

# CHALMERS



Collaborating for video:  
Using video to provoke performance in collaborative design  
teams

*Master's Thesis in Interaction Design and Technologies*

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Collaborating for Video

Using video to provoke performance in collaborative design teams

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# Abstract

In this thesis, I investigate the role of video in collaborative process- particularly how it determines the way people act when exposed to presenting to video and how it can be integrated into ongoing work process without being an activity in itself. I explore this through participating in, and reflecting on, a collaborative design process. In this process, video is generated by researchers, users, designers and company stakeholders, and analyzed by me. As an outcome I propose a list of aspects to consider when conducting and using video in time constrained collaborative design processes that can help to establish condensed and engaging videos. In addition to this, I also describe observations made on how video can influence workshop participants. I have come to an understanding that video is not only suitable for documenting activities or communicating information in a rich and compelling way in design processes, but it also enhances collaboration as it tends to provoke performance.

**Keywords:** video, collaborative design, design tools, interaction design, design research



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# 1 Introduction

Interaction design is a field that not only introduces new technologies to other fields, but also seeks to integrate the benefits of new technologies into the design practice itself. Interaction design projects are often part of larger projects that are commonly interdisciplinary and do not follow a clear-cut plan of action. The field differs from other fields such as industrial design because what is being designed is often not a tangible product, but rather how people interact together, supported by technology, often over time. Some of the key components of interaction design projects, as well as other design projects, include user studies (learning about the potential users in their context), user involvement (inviting users into design studio activities), and collaborative design (workshops with project team members and/or users). These activities are often conducted with people with different relationships to the project, at different times and places.

In this thesis project, I focus on one specific tool among many to support design and communication in project work, namely video. To conduct the thesis project, I was invited into a working project team of an “Open Innovation and Lead Users” project to specifically focus on new ways of using video to support project work. As there is existing research on video as a way to document fieldwork (Blomberg, et al., 1993), record usability studies (Ylirisku and Buur, 2007) or analyze human interaction (Brereton, Donovan and Viller, 2003), I was more interested in exploring a particular way of making video and how it can determine the way activities are organized.

The research question formulated for this thesis is:

“Use of video in collaborative work, is it documenting what is taking place or does it influence how people act?”

I also seek to investigate how video can be integrated into ongoing time constrained work process without it being an activity in itself. I explored these questions through many collaborative activities with researchers, users and company stakeholders.

Thesis research took place during a six months period in an “Open Innovation and Lead Users” project that was focusing on the topic of “Urban Biking”. It was a collaborative project including stakeholders from a design and innovation company Veryday, an undisclosed international retailer and an experimental IT and design research institute Interactive Institute. The project explored Eric von Hippels “lead user” method, which is described later in the methodology chapter, in an innovation lab context to stimulate innovation through a series of user study, collaborative sense making and collaborative design activities held mainly in Sweden and Denmark, involving end users. As the project leader had a long history of using video in many ways and sought to deepen the exploration of it, he architected the activities not only to support the “host” project focus, but also my research.

## 1.1 Outlining the report

The research is spread into eight main chapters – (1) Background; (2) Theory; (3) Methodology; (4) Research Process; (5) Final Results; (6) Discussion; and (7) Conclusion. The background chapter introduces previous research on the topic and lays the foundation for the research. It is followed by a brief explanation of the main theories in the theory chapter and then by the description of the methodological framework in the methodology chapter.

The research process is then described to give an overview of the project activities during which the research was conducted, as well as introducing selected analyzed videos. Findings from the research process chapter are summarized in the final results section, following by the evaluation of the process and results in the discussion chapter, which also gives ideas for future research. The report ends with research summary in the conclusions chapter.

# 2 Background

This chapter will give a brief overview of the stakeholders and their motivations regards to the project “hosting” this thesis research, as well as describe previous work done on using video in design and research for design.

## 2.1 Partners

This thesis research was conducted at Interactive Institute in collaboration with Veryday and an international retailer whose name cannot be disclosed. Interactive Institute is an experimental IT and design research institute founded in 1998 by Swedish Foundation and Strategic Research and consists of multiple design studios around Sweden (Interactive Institute, 2013). The institute focuses on developing new research areas as well as products, services and concepts. Current thesis project was carried out together with Interactive Institute studio in Stockholm.

Veryday, formerly known as Ergonomidesign is a one of the world’s top-ranking design and innovation consultancies founded in 1969, holding offices around the world. Veryday is focused on creating new business opportunities and strengthening brands through user-centric design (Veryday, 2013).

## 2.2 Project

This thesis research was carried out in the frames of an “Open Innovation and Lead Users” project. The project was funded by the Swedish Governmental Agency for Innovation Systems- Vinnova and had two main goals: to explore Eric von Hippels lead user method in an innovation lab context to stimulate innovation in the undisclosed international retailer’s current innovation process; and to develop a toolbox for improving innovation through lead user research and collaborative design. The innovation lab being a condensed innovation process from user studies to concept development. Interactive Institute and Veryday were also looking to build a strong partnership between experimental research and consulting expertise to provide new methods for dealing with changing needs of businesses (Vinnova, 2013).

“Open Innovation and Lead Users” project activities were carried out in a face-to-face manner, but a video blog was created for the partners and participants to collaborate and access the synthesized video documentation of the project activities.

## 2.3 Video

Using video to support the design process and as a tool to conduct research for design has taken on many forms. This section will introduce how the use of video has been previously explored in media studies, design and research for design. It is highlighted that video cannot be assessed on its own but rather it needs to be assessed in the context of how it serves an agenda. It takes for granted somebody taking video, working with the video and introducing it for a specific audience. Video is discussed as a participatory media requiring collaborative engagement from researchers, designers and users and it is argued that video can be used in design and design research without expert knowledge, but effort is required for forming and presenting materials in ways that engage the audience.

### 2.3.1 Using video in design

Video has been widely used as a way of documenting and analyzing complex everyday interactions. Blomberg, et al. (1993) talk about how video sometimes supplements or substitutes ethnographic research field notes, but also points out that even though video is feasible for capturing quickly unfolding human activities and using field notes together with video can help videotape analysis, video recordings represent only a limited view of the camera and therefore do not communicate what the observer/participant experienced in full amount. Similar kind of notion was made by Buur, Binder and Brandt (2000) who argue that video recordings from fieldwork should not be looked upon as “hard data”, but the designers should turn them into something that is then considered as a first attempt to show the environment, the people and the activities in a way that make sense to the designer as well as to the people being portrayed.

In that regards video material is a genuine design representation and even though it conveys similarities to other design representations such as drawings or diagrams it is different because it can handle the “flow” of real life interactions without writing it up. Video material is also considered to be highly participatory, requiring participation and engagement for making sense of it (Buur, Binder and Brandt, 2000).

Jordan and Henderson (1995) also talk about the collaborative nature of video. They discuss video in the context of interaction analysis – *“an interdisciplinary method for the empirical investigation of the interaction of human beings with each other and with objects in their environment”*. They bring out the value of analyzing videos in groups by being able to involve people with no previous experience in video analysis and reduce idiosyncratic biases by individual analysts. Collaborative viewing has proven valuable as well, as it discourages the researchers to see what they are conditioned to see or even what they want to see. As different people have different focus points when watching the same video, reflecting on these points helps to reach to new ways of thinking of a design problem (Moore and Buur, 2005).

Another virtue that video conveys is that it can be replayed, and stopped and started when appropriate. This has proven valuable for allowing researchers to review field material and correct erroneous notions if necessary (Blomberg, et al., 1993) and also to improve observational skills. When working with students, Brereton, Donovan and Viller (2003) noticed that the students often overlooked important details and mixed observations with personal opinions. As a countermeasure, they introduced students to new ways of looking by having them watch activities on videotapes. By replaying, exploring and discussing the tapes, they became aware of aspects of human interactions such as the beginning and endings of activities such as turn takings, disruptions, participation structure, just to name a few. Even though in-situ observations do not allow this kind of detailed exploration, it would still assist them in future observational studies.

As video recordings from ethnographic fieldwork and usability studies tend to be lengthy and as such take fair amount of time and effort to be analyzed, which is seldom possible in an industrial setting, the researchers have come up with new ways of working through more video recordings in shorter time. For that reason Buur and Soendergaard (2000) introduced a video card game to interaction analysis as a way of turning video segments into tangible cards that can be referred to and handled in design discussions. As they describe, a user centered design group worked through eight hours of usability study footage and picked 60-70 seemingly interesting segments that were then turned into video cards to be used in one-day video analysis activity. Therefore it is arguable that even though video card game allows decreasing the time of video analysis, it still requires a fair amount of focused preparation time and knowledge to create the cards, making it more challenging to implement it naturally into an ongoing work process.

Video has been used in design, and has proven valuable for perpetuating, reporting and later analyzing data and new techniques have emerged for working through large amounts of recording, but there is another interesting and less explored aspect to using video in design and research. It is the preparation for and making of videos focusing on how camera influences people being filmed, and how video can help to communicate information.

### 2.3.2 Making video

Buur, Binder and Brandt (2000) describe how they at first considered using video camera for documenting user activities in field studies as a rather neutral way of engaging with people, but as they came to learn people are very aware of the camera and tend to be conscious about what they tell and how they act in front of it. This introduces a strong bias in the material, altering the subjects' everyday flow in activities, but the tension between what people want to tell and what is recorded is considered to drive the collaboration forward.

Moore and Buur (2005) made similar observation when they asked their workshop participants to make a presentation of their video analysis findings. Even though the presentations were not recorded, as it was the case with the work of Buur, Binder and Brandt (2000) described before, they noticed that giving a presentation encouraged the participants to reveal insights that might not have been revealed otherwise, and make them explicit as well as to develop richer ideas and interpretation of the material. They also argue that the presentations made after viewing all the videos encouraged the participants to give structure to and prioritize their key reflections and ideas. Even though both Buur, Binder and Brandt (2000) and Moore and Buur (2005) have stumbled upon an interesting notion that people tend to perform or want to perform better in front of a camera or an audience. Moore and Buur (2005) research is more interesting as it deals with delivering time constrained messages.

Johnston (2003) addresses an issue of presenting research papers in a corporate setting. He argues that people do not have time and are reluctant to reading written reports and they need to be inspired and engaged by carefully constructed videos or as he puts it – understandable and compelling stories. McDonnell, Lloyd and Valkenburg (2004) make similar kind of argument saying that people do not have time to watch long recordings and are unable to actively pay attention even when viewing time-constrained events. Johnston (2003) suggests that through the combination of narrative and video it is possible to present experience-near information that can engage the multiple senses of an audience. He advocates for a story-like nature of video, as *“The goal is ultimately to shake the client’s foundations of belief, to rattle his or her assumptions, to create new state of an awareness”* (p. 10). To create a sense of objectivity Barker (2012) suggests, *“using an authoritative voice-over to complement the image with additional abstract information or to comment on events in the image”* (p. 81). Garcia, et al. (2002) argues that it is more effective to provide the audience with an interpretation of a fact than giving them all the facts, because delivering the interpretation lowers audience’s cognitive load. Lloyd (2000) defines storytelling as a way to describe related events that link people together.

Johnston (2003) suggests also a social value of creating stories. He argues that by constructing stories the researcher and the participant (ex. business executive, designer) both gain credibility and influence in regards of business situation as the researcher will gain the status of a guide and rises to a position of authority while the participant will gain greater significance as a representative of a *“wider range of meaning, cultural patterns, and behavior”* (Johnston, 2003, p. 8). Collaboration of designers and users, how they can establish common language of engagement and evaluate future design ideas through using props and stages to play out improvised scenarios is discussed by Binder (1999).

The use of video has taken many forms in design and research. Video has been used for documentation or as an activity initiator. Video has proven to be highly participatory, being a base for collaboration in its pre-production as well as post-production phase. It embodies different ways for effectively communicating and engaging with audiences. If and how video can provoke performance is a new and interesting research topic I seek to investigate in this thesis project.

# 3 Theory

This thesis project was conducted in collaboration with company stakeholders and users following practices in interaction design, participatory design and design ethnography. This section will briefly explain the main theories followed when conducting the research.

## 3.1 Interaction Design

Interaction design is about designing interactive products and services to support people in their everyday and working lives (Preece, Rogers and Sharp, 2002). Löwgren and Stolterman (2004) narrow it down to digital artifacts saying that it refers to a process that is arranged within existing resource constraints to create, shape, and decide all user-oriented qualities of a digital artifact for one or many clients. As the practice has evolved Cooper, Reimann and Cronin (2012) have expanded the definition stating that it is not only about products and services but also about digital environments and systems. The focus is mostly on the design of behavior.

Video is a one of many tools that can support design and communication. It has been used for recording usability studies, documenting user visits and analyzing human behavior, as well as allowing stakeholders to experience with a realistically envisioned products through video prototypes (Preece, Rogers and Sharp, 2002).

## 3.2 Participatory Design

Participatory design is a practice to involve “ordinary” end-users to a product, system or service design and development processes not only as evaluators and critics but also as co-designers. It is a way to learn more about users’ work and contexts of use of the technology as well as to ensure that technologies support and enhance the users’ knowledge and skills (Buur, 2008).

Video is considered a highly participatory medium requiring participation and engagement for making sense of it (Buur, Binder and Brandt, 2000). It is used for interaction analysis allowing novice people be involved in video analyze (Jordan and Henderson, 1995). Video has also social value in participatory design as constructing stories researcher and participant both gain credibility and influence in regards of business situation (Johnston, 2003) as well as video allows designers and users establish common language of engagement (Binder, 1999).

## 3.3 Design Ethnography

Design ethnography is based on social and cultural anthropology, which employs field study as a method for the careful study of activities and relations between people in a complex social setting and studies the culture of potential users of the technology. Whereas traditional ethnography studies the culture, activities and traditions of indigenous people from the point of view of the community members (Ylirisku and Buur, 2007). Design ethnography is to provide sufficient understanding not finished explanations to the studied practice in order to discover new opportunities. Furthermore, it is valuable in focusing the design on the “right product” by paying enough attentions to the richness of the real social setting. Another important difference between design ethnography and traditional ethnography besides focusing on learning how people interact with technology is that it is done in great speed and

that it produces a “thin” description of the culture in contrast to a “thick” one, usually produced by traditional ethnography (Ylirisku and Buur, 2007).

Video has been used in ethnography as a supplement or substitute of field notes (Blomberg, et al., 1993) or for teaching students how to conduct observational research (Brereton, Donovan and Viller, 2003). It has been a good medium for analyzing interaction (Jordan and Henderson, 1995) as well as allowed turning fieldwork data into tangible design material – video card game (Buur, Binder and Brandt, 2000).

# 4 Methodology

This section will describe the methodological framework for this thesis project and in some cases it will bring out the challenges with using a specific method.

## 4.1 Literature search

The literature search is an important part of a research through which researcher evaluates the work already done on the topic as well as if the research question is already answered. If the question has not been convincingly answered researcher can position one self's proposed project in relation to existing knowledge and address the concept of a "contribution to the knowledge" (Knopf, 2006). Zelkowitz and Wallace (1998) argue that the literature search is the least invasive and most passive form of data collection, which has no demands on a given project hence providing information across broad range of domains, but which has a major weakness as a selection bias; researchers and authors tend to publish only positive results and not the contradictory ones.

Literature search should not be considered only as a distinct step in a research, but both as an iterative feedback loop meaning that defining an unsolved problem determines which kind of literature search is appropriate, and performing literature search helps to define the unsolved problem (Reed, 1998).

I conducted literature research to obtain a better understanding on the previous research done on the topic, to grow my understanding on different ways video can be used in design and collaborative processes and therefore be able to position my research in regards to the work of others.

## 4.2 Lead User method

Eric von Hippel introduced the lead user approach in 1986 as a marketing research tool for developing breakthrough products and services with the input of "lead users". Lead users are defined as individuals, companies and organizations that face a need for a new product or service and develop solutions ahead of the market (Churchill, von Hippel and Sonnack, 2009) and (von Hippel, 1986). The most difficult aspect with this method is identifying the "real" lead users. Many times the realization that one is already working with a lead user comes after a long period of collaboration.

The focus of the "host" project that withheld the thesis research was to explore and introduce lead users method to an ongoing business model of an international retailer. End users were approached and involved into collaborative design process as co-designers and later evaluated as "lead users".

## 4.3 Collaborative design

Collaborative design means multiple participants representing individuals, teams or organizations from different disciplines working together for a common goal evaluating and proposing values for design issues from the perspective of their own field of expertise and experience (Klein, et al., 2003) and (Scrivener, Ball and Woodcock, 2000). In the 1980s, a field called computer-supported cooperative work (CSCW) emerged, which started to explore

how technology can support group work from the technology perspective as well as from social sciences point of view (Grudin, 1994). There are many advantages as well as challenges to CSCW. An advantage is that CSCW supports distributed teams, but on the other hand the tools for CSCW can be too difficult to use so they inhibit productivity as well as they often lack of intergenerational support.

My thesis research was highly collaborative as the “host” project was architected, lead and participated by stakeholders from Veryday, Interactive Institute and a major international retailer and as it focused on enabling innovation through involving a particular kind of end user – the lead user – into a product development process.

## 4.4 Observation

*“There is a well-known axiom in anthropology that what people say and what they do are not the same”* – Blomberg, et al. (1993, p.130). Observation is a way to understand users’ actual practices (Buur and Matthews, 2008).

For conducting an observation one needs to decide when, where and what to observe and needs to take notes either during or after the observation to link the field experience with the later interpretation of the experience. The notes can be either text, sketches or in form of a video and should not be considered as the complete records of the experience. Observations can be carried out at one extreme obtrusively - observer actively participating in the activities studied- or unobtrusively – observer trying to be as unobtrusive as possible being “a fly on the wall”. Being unobtrusive can be difficult, as the observer might need to be given some culturally appropriate role to be able to participate in an activity. These kinds of observers are sometimes perceived as observer participants. Observations are often coupled with interviews and informal discussions (Blomberg, et al., 1993).

During this thesis research we conducted ride-alongs to observe bike users (person focus) in their everyday activities rather than observing meetings (event focus), activities around a particular place (place focus) or objects in transition (object focus) (Blomberg, et al., 1993). We observed users in their natural environment not to deprive them from their usual context (Binder, 1999) balancing ourselves between an observer and participant observer role. We accompanied the observations with unstructured interviews.

## 4.5 Interviews

Preece, Rogers and Sharp (2002) distinguish four main types of interviews: unstructured; structured; semi-structured and group interviews.

**Unstructured** or open-ended interviews are a way of finding topics and areas of interests by allowing a respondent to have wide variety of response choices (Churchill, von Hippel and Sonnack, 2009) or as Blomberg, et al. (1993) states that the ethnographer may have general areas of interest to explore, but if the discussion moves away from these areas to issues more "relevant" to the respondent, it is likely to be viewed as an opportunity to learn about the community rather than a situation to be avoided.

**Structured** interviews contain predetermined short and clearly worded and mostly closed questions allowing only precise answers. Every participant will answer the same questions. Structured interviews questions are similar to the ones in questionnaires (Preece, Rogers and Sharp, 2002).

**Semi-structured** interviews combine the features from structured and unstructured interviews. To retain the consistency the interviewers use predetermined topics so that they would be covered in every interview. The semi-structured interviews embody a preplanned questionnaire allowing the interviewer to ask additional questions until no new information is provided (Preece, Rogers and Sharp, 2002).

**Group interviews** are facilitated discussions involving typically three to ten participants with different backgrounds at the same time. The participants are chosen to represent typical users. Group interview questions are often times seemingly simple but they are constructed to enable the participants to present their own opinions when discussing diverse and sensitive issues. The challenge with group interviews is it requires facilitator skills to be able to keep the interview focused and calm the irrelevant discussions (Preece, Rogers and Sharp, 2002).

For my research we chose to carry out informal unstructured interviews with users as it allowed us to spot new areas of interests and elaborate on them. Nevertheless we agreed on initial topics of discussion but were very open on using them and seldom did, as the interviews unfolded themselves. We conducted the interviews to elicit legacy stories from users.

The challenge with interviews is that the skill of conducting interviews comes with practice. For example, on one occasion we spotted an area of interest only when reflecting back on the interview.

## 4.6 Stories and Storytelling

Storytelling is a way to efficiently communicate interpretations of facts to audience and, if needed, conduct them to a specific viewpoint (Garcia, et al., 2002). Lloyd (2000) addresses it as a valuable mechanism for encoding social experience to be used in design process.

We collected user stories to understand and share users rich and complex knowledge of an event or situation (McDonnell, Lloyd and Valkenburg, 2004). We synthesized the stories into story cards as well as used the raw video of these stories as design material in workshops activities.

## 4.7 Sketching

Sketching is a method for creativity and problem solving. It is a cognitive aid, which helps designers to describe the overall concept by making mental images concrete and then reorganize, refine and explore the details and through that allows modifying an unstructured problem into a final design (Craft and Cairns, 2009). Löwgren and Stolterman (2004) state that sketching is a way to create material to work with and it does not have to follow a plan as well as they bring out three basic purposes for sketching: to form ideas, to communicate with oneself, and to communicate with others.

**Forming ideas.** Sketching can be used to allow new understandings of ideas that can be difficult without external representations. In this situation sketching is often kept light and done fast.

**Communicating with Oneself.** Having the ideas externalized allows the designer to reflect on something that exist and unveil previously unseen properties of the ideas.

**Communicating with Others.** The most evident reason for sketching is to communicate ideas with others. As sketching allows externalizing ideas it enables teams to work together

with something seen not necessarily understood and interpreted by everyone, which it enables discussions and critique to arise.

Sketching is one of many low-tech methods that allow understanding, exploring and evaluating design phases through the use of low-tech materials (Buchenau and Suri, 2000). Other low-tech methods are for example wire-frames and paper-prototypes just to name a few. Whereas high-tech methods are refined more or less into a final product and typically use the material the final product would use (Derboven, et al., 2010).

It is also important to understand that there is a difference between the conventional sketching in traditional areas such as for instance product design or architecture, and sketching in experience and interaction design, as the latter ones deal with time, phrasing, and feel (Buxton, 2007). In the project, we chose to use conventional sketching to draw up user stories into story maps or create a concept visualization, as it does not require special skills and as it allows quickly forming ideas or interpretation and communicating them with others and then capturing the interactions and experience to video, which could be considered as video sketches.

## 4.8 Journey mapping

Journey map is a representation of users' actions and behavior on a period of time when researchers were not present to observe. It was developed for researchers to understand the user story better and be able to elaborate on details unclear (Fraser, 2011). As an alternative to journey mapping, storyboarding could be considered. Storyboarding has been widely used in interaction design as a way to see how certain sequences are played out and solve timing issues with an interface (Löwgren and Stolterman, 2004) and (Vertelney, 1989). Storyboards are used as visualizations of a composition and scope of a possible interface for viewers to give feedback on (Maguire, 2001). Both journey maps and storyboards require little technical resources and are representations of information to be communicated to an audience. We chose the journey map format as it was freer to interpretation and as the format was more common to design ethnography research practice, which we followed throughout the "host" project.

We created journey maps either together with users during user visits or in workshop activities having collaboratively made sense of user study material. It allowed us create a shared understanding of the material, synthesize it and present it to other workshop participants. As we also narrated the journey maps, allowed us to construct engaging and compelling videos and add credibility to the presentation (Ylirisku and Buur, 2007).

## 4.9 Puppet scenario

Puppet scenario is a way to ideate and generate future scenarios through collective exploration, bringing together participants with different backgrounds and competencies (Kumar, 2012). This method allows also shy people to project their ideas and attitudes onto the representations, and communicate through movements and speech. Puppets are being static forces "actors" to express themselves verbally, which can lead to new understandings and meanings (Ylirisku and Buur, 2007). Somewhat similar methods to puppet scenarios are bodystorming and video prototyping. Oulasvirta, Kurvinen and Kankainen (2003) have explored bodystorming as a way for improvising scenarios based on previously collected data. Bodystorming is a physically situated brainstorming (Buchenau and Suri, 2000). It is usually carried out in the original context of a design problem so the participants could quickly build a mental model of the directly observable environment. The challenge with bodystorming is that the costs for preparing a staged environment as well as training the

actors for the sessions are considerable (Oulasvirta, Kurvinen and Kankainen, 2003). Vertenley (1989) suggest video prototyping as a “*useful way for specifying user interfaces for technologies, which do not yet exist and can emulate the mechanics of real systems without actually having to build them*”. He also states that because video prototypes are capable of simulating reality, they can mislead the viewers into thinking that they are looking at a finished product. Therefore video prototypes and bodystorming are in total contrast to puppet scenarios, as puppet scenario requires only cardboard backdrops, appropriate scene printouts, paper props, pen and paper, and if necessary magazines for additional imagery and would be challenging to mistake to a real product.

We used puppet scenarios or dolls scenarios to challenge workshop participants to convey their future concepts in a rich and accessible way.

## 4.10 Workshop

Workshops are used for gathering users and stakeholders to discuss issues and requirements, to clarify common problems and find solutions for them. Participants switch between small group and whole-group work in going through phases of critique, imagination, and implementation. Workshops can be structured having set topics for discussion and activities or unstructured and should have a facilitator who can keep the discussions on track and provide necessary focus and redirection when necessary (Preece, Rogers and Sharp, 2002) and (Löwgren and Stolterman, 1999).

The challenge with workshops is to calm the dominant characters if any to hear all the voices in the workshop groups.

Workshops were the center of the research allowing collaborative activities between company stakeholders and users and providing content to be captured on video to support my research. The workshops were conducted in semi-structured way having a pre-proposed agenda but allowing deviation from it as things unfolded during the activities.

## 4.11 Project in a Day

*“It provides a showcase for how the social shaping process in a project can unfold”* – Clark and Lahtivuori (2011, p.157).

We held a project in a day for the project team to build a shared experiential reference point by conducting a condensed version of the whole project ahead in a day. During the day the project team carried out several time-constrained activities to mimic the project process. The purpose was to act out and create material representation of what was acted out rather than describe it (Clark and Lahtivuori, 2011).

# 5 Research process

The research focused on three main interrelated stages of project work over a six months period – generating and sharing knowledge, literature search and analysis (Figure 5.1). Generating and sharing knowledge stage consisted pre-study and workshop activities of the “host” project therefore was carried out by the project team who advocated and used video technique to generate video material. Literature search and video analysis part of the analysis stage were strongly related to my thesis research hence I conducted them individually.



Figure 5.1: Visualization of the research process showing how the research question changed on the way.

Generating and sharing knowledge was done in three major steps – (1) Project-in-a-Day; (2) Pilot Workshop and everything related; and (3) the workshop “Innovation Lab” that brought all the previous experience and knowledge together and had the highest number and most versatile set of participants. These stages consisted of several activities and practices such as user studies through observations and interviews; sense making and packaging information into story cards or journey maps; and collaborative work by conducting workshops. User studies, collaborative sense making, story mapping and collaborative design activities were carried out several times and juxtaposed as appropriate throughout the research hence the chapter focuses on describing the activities and the variations in the activities where video summaries were taken to give an understanding how the experiment took place and not on giving a step-by-step guide on how to re-create the whole project that made the video exploration possible.

All the relevant videos were taken using smartphone cameras. The choice to use smartphones was made because of the accessibility to the technology, the availability of services supporting video sharing and because of the easy access and the common format of the video files.

It is important to keep in mind that the initial research question was “How can video blogging enhance on-boarding and communication in collaborative design process”, which encouraged me to create a video blog for making video material available to project partners and participants. The research question changed in course of the project several times as my knowledge about the previous work done on using video in design and research for design as well as level of experience in conducting videos in collaborative design process increased.

## 5.1 Literature search – first visit

In the beginning of my research I browsed through previous work done by Buur, Binder and Brandt (2000), Ylirisku and Buur (2007), and Barker (2012), just to name a few, on using video in design, research for design and media studies. From this I gained a general understanding of the history and the depth in which video has been explored and used.

Having gained an overview of the relevant research done on video in design made me realize that video blogging is too technical and would probably turn into generating guidelines, characteristics and comparisons between different blogging platforms assuming that company stakeholders would want yet another work tool into their on-going work process. Therefore I focused my research towards seeking “How can video support collaborative design processes in multidisciplinary teams”. As mentioned later in the “Literature search – taking it on” paragraph the focus of the research changed again.

## 5.2 Knowledge generation

Knowledge generation was the most extensive part of this thesis research project. Next I will describe the three main steps of the generating and sharing knowledge stage – (1) Project-in-a-Day, (2) Pilot workshop and everything related, and (3) Innovation lab workshop, in regards of my research focus.

### 5.2.1 Project-in-a-Day

Project-in-a-Day was one of the planned activities at the outset of the project. It was the first time for the core team to gather for a workshop as well as it was the first time a variety of research and design techniques and tools were introduced to and experienced by the team. At the time of this activity, the project focus was thought to be on the topic of “Urban Gardening”. It later changed to “Urban Biking”. As mentioned above, a project-in-a-day seeks to rapidly run through the main activities of a project. The workshop was facilitated by the project leader. The participants were split into teams of two to have at least two persons in a group and have as many groups as possible to get versatility in the results. Over the course of the day, we went through topic scope mapping, lead user and context mapping, field study, lead user study, collaborative analysis, collaborative design and evaluation and refinement activity. This was the first introduction to a variety of ways to use video. We captured groups presenting their topic maps, sharing user study findings; introducing design concepts as well as we recorded a user story. Each team had at least one smartphone to record a video and participants were encouraged to keep the presentation short and we tended to not to edit the footage.

#### 5.2.1.1 Topic scope mapping

The first time the team was exposed to the use of video was when the groups were asked to present their topic maps in the end of a 25 minute topic mapping activity in front of an audience and to video. Groups had to explore the topic “Urban Gardening” and map down the findings onto an A1 paper sheets using pens, post-its, tape and visual material from magazines. The maps were created as well as presented in pairs giving both of the group members the possibility to make the map their own as well as be explicit on the things important for them (Figure 5.2). Before presenting the group members agreed on the roles in the presentation and agreed the story path with the cameraman. We encouraged the presenters to keep their presentation around two minute limit, but as it became clear that in different activities the amount of the created content differs and therefore is challenging to compress it into the time limit as well as because the limit was our assumption of a reasonable length to keep an audience engaged, we did not advocate for it later in the workshop. Most of the videos were recorded by the workshop facilitator using a smartphone and focusing on the details currently presented.

Only one of the three groups practiced their presentation a couple of times to gain the flow and concentration they wished for. The other groups presented with one take and managed to keep their presentations in the time limit.



Figure 5.2: Project-in-a-Day, a group presenting their topic map to video.

### 5.2.1.2 Field study, user study and collaborative analysis

Next the teams went off to conduct a 15 minute field study and a 30 minute user study which findings they later collaboratively analyzed and presented to other groups. The groups were asked to take notes during the studies and later write the findings down onto A4 papers using pens and markers. The sketches were then taped to the wall and one person from each group presented their write-ups to the video. This time only one of the group members did the final presentation even though both members participated in the sense making of the field study and user study material and in creating the write-ups. We also tried to make one long shot of the presentations having the groups to present one after another. The project leader recorded the video.

During the user, study one of the groups had provoked a user to tell his story to the video as well as had asked him to alter his story into a “potential future” scenario. This made it particularly interesting as the researchers had involved a user into producing the video as well as had explored an interesting way of using video for capturing a fictional story that could be. The video was later screened for other participants to see and it expanded their view of the possibilities video can have in such a process.

### 5.2.1.3 Collaborative design

Finally we used video in the collaborative design session where the teams had 20 minutes to write up some concepts and then present them to video. We recorded the presentations focusing on the details currently presented. With shooting the concept videos we wanted to document some quick ideas and to expose the team to another way of using video.

In the end of the day we held an evaluation and refinement activity where we learned that the project-in-a-day workshop participants were excited and found video useful for documenting

collaborative work results. From our point of view all the video sessions had a strong social effect as the group members were able to build their collaboration by co-authoring the videos as well as it was important for us that the project team got familiar with different ways of using video so they could advocate it when appropriate in the future workshops.

All the videos were later uploaded to the project blog to help to onboard new members as well as to have a documentation of the project-in-a-day.

## 5.2.2 Pilot Workshop and everything related

Next step in the project was the pilot workshop on the topic “Urban Biking”. It had two main parts – pre-study and pilot workshop. Preliminary research period where researchers conducted user studies with potential “lead users” in Denmark, Sweden and Spain. Researchers used smartphones and tablets to capture legacy stories from bike users to video. The recordings were used in the workshop as design material and some of them were referenced upon throughout the project. This was the first time the core team members were exposed to using video technique in user studies as we encouraged them to capture user stories onto video.

Pilot workshop was attended by 16 participants who were split into four groups of four. Each group had at least two project core team members. The groups were assigned a design space that was provided with pre-study story printouts; a station with a stationary webpage for easy access to the pre-study videos and tools like post-it notes, scissors, precision cutter, tape, paper, pens, papers props to name a few. Every group had at least one smartphone or a tablet to take the videos. During the two days we carried out activities such as topic dive and story mapping, what if? framing, collaborative design, design concept evaluation and reflection and feedback. The project leader facilitated the workshop. In pilot workshop we used video as a design material as well as to capture groups narrating topic maps, introducing concepts and reflecting on the workshop activities. It was the first time we used videos from pre-study research in workshop activities as design material and had the users from the videos to join the groups in the collaborative design activity.

This time we did not set limitations to the length of the presentations. As described before we had learned during the project-in-a-day workshop that the amount of content produced in different activities varies and therefore can be challenging to fit into a common time limit, but as the core teams members were familiar with video in collaborative work we tried to have a focus and a flow in the presentations.

### 5.2.2.1 Pre-study

As described before we had shot one user story video during the project-in-a-day workshop. We wanted to explore using video in user studies further so we encouraged all the core team members to engage users and capture their stories to video. As it was the first time for many of us to use video in user study we shot most of the videos as a general take showing a user telling a story. Although one of the researchers together with a user created a journey map of the users story and the user then narrate it while recording it with his phone focusing on the details currently presented. This allowed the researcher to understand the story better; the user to elaborate where necessary as well as it turned the story into a visually rich and engaging package.

For my research and video exploration, I chose the following three pre-study videos to demonstrate different ways of shooting footage, building collaboration as well as presenting information;

#### Video “Adapting to space and things you need”

The unedited almost 7 minute video shows an interview with a bike enthusiast. The discussion is about adapting to space and things needed in different life stages regarding urban biking. The video was taken by one of the researchers during a user study and is mostly focusing on the user presenting. The video was used for evaluating the user to be a lead user and as design material in pilot workshop. We later uploaded it to the project blog.

The video was taken during a home visit and interview with a bike enthusiast as the researchers tried to uncover interesting focus point on the topic of urban biking eco-system. The user visit exposed the researchers to a new way of using video in user studies, to build their collaboration as a team as well as with the user. The user later joined the pilot workshop as a bike user, which made it possible for the participants to engage with him and later evaluate him as a possible lead user. The video from the pre-study phase made it possible for the workshop participants to learn about the user and his story to be able to elaborate on the details unclear before meeting him in person.

Capturing user story to video brought to our attention that it allowed a rich understanding of the story and gives a nice introduction to user. It also made us understand that to conduct a condensed and focused visually rich video with users needs practice.

#### Video “Phil the Window Washer”

The edited almost 2 minute video shows a bike user presenting the modifications he had done on his bicycle and what lead to creating it. The video shows the bike and how it is used for carrying tools such as ladder and cleaning supplies. A researcher conducting a user study with another bike user stumbled upon this user accidentally. We used the video in the pilot workshop as design material and where it became a strong reference point for the project team as it was brought up every time there was a discussion about lead users. Later we uploaded it to project blog.

The user was stumbled upon accidentally when a researcher saw his bike when he had come to wash the windows. The window washer had modified his bicycle to be able to transport his tools and a ladder necessary for his work. The researcher asked the window washer to present his bike and how it is used as well as to describe how he had come up with the solution. The researcher recorded the introduction with a smartphone and later edited the video into a condensed presentation. The video was used as design material and also in discussions about lead user as the window washer was a potential lead user type.

Making and using the video made us understand how strong a video can be as a shared reference point as it was referred to throughout the project when discussion about lead users. It also brought to our attention how elaborative is to have a video of the artifact and see how it is used as it could not have been explained so well through written text and illustrations.

#### Video “Box Bike”

The edited 4 minute video shows a bike user narrating a story about the activities leading up to him purchasing a box bike via mail order, putting the bike together, and how he, his wife and their kids used the box bike. The video follows a sketch of the process with footage of the actual activities spliced into the video. The sketch was created by the bike user and the researcher during a home visit, while the raw video footage was provided by the bike user and edited into the video by the researcher later. We used the video as design material in the pilot workshop and uploaded it also to project blog.

A researcher recorded the video during a home visit as he was trying to conduct a legacy story of the box bike. He asked the user to sketch a journey map of his story, which enabled

new things to come to mind while creating the map; allowed the user to elaborate on the details of his story hence helped the researcher to understand the story better. The video was used during the pilot workshop for a specific group's activities and later uploaded to the project blog. The stakeholders in the discussions about lead users also referenced to it.

Making the video in the user visit brought to our attention that video can be used to provoke the user to performance, as the user was able to make his story explicit. We also understood that narrating a journey map could make the story immersive hence more easily understandable. The video acted also as a shared reference point for the user and the researchers.

In the end of the pre-study stage we collaboratively analyzed and synthesized the user stories, condensed them into A4 printouts and later used the story cards together with the user study videos as design material in the pilot workshop.

### 5.2.2.2 Pilot Workshop

As described before the workshop had 16 participants and it was held during a two days period consisting of several collaborative activities. We had gathered and prepared a vast amount of material from the pre-study phase and as the project team had gained hands on experience to shooting videos in collaborative work we asked them to advocate it to the stakeholders and users who had joined the pilot workshop. The stakeholders were from the retail company whose product development process the "host" project was focusing on.



*Figure 5.3: Pilot workshop, a group narrating and playing out their journey map to video.*

#### 5.2.2.2.1 Topic mapping

Participants were split into four groups of 3-4 people with different profession having two researchers in every group to help to drive the process and focus the discussions if necessary. Each group was appointed to a room that was provided with pre-study material and design tools as described before. We asked the groups to familiarize with given material, make

journey maps of their interpretation of it and then present the map to video. The groups had to make the final presentation in front of all the workshop participants and to video (Figure 5.3). Topic mapping activity was interesting as most of the groups narrated their stories and used props to play out a scenario of a studied user or family. This was a new way for constructing a compelling story as well as to engage the participants to making the video. As I described later in the innovation lab paragraph we used puppet scenarios to communicate future scenarios during the innovation lab workshop.

I have chosen the next two videos for my research to demonstrate different ways of how groups prepared their results and their presentation as well as what impact it had on the recorded video.

#### Video “City Biking”

The unedited one-shot 6-minute video shows a group presenting City Biking categories that is the result of a topic mapping activity where they learned about “bicing” in Barcelona, bike maintenance as father-son activity in Copenhagen as well as wacky bike inventions in Stockholm. The map created by a workshop group and was based on a material collected by the project team during the biking eco-system pre-study phase. The video follows a map of categories created by the group and focuses on the details currently presented. We later uploaded the video to the project blog.



*Figure 5.4: Pilot workshop, a researcher (me) demonstrating how to narrate a journey map.*

The group used A1 sheet and pens and post-its to create a map of what they thought was important in the pre-study material provided to them. Their map conveyed categories of information to be presented to other groups. Before presenting they agreed on which part of the presentation will be given by whom and told the cameraman the path to follow. The presentation had several repetitions and thought pauses making it challenging to follow and enabling to fall into passive viewing. On the other hand the group had compressed a huge

amount of information into a visually rich package. The project leader and workshop facilitator filmed the presentation with a smartphone focusing on the details currently presented to have a visually rich presentation. We later uploaded the video to project blog.

Using video in this setting brought to our attention that there are different ways how people might want to present information and without practicing it can sometimes be challenging to keep the audience engaged throughout the presentation. As two of the group members were familiar with using and shooting video in collaborative work and were not able to communicate the value of it in this situation made us understand that it can be difficult to explain the value to a person without experience in the technique.

#### Video “Daily Transitions”

The unedited one-shot 3-minute video shows a journey map created and played out by a group in the pilot workshop topic mapping activity where the group had to map down a story of a Danish family using material including videos from pre-studies. While shooting the video the researcher followed a story path agreed with the presenters. All the group members acted out a character in the story. The group presented to audience as well as to video, which we later uploaded to project blog.

The group used A1 sheets and design tools such as pens, paper props, biking eco-system related printouts to make a map of what they had learned from the provided pre-study material and thought to be important in regards the topic “urban biking”. The group created a journey map and a user scenario to understand and share their interpretation of the story. As I was the only one familiar and also interested from my research perspective in using video in this kind of situation, I made an example narration of the topic map (Figure 5.4). After that we changed roles so that one of the other group members became the narrator and the other members acted out a character in the story using paper figures. We rehearsed the presentation a couple of times within our group to video and gave the final presentation in front of other groups and to video. Before the final presentation we introduced to the cameraman the path the story will take. The presentation was filmed by the workshop facilitator and the project leader focusing on the part currently presented. We later uploaded the video to project blog.

This group work made us understand how practicing a presentation, making it visually rich and turning the information into a scenario can lead to an engaging video. It also brought to our attention that it is easier to explain the video technique to others by demonstrating it first and discussing about the details.

#### 5.2.2.2.2 Collaborative design

Four users from the pre-study videos joined the workshop groups to collaborative design activity, which allowed the participants to engage with end users, elaborate on their stories as well as later evaluate them to be lead users. In this case, video had many values. First a collaborative inquiry with the users had been initiated when doing the user studies letting the users know about our interest; the workshop participants being familiar with the user stories allowed to save their and the joined users time; as well as it allowed to build collaboration between newly met participants that were going to work together also later in the project. We asked the groups to present and shoot a concept video individually in the end of their collaborative design session and later showed it in a collaborative screening session.



Figure 5.5: Pilot workshop, a group sketching a concept together with a bike user.

I chose the next video for my research as a demonstration of a concept video where a group had established a condensed and flowing story as they had captured it focusing on the details currently presented making the concept video very explanatory and immersive. It is a good example of how video had built the collaboration within a group as they had divided roles, rehearsed to perfect their presentation and shot it in a way that is easy to follow.

#### Video “Inclusive Biking System”

The unedited one-shot 4-minute video shows a group presentation of a concept of an inclusive biking system that enables to transport or share the biking experience with people who are not suitable for a child seat and for some reason are not able to bike for themselves. The video captures a sketch drawn on the wall and focuses on the details currently presented by the narrator. The visualization was made by a workshop group as a result of a collaborative design activity (Figure 5.5). One of the group members recorded the presentation while the other three including a bike user presented. We shared the video with other workshop participants later in the collaborative screening session and then made it available in project blog.

The concept sketch was created by the workshop group who was joined by a bike user from the pre-study phase. As the user was a bike enthusiast he was able to share his extensive knowledge on the bike topic and as he was also an industrial designer he took on the role to sketch the concept on the wall. The group then made a couple of test runs on their presentation to sort the information and organize thoughts as well as to share the roles in the presentation. One of the group members (me) recorded the presentation with a tablet while the other three were presenting it. The video also captured an event where one of the group members stepped in with a supportive question to remind the current presenter an important aspect to tell. The video was later viewed by all the workshop participants in a joint screening session and acted as a reference point in a discussion about lead user types. The collaborative

sense making and recording it to video allowed the team to build their shared understanding of the given material while keeping a personal perspective during the presentation.



*Figure 5.6: Pilot workshop, a collaborative screening session.*

The actions the group took before making the video made us understand how video can provoke people to put more effort into preparing for something. It also ensured how valuable practicing a presentation can be for making a condensed, focused, well organized and captured video that can keep audience engage throughout viewing it.

#### 5.2.2.2.3 Joint screening

As mentioned before the concept videos were presented in the joint screening session with all the workshop participants present (Figure 5.6). It was interesting in regards to my research, as it was a way to use video for initiating discussions as well as for researchers and stakeholders to build credibility and influence in the project. The videos were also a good way to reflect on the pre-study and collaborative design activity together with the users and allowed the stakeholders to evaluate the users to be lead users.

Pilot workshop was the first occasion when we used videos taken in one activity for initiating a discussion in another within the same workshop. Pre-study videos such as “Box Bike”, “Phil the Window Washer” and workshop video “Inclusive Biking System” became a strong reference point for the stakeholders as they were mentioned in many discussions about “lead users”.

## 5.3 The workshop “Innovation Lab”

Innovation lab workshop was the final step in my research where I was able to explore different ways of using video in collaborative work. As mentioned before it brought all the

previous experience and knowledge together and had the highest number of participants. In regards of my research the innovation lab had to main parts – (1) preparation and (2) workshop. During the preparation the core team members were exposed to a new way of using video in user studies as we asked them to conduct a practice ride-along following a user in their everyday use of bike and later map the story down and present it to video. They conducted the research individually or in groups. It was particular as the researchers were involved in the user experience and where presenting it as their own.

Innovation lab workshop participants were split into five groups of 3-4 people with different backgrounds. Each group had at least two researchers from the core team. Over the course of three days, we went through observation and interview, share out and collaborative analysis, preparation and collaborative workshop and packaging innovation activities. We used video to capture group presentations of ride-along story maps, hot spot identification and expansion results as well as collaborative design workshop videos. All the groups had at least one smartphone or a tablet to record the videos and the videos were taken either within a group or when presented in front of an audience.

### 5.3.1 Preparation

As a preparation, we exposed the project core team members to a new way of using video in user studies. We asked all the members either individually or in groups to conduct a practice ride-along with a user in her everyday activity with a bike, analyze and sketch the findings into a journey map and present it to video. It was interesting as the researchers were immersed to the user experience and made the story explicit by sketching and presenting the story; and as one of the researchers (me) was working remotely did it to video and shared the video with other team members. They then collaboratively analyzed the video and it was taken as an example of how detailed the journey maps should be and what transitions and aspects observed. The aim was to evolve the core team members' user study skills and so they could re-focus the activities in the innovation lab workshop if necessary.

### 5.3.2 Workshop

Next I have described innovation lab workshop activities – (1) ride-along, user visits and (2) puppet scenario, which convey ways of collaborating for and conducting of videos that we had not used before and therefore are important to be mentioned in regards this thesis research;

#### 5.3.2.1 Ride-along, user visits

As mentioned before innovation lab participants were split into groups of three to four people. All the groups conducted at least one ride-along or user visit with a potential “lead user”. After the ride-along the groups collaboratively analyzed the gathered information and turned it to journey maps. They illustrated the maps with photos taken during their study. We asked the groups also to present their maps in front of the other groups and to video allowing each group member to make the information explicit and provoking them to organize their thoughts and focus on what they feel is important. What was particular in this case was that the group members conducted the user study, and then analyzed and created the map of the research findings collaboratively making the information more credible as well as allowing them to gain more influence in the project. They were also able to create a shared experiential reference point and stronger their understanding of the observations and interview results.

As many of the videos were similar to what we had done before I chose the following video for my video exploration as an example of how a group conducted a user study, analyzed the findings and presented them to video and through that built their collaboration as a group;



*Figure 5.7: Innovation lab, a researcher observing a bike user taking his son to the daycare.*



*Figure 5.8: Innovation lab, a researcher conducting an unstructured interview with a user after a ride-along.*

### Video “Biking 4 Occasions”

The unedited one-shot 6,5 minute video shows a group sharing their user study results. The group carried out a ride-along to observe a bike user with his bicycle in his everyday activities. They turned the information into a journey map and presented it to the audience and to video. The video focused on the part of the map currently presented.



*Figure 5.9: Innovation lab, a group presenting their ride-along findings through explaining their journey map to audience and video. Cameraman is focusing on the details currently presented.*

The video was taken in the share out and collaborative analysis activity in the innovation lab workshop. The group observed a father taking his son to the daycare (Figure 5.7) and later interviewed him (Figure 5.8) to extract areas of interest in regards urban biking. After the user visits the team collaboratively analyzed the information gathered and mapped it down to a journey map, which they later presented to other groups and to video (Figure 5.9). We had told the participants that their presentation will be filmed, but as it was still unclear what it was about, one of the group members (me) asked the other two to present the map to video. I wanted to give an example of the video technique and also to enhance our presentation through practicing it. Collaborating for this video was interesting, as this time the group members were engaged in conducting the user studies and then collaboratively analyzing the gathered data rather than analyzing material collected by someone else. The participants made their stories explicit by jointly creating and presenting their journey maps, which also allowed them to build a shared understanding and experiential reference point.

This video and how the group prepared for it brought to our attention how collaborative sense making can allow the group members to make the user study information explicit and the group to build shared understanding of the material keeping individual perspectives. Also how the group knowing about the need to present their journey map made them plan and run through their presentation.

### 5.3.2.2 Puppet scenario

We introduced the puppet scenario in the workshop as a way to play out future product or service scenarios. The groups were provided with backdrops and A4 printouts of scenes as well as tools like pens, paper, post-it notes, magazines just to name a few. Participants then created a possible future scenario based on the results from the user study material analysis sessions and we asked them to present the scenario to video. A setup that became common for all five videos was that one of the group members narrated the story and others acted out a character in it using paper figures. It was interesting as we did not propose the groups to do it this way but they found it themselves to be the most appropriate way to communicate their message. What is particularly interesting with puppet scenario is that it only works with video as the story comes through the best when the camera is focusing on the backdrops the story currently is. Using props gives supports the shy presenter as it allows a level of anonymity as the camera is not focusing directly on them. One of the core team members filmed the puppet scenarios focusing on the part of the scenario currently presented.



*Figure 5.10: Innovation lab, a group narrating, playing out and recording a future concept through a puppet scenario.*

I chose the following video for my research to demonstrate a new way for using a video to create and present an immersive and engaging future scenario as well as to show the value of preparation of presentation;

#### Video “Interactive Evolution Solution”

The unedited one-shot almost 2 minute video shows a group acting out a doll scenario of their future concept “Interactive Evolution Solution” that would enhance the interaction parent-child interaction while cycling (Figure 5.10). The video follows the scenes of story currently presented. The scenario was narrated by one of the group members whereas the other three were acting out a character in the story. The video was shot by one of the project team members (me) in the collaborative concept development activity of the innovation lab

workshop. We presented the video in the end of the innovation lab workshop in a collaborative screening session and later uploaded it to the project blog.

The group was provided with A4 backdrops, magazines, scene printouts and design tools such as pens, paper, post-it notes just to name a few. We asked the group to create a possible solution for a hot spot extracted from user visit and ride-along material. The group created a future scenario and presented it to video. One of the group members narrated the story as others played out a character in it by using paper dolls. I filmed the scenario and shared it in a collaborative screening session. We also made the video available in project blog.

Making and viewing this video made us understand the value of using a puppet scenario as it supports the shy non-actors as they are allowed to project their ideas and attitude without being fully exposed to the camera (Ylirisku and Buur, 2007) as well as through playing out a story gives an experience-near representation of information which is hard to gain through written text or listing facts on video (Johnston, 2003).

We later showed the videos in a collaborative screening as a cool off of the three intense days of workshop and made the videos available in the project blog as documentation and a reference point. As we advertised the blog as a place for the workshop summaries and video we hoped to get more users to join it and therefore turn it from plain documentation into a collaborative space. It was unsuccessful.

## 5.4 Literature search – taking it on

This time I conducted a focused and in depth literature search to position my research as well as to support my observations and conclusions made when analyzing the video material and activities leading to making the videos. Combining the thorough literature study and reflections on the research process I was encouraged to narrow down the focus of the research to “Use of video in collaborative work, is it documenting what is taking place or does it influence how people act?” which stayed as the final research questions until the end of the exploration. The main reason for narrowing my research focus was that reflecting back on the workshop and pre-study activities I realized, how the participants knowing about the need to present to camera, tended to make extra effort to gain a nice presentation. This observation got grounds from the work done by Buur, Binder and Brandt (2000), and Moore and Buur (2005), who had made similar notions but had not explored the aspect in a focused manner. I have described their work in more detail in the “Background” chapter.

## 5.5 Analysis

Analysis step can be considered roughly in two parts – (1) video analysis and (2) video technique analysis. Video analysis was a part of my research where I synthesized the vast amount of video material generated during the research and by doing that guided the research towards my focus on exploring if video is a way to document or is it determining how the activities take place. Even though using and shooting video was now and then discussed within the project team, and the project leader altered the activities leading to the use of video to provide a variety of settings and preconditions for exploring video in a collaborative work as I described before, I started with a focused video analysis only after the innovation lab workshop. I took it on just then as for that time I was able to focus my research and therefore choose relevant footage to be analyzed.

We also evaluated video as a technique and its suitability for collaborative processes. We did it as a one-day method analysis workshop in the end of the six months period in the “host”

project where the core team analyzed previously held activities and applied methods. We learned that project team and other stakeholders find video technique mainly useful and exciting to use in collaborative activities for documentation, but several concerns for example how we presented a doll scenario were addressed, which I will discuss in the method analysis section.

### 5.5.1 Extracting the essence

For my research and video technique I chose seven distinct videos such as “Box Bike”, “Phil the Windows Washer”, “Daily Transitions”, “City Biking”, “Adapting to space and things you need”, “Interactive Evolution Solution”, “Biking 4 Occasion” and “Inclusive Biking System”. I based my choice on the experience and knowledge about the project-in-a-day, pilot workshop and innovation lab workshop and juxtaposed the videos to extract characteristics relevant for my research. With the analysis I did not focus on the observations drawn from the content but rather on they were made and how they influenced people making them.

The following are eight main characteristics that came to my attention and seemed interesting in regards to my research when analyzing the selected videos;

#### 5.5.1.1 Edited vs Un-Edited

When conducting videos we followed an assumption that the videos should be short, condensed and meaningful so that the audience would get an immersive engagement (Barker, 2012) and not fall into a passive viewing (McDonnell, Lloyd and Valkenburg, 2004). In my research we came across two ways of condensing videos. One was through a specific kind of preparation for making the video, which I will introduce later in the rehearsal paragraph and the other was via editing the footage. “Box Bike” and “Phil the Window Washer” are examples of edited videos used in my research. “Box Bike” video was recorded by a researcher conducting a legacy story with a bike user about how he had come to purchasing a box bike. As the bike user provided the researcher with additional footage from receiving and assembling a box bike, the researcher was able to create a meaningful story by juxtaposing scenes from the user study video and the video from the user. Somewhat similar example is the “Phil the Window Washer” video where a window washer had come up with a bike solution for transporting his tools. This video was cut together using material from only one user study, but as the research followed design ethnography approach the recordings were trying to capture the events unfolding themselves. Therefore the researcher cut scenes of the bike user explaining his solution, telling how he had come to that and demonstrating how the solution worked, to make a condensed video and meaningful story. Editing can also guide the audience to an interpretation reducing their cognitive load (Garcia, et al., 2002).

Shortcoming with editing is that it adds the complexity of knowing the technology and technique of video editing and it takes time (Ylirisku and Buur, 2007). Time is something that corporate setting seldom has (Johnston, 2003). And as one of my research interests was to explore how video can be integrated into a work process without it taking too much time and making it into an activity itself the editing is not feasible because, as I mentioned before, it requires special skills and time. Mackay (1995) states that the video producer is responsible for not implying on particular events if they are not really represented. Therefore we advocated for recording videos in one shot and not cutting them, which allowed us to use videos from one activity in other within a workshop.

### 5.5.1.2 Rehearsal

Comparing videos such as “Daily Transitions” and “City Biking” brought to my attention that rehearsing a presentation allows organizing thoughts, sharing roles and focusing the presentation. This came to my attention as the “Daily Transitions” group practiced two times before giving their final presentation of their journey map. During the preparation they changed the narrator of the story and focused on what they wanted to communicate. They ended up with a fairly condensed final presentation as they had practiced it before. Whereas the “City Biking” group did their presentation only once in front of the audience and to video. The presentation had many thought pauses and repetitions and therefore was hard to follow and even though they had agreed with the cameraman on the path to follow the focus jumps around their map as they organize their thoughts while presenting.

But it is important to keep in mind that the two groups had different ways of mapping their findings as the “Daily Transitions” group created a scenario to present the information in an experience-near way (Johnston, 2003) whereas “City Biking” group decided to present facts allowing them to go into more detail but being harder to follow.

### 5.5.1.3 Scenario vs Facts

This brings me to the issue of the style of a presentation. As I previously mentioned in the “Rehearsal” paragraph, Johnston (2003) argues for using narrative to present information in an experience-near way. “Daily Transitions” is a good example of doing so. The group was provided with pre-study videos and story cards and they collaboratively analyzed the material and created a journey maps to present what they found interesting and important regarding the project focus. They then narrated and played it out to present the findings to other groups whereas “City Biking” is presenting facts and elaborating on them. Similar notion can be made about the “Adapting to space and things you need” video, which focuses on a bike user telling he has had to adapt to different life circumstances. Two latter ones are more of a documentation type that could be paralleled with a bullet points in written text as the information is given piece by piece whereas the first one is trying to immerse the viewers into an experience.

In my research we also used puppet scenarios for communicating information. In “Interactive Evolution Solution” a group played out a future scenario of a product concept. Asking the group to present their concept out using a puppet scenario allowed us not only to capture an immersive story (Johnston, 2003) but also to provoke the participants to verbalize their thoughts and therefore come to new understandings of the given material (Ylirisku and Buur, 2007).

### 5.5.1.4 Details

Most of the videos taken in my research were done so that the person filming was focusing on the details currently presented. We wanted to keep the videos short and the viewers engaged throughout the video and not let them sink into passive viewing (McDonnell, Lloyd and Valkenburg, 2004) therefore we encouraged workshop participants to visualize their results not just tell them. And as they narrated their visualizations or played out a scenario with figures it was important to focus on the details not the presenters. This brings to wonder if focusing on the part of a presentation currently presented and not the presenters can have similar effect as the puppet scenario as the shy presenters can project their ideas and attitude without being exposed to the camera (Ylirisku and Buur, 2007). The value of focusing on details came to my attention from juxtaposing “Adapting to space and things needed” with “Biking 4 Occasions” or “Inclusive Biking System” video. As the first video is more of a documentation type taken as a general shot of a user having a discussion with the researcher about his experiences with biking and biking eco-system. This video requires a lot of mental

effort and attention to construct a logical story from it (Barker, 2012). In “Biking 4 Occasions” a group is presenting a journey map of their user study results. The cameraman is focusing on the parts of the map currently presented allowing experience-near presentation of the information (Johnston, 2003) allowing the video to be engaging to the audience.

Another not so obvious advantage with capturing the details of a presentation visualization when using a smartphone or a tablet, as it was the case in my research, you have to be close to what is presented as these devices do not allow a great deal of zooming without losing quality. And as the presenters stood close to their visualization being close to it allowed recording a perfectly usable audio as well. This came to my attention when viewing and analyzing the videos, as we did not focus on it before.

#### 5.5.1.5 Step-in

Generally, it is good if a person or a group can present without being interrupted to maintain the flow, but sometimes a step-in can be valuable. This came to my attention when viewing the “Inclusive Biking System” video. In that video a group is presenting a bike concept. By collaboratively creating the sketch they had built a shared understanding of it, shared roles in the presentation and agreed on the path the presentation will take. Nevertheless one important aspect was forgotten by one of the presenters so another team member stepped in and reminded it by asking, “How can you also grow with the bike?”. In that situation the step-in worked well as it did not turn the presentation into a general discussion by encouraging other participants also to interfere. This happened a couple of times during my research and made the videos difficult to follow as the viewer’s try to construct a story to make sense of the video and if it is not coherent the audience will lose focus (Barker, 2012).

#### 5.5.1.6 Introduction

The value of an introduction in a video came to my attention when viewing the “Box Bike” video and reflecting back on the other videos taken during my research. “Box Bike” starts with a shot of a user introducing himself, his family and the topic that he will present. This allowed me to identify with him (Ylirisku and Buur, 2007), as well as briefed me on what to expect from the video. As the value of the introduction came to my attention in the analysis phase we did not encourage the workshop participants do make them.

#### 5.5.1.7 Audio

It is very important to record a good audio when users present a sketch or a topic map or other type of visualization because in case of poor audio the users may shift their attention from the core message (Ylirisku and Buur, 2007). As I discussed in the details paragraph that even though we used smartphones and tablets for recording videos the audio was not focused upon, as we had no issues with it during my research. We recorded most of the presentations up close focusing on the details currently presented and as being close to the presenter were able to record a good quality audio.

The observations and conclusions drawn from juxtaposing videos are summarized in the final results chapter.

### 5.5.2 Video technique analysis

As a conclusion for the first half of the “host” project, we held a method analysis workshop where the project team members evaluated the methods and activities done so far in the “Open Innovation and Lead Users” project. As I was almost done with my video analysis I

was allowed to present my results and conclusion there as well to get feedback on the video technique.

The project team agreed on the value of using video as a means of documenting activities, prototyping and sharing knowledge. The video was thought to be valuable not only as a visualization of a product but also a concept of the product offer; as a way to provoke reaction; together with the experience from workshop activities as an reflection initiator; and a good way to funnel things into something that can then be presented to others. There were a couple of concerns on packaging a task. For example one of the last activities in Innovation Lab workshop, where the groups were asked to play out a future scenario using puppets, was reluctantly received. This was due to that it was perceived as something childish, but would have been greeted more openly if it was presented in some other way, for example “Lets now put us into customers perspective for a while...” In comparison the same activity was presented and conducted in the same way in another workshop with participants from a niche-clothing brand who accepted the task without second thoughts.

# 6 Final results

The results are divided into two parts: an analysis on (1) how video influences participants, and (2) a list of aspects to consider when conducting and using video in collaborative design processes. The results are based on experiences from “Open Innovation and Lead Users” project, in the frames of which I have carried out my research. My focus was to investigate a particular way of making video and how it can determine how activities leading to it are taking place. The research question is: the use of video in design- is it documenting what is taking place or creating it? In order to answer this, I have investigated how video can be integrated into ongoing time constrained work process without it being an activity in itself. These questions have been explored through many collaborative activities with researchers, designers, users and company stakeholders.

We recorded videos in the end of pre-study and collaborative workshop activities to conduct legacy stories with users, with the aim to summarize workshop activity results and capture future concept scenarios. Through analyzing these videos and reflecting back to the collaborative activities I was able to draw conclusion on the benefits video can have in collaborative teams in time constrained work process.

## 6.1 How does video influence the participants

In the following paragraphs, I have summarized the observations on how video influences workshop participants and how it can determine the activities leading up to the recording.

**Videos, and conducting videos, can act as a shared reference point.** *Many videos and activities leading up to videos were referenced back at appropriate points throughout the project.*

**Video can provoke performance.** *The groups at the workshops often rehearsed with the aim of achieving condensed and focused presentation.*

**Conducting videos collaboratively creates a shared understanding of the information, still allowing keeping an individual perspective.** *The teams’ analyzed material that was gathered or generated by themselves or other researchers in pre-studies or during workshop activities. By collaborative sense making they built a shared understanding that they explicitly presented for the video, still allowing every presenter to focus on things important for them individually.*

**The technique of video can be challenging to explain as the understanding is developed through experience.** *Several members of the project team expressed their initial difficulty in understanding the value and the technique of video in collaborative work solely by initial explanation but this was overcome after the practical experience of using and conducting video in such setting.*

**Video technique cannot be applied randomly as the activities leading to it determine how engaging it is for the audience.** *The qualities of the video – how rich, condensed and immersive it will be, depends on the activities leading up to recording of video.*

## 6.2 A list of aspects to consider

Some aspects to consider when conducting videos in and for time constrained collaborative work processes, to establish condensed and engaging recordings, is given below.

### **Edit vs Un-edit**

- Editing takes time and requires knowledge of the technique and technology and therefore is not feasible for time constrained work processes. Therefore I suggest shooting videos in one shot and leaving them un-cut, using rehearsals and scenarios in order to make them engaging and condensed.

### **Rehearsal**

- Practicing a presentation allows the presenters to organize their thoughts, assign roles and plan their story, therefore establishing a presentation that is condensed and has a nice flow.

### **Scenario vs Facts**

- Scenarios allow immersing the viewers into the story, keeping the audience engaged.
- Playing the scenarios out with puppets supports the non-actors as they can project their ideas and attitude to the story without being exposed to the camera (Ylirisku and Buur, 2007).

### **Details**

- Focusing on details enables to make a connection between the narration and the visualization, presenting the information in an experience-like way (Johnston, 2003).

### **Step-ins**

- Step-ins should be conducted carefully as they can encourage additional participants to interfere as well but when done appropriately it can be used for reminding the presenter of something they had forgotten.

### **Introduction**

- Making an introduction by showing the presenters and briefing on the content helps the audience to identify with the presenters (Ylirisku and Buur, 2007) as well as hints the viewer what to expect from the video.

### **Audio**

- It is very important to record a good quality audio as poor audio can make the viewers shift their attention from the core message (Ylirisku and Buur, 2007). A sufficiently good audio can be recorded with a smartphone or a tablet, but the device needs to be close enough to the presentation and the presenter, focusing on the relevant details.

# 7 Discussion

This section will evaluate the research (1) process, discuss the (2) extracted results as well as propose (3) future research opportunities in regards to the research and the results.

## 7.1 Process

The researcher was carried out during an “Open Innovation and Lead Users” project, which focused on exploring Eric von Hippels lead user method in an innovation lab context as described in the introduction. Lead user method being in itself user centered made it feasible to follow a participatory design approach for architecting the project. From the research point of view, the collaborative nature of the project gave a good foundation for exploring and evaluating how video can be used in collaborative activities. As it came to attention when analyzing the collected footage and reflecting back on the past events the process of gathering, making sense, packaging and presenting material has a very high importance in making videos that are valuable for collaborative processes.

The research was fairly ad-hoc throughout the process and having so many different types of activities and events taking place, and providing material for the research, it was hard to set the research focus early in the thesis project. Many of the conclusions and observations about the process and the technique of using video were possible only in the end of the research. This led to question if it would have been helpful to conduct a thorough literature research in the beginning of the project, to have a strong foundation for the research. Currently the literature search was first touched upon only briefly in the beginning of the project, to get a quick overview on how video can and has been used in design and research for design; and only later more thoroughly for building a foundation for video analysis and reflections on the process.

Another thing that might have helped to guide the research is video analysis that was carried out in the bare end of the project and even though the videos and activities leading to them were constantly reflected on, there was no “formal” video analysis conducted and therefore no conclusions were made during the exploration that would have had impact on the process.

Nevertheless the project that allowed the thesis research to take place was architected with high quality and allowed gathering valuable material from various situations and collaborations with people of different backgrounds and experiences. Because of the participatory nature of the project, it was possible not only to explore using video in collaboration with different company stakeholders, but also with end users sketching down their stories and exposing them to videos from relevant activities providing very rich and valuable video material for later analysis.

The videos were mostly taken in the end of workshop activities and during user studies where they were taken as video summaries of the results and user stories and later uploaded to the project blog with relevant textual material by the core team. As it came to attention from the feedback the later actions such as making sense of them, writing them down, taken on the videos should involve also other stakeholders not only the project team, because the stakeholders did not want it to be only a technique per se but put into context. They also wanted to have the findings that were captured on the video as write ups, which brought to understanding that the final activity of collaborative screening of concept videos in the end of

the innovation lab should have been followed by a writing session, where the gathered information would have been analyzed and documented within the workshop groups.

This brings to the issue that I analyzed the videos alone and not in collaboration with other project team members, which could have added the value and credibility of the analysis results by having different perspectives and experiential backgrounds represented while conducting it (Moore and Buur, 2005).

Now, to touch upon the process of taking the videos, it is necessary to point out that having experienced and advocated shooting and using videos in the collaborative processes it became clear that explaining the technique and value of it is challenging and most of the times unsuccessful as the understanding comes through experience. This explains also why the focus of the research was set only in the end of the process when the video material was analyzed. The same feedback was given also by other project team members.

As the aim was to keep the videos condensed, focused and make them visually rich to support collaboration by sharing knowledge in a well packaged form it became clear that the activities leading to shooting video summaries have great importance, if not the most. Also, that applying the technique to a random situation for example a discussions in a meeting or an interview with a user, without focusing on creating the content for it, would not serve the purpose.

The research focusing mainly on conducting, using and sharing videos in collaboration with stakeholders and users in pre-study and workshop activities left room for exploring how videos could be shared online and how it could contribute to the collaboration between remote teams. It has to be said that an effort towards researching how to share video online was made by creating a video blog where summaries of relevant meetings and workshops were posted, but because the project focus was on face-to-face collaboration it was not explored further. Nevertheless the project blog was created based on online inquiry on available tools and services and choices such as which host and service to use was made on the assumption that people will start uploading videos to the blog straight from their smart devices. Some of the blog features were chosen with the assumption that we will uploaded the videos straight from our smart devices, but as the videos had to be synthesized before uploading to the blog and there were network access was many times limited. Therefore we did not the acquired features and ended up limiting ourselves, as the purchased package did not allow a great deal of modifications and additions.

## 7.2 Results

One of the focuses of this thesis research was to investigate how video as a technique can be integrated into a time constrained ongoing work process. Johnston (2003) states that in corporate settings people seldom have time to read what is presented to them so the information needs to be synthesized into something relevant and engaging. He proposes to construct compelling stories. Similar notion came to attention during my research as the information presented through journey maps in “Box Bike” and “Daily Transitions”, and puppet scenario in “Interactive Evolution Solution” video was much more immersive and understandable than the “data list” type of presentation conveyed in “City Biking” video. In case of the latter one it is easy to fall into passive viewing (McDonnell, Lloyd and Valkenburg, 2004) as the viewers usually try to construct comprehensible stories (Barker, 2012) and it can be challenging as the “City Biking” presentation has many thought pauses and repetitions on the information.

In the final results chapter, I discuss also about editing video to create condensed and compelling stories, as the project leader edited two videos, which we then used as design

material in pilot workshop. Barker (2012) suggests that through editing it is possible to give meaning to video. In regards to using video in time constrained ongoing work process editing, in my opinion, is not feasible, as it requires knowledge about the technology and technique, and it takes time (Ylirisku and Buur, 2007). Also that the videos conducted in this kinds of activities are not artifacts but more like sketches done to provoke discussions, ideate, inspire and explore, and as I have pointed out, making of these videos are more important than the final video. To support my argument it is appropriate to list the attributes inherent to sketches: *quick, timely, inexpensive, disposable, plentiful, clear vocabulary, distinct gesture, minimal detail, appropriate degree of refinement, suggest and explore rather than confirm, and ambiguity* (Buxton, 2007). He also states that the essence of sketching is the activity, not the final sketch in itself.

Therefore I have proposed other ways for establishing condensed and engaging video presentations. One approach that we took in making the videos was to focus the details currently presented and combining it with a narration allowed us to capture the information in an experience-near way (Johnston, 2003).

Another thing I discussed in the final results chapter is rehearsing. From comparing “City Biking” and “Daily Transitions” videos and reflecting back to the topic mapping activity in the pilot workshop that lead to these videos I came to realize that firstly, through practicing it is possible to establish a condensed and engaging story, as it is the case with “Daily Transitions” video. Secondly, that asking participants to present to video can provoke them to perform as many groups went over their presentation before giving the final one without us encouraging them. Buur, Binder and Brandt (2000) and Moore and Buur (2005) have made a somewhat similar argument as they learned people tend to perform or want to perform better in front of a camera and Mackay (1995) states that people tend to change their usual behavior when being recorded.

An event we stumbled upon a couple of times with different outcomes was step-ins during a presentation. Usually it is good not to break the presentation flow, but as it came to my attention when watching “Inclusive Biking System” video, where one of the group members reminded the presenter of a forgotten point to make with an appropriate question, step-in could be useful. In that situation the step-in was in harmony with the presentation but as we later encountered step-in can turn a presentation into a general discussion making it hard to follow as it might encourage other participants also to intervene.

A couple of other things that we did not advocate for and consciously explored during this thesis research, but that I came to realize when analyzing the videos, and that are important for keeping the audience engage, are introduction and audio. “Box Bike” and “Biking 4 Occasions” videos start with a general shot of the presenters briefing on what they are going to present. This allows the viewers to identify with the presenters (Ylirisku and Buur, 2007) as well as know what to expect from the video.

A couple of other things that we did not advocate for and consciously explore during this thesis research but that I came to realize when analyzing the videos and that are important for keeping the audience engage are introduction and audio. “Box Bike” and “Biking 4 Occasions” videos start with a general shot of the presenters briefing on what they are going to present. This allows the viewers to identify with the presenters (Ylirisku and Buur, 2007) as well as know what to expect from the video. The last thing I mentioned in the final results chapter is the audio. Even though I did not consider it throughout my research as it was always with a decent quality it is important to record a good audio. Poor audio can make the viewers to shift their attention from the core message (Ylirisku and Buur, 2007). Audio was not a problem in my research as we were recorded the presentations mostly close to capture

the details currently presented. This allowed us to capture a perfectly good audio even though using a smartphone or a tablet.

The other thing I sought out to explore was how video influences participation and activities in collaborative work. I learned as well as stated by Buur, Binder and Brandt (2000) that video is a highly participatory medium, as it requires the researchers, users and company stakeholders to get engaged when making sense of video material as well as conducting video. Jordan and Henderson (1995) talk in regards interaction analysis that video analysis does not require people with special skills, which was the case in my research making it also appropriate for ongoing working processes.

Through collaborative viewing and conducting videos the workshop participants were also able to build a shared understanding of the information (Buur and Soendergaard, 2000) still keeping individual perspectives. Video allowed the participants also to create a shared reference point as the “Phil the Windows Washer” and “Box Bike” and activities leading to these videos were referenced to in many occasions in the research.

Two interesting things I learned were firstly that video can provoke performance. This came to attention as some of the groups for example “Daily Transitions” and “Biking 4 Occasions” rehearsed their presentations to construct a compelling story. Secondly, I learnt that by co-authoring a story both of the authors gain credibility and influence regarding the business situation (Johnston, 2003). I learned about it through feedback received from the project leader.

A challenge with video is that explaining it and its benefits is often times difficult. This came to my attention, as I was able to fully focus my research only when conducting the video analysis and literature research at the end of the research process. Before the video analysis, I did not have a clear understanding of the value video withholds in a collaborative process even though I was able to plan and shoot the video summaries. Another challenge with the video is that the activities leading to video determine how rich, condensed and immersive the video recording will be, so conducting a video has to be planned at least to some amount.

I believe that a possible shortcoming of my research results generally is the lack of collaboration during the video analysis as I chose and analyzed the video material individually. Moore and Buur (2005) argue that bringing people with different backgrounds together to make sense of video material can lead to richer understandings of the video as well as new understandings of the design problem. Therefore my results are allowed a strong bias towards my interpretation of what is important and can be considered arguable.

## 7.3 Future work

My research focused on conducting and using video in collaborative design process. It was carried out in face-to-face activities with researchers, designers, users and company stakeholders. Therefore it would be interesting to explore how the results could be applied to other kind of setups such as business meetings or educational work just to name a few. It would be also interesting to study the use of video in remote collaboration between researchers, designers and users. For example, teams sharing meeting summarize or concept videos and evaluating videos from others or conducting user studies by having users conduct and submit their stories on video.

# 8 Conclusion

This master's thesis research was carried out within the "Open Innovation and Lead Users" project in Interactive Institute, together with Veryday and an undisclosed international retailer. Through many collaborative activities with researchers, designers, users and company stakeholders, I investigated a particular way of conducting video and how it can determine the way activities of the design process are organized. The research question is: "use of video in collaborative work- is it documenting what is taking place or does it influence how people act?" In order to answer this question I have explored how video can be integrated into ongoing time constrained work process, being a natural part of the activities and not an activity in itself.

As a result of reflecting back on the collaborative activities and analyzing the videos generated in these activities, I propose a list of aspects to consider when conducting and using video in time constrained collaborative design processes. I also explain some observations made on how video can influence workshop participants and describe advantages and disadvantages with making and using video in collaborative work that came about when conducting the research.

By conducting and using video in a multitude of collaborative activities I have come to understanding that video is not only suitable for documenting activities or communicating information in a rich and compelling, way but it also enhances collaboration as it tends to provoke performance. Also that video technique can be integrated into on-going work process without turning it into an activity in itself by keeping in mind certain "rules" when conducting video.

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