where the focus is directed to, how much details there are in the scenario and how well the desired message is communicated. For example, a video scenario may direct the focus to the details of the real-time interactions between the user and the system.

Scenarios can be used throughout the design process in various phases for example for understanding users' needs and their work [31, 6], developing requirements [11], creating ideas [15, 9] and communicating product concepts [19]. Scenarios allow keeping product details in the background while setting the focus on users' activities and contexts [19]. Scenarios promote communicating the meaning of different designs by putting them in the use context including users, their motives and environment.

A scenario can explain the purpose of the system, service or product in a brief, concise and engaging way. They are good for communicating causal relationships, because unlike for example drawings or mockups, scenarios describe events happening over time. This makes scenarios ideal for communicating the utilitarian functions of a product.

In sum, scenarios have three major characteristics that make them so powerful in design of practical product concepts:

1. inclusion of the time dimension,
2. versatility of form and
3. versatility of content.

Scenarios also support cross-disciplinary communication. As new systems, services and products are usually created by teams it is not enough to concentrate merely on understanding the users' point of view and incorporating it into the design process. New product design may include such fields as marketing, engineering, industrial design and human factors. Customers, project management, network specialists, user interface designers, database specialists and usability specialists are often also involved. The need for a common language across discipline borders has been a topic for intensive research over the last decades [e.g. 1, 12, 28] and scenarios are a feasible method for facilitating cross disciplinary communication [1, 12]. The concreteness of scenarios makes them accessible to the many stakeholders in a development project [11].

Scenarios should focus on representative situations. As systems often facilitate many possible uses, not everything can be descibed with scenarios. If scenarios are directly based on empirically observed situations, the result may be a huge amount of scenarios with no internal structure making them difficult to manage [10]. Empirical scenarios are also a posteriori, they represent history. In the design of products for future use, they should also be valid in future situations. The number of scenarios should be kept at a manageable amount. User study findings must be condensed to be made into useful scenarios.

Good stories are not merely descriptions about events following each other, but build suspense as well. The suspense may, for example, result from a conflict between the protagonist's motives and her actions. Potts suggests that a set of scenarios in systems design should consider also situations or behaviour, which is not desired for the system and, thus, introduce a conflict in a scenario [31]. The inclusion of such situations in scenarios highlights the potential for design improvements and can make the design problem more engaging to work with.

2. Using Video in User Centered Design

Video can be used to support design activities in most of the design process phases. Video can be even used to study and reflect upon design activities and, thereby, develop the design practices [16]. Currently, there are numerous examples of using video in product development in phases such as user studies [e.g. 6, 33], organizing and representing user data [7, 25], ideation [26], design [28, 4], prototyping [24], scenario creation [6], communication of product and interface ideas [21] and product evaluation.

Video that is captured in a real environment is specific and rich in detail. It represents people, their acitivities, tools, environments and situations vividly. Observation videos are often considered objective records of the users' world, but on the contrary, evidence shows that video is far from objective. Going with a video camera to the users' environment is an intervention, which may change the way that users relate to their setting. What is captured on video is a selected fraction out of continuous events filtered through the limited angle of the camera lens. Thus, what is presented is a subjective account. Moreover, things that take place on video can be subject to controversial interpretations [6]. This can be seen as a weakness of the record or taken as an inspirational resource for

design. Ethnographic video materials should be considered as representations rather than facts [30].

As video promotes acting by capturing what people do and say, it is a natural tool to be used in co-creating the scenarios together with the users. For example, Binder has observed that users can contribute to the design with improvised video scenarios [4]. Sperschneider and Bagger have used video in co-designing new products with users, who act in their own industrial work environment [33].

Improvised video scenarios describe users interacting with a system, service or product. They are acted out by representative people of the work domain without completely planning in advance what they say and do. Acting may follow a roughly planned plot or be fully improvised, for example, inspired by a design 'prop'.

The planning, filming and editing of the video scenarios takes a considerable amount of time, and video has had a reputation of being cumbersome to edit [e.g. 25]. Even though non-linear video editing tools have made editing more efficient, it is still time consuming. Video scenarios could be created completely without planning and editing, but they would most likely end up lacking internal structure and relevance. Moreover, they might be too rough or confusing to be useful in communicating the ideas to outsiders. Therefore, scenarios should be planned to some extent in advance and be processed after filming to make the message in the video more clear, effective and engaging.

Real product development projects are usually done under high time pressure, which increases the importance of efficient and effective communication between different parties involved in the process. Black points out that the key points of the data should be communicated in a vivid and memorable way [5]. A well created video scenario may support this goal, since it can convey a message in a rich, specific and emotion-evoking way.

2.1 Video and Required Skills

People are used to watching commercially produced movies, television programmes and advertising. This should be taken into consideration when creating video scenarios, since these experiences influence the expectations that people have. As the creators of video scenarios may not be professionals in acting, shooting, lighting, sound recording, cutting or directing, the resulting video scenarios may lack credibility or fascination. At worst, the audience sees the user as a fool, which definitely should be avoided when involving real users in the acting. Ethical issues are always important when using video in user centred activities [see e.g. 23, 30].

At best, video scenarios convey the idea in an engaging way. To succeed in this, basic skills about video storytelling are required. The producing teams should know about capturing high quality image and sound, and about how to edit and combine the material into a cohesive story which is of appropriate length.

3. Empathic Approach

The empathic design approach aims at creating a holistic understanding about how users experience products and incorporating that understanding into the creation of new products. In the Luotain project a framework has been developed about the roles of various aspects and contexts that have a role in the users' product experiences [17, 18]. The framework supports a holistic understanding of the users and their relationships with other people, acitivities, environment, artefacts and with future opportunities related to the current area of

interest in order to inform and inspire product concept development. Based on the experiences of the case studies these relationships can be described in scenarios. As scenarios are about the motivations and experiences of users as well as the events [11], scenarios can be used among other tools and methods to support the empathic design approach.

Nielsen points out that the character or the user in the scenario is often poorly described [29]. This has made it difficult to engage with the user and to be able to imagine the user's actions. When a user is described as a fully developed character it helps the design team to connect with the user with empathy, she is more easily remembered and is, thereafter, more likely to be brought into the actual design process [29]. In participatory video scenarios the user is described in much detail. Furthermore, when the user improvises according to a rough pre-planned plot, she most likely reveals also some tacit aspects which characterise her and her way of interacting with people and products.

There are also difficulties in describing the user in detail. When a scenario is used for communicating a product concept idea to an audience, a detailed description of the user may draw too much attention and bias the evelution of the product concept.

4. Case Contact Center Knowledge Management

This chapter describes a case study about the concept development of a bank's knowledge management system. The aims of the 'Contact Center Knowledge Management' case study were to develop an understanding about the bank's phone service work from the workers' point of view and to provide the developers with relevant visual material about the topic. The research focused on studying whether it is possible create communicative visual material efficiently and in participation with end users to inform the strategic planning of a collaborative knowledge management system and focus on relevant issues about the topic.

The study was conducted with the Contact Center of a Scandinavian bank. The Contact Center produces services for over 200 cooperative banks serving almost 3 million people. It is the central service channel of the bank group for offering personal services via electronic media (i.e. phone service, email, internet). The case study took place in the beginning of a long development process of a new knowledge management system for the bank.

The context of a bank is challenging for research. A bank consists of multiple departments and offices, which are geographically dispersed. Information related to banking interactions is highly confidential and the privacy of the bank clients must not be compromized at any stage, which is reflected in the bank's formal organization. The knowledge domain is wide and each department has its dedicated role, tasks and tools in the whole. Therefore, for a researcher coming from the outside, it is important to set a clear focus in order to be able to help to develop the work.

4.1 Setting the Focus for the Study

The Contact Center's phone service, a central place requiring efficient knowledge management, was selected as the target for the study. The different work situations were assumed to include a wide variety of work and specific knowledge needs, which was important for creating a good basis for the scenarios. The real-time requirements of the work situations in the phone service are a challenge for knowledge management. Data must be retrieved fast. Also, it was assumed that many different kinds of situations could be observed in the phone service within the short time period of the study.

The workers saw knowledge management as an obscure monster. The bank's management wanted the workers to participate in the process to give this 'monster' a better known and friendlier form. This aim matched the project's interest on user experience. Therefore, an emphasis was set on the emotional side of the experience. Priority was given to the workers' point of view as well as to the point of view of the clients who they served.

The quality of the phone service of a bank depends both on the workers and on the system they use. Thus, in the design of a new banking knowledge management system it is essential to get the people committed to adopting the new system, otherwise the whole attempt may fail. Having the workers participate in the design of the new system was seen as a means to increase their commitment.

To be able to conduct the contextual study and analyze the material within the available time and human resources, the number of Contact Center workers participating in the study was limited to five. This was considered enough to create a sufficient understanding of the work, the environment and the people for creating scenarios about the new concept. The participants for the study were chosen from different backgrounds and roles to cover the variety of the workers and the roles in the Contact Center as well as possible.

4.2 Starting the Activities

The main activities of the case study consisted of a contextual observation and participatory workshops. The project started with an introductory session and ended with an evaluation session. The order of the activities is described in Figure 1. The contextual study was conducted with five workers. The planning was done by a team consisting of a project manager and a team leader from the bank and a researcher from the University of Art and Design Helsinki.
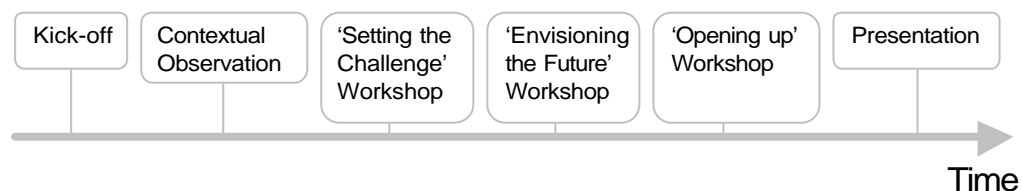

Figure 1. Time table for the case study

The case study started with an introductory kick-off session. The participants were introduced to the aims and methods of the study as well as to the researcher and a project manager from the bank. Also the workers' attitudes towards being recorded on video were discussed. This was important both ethically and for building the necessary trust between the workers and the project team. The permissions for recording video in the bank were also given in this meeting.

4.3 Contextual Observation

The phone service work was studied in the workers' real work setting. The workers were first interviewed at their workstations to get an overview of their role, artifacts, work activities, motivations and sources of good and bad feelings. After the interview the workers resumed their normal work and the observation continued for about two hours with each participant (see Figure 2).

Figure 2. The use of work related artifacts was studied during contextual observation.

The data records from the study consisted of video tapes and field notes. Some of the video tapes were first transcribed into separate text documents. There was no time to transcribe and analyze all the video material thoroughly. The rest of the user data was analyzed from the field notes.

The data from the contextual studies was analyzed in a matter of days. There were many different possible areas to focus on within the general focus of the study. For example, the focus could have been set on the problems in using current software, interactions between the workers, workers' different roles, use of the various physical and software tools related to knowledge management, the task structures, data flows and knowledge requirements of different situations. As the analysis and transcribing continued several recurring themes was identified. The findings were grouped into categories such as 'different skill requirements', 'the difference between outgoing and incoming phone calls' and 'tools and sources of information'. Unfortunately the details of these categories cannot be described here due to the confidentiality of the material.

4.4 'Setting the Challenge' Workshop

The first workshop aimed at creating a shared understanding about the current work practice and selecting a representative situation for the video scenarios. The workshop team consisted of the phone service workers and a facilitator. The workers were the same that were studied and the facilitator was the same person, who conducted the contextual study and analyzed the data.

The main findings from the contextual observation were verified with the workers. The most central findings concerned the different types of knowledge, knowledge requirements of situations, different roles in work and different work experience levels. Due to the confidentiality the findings cannot be described in more detail in this paper.

To give the participants an idea about the expectations of the workshops and what scenarios are all about, they were introduced to video scenarios in the form of a short exercise. This excercise aimed also at creating a more informal and relaxed atmosphere and at getting the participants to understand the value of scenarios in communicating an idea to people with different backgrounds.

The team acted and videotaped a story about a person who had fallen off a boat. The story was in a form of a three-act drama, which had a beginning, a middle and an end. The plot of the story was following:

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"Beginning
Actor 1: Has fallen of the boat and is in the water shouting:
        "Help me! Help me!"
Actor 2: Is on board with a rope. She shouts to actor 1:
        "Try to hold on! I'll save you!"


Middle
Actor 2: Throws the rope to Actor 1.
        Actor 1: Ties a the rope around his back using the one-
        hand bowline.
Actor 2: Starts pulling Actor 1 from the water.


End
Both actors are onboard and smile."
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To understand the value of scenarios in communicating a message to people accross different disciplines the participants were asked to imagine different points of view such as a shipowner's, a sailor's, a rope manufacturer's and a ship constructor's. After this it was easy for the participants to understand, that the different stakeholders could use the scenario to judge what it would mean for them if the one-hand bowline were to become the standard method for saving people in the future.

The building of the scenarios started after this warm-up excercise. The focus was set on the current practice and contrasted to the ideal situation and a possible future situation. The participants were presented the basic building blocks of the scenarios: the worker, the client, the client's situation, the problem of the client and the tools available to the worker.

To help the participants focus on a situations that are essential for knowledge management, four general criteria with some concrete examples from the contextual observation were presented. In a matter of seconds the participants came up with a real, representative and applicable situation. "In Lapland a man has lost his credit card. He is a customer of a bank in Southern Finland." Although other possible situations were discussed as well, the scenarios were built on this idea.

The facilitator's role in the creation of the scenarios was to keep the planning on the specifics of objects and events. He continuously kept asking questions like: "What is the time? What is his name and where is he calling from? He calls now. He explains his situation..... What happens next?". With the experience from the contextual study the facilitator was able to discuss details of the domain specific scenario plans with the participants.

Two scenarios were outlined to describe the current work. First one described an experienced worker's point of view and the second a novice worker's point of view. The plot was planned so that the more experienced worker could handle the situation well whereas the novice worker would fail to serve the client due to lack of knowledge about exceptional opening hours of bank offices during holidays.

The first scenario was filmed during the same day. The videotaping was done in an appropriate working context with the usual working equipment. The facilitator operated the video camera and the workers were acting. To intensify the emotional experience in the exciting points of the scenarios, the scenario was filmed from two different angles. A wider angle was taken from a side and a closer angle was taken from the front (see Figure 3). However, creating this emotional effect was difficult during editing, since the semi-improvised versions of the shots were quite different due to the improvisation.

Figure 3. Shooting a front close-up for a video scenario

The customer who was hiking in Lapland could not be filmed in the appropriate context within the resources of the case study. Therefore, it was decided that the customer would be presented in a discount fashion as hand-drawn still images.

4.5 The 'Envisioning the Future' Workshop

The second workshop was held five days after the first one. The memories from the last workshop were refreshed by watching a video clip of the previous workshop. The second scenario was rehearsed once before videotaping in a similar way as the first one only the participants having different roles.

After videotaping the second scenario the story was analyzed in detail by the team. The story was studied step by step to find out the different knowledge needs and information sources in the progress of events. This analysis provided the basis for creating the ideal scenario, where all the necessary knowledge would be provided to the worker and to the client at the right moment.

It was also discussed whether the collaboration of the workers should be built into the ideal situation, since it was found during the contextual study that solving a problem in collaboration with co-workers was often considered pleasing. It also would support learning from colleagues. After all, serving the client efficiently was the most appealing solution in the ideal situation.

A realistic future scenario was based on the ideal scenario. The future scenario had a system that was able to support the worker well in the situation. Having looked at the same situation from three different points of view helped in constructing a new scenario, which combined elements from the other scenarios.

4.6 The 'Opening up' Workshop

The third workshop took place six days after the second. The goals of the workshop were to open up the designed knowledge management concept to other situations than the one presented in the scenarios and come up with the aims and development framework for the system.

The workshop started with a recap of the earlier workshops. For this purpose the facilitator had created diagrams about the different scenarios (see Figure 4). The representations showed the time that serving the client took and also the development of the client's feelings during the interaction. Video material was not used for this purpose since editing a selection of all the available material would have required too much time.
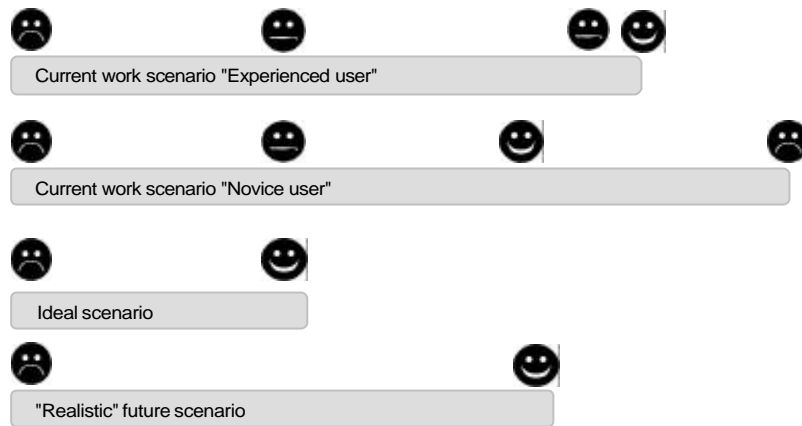

Figure 4. Diagrams showing lengths of the scenarios and the client's feelings

After the ideal and future scenarios were videotaped, the concept of design drivers was introduced to the participants. Design drivers are central values that guide design [34]. Some examples of design drivers were presented to the participants, who were then able to discuss the design drivers for the knowledge management system.

The concept of the knowledge management system presented in the future scenario was evaluated against other kinds of situations relevant to knowledge management. To support this the facilitator had selected a couple of situations from the contextual observation. The situations differed in such aspects as the frequency of occurrence and complexity.

Some screen designs were sketched out and the user's interaction with the system was designed for the different situations that had been considered so far. This provided a rough idea of the user interface for creating illustrations about the user interface for the future scenario. After considering the different situational alternatives and creating the user interface sketches, the design drivers were reviewed once again.

4.7 Editing

The editing consisted of creating images of the user interface, images of the customer, cutting, sound manipulation and sound editing. The sounds were manipulated to create the illusion of a real phone call. The participant who acted as the voice of the customer was actually sitting in the same room with the other participants during videotaping. An example of the hand-drawn images for the scenarios is presented in Figure 5.

Figure 5. The client of the bank was represented as a hand-drawn image in the video.

The facilitator was resposible for editing the video. The video editing took 14 working days including the learning of a new editing software. The final result was a video that was 20 minutes long.

4.8 Presenting and Evaluating the Scenarios

The video scenarios were presented to the workers in the project team, the managers of the knowledge management development and two professors of design. The scenarios were evaluated by 12 people in total. The evaluation was based on a questionaire, which focused on such aspects as the communicability and the emotional effects of the scenarios. The workers, managers and professors had different questionaires with some overlapping questions. The evaluation also included an informal discussion about the video scenarios and the process. The results of the evaluation of the case study and the video scenarios are summarized in the next section.

5. Results

According to the feedback from the bank's management and Contact Center workers the case study increased their understanding of the different knowledge requirements of the work situations. The specific situation on which the scenarios focused was considered central for the knowledge management domain. It was also reported that the study increased their understanding of some of the emotional effects that a knowledge management system may have on the interaction between a worker, the system and a client. Furthermore, they reported to have as a result a better understanding of the worker's as well as the client's point of view in the whole. According to the bank's project managers, the study focused on relevant issues and produced design drivers, which should guide the development of the future knowledge management system.

The participants reported that the process was motivating for them. They could influence how the observations were conducted. They participated in creating and realizing

the scenarios and they planned the design drivers for the knowledge management concept. They also reported that they learned new things about their work during the study.

All the presentation session attendees reported that they liked the video scenarios. They even reported that they were willing to see the scenarios again. The audience reported emotional responses to the scenarios and the scenarios were considered engaging even by the design professors, who didn't participate in the process, but who attended the scenario presentation session. The attendees of the presentation session also commented that the scenario in which the novice worker fails to provide the client with decent service was the most exciting.

According to the feedback, all the presentation session attendees were able to understand the scenarios. The fact that some of the attendees did not have previous knowledge about the bank's knowledge management domain and some were experts in it, seems to support the claim that scenarios facilitate communication to an audience with different levels of knowledge about a topic. There was no need to develop separate material or presentation sessions for communicating the message to the management.

The situation of how the lack of information can affect the situation of a client was understood by the viewers. Especially the ones who had not participated in the process reported that they could understand, how the system affected the worker's feelings in different situations. This is in line with the observation that with video even an outsider can get the sense of how it is to interact with certain product [23].

According to the workers, the process was efficient. It took at maximum 16 hours of working time from each worker to attend the project activities. This time includes the introduction and scenario presentation sessions. The calendar time to plan and conduct the study and organize the workshops was two months and the video editing was done in a period of another two months. The case study was conducted by a researcher working on the process part time, three days a week.

In sum, in the case study it was possible to create communicative visual material in participation with the bank's workers. The result was considered relevant by the bank's project management and valid for informing the strategic planning of a collaborative knowledge management system.

6. Discussion

In this case, the scenarios were based on verified abstractions from the contextual study of the users' work. These scenarios were created together with the users and the results are
  - very detailed and concrete
  - realistic
  - small in number
  - have a good coverage of the user's different work situations (past, current and potential)
  - focus on relevant things to the current area of interest
  - focus on the users' point of view and support empathy for the user

In addition to communicating a pre-planned message, semi-improvised role-acting can convey some of the tacit aspects of users' work as they improvise actions similar to their own work. The participants in the case were professionals in talking, which may have affected the success of their improvised acting. There are also other studies, which show that improvised role acting can be used effectively in product development processes [14, 33].

Creating video scenarios with users requires that they are willing to act, which in some cases might not come for granted, and most likely will require facilitation. The motivation can be created in stages first observing the users in their own environment and then discussing the findings with them. They may become involved to the extent, that they are easily motivated and willing to act. This can be supported with simple warm-up excercises to relax the atmosphere. In making the users act, the facilitator has to be sensitive to the users, and they must have a way to withdraw from acting without losing their face.

Video supports user participation in the creation of the scenarios as users can be actors and scriptwriters. Moreover, using video seems to motivate the users for acting and preparing the plot. Video's effect in increasing the users' effort in striving for a good shot has been observed elsewhere also [26]. In the case study, participatory video scenarios were used to co-design with users in an efficient, effective and engaging way.

Textual and sketched scenarios lack the richness and multimodality of video. Black has pointed out that there is a need to present the data in a vivid and memorable way for the data to be utilized afterwards in the development process [5]. The richness and multimodality of video supports communicating the users' world in a specific and emotionally engaging way. Most likely, this affects the utilization of the video scenarios later in the development process.

Video scenarios can be exciting. It may result from the suspense in the story or the spectator's subjective relationship to the content of the video. People respond emotionally to a video representing themselves or a fellow worker. Salient emotions can be expected especially when a person is unaccustomed to being filmed and she sees herself acting in a projected image on the wall in front of an audience. This kind of a video can be highly personal.

The scenario in which the novice worker fails to provide the client with decent service was considered the most exciting. The conflict in the plot was the strongest. The novice worker informs the client incorrectly, which results in the client's failure to get money from a bank office. The spectators knew already from the first scenario the true nature of things and could expect the failure to happen.

The visual and aural content of the video can be manipulated to support desired emotional effects or to direct focus. This can be used to highlight for example problems in current work practice. As video can combine different media such as photos, drawn images, computer animation and music, not everything has to be recorded with a camera. This can make the scenarios more effective and the process faster and cheaper.

The editing of the video scenarios could have been done remarkably faster in this case. During the case an extensive amount of time was used to learn a new editing software, to polish the video with hand-drawn colourful images, to manipulate sounds, to find and add music and to fine tune the cutting. By doing the editing in a more 'quick&dirty' manner, the process would have been more rapid without serious loss to the message.

Basic knowledge about using video in storytelling was required for creating the video scenarios. Knowledge about issues related both to video content and technology are required for effective video use. Without appropriate experience or skill, the result will most likely to be unconvincing.

Despite that within the limits of this kind of project the amount of issues addressed is somewhat limited, the approach seems to be suitable for co-creating vivid and engaging scenarios with the users, which promote the users' point of view and at the same time focus on the central issues about the development challenge. The case study shows that this method worked in the development of a collaborative knowledge management system for a formal and complex domain of banking.

7. Future Possibilities

As processing power, data storage devices and software have all improved during the last years, high quality video editing is now possible with a mobile set of devices, which are easily brought to the users' environment. Therefore, the videos can be more easily co-edited with the users and they have better chances to affect the resulting video. As video editing tools get cheaper and more easier to use it should be possible to increase user participation in the video creation process.

Video is becoming increasingly used on digital platforms such as the internet and mobile phones, and this affects the way video will be perceived and used in the future. The appropriate length and quality of video scenarios might vary depending on the platform posing new challenges for the development of the scenarios.

Furthermore, digital platforms facilitate easier sharing of the video artifacts. As connections become faster, video scenarios can be efficiently delivered to a georaphically dispersed audience. This may well support the user centered design activities of large international companies. Thus, the development of technology will provide new possibilities to co-design and use video scenarios in the future.

8. Acknowledgements

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