A Mobile Video Streaming Application - user centered conceptualization and development

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Abstract

This master thesis looks at the mobile video streaming applications of today and evaluates these. The findings after this evaluation, user studies and a conceptualization method are used to create a thought-through concept. The resulting concept uses predefined tag pairs with the character of being opposite feelings (cool–lame, cute–ugly), rather than the classical content tags (car, dog, cat). The producer chooses one tag that he believes the video conveys and then viewers can select their own tags. They can agree on the same tag, disagree by choosing the opposite tag in the tag pair or select a tag in one of the other tag pairs. The tags within the tag pair (agree/disagree) are collected and displayed in a horizontal list in connection to the videos. Viewers see the producer tag and a ratio on how well other viewers have agreed on this tag.

The concept and its UI were evaluated in three steps – an expert evaluation, a silent brainstorming and a focus group. This resulted in several findings. Firstly, conveying feelings is hard both because video is a lossy media and because people can react differently on the same content. Secondly, video is a private media and user studies showed that users want to have full control over who the viewers are. A third finding was that predefined tags restricted the creativity of the users, but the way of having two opposites to be able to agree or disagree motivated producers and viewers to use the application.

The findings resulted in some potential improvements for the concept. The first improvement would be to have different groups in the application, which means that the producer can choose which viewers that are allowed to access his material. Another improvement would be to have predefined tag pairs in every group, but with a possibility for the users to create new tag pairs.
Sammanfattning


Konceptet och dess användargränssnitt utvärderades i tre steg – expertutvärdering, tyst brainstorming och fokusgruppsession. Utvärderingen resulterade i ett flertal viktiga slutsatser. För det första, att återspeglas känslor är svårt eftersom videokvaliteten är låg vilket innebär att information går förlorad, dessutom kan användare reagera olika på samma video. För det andra, video är ett privat medium och användarstudierna visade att användarna vill ha full kontroll över vem som tittar. En tredje upptäckt var att fördefinierade taggar begränsade användarnas kreativitet, men att ha två motsatsord för att förmedla att man håller med eller inte motiverade användarna att nyttja applikationen.

Resultatet kunde användas för att komma fram till potentiella förbättringsförslag på konceptet. Inledningsvis vore det intressant att tillämpa användargrupper i konceptet. På så sätt kan en användare som ska spela in video välja en grupp som ska ha tillgång till hans video. Ytterligare en förbättring skulle vara att ha fördefinierade taggar i varje grupp, men att användarna ska ha en möjlighet att lägga till egna tag-par.
Preface

This master thesis is made at Lund Institute of Science (LTH)\(^1\) in collaboration with the Malmö based company TAT\(^2\). We would like to thank our main supervisor at the design institution at LTH, Joakim Eriksson, that helped us with practical questions about the master thesis process and report work. He also helped us in user test related questions. At TAT we would like to thank our advisor, Minna Gedin, she helped us during conceptualization methods and UI discussions. Overall we had a lot of help from TAT. They offered resources to us that facilitated the conduct of user studies and implementation. They also gave a lot of important input on the concepts.

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\(^{1}\) http://www.lth.se
\(^{2}\) http://www.tat.se/
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1 Introduction

We are in the middle of a technology era where ways of communication are expanding rapidly. If you were to remind yourself about the mobile industry just ten years ago, you might be lucky if you had even tried out a phone. Today it is in every man's pocket. It is a personal portal to your friends, and the world for that matter, and you might find yourself having a hard time remembering what it really meant to be without it. And the mobile market is not the only area where things change rapidly. Fifteen years ago Internet started to make its way to the home of regular people\(^3\). This is something, in similarity with mobile phones, that most of us take for granted today. So what has been the focus the last five years, and will be in focus the next five years? Well, the last five years there have been a market focusing on instant media. The upload and download speed of all kind of information is increasing and so are also our demands on it. We want to communicate and we are very impatient about it.

This master thesis will handle mobile video streaming as a new communication tool. The information channel is as close to instant as possible which opens up to a lot of communication opportunities. Indications such as high demands on instant information and video streaming applications popping up suggest that mobile video streaming might be the next big thing.

1.1 Initiator

The thesis was carried out at TAT TENK (The Astonishing Tribe, research department) which is a company that develops mobile user interfaces. As they are in the leading edge of new communication techniques, especially oriented towards the mobile phone industry, they have observed several applications implementing mobile video streaming. In order to stay at the leading edge of the market they saw the need to study these upcoming techniques.

1.2 Our mission

1.2.1 Aim

TAT finds it easier to study new ways to communicate if a concrete concept is implemented. Therefore an important step of the process was to find a thought-through concept to do user studies on. As we both have a technical education we had the opportunity to make a working prototype to do the studies on.

1.2.2 Mobile focus

As this master thesis was carried out a similar master thesis was carried out in parallel by Jenny Håkansson[1]. That master thesis also focused on mobile video streaming and many of our studies were done together. However that master thesis had an objective to

look at producer/receiver relationship and used a computer as receiver of the video stream. In our report the focus is on video streaming with a mobile phone as both producer and receiver. To try to get a wide picture of the mobile video streaming area we will use Håkansson’s[1] findings but try to extract what kind of possibilities it brings when receiver side is mobile.

1.3 Objective

This master thesis report will look at the concept development of a video streaming prototype and how video streaming in general can be used in new ways for the mobile phone. The prototype will be described, mainly the underlying concept but also the importance of a good UI. We will perform different types of user studies to evaluate the prototype, and study the advantages and disadvantages of having both the recording and viewing of streamed videos on the same platform; the mobile phone. We will also look at what the aspect of tags can add to a video streaming application, and study what tags can be used for and what kind of tags are interesting to work with.
2 The field of technology of today

When implementing new concepts it is important to study the market first. Mainly because there are lessons to learn by looking at other applications. One can learn from why a specific application succeeds to take market shares. One can also look at what kind of disadvantages make the growth of an application stagnate. In this chapter we will cover the most relevant video applications at the market today and try to analyze their competitive advantages and disadvantages.

2.1 YouTube

With 100 millions views a day, YouTube is an important actor on the area of user generated video content[2]. YouTube was officially launched in November 2005 and grew rapidly. Just 7 months later, July 2006, YouTube announced that over 65000 videos were published every day. So what made YouTube such an instant success?

Firstly, there were few video applications on the market that was directed towards ordinary computer users. YouTube was easy to use and it took minutes to share a video with the world. Secondly it was free which made the decision to try it out easier. Another important issue with YouTube is that viewers can rate the videos, which both motivate the recorders to make better videos and give the viewers an opportunity to filter good videos from bad ones.

A restriction with YouTube is that it is highly adapted to computer usage. A mobile version of YouTube exists, but a lot of the content on YouTube requires good video and audio quality, which means that mobile viewers can't embrace the video content. Another restriction with YouTube is that the ratings do not reflect content. This is something that might be of small importance if all videos have a good title and description as a lot of the content on YouTube has, but as we focus on live videos in this master thesis some kind of system to reflect the content of a video might be needed.

2.2 Bambuser

Bambuser is a Swedish mobile video streaming application. Bambuser uses the open source solution Movino, in similarity with our prototype. Bambuser is free and consists of two parts – a mobile phone application that is used to record content and a web site where users can look at recorded videos. The video player used at the website can also be embedded in other websites. The approach for Bambuser is to let the users decide what they want to use it for. At page one, live videos are emphasized, but one can also choose

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4 http://www.youtube.com, 2009-02-26
6 http://bambuser.com, 2009-02-26
7 http://movino.org, 2009-02-26
to see the most viewed videos or search for upcoming events. A user can choose to broadcast spontaneously, broadcast on a specific event by documenting himself as broadcaster in advance, subscribe to specific broadcasts, view videos at random etc. Our impression is that this wide approach benefits mainly broadcasters as they don't have to define their video into any categories, which makes it easier to start broadcasting. The viewers on the other hand must either have a specific goal on the page (for example follow a broadcaster or an event) or browse between the videos at random. We tried out the role of a viewer browsing the videos and found the information to be relatively uninteresting. Many of the videos were broadcasters trying out the application which made us lose interest quite quickly.

During the implementation phase of our concept Bambuser supported mobile video streaming to the web but there was no solution for looking at the videos from a mobile handset. As of today such a solution has been implemented by the Bambuser team and broadcasts can be viewed on Symbian phones that support Flash Lite.

2.3 Competitive mobile video streaming applications

There are several other applications offering services like Bambuser does. Following Bambusers work was more relevant as we used the same open source solution as them. However there are especially three services that battle over the dominance in the mobile video streaming world – Qik, Flixwagon and Kyte.tv. They all offer users to broadcast and view for free.

There are some differences between the services in terms of how they present text feedback in the recorder screen during broadcasts. In the previously presented application Bambuser the last sent feedback is presented as a regular pop-up and therefore blocking the view of the video, compared to Qik which shows it transparently, and Flixwagon which has a text box below the video. Kyte.tv has a chat room for every broadcast.

Although Qik has the most visitors today, approximately 170000 per day and constantly increasing indications, as we will see below, have shown that the competitor Kyte.tv has some important competitive advantages.

The first indication is that the funding for Kyte.tv exceeds 23 million dollars, compared with 4 and 1 million for Qik and Flixwagon respectively. In an article by the American blogger and technical evangelist Robert Scoble it is said that kyte.tv also have other advantages that will make them dominant on the market. Scoble is a frequent video blogger and have tried out several services, including the three discussed.

Other than that the video player for Kyte.tv is faster and more consistent Scoble sees the most important advantages on the mobile phone side. One of the first advantages that he

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8 http://www.qik.com, 2009-02-26
9 http://www.flixwagon.com, 2009-02-26
10 http://www.kyte.tv, 2009-02-26
11 http://www.crunchbase.com/company/qik, 2009-02-26
brings up is the possibility to participate in chat room discussion over the phone. He also prefers the possibility to make not only text comments but video and audio comments as well, the third one being favorable by Scoble. A third important advantage is that Kyte.tv was an early adopter of mobile viewers.

The most important advantage for kyte.tv, which all the other advantages probably depend on, is that it is partially funded by Nokia, which means that they, with great probability, will get more mobile phone support than the competitors.

We have studied Qik, Flixwagon and kyte.tv ourselves as well. However, as Scoble being a user that has more insight in these services and has unstaged experience of using them, we find his opinion of high importance and we do agree on the point that the support for mobile phone viewers could be a huge advantage.

So how important will the advantages of kyte.tv be? Well that depends on how the support of mobile viewers will be received. We sum up our findings concerning mobile viewers in chapter 5.5. One thing is sure though, if mobile viewers turns out to be important kyte.tv will have a huge advantage, as they have had the privilege of observing and implementing towards this market for a longer time than its competitors.
3 Concept work

This chapter will handle the concept work. The methods used during the concept development process and the actual concepts they gave rise to along the way will be described in detail. Along with user findings they led to the final prototype, Catch The Vibe, which we will explain both concept wise and UI wise.

3.1 Methods and material

3.1.1 TAT TENK conceptualization method

The goal is to come up with one strong solid concept. This is done by making lots of concepts and then screen the bad ones out by keeping the good characteristics from the different concepts and discarding the bad ones.

For a start you make five to ten concepts. They can be rough and stupid, but they should be as different from each other as possible. It is better to make many rather than few. Each concept should have a title, tagline, sketch and a short description.

When the initial concepts are done you need some feedback on them. Show them to people and let them give you input. Usually it is good if you can get the feedback in written form so that you don't forget anything.

With this feedback the five to ten concepts are then reevaluated. Try to find out which characteristics could be extracted from each one of them. With help of the results three new concepts are made.

The final concept is picked from the three mentioned above. Some adjustments and improvements may have to be done to further develop the concept.

3.1.1.1 Seed meeting

TAT TENK conceptualization method starts with a seed meeting. The meeting functions as a brainstorming where many ideas are supposed to come up and be discussed. Bad ideas are filtered out and good ones are taken care of. The seed meeting is also meant to create a common ground for everyone involved in the project. There are three keywords to consider:

- *What* is this product or service?
- *Why* would anyone be interested in using this product or service?
- *Who* would be interested in using the product or service?

3.1.1.2 Personas

A persona is a made up character that represents a part of the potential user group for the software application[4]. Usually you create a set of personas and together they represent
the targeted user group for the system to be developed. The concept was developed by Alan Cooper who thought that referring to "the user" was too vague. The designers and developers couldn't really know who the users were and what they actually wanted. By describing the personas personality and current situation they are made more alive. The personas are presented in Appendix B.

3.1.1.3 Core values on axises

Core values are exactly what they state to be: the essence of what we want the prototype to be. Each core value is defined by an axis with a pair of words as extremes. The two words are supposed to be each others opposites, for example permanent–temporary. The core value is somewhere on the axis between the extremes. Usually between five and ten pairs of words are picked to make the core value chart as describing as possible.

Making core values is a way of thinking about what you want the prototype you're developing to be like. Usually you have a vague idea, but it is not until you try to print it on paper that you realize that some things may be unclear. Once they are printed it's easier to keep focus on what's important for the prototype. If ever in doubt whether to implement a feature or not, have a look at the core values.

Core values serve as a platform for the involved to agree on common goals and gather them together for future work. This is an advantage that is more important when working in teams rather than individually. It is also useful to introduce the core values to people that are partially involved so that they can embrace the key issues.

3.1.2 Focus group

A focus group is an effective way to get information from potential users, especially when the subject is wide, and needs to be restricted in some direction. When performing a focus group a group of 6–10 persons is gathered. Usually the group members are selected so that the whole group represents as many different user groups within the target group as possible, with the exception of subjects which have a well defined target group from the beginning.

A focus group meeting will take one to two hours and is lead by a moderator. The task of the moderator is to present the subject and start the discussion. Then his main task is to make sure that the group sticks to the subject and to make sure the discussion is kept on areas that are of interest. The moderator should not reveal his own thoughts due to the fact that it can alter the direction of the discussion[5].

3.1.3 Silent brainstorming

One way to get a lot of ideas from different people without having them influenced by
each other is to have a silent brainstorming. What is done is that a subject is presented and the people brainstorming put their ideas on notes without talking to each other.\textsuperscript{12}

3.1.4 Expert Evaluation

A way that is both cheap and time efficient is to evaluate an interface by letting user experts evaluate it to find flaws and improvement issues. A disadvantage with the method is that it is less complete than classical user testing and there might be a risk that important errors are missed. Although, as the purpose of this application was to have a tool to make communication studies on, not the perfect user interface, the time aspect was prioritized over the correctness in the UI\textsuperscript{[5]}.

3.1.5 User testing

During development of the project sketches of the UI were made. These were evaluated in \textit{sprints}(chapter 4.1.1) by coworkers at TAT that had interaction knowledge. When our prototype was finished it was evaluated. The user testing consisted of three different parts. All of the parts were made on members of RGRA (Rörelsen Gatans Röst och Ansiktet)\textsuperscript{13}, a group of young people with an aim to reflect their situation in the suburb of Malmö.

3.2 Catch the vibe – an application

As mentioned in the objective (chapter 1.3) a mobile video streaming prototype was implemented as a platform for studies. This concept was shaped during TAT TENK conceptualization method, and is presented in this chapter. The complete results of the conceptualization method are clarified in chapter 3.3.1.

3.2.1 Key issues

There were four key issues to focus on, extracted from user studies and looking at the field today.

3.2.1.1 New concept

"You have to make it unique, otherwise it will be boring."

"You have to create a niche, otherwise it will be YouTube."

Coworker, TAT. Man, 27.

An issue that often came up during discussions was that "YouTube can do this". As the field of user generated video is dominated by YouTube today (chapter 2.1) it is important

\textsuperscript{12} http://www.attitudeworks.com.au/AW_pages/resources/tools/005/T005_060614_brainstorm.html, 2009-03-02

\textsuperscript{13} http://www.rgra.se, 2009-02-22
to find a concept where users have a motivation to use our application instead of YouTube.

3.2.1.2 Relationship between producer and consumer

As thoroughly discussed by Håkansson a relationship between producer and receiver is needed. The main reason for this is that it is more interesting to both produce and view if you know something about the user on the other side [1].

3.2.1.3 Sort out crap

As handled in the section The field of technology of today (chapter 2) there were some lessons to learn from the video streaming services where the producer used a mobile phone to record. The most obvious one was that a lot of videos were users trying out the application i.e. no specific content to share with the viewers. Therefore we believe that it is essential to have a way to sort out uninteresting videos.

3.2.1.4 Motivation to record and view

In every application that involves users, independent of context, they need a motivation to use the application. This will influence all concept work so that both recorders and viewers have a motivation to use our application.

3.2.2 The concept

The essence of Catch the vibe is to extract the sensation of a specific location. This is possible due to a mobile platform and makes the aspect live even more important. Looking at our key issues this will indeed fit as a new concept and a new communication way. Our theory is that the recorders have a natural motivation to share his or her environment if something interesting is happening. To have a motivation to view is of great importance. One solution to this problem is to have a good way to sort out uninteresting videos. In CTV this is handled by a rating system using tags. The producer will get to choose, between some predefined tags, the vibe of the situation. Then viewers can themselves choose a tag that they believe the video conveys. By using tags that are opposites of each other, such as happy–sad, they can also choose to agree or disagree with the recorder of the video. These tags will result in a possibility to share thoughts for both producers and viewers. The viewers can also use these tags to extract a context for example if a viewer is interested in happy videos exclusively. He or she can also choose videos where the producer has conveyed the vibe with success, i.e. recent viewers have agreed on the producer tag.
3.2.3 UI

To get realistic findings on how our concept would be used a working prototype was implemented. This prototype is an extension to the open source solution Movino. This open source solution made it possible to stream video in real-time from a mobile phone to viewers on computer. To open up to viewers using mobile phones the videos were added to a streaming service that allows the user to stream the video to a mobile phone. The implementation and technical parts will be handled in the section Implementation of a concept (chapter 4).

The user interface screens of this concept were developed according to two criteria – to have something that is easily understandable up and running and to have something that was realistic to implement.

Resulting from a mobile platform on both producer and viewer side all tasks can be performed on the same platform, in contrast to the majority of the existing video streaming applications on the market. This will make the user aware of that he can both produce and view information and it will be more likely that he will try both of the user tasks out. Another theory is that the user can record more interesting information because he has tried out the viewer perspective.

3.2.3.1 Screens

The first thing the user has to do when he is entering the UI is to choose whether he wants to record or view (Figure 2).

![Figure 2: The main menu of the application.](image)
In this case the user wants to record something. He selects `record` and will be sent to a screen where the camera is activated and shows the environment (Figure 3, picture 1). The user now gets a moment to consider what to film and in what direction to point the camera. When he is ready, he presses the left soft key, a connection will be established (Figure 3, picture 2) and he will go live (Figure 3, picture 3). He records the video and when he is satisfied with his material, he presses `done`. Now he has to select a tag (Figure 3, picture 4) that will reflect the content of the video and confirm it (Figure 3, picture 5).

When designing the UI we discussed if the tag should be entered before the recorder goes live. The advantage with placing tag selection before is that we do not risk getting videos without tags in the database. Another important advantage is that the user might be more motivated to try to convey his chosen tag when filming. Our hypothesis is extracted from a proved theory about how people urge to realize their written commitments[6]. The third and most important advantage is that it is a prerequisite to save the tag before recording if the video will be sent live to viewers. The drawbacks with having to choose tags before filming is that the user might change his mind during filming, and it is a lot easier to sum up content after the content is gathered. Another drawback is that the content that the recorder had in mind could be elusive, it is therefore of great importance that the recording can start as quickly as possible. There is more time to think of tags after the video is made.

In this version the technical part didn't allow us to stream the video from producer to viewer. The video had to be completed before it could be streamed to viewers. The argument with having the tag before streaming so that tag information could reach the
viewer during recording became quite irrelevant due to this. Therefore we found it more important to have a short time to have a video link up and running than the advantages of having tags before video recording.

3.2.3.1.2 View

In this case this user chooses to view videos that others have recorded. He selects View. Now he is presented with a horizontal list of all videos where every video is represented by a man in color coding (Figure 5, picture 2). These colors depend on what tag the producer have selected. The color coding and the initial tags are as following (Figure 4).

![Tag selection buttons.](image)

Figure 4: Tag selection buttons.

The man is also more or less filled with this color, depending on how well viewers have agreed on this tag. Say that the producer has chosen the tag cute and four have agreed with him on this, but 12 have disagreed and tagged it ugly. Then the video is 25% cute and the man representing the video will be 25% filled with the color that stands for cute.

![Viewing a video and its stats](image)

Figure 5: Viewing a video and its stats

Our user has found a video that he wants to view. He centers the man that represent a video that is cool and selects it by pressing Watch.

In contrast to the producer the viewers can choose more than one tag. He selects them by centering the tag pair and presses up or down depending on if he wants the positive or the negative tag (Figure 5, picture 3). When a tag is selected it is showed below the video in its corresponding color. A tag is removed by redoing the interaction that selected the tag i.e. select the tag once more. When the user is satisfied with his tag and has seen what he wanted in the video he presses done. He is now sent to a statistic screen (Figure 5, picture 4) where all tags are represented, not just how many have agreed or disagreed.
is satisfied with his choice he presses *done* and is sent back to the horizontal list of videos (Figure 5, picture 2) and can now select another video to view.

The third list object in figure 2 showing a file cabinet was meant to contain all videos recorded by the user, so that the user could go back and look at the tagging statistics, but this was never implemented.

3.2.3.2 UI consistency

Our goal throughout the interface is to be consistent[7]. For example if you find a shortcut to the main menu by pressing the right soft key and selects the second position in a list pop-up, you can expect that the shortcut is at the same position in another screen. The Symbian platform allowed usage of only two soft keys – left and right. The middle key did the same thing as the left soft key. The standard in the mobile phone industry today14 is to go forward (*Done, Confirm, Select*) in the UI with left soft key and backwards with right soft key. Due to that we needed more alternatives to pick, such as go to *Main menu* and *Exit* we had to prioritize one of them and turn the other one into options. To go forwards was prioritized not to restrict the flow in the interaction. The most common key event is in fact going forward in the interaction. Right soft key holds three options: *Back, Main menu, Exit.*

3.3 Results

3.3.1 Tat TENK conceptualization method

This section will describe the concepts we came up with and the steps taken to reduce the original eight concepts to one.

3.3.1.1 Five-to-ten concepts

This section will present the eight concepts and some feedback we got on them.

3.3.1.1.1 Location based videos

"See what's happening at your favorite location"

As a producer you are free to film almost anything and the videos are defined at the server as a location only. Consumer can then choose videos depending on what environment he wants to view. He can also send feedback to the producer. If he can't find his favorite location, he can request a specific spot to film. If many have wished for the same location a notification can be sent to a phone that is nearby the requested spot. When a consumer has viewed a film he is asked to select between predefined taglines to put on the video. This application can be used for tourist information, exploration or news collection, for example.

This concept was well received and the concept that got the most and the most positive feedback. You can use it for a wide variety of things varying from checking the weather to getting a general feeling of what it's like on a certain spot at the moment. Someone thought everything should be saved and mixed together for a show of what has happened during the day.

Figure 6: Concept feedback for Location based videos.
"Catch me if you can!"

This is an exploring competition. A producer will start a game by filming his surroundings. Then consumers can choose to join the game and by looking at the produced video they can try to find out where the producer is. When a consumer has found out where the producer is he can go to try catch him. When the producer and the consumer are at the same location the consumer wins. Both Bluetooth and GPS could be used to detect when the consumer has found the producer. A challenge in this application is to get the producer to make a good game by filming a challenging environment, but not one that is impossible. This can be done by rating producers by their capacity to make good competitions.

The feedback on this was spread out. Some liked it a lot, some didn't like it at all. The ones that liked it said it would be fun and that they would use it themselves. For example someone thought it to be a great way of getting to know a city newly arrived in. However there are lots of things to think about when making games. There are many books written in the art of making games good and since this thesis isn't about that we decided not to go with this one.
Distance course is a known concept, but what these courses lack are the possibility to interact with the teacher during a lecture. This application will make it possible for students to ask questions during the lecture. The lecturer can also ask the students to vote on different things, such as "Have you understood this?" or "Do you want me to go deeper into this?".

This concept was perceived as strained by many people we showed it to. They felt it was forced into a mobile application when it would probably be better suited for a computer since it's not an "on the run behavior" as someone put it. Some parts of it were appreciated though. For example the feedback possibilities and the fact that the feedback was anonymous.

Figure 8: Concept feedback for Lecture on distance.
"I want to see the birds but I don't want to sit in the forest for hours"

In the bird watcher circles people try to find as many birds as possible. This means that they need to sit waiting for quite a while. This application is meant for those who don't want to visit the wild to see the birds. If a producer views a bird he inputs the name of the bird and films it. The video is then sent to a database where it is associated with the specific bird. A consumer can then go to the page and choose which bird he wants to see. When he has seen the bird, his "watched birds" list is updated with this bird.

This concept can be used for many different categories not only for birds. Examples are car spotting, celebrities and buildings. Some pointed out that it is a bit inhibiting in the way that it encourages people to stay home instead of going out experiencing the birds for real.

Figure 9: Concept feedback for Bird watcher.
"How lucky am I?"

Most people are in the same environment most of the time. To/from/at work and home being the most common. Sometimes you want to escape the daily routines and see something else. This application is a way of sharing your own personal favorite spots. It's also meant as a source of inspiration for others. There's functionality to rate other people's spots in different categories such as coolness, relaxing, fun and so on.

Some said this concept is killed by YouTube. They reason that you can just as well go to YouTube to see videos from different spots. What we need to keep in mind though is that the "Live aspect" could turn this around. For example an angle could be put on this concept by sending tips about what environments are available near you and thus might be possible to visit.

Figure 10: Concept feedback for Inspirational environments.
"Watch! He is making a fool out of himself!"

People love when someone else makes a fool of himself. In this application people can share their moments of fun watching funny people. At the server videos are listed according to incoming time. When a consumer wants to view some videos, he will receive the newest video from start. If he wants to find other videos he can leave this video by rating it. Then he can choose between watching another fresh video or select a video in a list according to what rating it has. For every video switch he will be obliged to rate the viewed video. The purpose of having to rate the newest video before looking on other videos is to have a way to cope with all incoming videos, so that live videos can be evaluated as early as possible.

Most felt this would be very funny to watch, however there are some things to consider. First it could turn out to be bullying. The one being filmed might not appreciate it very much and it would be hard to control that. Second it would be almost impossible to actually catch something funny while recording since the goofing isn't really planned.

Figure 11: Concept feedback for Goofy people.
"Categorized information"

One way to get fresh information about your interests is to subscribe to a subject and when a producer films something that has anything to do with your interest you get notified. If you want to, you can then see this video live. The producer categorizes his video before he starts to film.

There are tons of ways to get information readily available already. The difference here would be that it is live. There are very few, if any, times where you want this kind of information in real-time. You rather wait until you have time to spend. Therefore this concept is not useful.

Figure 12: Concept feedback for Updater.
"What are my friends doing right now?"

You can subscribe to certain users a.k.a. "friends". When a friend films anything you will get a notification and an opportunity to watch him right away on your mobile phone. As a user you can choose which friends you want to view, but you can also choose which friends that will be allowed to watch you. This application could be integrated as an application in Facebook\textsuperscript{15} where friends can be selected in friends list.

The fact that you're more interested in your friends than in strangers made this concept more intriguing than others. It's great that you can request someone to start recording. This can be used as a way of not being alone. You ask your friend to record and he doesn't have to record actively. He just put his phone by his side and you have some sort of virtual peripheral presence.

\textsuperscript{15} http://www.facebook.com, 2009-03-03
3.3.1.2 Three concepts

We got the most positive feedback on the first concept, *Location based videos*. Therefore we decided to go further with that concept and develop three new variations. We also took some of the features from the other concepts, for example rating from *Inspirational environment* and the friend aspect from *Keep track of your friends*.

3.3.1.2.1 360°

The viewer can see all the active users as dots on a map. Everyone that is running the application on their mobile phone is an active user. By clicking on one of the dots the viewer sends a request to the corresponding user. That user picks up his phone and starts recording while turning 360 degrees. When he has turned 360 degrees he stops recording and continue with whatever he was doing. This application is very focused on location. The content is not really that interesting, it could be that all you see is an empty parking lot. However the concept is that it would be some kind of a peek hole to the rest of the world. If there is someone using the application you can see what he sees, wherever he is.

This concept has its interesting aspects, for example that fact that the viewer gets exactly what he asks for. It's very defined what will happen when you request someone to record. It's also quite effortless for the recorder. It only takes seconds to turn 360 degrees. The disadvantage however is that the recorders don't have a reason to run the application. The only reason would be that you add geographic coverage for the potential viewers by using the application. It would also probably quickly get annoying if you get a couple of requests a day. After a while the producers might ignore requests or not even run the application. It would be very frustrating for the viewer to request someone to film, but not get any response.

3.3.1.2.2 Friends

This is development of the previously explained concept *Keep track of your friends*. As with 360° the user is presented with a map with dots representing other users. The difference is that the dots symbolize people the viewer knows. The dots can be either red or white. The red ones are users already recording and the white ones are ready to receive a request to start filming. If you highlight a red dot you see a thumbnail of the video clip and you also see who's watching at the moment.

The producer either starts filming because he got a request to do so, or because he wants to share what he's doing with his friends. When you start recording you can choose to send a notification to your friends so they know you're doing something you want to share. You also set a tag that describes what you're doing.

This is similar to 360° in the sense that you can send requests for users to start recording. Since you're more interested in your friends the users will hopefully not be annoyed when getting requests, and they will receive less requests since less people will be able to send them.
3.3.1.2.3 Catch the vibe

In this concept, in similarity with the previously mentioned concepts, videos are presented on a map as dots. The main difference from the other two is that the recorder is supposed to try to convey the vibe at the place he is. The producers tag the video with a feeling and the viewers get the chance to tag the video themselves. Also the recorder would be able to see how many are viewing what he records at the moment. Thus establishing some kind of link between the producer and consumer. The dots would be intense when they're representing live content. When the producer stops recording the dot would remain visible but with time it would fade away and be totally gone within an hour or two. This would make the application more living and would give a more accurate indication about the current vibe at the location.

3.3.1.3 The final concept

We chose to go further with the third concept of the three above. The tagging aspect and the removal of the request system were the main reasons. We also liked the idea with the fading dots. However, due to mainly technical and time issues our final prototype didn't include the map with the dots. The final concept is introduced in as a whole in Catch the vibe – an application (chapter 3.2).

3.3.1.4 Core values on axises

These are the core values we made. They reflect our original vision of the concept. When we implemented the concept some of these core values suffered and that will be discussed later in this section.

Fact–Emotion
What's supposed to be communicated through the application.

Anonymous–Social
If the users should be anonymous or if the application should promote social networking.

Permanent–Temporary
Whether or not the videos should remain to be viewed at a later point or be deleted after a while.

Playback–Live
If the users should be able to see the content live or if it should be playback.

Everyday event–Spectacular event
What's supposed to be recorded with the application.

I'm unique–Everybody has it
If the application should be available for anyone or if it should be exclusive luxury.
We wanted the broadcasts to describe the vibe at a location rather than to have a concrete content like *soccer game*. The users were to be anonymous, without user names, friend lists or any other way to keep track of specific users. The video should be about the emotion it tries to convey, not about who recorded it. As described earlier we wanted the application to host live material and videos that would fade away with time. This was to enforce the videos to describe the vibe at the specific locations at the moment someone was watching, not what it was like in the past.

![Figure 14: The original core values.](image)

The actual core values (Figure 15) reflect what the application turned out to be rather than what we wanted it to be from the beginning, which the original core values show (Figure 14).

There are three axes that have changed: Anonymous–social, permanent–temporary and playback–live. Anonymous–social because we realized it is pretty obvious that some videos can reveal who it was that recorded them. However it didn't change much due to the fact that even though it is possible to figure out who the author of a video is it is not possible to search for specific users. To find them you would have to look through every video and hope for a match. The other two were both changed due to technical difficulties. We never managed to get the video streaming to be live so we had to change these core values.

![Figure 15: The actual core values.](image)
3.3.2 User findings

In this chapter the results from the user studies will be described. We performed a focus group, a silent brainstorming, an expert evaluation and some mixed user test with four members of the RGRA network.

3.3.2.1 Focus Group

The focus group consisted of six members. Four were selected amongst friends that had a genuine interest in the mobile phone industry. They are civil engineers in the age span 24–27. This choice of users was selected so that we could get opinions from people at the front edge of the market, as they have been introduced to new concepts previously and therefore are more prepared to new ways to communicate. The two remaining focus group members were selected to have some kind of reference value from a group of users that are not as technically informed, so that the front edge users don't give us opinions that are far too different from other users. The two selected were artists in the age span 45–50.

The focus group session consisted of five phases:

- Get to know the group and their relationship to mobile phones.
- Discuss the group members’ relationship to video applications (i.e. YouTube, WebTV, video conversations etc.)
- A free discussion around the applications that was brought up in phase 2. What are advantages/disadvantages with these? How do they use feedback?
- Discussion around the subject mobile video streaming. A very loose scenario around the subject is presented and the group gets to share their views on it.
- Three more specific concepts are introduced and discussed. The concepts are: *bird watcher* (chapter 3.3.1.1.4), *location based videos* (chapter 3.3.1.1.1) and *hide and seek* (chapter 3.3.1.1.2).

The complete instructions and the focus group answers for phase 4-5 are presented in Appendix C.

The results of this focus group were quite surprising as we had gotten some misconceptions when looking at motivation to record. When we studied the mobile video streaming applications of today we discovered that the videos on the page were accessible to all visitors, and the recorders seemed to be fine with this. The tendencies of the group, however, showed early in the discussion that sending video is a sensitive matter. They felt that it is essential to have some kind of control over who the viewers are.

When looking at the three different concepts introduced, the group had different favorites. However they selected between number one, *Bird watcher* and two, *Location bases videos*. *Bird watcher* as an application to watch bird was received as irrelevant because the people interested in bird would most probably appreciate the viewing
environment as well as the birds, which means that they would not want to see it via a video channel. The ones that are interested in viewing the bird, but don't want to visit its habitat could use YouTube to see videos of the bird. The live aspect was not important enough.

The ones that believed in Bird Watcher were not interested in birds, but they extracted the possibility to know something about the video, and who's filming. They could find themselves in the situation where they wondered what their friends were doing, and then use this video channel to find out. The ones interested in Location based videos like the map concept and saw the opportunity to know something about a destination they had, a finding that led to 360° (chapter 3.3.1.2.1). For example if they wanted to visit the beach they could request a recording from a user that is at the beach at the time. However, they showed little interest in responding to a request, which would be a prerequisite to make this work. One group member liked the first two concepts equally much but saw them both as ways to find videos, as a search function.

Although we presented several different concepts the group tended to go back to a concept of broadcasters as TV-channels. With an aim for viewers to zap between channels, not so much focusing on one channel. Overall, the focus group was very centered on viewing the material, not recording, and when asked about recording specifically they answered reluctantly but changed the subject back to viewer side quite rapidly.

As a focus group conductor one should ask oneself if the focus group people didn't reflect the opinion of users due to a very consistent point of view in the group. However, even though it is suspected that the front edge users have similar views, their views were also quite similar to the group members that were artists. We found it relevant to continue to be observant in the matter of privacy.

3.3.2.2 Silent brainstorming

We had the opportunity to get a large group of approximately 20 people to share their thoughts. The silent brainstorming was carried out in conjunction to the presentation of Håkanssons master thesis and therefore the group had just been presented with the subject. We wanted to get peoples unclouded thoughts about how to use CVT and therefore we requested thoughts on what to record and view and what kind of attributes they wanted to use. The most obvious conclusion after gathering the answers was that there were a lot of different contexts that they wanted to use it in. It was also hard to find any consistency amongst the tags, which made it hard for us to select any of these for further studies. The complete results are presented in Appendix E.

3.3.2.3 Expert evaluation

In this project a simple evaluation was carried out where interaction specialists from the institution of interaction, K3, Malmö Högskola\(^\text{16}\), shared many useful comments on the

\(^{16}\) http://www.mah.se/default.aspx, 2009-03-03
interface. The specialists had been introduced to the concept in advance and focused on interaction and how clear the conceptual model was. They tried out the interface while we monitored the system and made video updates while documenting their comments.

This session resulted in quite a few improvement issues. Due to time constraints we had to prioritize which flaws to fix in terms of how annoying they would be to the end user and in terms of how much time it would take to fix. All of the comments and improvements we made are documented in Appendix F.

As previously defined the purpose was to evaluate the representation of the conceptual model. The most important issue here was the way the user interface represented the different videos. As of today videos are represented as men in a horizontal list and the men are color coded according to what tag the producer has selected. The man is also more or less filled with this color coding depending on how well the viewers agree on this tag. The interface specialists had two comments about this. The first was that it was a bit unclear that a man represented a video. It could be misinterpreted that the men represented different users. The second comment was that the user would most probably want to see how he affects the video representation. In the current version this is presented in the stats screen, but if a user has selected another pair of attributes than the producer chose, there will be no change on the screen with the list on videos. This will be frustrating to the user. To fix this problem the specialists recommended another representation of the videos. For example deleting the man representation and have a representation with all the different tags involved. This is further discussed in chapter 5.6.2.

3.3.2.4 User tests with RGRA

The user tests were carried out in parallel with Musikhjälpen, a charity event with musical influences[8]. As K3 cooperated with RGRA it was an opportunity to meet a group of teenagers that had tried out several of the mobile video streaming applications of today. In similarity with the majority of the initial focus group these teenagers are front edge mobile phone users, but with an important advantage that they are quite different from the focus group in terms of background and living environment, which means an opportunity to screen our user findings in a different user group.

The first step of the user test was to try out the recording process. We asked people from RGRA to try out our application and record some videos. After the recording process they were asked to fill out a short form so that we got some ideas about their relationship to video applications in general and how they selected their tag.

We also recorded some videos ourselves to have a database of videos to use in our focus group, which consisted of four young men from RGRA.
The focus group session consisted of three parts:

- Concept introduction and UI walk-through
- Application try-out with viewer focus
- Discussion

The complete instructions and transcripts can be found in Appendix D.

This focus group talked a lot about different tags. They stated that there were too few tags to choose from. They had many suggestions for single tags, but had a hard time coming up with opposite pairs. They also believed that different sets of tags were needed for different users. 16 year olds would need different tags from 13 year olds and so on. They wondered about who the target group was because they felt it was too wide to aim the application towards everyone.

After some discussion they realized that there should be some kind of identity to the application. They wanted to be able to see who had recorded the material and perhaps be able to only show videos from their added friends and such. Perhaps it would be possible to create and join various networks. For example RGRA could be a network and they could use it to record a variety of things, including interviews, during various events. The networks would also allow them to screen some users out and to only allow their friends to be able to see some videos that might be more private than others. The usage of groups would also fit the demands the original focus group had on the application (chapter 3.3.2.1), since it offers full control over who can access the videos.

They liked the idea about tagging with single emotions instead of writing long comments down. They compared it to YouTube and said that they rarely have the time or energy to read the comments even if they would like to know what was being pointed out in them.

If the applications would exist on the market and they had it in their phone they thought that they would probably use it most when they had some spare time in between other things. For example during a bus ride or when on a boring lecture. It would probably not be something you’d do when you had lots of free time to start something else up. Also in its current state they felt the application was too unstable and slow.
4 Implementation of a concept

This section will handle implementation of Catch the vibe. If you are not interested in this part you can go to the next section without missing any concept ideas.

4.1 Methods and material

4.1.1 Scrum

During both software implementation and concept development we used some parts of a method called scrum\(^{17}\). Scrum is an iterative incremental method used in agile development. Each increment is developed during a sprint. The sprints are usually 15–30 days, but our sprints were a little shorter, usually five to ten days. The work to be done is broken down in tasks and subtasks. These tasks are then time estimated and assigned to a project member.

The idea is to focus on one specific thing for a short period of time to get something working done.

The ones involved in the project are called pigs (because they have their bacon on the line). Others that might be interested but not involved in the project are called chickens. Every day there is a short meeting knows as the daily scrum. The meeting should be 15 minutes at most and preferably be held with everyone standing up to keep it short. At the meeting you discuss three things:

- What you have done since yesterday
- What you will do today and
- What, if anything, is blocking you.

Anyone may attend these meetings, but only the pigs may speak.

After each sprint there is usually a sprint review meeting to discuss what went well and what could be done to improve next sprint.

4.1.2 Development environment

4.1.2.1 Platform

A prerequisite for this project was to use the mobile operating system S60 as the handsets that were available used this. The handsets in this project were N82 and N95 but the application should work on comparable handsets.

\(^{17}\) http://en.wikipedia.org/wiki/Scrum_(development), 2009-03-03
4.1.2.2 Movino

Due to the fact that focus is on concept findings and user studies to find new communication methods, the development could not be time consuming. As there is an open source solution called Movino\textsuperscript{18} which handles recording video and streaming it to the web we chose to extend this. The implementation is made in Symbian C++.

4.1.2.3 Linux server

A server connection was established at TAT to handle videos and related information. The server has the operating system Linux as the Movino server implementation only worked for this platform. Server classes are implemented in C++ and video information is stored in a \textit{mysql} database.

4.1.2.4 Darwin Streaming Server

DSS\textsuperscript{19} is a open sourced RTP (Real-Time Transport Protocol) / RTSP (Real Time Streaming Protocol) streaming server developed by Apple.

4.1.2.5 Implementation tools

When implementing the client application (i.e. application on the mobile handsets) the software development tool Carbide.c++ was used as this is created by Nokia and customized for Symbian OS development. Versioning in client work is handled by the subversion client TortoiseSVN.

When handling server implementation, versioning was made by fetching the file to change from the server through ftp via Filezilla, modify it in Microsoft Visual Studio and superpose the modified file on the server. Then the code was compiled with G++.

4.2 Results

The extension of Movino dealt with two main challenges – modify the interface to suit our concept and achieve a video link back from the Movino server to the mobile phone. The videos and related information were managed on the Linux server.

4.2.1.1 Clients

The clients in this project are the mobile handsets which hold the \textit{Catch the vibe} application. The application on the handsets is, as previously mentioned, an extension of Movino.

\textsuperscript{18} \url{http://movino.org}, 2009-02-26

\textsuperscript{19} \url{http://developer.apple.com/opensource/server/streaming/index.html}, 2009-03-03
4.2.1.2 Server

When the Movino client application records a video it will stream it to a Linux server. This server is implemented in C++ and database requests are embedded in the C++ code.

4.2.1.3 Database

The database holds the information about the videos. There exist two tables – Videos and TaggedVideos. When a video is recorded information is placed in table Videos. To be accessible to viewers the information is manually copied to the table TaggedVideos, which gives us full control over which video that are accessible and to make sure that they are in the right format and has a producer tag.

<table>
<thead>
<tr>
<th>Videos</th>
<th>TaggedVideos</th>
</tr>
</thead>
<tbody>
<tr>
<td>PK</td>
<td>id</td>
</tr>
<tr>
<td>tag</td>
<td>filename</td>
</tr>
<tr>
<td>author</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Database table.

Table 2: Database table.

4.2.1.4 Communication

This chapter will present how the different parts of the system communicate. As mentioned previously, both recording and viewing are handled by the same application – CTV. As a user of this system one has access to CTV. Other parts of the communication are handled and monitored by us. We will go through the communication divided into the two most common user actions:

- record a video and select producer tag
- view the list of available videos, select one to view and tag this one

4.2.1.4.1 Record

When the user starts to record the video streaming starts (1)(Figure 16). What Movino does is to stream the video to a server and makes it possible for web users to forward the stream in real-time to a web browser. In this project however the video has to be completed and stored before it can be streamed to a mobile phone. What the server does is to wait until the video streaming is complete, then it creates a new Video element in the database where it stores the filename of the video (2). The next step is that the user
selects a tag in the UI that he thinks represents his video. The selected tag is sent to the server (3) and the server stores the producer tag in the previously created element (4).

1. Record video
2. Create element in Video table and store filename
3. Send the selected producer tag
4. Store the producer tag

Before video is accessible in the UI it has to be moved to DSS so that it can be streamed to mobile phones. The specific video is converted and compressed from mpeg1 to mpeg4 with a video and audio quality to suit mobile phone playback. The conversion is made in VLC\textsuperscript{20}. Then the video is placed on DSS which creates an SDP (Session Description Protocol) ready to be streamed. To make the video accessible to users the table TaggedVideos is updated with the new video and its SDP-address.

4.2.1.4.2 View

As the recording process had an aim to be straight forward the viewing process is more aimed at retrieving a navigation flow where the user can navigate in the UI and look at several videos after each other. The communication below assigns the scenario when a user chooses to view videos in the main menu screen (Figure 17).

The first step for the application is to retrieve the available videos on the server. The application sends a request to the server(1), the server forwards the request to the database(2) which sends back a complete list of all videos(3). The server sends the video list with corresponding tag information(4) so that the application can create the horizontal list with videos, their producer tags and video representations showing how well the viewers have agreed on the producer tag.

The user can now navigate between videos and select the one he finds the most interesting. When he has selected a video, the application requests the corresponding SDP-address(5) and DSS streams the video to the application(6).

\textsuperscript{20} http://www.videolan.org, 2009-03-03
While viewing the video, the user can select one or many tags. When the user is satisfied he confirms his tags and the tags are sent to the server (7). The server updates the database with the selected tags (8).

Now the server requests the statistics of the previously viewed video (9). The database sends back the content of the tag columns in the correct row of the table TaggedVideos (10). The server sends the tag information to the application (11) which creates a statistics screen.

1. Request list of videos
2. Request SDP, producer tag and ratio for all videos in DB
3. Send SDP, producer tag and ratio for all videos in DB
4. Send list of videos
5. Request video stream
6. Stream video
7. Send info about the viewed video and which tags the user selected
8. Update the info in TaggedVideos with the selected tags
9. Request tag statistics for the viewed video
10. Send tag statistics for the viewed video
11. Send data to place in statistics screen

Figure 17: The interaction involving ctv, the server, the database and DSS when viewing a video and its statistics.

4.2.1.5 Movino

Our choice to use an open source solution felt motivated even after looking at the results of it. At first, it is free and has a lot of the functionality we were looking for. Secondly it offered well structured code to expand, which was welcomed due to the fact that we were both new to Symbian OS. In addition to this the originator helped out answering our questions when we came into problems we couldn't solve.

Although, there are some relevant drawbacks with Movino that might have motivated to use another solution. The first reason is that we couldn't use Movino in combination with the TAT UI framework Cascades which means that the UI implementation was harder than it could have been. Another drawback is the one previously mentioned – no support for mobile viewers during the implementation phase. This was mainly due to that the stream was in the format mpeg1.

Looking back at this the ideal situation would have been to have video streaming support in Cascades and use this for the whole application.

4.2.1.6 Development tools

The combination of development tools worked without any major drawbacks. When using SVN merge conflicts arose occasionally, but they were quickly solvable. As the
versioning solution for server updates where made by check-in/check-out method we made these changes as carefully as possible and partially due to relatively few server updates there were no serious problems with this method.

The most relevant drawback with Carbide.c++ was that there was no built-in functionality for signing sis files. In the beginning of the project we overrode this by signing them manually in the command prompt. After a while we came across a .bat file handling this. This .bat file was placed in the pkg folder of our application and whenever we needed to try out the application we ran the bat file in the command prompt, thus saving some time. Another drawback with Carbide.c++, that mainly depends on Movino, was that we could not test our application in the simulator as this couldn't communicate with our server. Which meant that we had to place the application on a phone and make sure that the server was running every time we needed to try it out.
5 Discussion

This chapter will present our thoughts after the concept work and user findings dealing with the concept. Some improvements on the concept will be presented and discussed. To sum up we present some subjects where we would have wished to make further studies.

5.1 Tags

Predefined versus user generated?

There are pros and cons with both ways. We used predefined in our prototype. Almost all of the persons that used the prototype said they weren't satisfied with the available tags to choose from (including RGRA, chapter 3.3.2.4). They felt that they couldn't express themselves with the limited selection, both when recording and when watching. That is a big drawback and one that has a big impact on the general perception of the application. Especially as a producer you want to be able to put as precise a tag as possible on your recorded video. The possibility to create your own tags on the fly would allow for creativity and encourage the users to create unique tags. A co-worker mentioned that it would be very rewarding and inspiring to come up with a new tag that no one had used before and see it spread among other users and grow popular.

Both these facts imply that it would be better to use tags generated by the users. However there are a few things that tell against the user generated tags. The first is the loss of the color coding. With predefined tags every tag gets a fixed color. For example cool was orange in our prototype. This fact would make it easier for the user to navigate in the application as colors are identified prior to text[9]. After a while the users would be able to navigate with the help of the colors alone, not needing to read the tags. The second thing that tells against user generated tags is that it was proven difficult to come up with good tag pairs. When we asked the focus group from RGRA to provide us with tags they would like to use they usually only came up with one word, not being able to deliver two opposites (chapter 3.3.2.4). There were four of them and still they had problems. That indicates that for someone to come up with a good pair on the fly might prove harder than it sounds. A potential risk could be that some people would give up rather than take the time to come up with a good pair. The result being less recorded videos.

5.2 Privacy

"There might be people to whom I don't want to share information about when I'm home, not home, what I'm doing, or not doing." Woman, 47.

Not everyone wants their personal life being broadcasted to millions of users they don't know. Some don't even want their friends to know what they're doing. Google is about to launch a service imbedded in Google maps 3.0 called latitude[10]. The service allows the users to see where their friends are.
Aftonbladet initiated a survey on account of latitude which showed that of the 40000 readers that voted only 5% wanted their friends to know where they were at all times, while almost 80% never wanted them to know[10].

This survey together with findings from our focus groups (chapter 3.3.2.1 and 3.3.2.4) shows that the privacy of the users are to be approached with caution. Recorded films can be very personal and you may not want to share them with everyone. When we researched the video streaming applications on the market today we realized that none of them were concerned with the privacy of the users. Everything recorded with for example Bambuser is broadcasted live on the internet easily accessed by anyone. Some may argue that it doesn't matter and that if it bothers someone they simply don't have to use it. A better approach would be to adjust the application to suit more users. One suggestion that came up during our user studies with RGRA (chapter 3.3.2.4) would be different groups which will be introduced in next chapter.

5.3 Groups

This would allow a user to create a new group or join an existing one. This was not incorporated in our prototype, but it is something we would like to try if we had more time. The groups would work as a way of ensuring the users privacy. Exactly how it would work is yet to be discovered. Some from the RGRA focus group (chapter 3.3.2.4) suggested that it should work like Facebook, where you can choose exactly what individuals will be able to see your videos. Others thought it would be enough to simply choose among the groups. The issue concerning privacy is not the only reason why groups would be interesting to study. In our prototype every user is anonymous and the reason for that was that we thought some would not want to record if their identity were revealed. The drawback is that most of the viewers were disappointed when they realized they couldn't know who the recorder was. The viewers felt it was more interesting to watch if they had some kind of relationship to the recorder. The interaction experts from K3 suggested that groups could be a possible way of keeping the anonymity of the recorder while still putting him in some kind of context. Users in the same group would have some connection to each other, for example they could share an interest, be part of the same network and so on. The groups would hopefully also improve the whole concept of tagging. The groups might evolve and grow different from each other. The same tag in one group could mean something completely different in another group. If that happens the tags would probably be more accurate with the actual content of the video than if all users were mixed in one big group.

5.4 Video as media

It has been proven very difficult to convey certain emotions through video. First of all the size of the mobile phone screen is usually very small and the quality of both the sound and the video is low.

Another aspect is that many people perceive things differently. For example during our user studies with RGRA (chapter 3.3.2.4) there was a video clip recorded during Musikhjälpen. The clip showed an area covered in outdoor torches which the producer of the video found very beautiful so it made him happy. When showed to the RGRA group
one of the participants stated that the mentioned video clip made him sad because it reminded him of a funeral he had recently attended. This finding is not revolutionary but interesting. We wanted to make an application in which the user would be able to choose video clips associated with specific emotions. For example one might want to be cheered up so he chooses to see happy videos. Since someone else put the tags on the videos it's very likely that that person’s idea of a happy video isn't the same as the person about to watch the video. That makes it very hard to find a video filtering function that could sort videos effectively to suit every one’s different opinions.

A third thing to point out is that although video is richer information wise than regular phone call there is still a lot that is being lost. Seeing a video of something obviously isn't the same as being there in person. Even if two persons would get the same feeling when being somewhere it's not sure that they would get the same emotion by only looking at a video from that place.

These points show that video might not be very good at dealing with emotions.

5.5 Mobile viewers

As defined in the introduction we wanted to focus on mobile viewers as this is a relatively unexplored area. Only one of the studied mobile video streaming applications, kyte.tv supported mobile viewers during our concept work. Our theory was that it would be more accessible to users if they are on the same platform regardless of whether they want to produce or consume video. Another theory is that users on a mobile platform open up to better communication opportunities due to the fact that they are online more often.

Håkansson used notifications to communicate to viewers that a broadcast had started[1]. This was quite necessary to keep the term live in focus. As the viewer platform in Håkansson’s master thesis was a web browser at a computer and the notifications were sent by SMS to viewers who had subscribed to a specific broadcaster it meant that the notifications were not sent to the same medium as they would be watched. User findings pointed on that this was not successful due to that users found it troublesome to change medium when they received notifications, and if they were to perform this change, a great risk was that the broadcast was over when they finally had opened up the broadcast in a browser. This would not be a problem if both the notifications and the viewer application were to be on the mobile phone.

Looking at the applications today there is an important disadvantage with a different platform for recorders and viewers, which is that the recorder sees the video while he is recording in the mobile phone window. A motivated assumption from the recorder is that the video he sees is the one that the viewers receive. This is however not the case as the streamed video has a bigger resolution than the mobile phone screen and if a user would view the video on a computer he would have a better resolution than the recorder. On the other hand, if the user would view it on a mobile handset, he would see a video that is more similar to the one displayed in the recorder window as the resolution on the screens are more equal.
5.6 Further studies

5.6.1 Live interaction

A subject that has been quite hard to do studies on in this master thesis is the concept live interaction, due to a non-live video link. Although user studies and the field today (chapter 2.3) show that this is an interesting aspect.

5.6.1.1 Feedback alternatives

The first and most relevant question in the matter of feedback from viewers to recorder would be what kind of feedback viewers want to share. This would probably be context dependent, but never the less interesting if one wishes to concentrate on this. After studying this it can be relevant to find feedback solutions that suit the viewers’ demands. It would also be interesting to see how the recorder perceives the feedback. It is not sure that recorders and viewers appreciate the same kind of feedback possibilities, and therefore one might be obliged to compromise.

5.6.1.2 Other interaction forms than text input

One issue that we fought with was that text input was too slow to be used for live feedback. Our solution to this problem was to use predefined tags. If we had a live channel, we would have the opportunity to try these tags out as feedback from the viewers to the producer. It would also be interesting to try out interaction in the form of pictures or icons. One first step would be to exchange the predefined tags with emoticons where the feelings are displayed in the shape of smileys.

It would also be interesting to make thorough studies at the way Kyte.tv uses feedback. Kyte.tv offers the viewers to comment on videos with either text, video or audio. Scoble pointed out that audio was a lot easier to use in mobile phone context as it was faster than both video and text feedback (chapter 2.3). It would be quite interesting to see how this would be received by recorders and viewers.

5.6.1.3 Can live feedback change behavior?

If viewers have the possibility to send feedback to the recorder during the broadcast, they might influence the recorder to film something else than he originally intended. This have been partially studied by Håkansson where viewers sent missions to the broadcasters which the broadcasters followed[1]. This resulted in, not only a different video content, but also created a relationship between recorders and viewers and a motivation for the broadcasters to carry on filming. We would have enjoyed making more thorough studies on this, and also see if the viewer behavior could be changed, the second aspect as mobile viewers are not studied by Håkansson.

5.6.2 Alternative representation of video

The most obvious flaw with the UI according to the expert evaluation (chapter 3.1.4) was that the representation of the videos was a bit vague, and it reduced the motivation on the
viewer side due to that it didn't represent feedback if a viewer selected a tag from a tag pair that the producer tag didn't belong to. Time constraints resulted in that we couldn't improve this prior to the user tests with RGRA. Although it would be relevant to look at this if the UI for this concept would undergo further development.

Figure 18 presents two alternatives for a representation of a video, the man on the left being the original representation, with the exception of the video thumbnail that we didn't have time to implement. The three representations show the same video which has twelve viewers agreeing with the producer on tag choice, eleven disagreeing and nine selecting different tags. The man on the left shows approximately 50% agreeing on the tag. This relationship can also be seen in the alternative representation in the middle as the thumbnail is half-full of the corresponding tag color. If viewers have different opinions than the producer tag pair, then the tags will be presented around the thumbnail. In the representation at the far right there is not any graphical aim on the relationship between how people agree or disagree on the producer tag, instead all tags are represented in a circle diagram. The only way to know the producer tag is to look at the color surrounding the circle diagram.

**Figure 18**: Three different alternatives to show what a video is tagged with.

There are advantages and disadvantages with all three representations. The one on the left has a more exclusive aim on the producer tag relationship, but it neglects viewers that have selected different tags than the producer tag pair. The one in the middle will show the producer tag relationship and show other tags which means that all viewers get to see their choice of tag. The drawback is that the focus on producer tag pair is vaguer. The third one does not take any stand towards producer tag focus.

As the expert evaluation showed that the original representation restricted viewers, and as the representation at the far right doesn't show our producer tag focus, there is only one alternative that cover our demands on it, that is the middle alternative. If we were to look at this in the UI context one alternative would be to make the horizontal list consist of thumbnails more or less filled with the producer tag color, depending on how well viewers have agreed (Figure 19). When a video is centered, the complete tags will appear with a transition from the sides of the screen and then surround the video thumbnail. This will hopefully result in a less cluttered screen and a bit more focus on producer tag relationship.
When a user has viewed a video, he can be brought back to this screen directly, as it has the same information as the statistic screen, which means that the statistic screen is redundant. A suggestion would be that the user sees the screen as it is presented below and sees his chosen tag enter from the side and alter the appearance of the video.

![Image]

Figure 19: One of the alternative video representations in its UI context.

As these are just speculations based on one expert evaluation it is of great importance that this altered representation is thoroughly studied before it is used. If we had time to do this we would start out with doing a paper prototype walkthrough with potential users and then making further studies if it seems to coincide.

5.6.3 International user studies

As mentioned in the results for the focus group (chapter 3.3.2.1) it is hard to know how well user study results coincide with the reality. As this master thesis is held in Sweden user studies have been made on Swedish users exclusively. It would be interesting to study users of other nationalities to make sure that our findings match up in other parts of the world.

5.6.4 Studies in a larger scale

This master thesis had a very broad approach which meant little time to lay on single events. If there were more time to put on the project it would be of great interest to expand the concept with the suggested improvements group usage and support user created tag pairs. Hereafter one might do user testing on a larger scale to see if some theories about the concept are correct.

One theory to study is the one that displaying tag ratio would give the viewers an opportunity to sort out bad videos (chapter 3.2.1.3) as these would most probably not have high level of agreement in terms of producer tag. Another theory is that group usage would improve the quality level of the videos as the producer might consider which users would be interested in his video when he selects a group that will have access to his video.
6 Conclusions

One final concept was developed looking at key issues extracted from user studies, evaluation of similar applications and concept work (chapter 3.2.1). The four key issues extracted were:

1. new concept
2. sort out crap
3. relationship between producers and consumers
4. motivation to view and record

To meet the demand to deal with uninteresting videos (key issue 2) we wanted to have some kind of rating system so that viewers could help each other to avoid bad videos and promote good ones. A rating system would also affect the motivation to view (key issue 4) since the viewer will have a more active role in the application compared to a passive user that will view exclusively. Active viewers will also improve the relationship between producers and viewers (key issue 3). Another problem that needs to be solved is that video is a very fast media and whenever complementing the video with text input the text input would be too slow (chapter 5.6.1.2). A way to solve this would be to avoid text input by using other input methods or using predefined text input. As this is a relatively new communication technique it would be dangerous to restrict the user too much since it is hard to guess what one would like to do with it. To avoid this we used predefined tags that reflected the videos in terms of feelings rather than content. All tags are defined in pairs and when a producer records he is prompted to select a tag that his video will convey. Viewers will then choose to agree or disagree and the UI will present how well they have agreed, which will act as a sort of rating system (chapter 3.2.2).

After the user studies were carried out there were several interesting findings:

- To reflect content with feelings is hard as feelings are individually selected. One user might find a video happy while another might find the same video sad. (chapter 5.4)

- Predefined tags are both positive and negative. The interaction flow is faster but it restricts the creativity of the users. (chapter 5.1)

- It is hard to come up with two opposite tags which tell against user created tags. (chapter 5.1)

- Video is a personal media. Our users wanted to have full control over which users that would be able to access their videos. (chapter 5.2)

- Viewing a video of a location is not the same thing as actually being there. A lot of information is lost, especially as the mobile phones have small screens and the stream video and audio is of low quality. (chapter 5.4)

- There are several advantages with having one application for both producers and viewers. One is that the users have both scopes of use accessible which means
that they are more likely to try out both. Then they have a better opportunity to have the other users in mind when they record or view. Another advantage is that viewers are accessible more often if they can use their mobile phone to view. (chapter 5.5)

An extension to our concept and a solution to the problem of video being private would be to add groups. A user can join one or many groups. Groups are created by users mutually with the following as possible examples: family, best friends, social networks, workplaces etc. When a producer were to record he would then be able to select what category of users that would have access to this video depending on the material he had intended in the video (chapter 5.3). Every group would have predefined tags but users are able to add new ones that will be accessible in the application by everyone in the group.

There are several areas where we would wish to make more studies:

- Since we didn't achieve a live video stream we had no opportunity to study the communication from viewer to recorder more than on a hypothetical stage in user studies. If we had the possibility to continue this work, we would have strived to have such a channel up and running so that we could make studies on live interaction. Questions to study would be:
  - What kind of feedback would be sent?
  - How will the producer receive the feedback? Can the interaction change the content of the video, i.e. will the recorder change the intended direction after embracing the feedback?
  - What kind of feedback possibilities would users like?
  - Can the predefined tags in our application be used as live feedback, and how would this be received?
  - Are there any other feedback alternatives than text that can be used? For example audio, video or emoticons (chapter 5.6.1).

- Improve the concept with groups and enable for users to add tags (chapter 5.3).

- Improve the UI to fit the improved concept and change the video representation according to expert evaluation comments. (chapter 5.6.2)
References


[2] Marshall Kirkpatrick, 2006-07-17, YouTube serves 100m videos each day, (www.techcrunch.com/2006/07/17/youtube-serves-100m-videos-each-day)


Appendix A – Vocabulary

Video Streaming

When video is streamed the ideal situation is that the information is transferred to the end station at the same rate as it is being produced. Of course this is not the case because your communication tools and technology in between have a certain amount of operations to handle before sending and receiving, and the sending will take some time as well. But these steps are continuously improved and today the transmission is very close to instant. You can therefore view a video almost simultaneously as someone else is recording it.

Mobile Video Streaming

When talking about receiving video content in the same moment as it is being produced one presuppose that both sender and receiver are available. This is seldom the case, because video streaming as most of us know it today demands computers with network access on both sides. The focus in this report is to see what happens if recorder and viewer use a mobile handset. This will reduce this restriction and making the users available continuously.

Recorder

The term recorder refers to the person making the video, alternative term that are used as well are producer and sender.

Viewer

The term viewer refers to the person watching the video, there is no definition of how many viewers there are from the start. It can be one or it can be many. Alternative terms are consumer and receiver.
Appendix B – Personas(EN)

Kalle 24, student:
Kalle is studying electrical engineering in Linköping. Kalle loves gadgets, preferably tech porn. He works part time on Kjell & Co. For Kalle it’s very important to keep track on his line of business. The worst thing he knows is when he fails to answer a question at Kjell & Co so he spends lots of time keeping himself updated. He never misses an opportunity to talk about his interest and likes to share his knowledge with others. Kalle is single, but he recently made contact with a girl that’s blogging for “ny teknik”.
Kalles change his cell phone several times every year. He enjoys being regarded as a person who always has the newest things, but it’s not what’s motivating him. It’s the tech in itself that he’s after. His motto is “tech is there to be used” and he uses his phone several times daily for different activities. The first thing Kalle does when he gets a new cell is reading the manual thorough. After that he customizes the phone to fit his needs and general preferences.

Rita 54, artist and musician:
Stockholm. Works mainly with abstract art. Rita works on the side as a guide at the museum of modern art. A good day for Rita is when she gets to wake up early a Saturday morning to sit on the beach and paint ”the act of wakening” to the sound of birds and the light touch of the wind. In her youth Rita dreamt of artistically success, but she has now accepted the fact that it probably won’t come and she’s pretty satisfied with her life as it has turned out anyway. Rita is a social person and sometimes she gets bored and feels lonely on her archipelago island. Her work is a great opportunity to meet people. Deep in her heart she still nourishes a girlish hope of meeting her dream prince. She doesn’t miss children. Lisa at work almost feels like a daughter to her. However she wouldn’t mind a husband that brought her to the Mediterranean Sea just to spoil her. This dream isn’t something she walks around telling everyone about.
Rita has been skeptical about new technique for a long time. But a few years ago Lisa, the receptionist at the museum of modern art, showed her a blog and ever since Rita has been writing her own blog to share her feelings and thoughts.

Nils 51, business man:
Nils is CEO for a company in Stockholm. He has a wife who’s expecting his child. He already has two kids from another marriage. Nils and his family lives together in a penthouse in central Stockholm. He only sleeps there during weekends though, sometimes not even then. The reason for that is that he often travels in work, especially to Nanning in China where his company has a factory. Nils, who doesn’t want to be called Nisse, works much. He sometimes thinks about how he would like to spend more time with his family, but due to that he’s been gone so much he feels he almost doesn’t know them anymore. At work however he’s the man. He knows everyone and everything – he’s in control. At some
point he would like to scale things down. Maybe buy a house somewhere at the Mediterranean sea, France for example. He’s concerned what would happen if he left the company in the hands of someone else. And on what is he going to spend his time if he can’t work? That’s the only thing he knows how to do really good. Nils likes new technology, but it should be cool and easy to get a hang of. If it also means better communication he buys it straight away.

Lisa 36, receptionist:
Lisa is very organized and keeps track of everything. She’s married and has a three years old daughter. Since the birth of her daughter, Lisa has been even more precise when planning her week. Some would have called her life squared in, she herself calls it controlled. Lisa is an active woman. She does a lot of sporting and open-air life whenever her schedule allows it. Sometimes Lisa spends time with Rita. Sometimes Lisa wonders why she likes to hang out with Rita, they have so little in common, she’s come to the conclusion that a part of her looks up to the philosophical and unorganized Rita. Every Friday Lisa goes out with her girlfriends. Usually they go for a few drinks at some trendy place. Lisa likes tech that can help her organize her hectic life. She uses her cell phone for a variety of things. For example as a calendar, to look up timetables for trains and busses.

Sandra 16, high school student:
Sandra is on her freshman year at samhällsvetenskapliga programmet. Since junior high Sandra has been one of the cool chicks. She spends about half an hour every morning just to get her hair right. Sandras interest in fashion is financed by her mother, who is a single parent. Sandras mother has a well paid job and she has a hard time turning Sandras requests down. Image is very important to Sandra and the thought of looking like a fool is scaring her to death. However she really enjoys watching others making fools of themselves. A lot of Sandras time is spent on reading fashion blogs and magazines. She likes to shop with her friends and also spends a lot of time on it. She dreams of becoming a writer for Elle. She wants to be able to visit Paris, New York, London and Milano through work. Another dream is becoming a model, that doesn’t require any education which is a good thing. Sandra like new tech but mainly because it’s cool. She writes a lot of sms, but she isn’t reluctant to pick her cell out just for show.

Författare: Andreas Axiö Apitzsch & Gabriella Pålsson

**Introduktion:** Välkomna! För er som inte vet vad en fokusgrupp innebär så är det så att det är en samling med människor som diskuterar ett specifikt ämne. Vi kommer att ha vissa punkter som vi gärna ser att ni diskuterar kring men annars är tanken att ni kan säga precis vad som faller er in. Syftet med mötet är att vi ska få veta era tankar kring ämnet och då finns det inga rätt eller fel.

**Fas 1: Lära känna varandra. 15 min**
- Gå en runda runt bordet där folk får introducera sig själva.
- Gå ytterligare en runda – nu diskuterar mobilvanor.

**Fas 2: Video i vårt liv. 15 min (Tog 10 min)**
- Gå en runda runt bordet – nu diskuteras relation till videokommunikation – t.ex. YouTube, videosamtal, TV, Web-TV.

**Fas 3: Fri diskussion om video. 15 min. T.ex. form av kommunikation i de olika exemplen ovan. För- och nackdelar med YouTube, t.ex. Vad tycker vi om denna kommunikation? Hur tillämpas återkoppling?**

**Fas 4: ”Personalized communication through live video broadcasts”**. 20 min. Nu går vi över till det aktuella ämnet, nämligen användning av direktsänd video.

Scenario att tänka kring: Någon har något att förmedla och börjar filma detta med sin mobiltelefon. Detta kan sedan tas emot av andra personer, som beslutar: ja, det här är jag intresserad av, och tittar sedan på den direktsänd video i sin mobiltelefon.
- Vad är er spontana reaktion till detta?
- Hur skulle ni vilja använda detta?

**Fas 5: Concepts. 20 min. Nu tänkte vi presentera ett antal koncept för er där man kan använda direktsänd video och efter att vi har presenterat ett koncept vill vi höra era spontana reaktioner.**

Resultat fas 4-5:
Spontana reaktioner:
Var ska man hitta det?
Hur ska man veta att man är intresserad av det?
John ser tillämpning av scenario: Man kanske är ute och reser och tycker ”Oh, vad här är fint” och så filmar man det och stickar till dem man ändå ringer till.
Mikaela reaktion: Handlar inte detta om att man skickar ut till alla, så kan den som vill titta på det.
Sigge flikar in: Det blir som TV? Att en haller i kameran och alla kan titta på.
Mikael: Som YouTube, fast inte inspelat då.
Sigge: Tänk ordet TV! Det är som olika TV-kanaler.
Linus: TV funkar för att det är så få kanaler att hälla reda på. Här skulle de då finnas fler kanaler.
Mikael: Det verkar roligt, så om man är på semester så kan man lägga upp det på semesterkanalen. Och filmar man annat lägger man det på den kanalen.
Joanna: Det här alltså något som är live, det är inget som sparas undan?? Hon ser snarare att man har igång kameran hela tiden och att man kan gå in och uppdatera sig om hur t.ex. ett hus byggs successivt.
Linus: Webcams har funnits länge.
Sigge: Då är frågan, vem kommer gå omkring och filma konstant?
Mikael gör jämförelsen med sådana som videobloggar hela tiden, som filmar hela sitt liv, blir lite big brother, eller nåt i den stilen.

Mikael: Om alla i hela världen har detta så kommer det att finnas mycket mer än 24 timmar om dygnet, så det kommer alltid att finnas saker att titta på.

Andreas: Tänk er att flera filmar samtidigt, vad ska visas då? Om man som Mikael föreslog att man har en semesterkanal och två filmar samtidigt.


Mikael: Det finns ju de som spelar in dokusåpor med sig själva.

Andreas: Tänk er att flera filmar samtidigt, vad ska visas då? Om man som Mikael föreslog att man


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Gabriella introducerar konceptet Bird watcher.

Mikael: Frågan är om man måste ha detta live. Om jag vill se en fasan så ser jag det på YouTube.

Sigge: Och bläddra genom de bästa, så att man får se de bästa filmen. Jag vill inte att slumpen bestämmer om jag ska se en bra bild av en fasan eller en dålig. Vad är som bestämmer att jag vill se den live.

Joanna: Det kan vara att jag sitter och har tråkigt på jobbet, så vill jag något som plingar upp när det händer något roligt.

John: Det är i så fall det här med att man vill vara först med att se något. Det finns ju det ju de som vill. Att inte det här är sparad och redan har här hänt utan att jag ser det med det samma, nu när det händer.

Sigge: Så när du går in och tittar på den här filmen så registreras det att du har tittat på den här videoströmmen [verkar säga det som ett skämt]

John: Det kan det ju också vara.

Sigge: Storebror ser dig.

Mikael: Jag har tänkt att det är en stor del av grejen. Riktad reklam etc.

John: Sedan kommer det nerdimande ett e-mail där de vill att man ska köpa en bok om fasaner.

Gunnel flikar in: Hur trevliga hade vi varit om vi hade fått meddelande och ska börja titta på det här.

Joanna: Det blir ju lite som med SMS och telefonsamtal.


Joanna: Man kanske kunde prenumerera på någon sän här kompiskanal istället. Att man är intresserad av vad ens kompisar gör. Om de börjar filma något roligt så plingar det: Nu filmar jag nät roligt!

Sigge: Hela tiden?!! Kunde de inte lägga upp det på YouTube istället så kan du titta på det i lugn och ro när du sitter vid datorn.


Linus: Kan man då ha det som konferensamtal, så att alla kan kommentera vad man säger? Det funkar inte om det är en världsnätet som flera miljoner tittar på, men annars?!

Joanna: Jag är inte så intresserad av att få massa pling att nu har det här hänt, nu har det här hänt utan vill ha det i en lite mindre krets. Och då kanske det inte händer lika ofta. Så tar man dem som det faktiskt kan vara värt att titta på.


Joanna: Det blir så mycket smidigare för den som filmar också. Att man inte behöver skicka det till alla, utan vill man titta på det så klickar man.


Linus: Eller är det ingen som ringer. [skratt i grupp]

Linus byter ämne: Det här med att man ska knappa in ordet fasan på den lilla mobiltelefonen och då flyger den iväg. Kan man inte säga det istället så kan telefonen analysera det?

Gunnel: Då flyger den iväg.

Joanna: Så sitter en liten kille och tittar på alla videos.

Sigge: Kan man inte skicka det till Kina, så får man automatisk censur också.

Gunnel: Man kan alltså inte välja vilka man kan skicka det här till, och att det här sparas på telefonen. Eller man måste skicka ut till kreti och pleti.

Gruppen håller med. Påminner om vad Joanna ville ha med kompiskanal. Detta är dock fokus på att filmaren bestämmer mottagare.


Sigge: Då blir det som att du skickar MMS till alla.
Gabriella frågar om huvudpöägen är att man som filmare själv vill ange publik. 
Gunnel bekräftar: Där kanske finns människor som jag inte vill ska veta när jag är hemma, eller inte hemma, eller vad jag gör, eller inte gör. 
John: Det tycker jag låter rimligt. 
Gunnel: Om t.ex. inhjutningsjuvar kan tänka: jaha, nu så filmar Andreas på semester. Då är det fritt fram. 
Sigge: De går in på semesterkanalen. 
Sigge: Jag funderar på huruvida man behöver få tillbaka något från de som kollar. 
Joanna: Jag tror inte det. I och med att man redan filmar så kommer man bara bli störd om man får massa feedback direkt. 
Sigge: Ja, så kommer det en massa SMS medan man filmar också. 
Mikael: Jag ser ett problem med kompiskanalen. Om man träffas och nån säger: Såg ni vad jag filmade, så har ingen sett det. 
Sigge: Det här med att spara videos. Ni pratade om att det ska ner i papperskorgen direkt. År någonting så viktigt att man filmar det, är det inte så fall så viktigt att man vill spara det då? 
Mikael: Jag tänker mig att det inte är det, utan att det är något som är roligt för stunden. 
Sigge: Men med en möjlighet att spara det, kanske?!
Gunnel: Det kan ju hända något exceptionellt. 
Mikael berättar om en film med en kille som sätter sig på bilen när den kör själv, och helt plötsligt springer en annan kille fram och sätter sig i bilen, i farten, och kör iväg med bilen. Om nåt sånt händer när man har på en sån här kanal så är det klart att det är roligt att spara det. 
Joanna: Men det är ju ganska enkelt att ha det i slutet: Vill du spara eller slänga det här? [Joanna och Linus går in på hur detta kan lönas tekniskt] 

Gabriella introducerar konceptet Location based videos. 
[Kort diskussion för att klargöra vad det innebär] 
Joanna tycker att det verkar roligt att kunna ha en karta och se olika platser där folk filmar. 
Mikael: Jag tänkte nu när det var pridefestival i Stockholm, så hade det varit kul att kolla runt lite på de utklädda. Joanna: Så slipper man skriva in vad det är för sak, för då vet man ju vad det är som filmas. 
Linus: Och att man kan hitta något att relatera till. Det kan ju då vara saker som är i närheten, t.ex.
Gabriella: kompletterar med ett scenario där någon ska till Stockholm i helgen och vill veta hur det är där just nu, då skickar man request om filmning till någon som är i Stockholm.
Linus: Det är egentligen en helt annan tjänst. Det är att skicka SMS till någon som är på en plats.
Sigge: Eller att du skickar SMS till som har den här tjänsten och har aktiverat det.
[Gruppen verkar vara överens om att det måste vara ett eget val att vara tillgänglig för request]
Mikael: Det är ju en ganska kul grej. Alla blir när slags nyhetsreporter.
Gabriella: kompletterar med ett scenario där nyheter upptäcks genom att man jämför antalet filmare på en specifik plats med ett medelvärde för den specifika platsen. Är det då ovanligt många som filmar kan man dra slutsatsen att det händer något extraordinärt.
Gabriella: Hade ni använt det här?
Linus: Det är så stor händelse så det får man reda på ändå. Men jag tänkte att om det är många som filmar i Perstorp så vill man nog veta det.
Sigge: Jag tror att det är en sån sak som man vill ha inställningar för. Är jag profil möte så vill jag inte ha några notifikationer. Ar jag på profil normal eller uttråkat så... [avbryts av skratt och diskussionen går tillfällig över till att diskutera olika profiler]
Sigge klargör sin åsikt: Det här med olika sökfunktioner och notifikationer, jag tror att man måste gada ihop det här, till ett paket. Så att man inte behöver göra tio inställningar inför varje möte man är på.
Linus: Det kommer att användas till reklam också kan man tänka sig dä.
[bekräftande nickningar och ja bland flera i gruppen. Sedan en kort tystnad]
Mikael: Ja, det här med väder låter väldigt intressant. Vad mer kan vara intressant?
Joanna: Hur mycket folk är det på IKEA? [skratt i gruppen]
Mikael: Är det kö på klubben?
Sigge: Ja, är det kö på klubben!
John: Ja, det skulle nog folk använda det till. [flera nickar medstämmande]
Joanna: Nå, men en sån grej om man undrar om det är lönt att köpa eller inte. Är det lönt att köpa på rean?
Sedan tänkte jag på att det faktiskt inte är så stora skärmar på mobiler just nu, men det kommer väl.
Mikael: Problemet är ju också att det behövs en massan användare innan det blir roligt.
Linus: Kompiskanaler funkar ju när det är få också. [gruppen håller med]
Mikael: Och kompiskanaler kan man koppla till det stora också, så när man väl fått igång kompiskanaler.
Sigge: Man kan börja genom att göra genom ett stort nätverk i form av Facebook. Om man vill nå en bred massa, kanske.

Andreas introducerar konceptet Tjuv och polis.
Sigge: Som TV-programmet På rymmen. Fast de filmade inte hela tiden.
[short diskussion om skillnaderna mellan konceptet och på rymmen]
Joanna: Om man nu kommit på vart tjuven är så är det ganska lätt att veta var han är på väg. Man kanske vill se snurrar av vad han filmar.
Sigge: Jag tror inte att tjuven hade haft en chans....[diskussion om hur tjuven skulle hittas]
Sigge: Jag tror att detta konceptet hade behövt en del accessorer. T.ex. mobihållare runt halsen eller på armen.
Mikael: Jag gillar konceptet, men jag vet inte om alla hade gjort det. Jag vet inte om ni som är lite äldre tycker om det. [syftar på konstnärerna]
Gunnel: Jag hatar att sitta still och spela spel, men sånt här hade jag tyckt varit lite roligt. [John verkar inte jätteinteressad]
Joanna: Om detta ska vara spännande så tror jag att det som tjuven ser visas för polisen en gång i minuten. Så att tjuven har en chans att gömma sig när polisen försöker ta reda på var han är. Och att tjuven kan se polisens så att han kan välja en annan väg.

Sigge: Om man sasar mellan att tjuvens och polisens vy visas. [sidodiskussion som spårar ur]


Gunnel: Eller att ta det i skogsmiljö, istället för orientering. Så kan man få folk ut i friska luften och jaga varandra där istället.

Sigge: Lite svårt att lokalisera. Ok, han är vid det trädet.

**Gruppen tillfrågas om de har någon favorit av de presenterade koncepten.**

**Mikael: Nr 2.**

Sigge: Ja, nr 1 och 2. Jag tror att 1 och 2 hör ihop. Olika sätt att söka på.

Linus konstaterande: Ettan är vad som händer, tvåan är var det händer.

Mikael: Jag tycker den med GPS, det är kul med kartor.

[Gruppen blir tillfrågad om det är något de saknar med koncept 2]

Sigge skämtsamt: Mobiler som stöder det.


Joanna: Jag har lite svårt att bestämma mig för 1 eller 2. Ettan känns nog mer viktig för mig. Jag tycker att det är mer intresserad av vilka personer det faktiskt är som filmar än en plats som vem som helst filmar på.


Joanna: Ja, det stämmer. Jag är nog mer intresserad av de jag känner. Vad de vill berätta för mig. Men det är väl lite vad man känner för just då. Om man vill höra på sina kompisar eller se vad som händer på Roskildefestivalen.

Sigge: En sak som jag tycker är viktig med båda de två är i alla fall att man inte behöver tänka så mycket på feedbacken från de som tittar. Det är sekundärt, egentligen.

Linus: Man kan använda feedback för att hjälpa andra att hitta samma sak. Sigge instämmer: Med stjärnor.

Linus: Eller att man taggar med nyckelord efter vad filmen innehåller.

Sigge: Men taggar gör väl den som spelar in?!

Linus: Men det kan ju vara att någon får syn på någonting och då kan han fylla på med nyckelord.

**Gabriella presenterar scenario vid virtuell föreläsning där en elev vill ställa en fråga. Hur gör han?**

Sigge: Han sitter vid datorn.

Gunnel: Men om han ligger på stranden.

[John avbryter diskussionen eftersom han behöver gå, vi beslutar oss för att avrunda]

Appendix D – RGRA focus group (SV)

Användartestning av CTV – videoinspelning
Tid ca 1 h.

Material:
* 2 stycken Symbiantelefoner med CTV
* Inspelningsanordning
* Aktiverad server och databas

Personer:
* evenemangsbesökare
* 1 observerare
* 1 dokumenterare

Utförande:

1. Genomgång av applikationen.(G)

Presentation. Presentatören börjar med att berätta lite kort om vad CTV är. Han/hon bör också nämna att testet spelas in så att testansvarig slipper sitta och anteckna observationer under tiden.


2. Test av applikationen.(A)

Testdeltagarna ombeds lämna ID-kort så att vi kan veta vem som lånat telefonerna. ID-kortet fås tillbaka när testet är över. Under ca 30 min får testdeltagarna spela in videos. De ombed gå runt på området och spela in korta videos (ca 1 min) och vara noggranna med att tagga dessa.

3. Frågeformulär.(A)

Testdeltagarna får fylla i ett frågeformulär. Efter att alla ha lämnat in så tackar testansvarig för deras medverkan.
Användartestning av CTV – titta på video
Tid ca 1 h.

Material:
* 2 stycken Symbiantelefoner med CTV
* Inspelningsanordning
* Aktiverad server och databas

Personer:
* 4 ungdomar från RGRA
* 1 Moderator
* 1 observerare med inspelningsanordning uppsatt

Utförande:
1. Genomgång av applikationen.
Presentation. Presentatören börjar med att berätta lite kort om vad CTV är. Han/hon bör också nämna att testet spelas in så att testansvarig slipper sitta och anteckna observationer under tiden.

Introduktion av utvärderingen. Inledningsvis tittar vi på de filmer som spelades in igår och taggar dessa. Sedan går vi över till att diskutera en del frågor som vi har och att ni kan komma med allmänna åsikter och kommentarer.


2. Test av applikationen.
Under ca 30 min får testdeltagarna titta på videos.

3. Diskussion.
 Diskussion sker under ca 30 min.

Att diskutera:
Vad tycker ni om sättet att navigera i programmet?
Vad tycker ni om att varje film har en tag?
När ni valde film, valde ni film efter vilken tag den hade eller efter något annat?
I dagens version finns endast tre par av attribut att välja mellan. Finns det några fler attribut som ni skulle vilja välja mellan?
Av de attribut som finns idag? Vilka tyckte du bäst/sämst om?
Hur skulle ni vilja förbättra programmet? (Saknar ni någon funktion? Är någon funktion onödig?)
Vad kan ni se för användningsområde med detta program?
Hur kan ni se CTV som ett sätt att förbättra kommunikationen med era vänner?
Var videon mer/mindre intressant om ni kände personen som spelade in/var med?
Om ni hade haft detta på er telefon. Hade ni använt det? Varför/Varför inte? (Hur?)
Transkribering av fokusgruppsession:
D: Vad är syftet med hela programmet?
Moderator: Syftet med det här mötet är att komma på vad folk vill använda det till. Syftet med programmet är att ha ett alternativt sätt att se på video. En video är taggd med en känsla istället för innehåll.
D: T.ex. roligt?
Moderator: Precis. Och även att folk kan rata sina videos.
Moderator: Har ni nån motsats till sexy?
A: Ugly.
Moderator: Några andra ord?
C: Kanske Hot.
A: När jag tänker cool. Om du säger till mig att jag ska berätta vad jag tycker är cool då tänker jag på stunts, du vet sådana skateboarders eller snowboarders som åker ”tjoom” de bara flyger 500 m och man tror de ska dö. Det är cool för mig. Lame det är när alla säger ”kolla här” och ska trix och så.
B: Lame.
A: Ja alltså typ, okej...jaha...
d: Whatever
A: Det är typ så ok, who gives a fuck. Happy det är klart videos som får dig att tänka tillbaka, det kanske ett minne.
Moderator: det måste jag säga att jag tyckte var intressant att du taggade sad på den videon för att du fick andra associationer, du förknippte den med begravning. Ett helt annat sätt att se.
Moderator: Vad tyckte ni annars om att en video hade en tag förknippad med den? Vad tyckte ni när tittade på en film. Var det intressant att veta innan?
D: Hela idén var liksom, Wow, vad kommer hända nu? Men sen när man varit inne i programmet så var det ”Ok, ursäkta?”. Sen tar det så lång tid, är Nokia mobil. Man var liksom ”jaha, vad är syftet egentligen med det hela?”. Men grejen är att det här ska vara som bakgrundsidé för YouTube känns det som.
Moderator: Ja YouTube är...
D: Världsledande just nu!
Moderator: väldigt stora...
D: Världsledande just nu!
Moderator: ja precis. Om vi jämför det här med YouTube. Finns det något det här kan tillföra?
B: Här kan man inte skriva kommentarer. Ibland när man kollar på en utländsk kille som spelar trummor så säger de ”stick hem jävla invandrare”.
[Skratt]
B: det är sant, här kan man inte göra så.
Moderator: Man kan fortfarande tagga lame 40000 gånger
D: Om man ska kolla filmtrailer så går man in på YouTube för det är det enklaste sättet. När man ska kolla vad folk tycker om den så är filmen säkert riktigt jävla bra, men u när alla skriver den är så jävla dålig, det är så ljudligt så då tänker man ”jaja skit samma” och så stänger man av. Så här tycker jag faktiskt att det är bra att man taggar med känsla istället för att skriva ner saken
A: ja det är skitbrä, men grejen är att man behöver mer. Det räcker inte med det som finns.
D: nej nej, men detta är ju en beta version.
Moderator: ja, men vi vill ändå veta vad som saknas.
A: Jag skulle inte vilja tagga en video som... ugly. Jag tycker inte det passar in. Som du (B) sa om han som spelar trummor då hade jag hellre taggd inappropriat eller nåt sånt.
Moderator: Det tror inte jag heller
D: Så vilken folgrupp är det ni söker.
Moderator: Vi vill gärna veta vad Ni tycker. Vad är det Ni vill ha?
D: Så grejen är, ok. Där, Hot. Istället för...
Moderator: cute och ugly?
D: lite mer... Om vi säger att cute är här (visar med handen) så är hot här (visar med händerna att hot är ovanför cute).
b: Ni kan ta farligt, dangerous.
D: Det du(A) snackade om innan med skidåkaren eller vad det var, som flyger, det är ju Hot.

A: Ja
D: Det är den känslan. Det kan man förknippa med många olika saker.
         Det kanske inte nödvändigtvis behöver vara vara ... som du så damn, det tyckte jag var coolt.
C: Damn nu har du hittat en n tjej, då blir det damn.
D: Eller damn hot, eller damn ugly. Det förstärker känslan i sig.
A: Cool, hot. Det är saker som man blir Wow, det är som jag nu. Om man säger kolla på detta och så börjar man filma. Och så hoppar man bakåt. Man tänker Wow, what the fuck. Vad hände?
B: Man kan kanske gradera; hot, hotter, damn hot.
Moderator: Ja, ha flera graderingar. Vi kan gå över på en annan fråga. Vad hade Ni använt det till?
D: På bussen, en lång bussfär, eller en tråkig lektion.
C: Om man jobbar som ambassadör och ska intervjua folk.
C: Ni måste ha ett budskap med detta.
c: Men man måste ha ett budskap som alla kan förstå.
Moderator: Man ska försöka inrätta det?
B: Förstå du?
D: Jag fattade inte ett skit av vad han sa.
A: Ja! Jag tycker att man ska ha möjlighet att välja, som på bilderboken, om anonyma ska kunna se det eller bara vänner, eller som Facebook. Man kan välja.
C: Att ni kommer ha det på hemsidan. Han kommer ju inte ha, han vet ju inte... ha tillstånd för detta. För annars ska han aktuellt vara en anonyma. Han kommer ju inte ha, han vet ju inte... ha tillstånd för detta. För att några ska få tillstånd att göra detta hur man vill utan att...
Moderator: Som det är nu så väljer vi vilka filmer som går att komma åt. Vill ni välja för varje video?
A: Borde ha olika mappar faktiskt. Om jag spelar in en film vill jag kanske inte att hela Sverige ska se den. Jag vill kanske att min bror ska se den.
Moderator: olika mappar som olika användare kommer åt?
A: Precis.
Moderator: Om ni tittar på en video, hur intressant är det vem som spelat in den?
D: Det avgör liksom.
Moderator: Ska det vara något man vet innan man ser videon?
A: Ja, helst.
B: Sen kan man ha en ranking för alla användare, vem som har coolast filmer.
D: Ingår det i ett nätverk?
Moderator: Ja, det kan man väl säga, det är bara de här två telefonerna som kan se videos.
D: Ok, för då kan man ju välja olika nätverk för vem som ska få titta.
Moderator: Om vi ser RGRA som, ett nätverk. Vad tror ni det hade varit för information
D: Det är ju det där med musik.
Moderator: Kan ni se några andra nätverk man skulle vilja ha. Ett med familjemedlemmar och ett med...
C: [oförståeligt]
D: Du skapar dina egna mappar.
B: Hur ska man veta...
A: Det är det jag försöker förklara. Vi säger att jag heter C. Jag har videos jag vill visa för B och D. Man har ju alla som vänner. Det har man ju.. allt som är internet kan man ju välja, den är familj, den är kompis. Då kan man välja om man vill ha människan...

D: Tillgång till att se det eller inte.

A: Precis.

d: Men grejen är, i och med att man är kompisar så blir det, "du har ej tillgång till den här mappen", då skulle jag tänka "varför har jag inte tillgång till det?".

C: Man kan inte lita på vem som helst.

A: Jag tänkte så här... Om du är hemma hos mig... Vi sa festa... Så säger jag att jag ska byta om, då går jag in och byter om, då öppnar du dörren, då säger jag gå ut idiot

C: Jag fattar ingenting.

A: Det är min grej, även om vi är kompisar.

B: ska vi byta fråga?

d: Han menar att du har inget med att göra när jag byter om, det är mitt privatliv. Även om vi är kompisar.

C: Om vi är hemma hos mig och så är jag med en tjej i ett litet rum. Då vill jag inte att nån ska komma in. Det är så du menar eller hur?

Moderator: Det är helt enkelt viktigt att inte alla kommer åt vissa grejer. Nu vill jag gå vidare till det här med taggar. Vilka taggar hade bra?

D: Sweet

B: Soft

C: Sånt som är viktigt.

Moderator: Men vad hade ni velat tagga om ni fick välja vad som helst?

C: [oförståeligt]... vad kan man säga om en seriös intervju?

D: Seriös intervjuer... ambitiöst, talangfullt...

Moderator: Hur hade ni beskrivit Behrang?

B: Grym

C: Snackar..

A: Men tanke på hur länge jag känt honom skulle jag säga... glad.

C: Kämpig.

A: Straight.

D: mustasch.

[diskussion om sweet]


C: Tråkig.

Moderator: Fler, eller är ni överens?

B: Whack.

A: Va?

D: Wookie.

B: Kass.

D: Kass.

[..]

D: Wookie är lite som Whack.

Moderator: Då kör vi sweet.

C: Nasty.

A: Ugly

[..]

A: Hade jag tagit upp min mobil och sett att någon taggad med nasty hade jag slängt mobilen i väggen. Nasty är inget ord du använder i vilken mening som helst.

B: Nasty kan vara en fin tjej.

D: Nasty kan vara något äckligt som fan.

A: Ja

B: Eller nån fin tjej, eller kinky.

[..]

D: Surt.

A: Hallå, vi kan se sweet som sött eller som roligt.
B: när du ser en fet film, sweet.
Moderator: Då tar vi nästa, talangfull.
D: Retard.
B: Träna mer.
[...]
Moderator: Ska vi fortsätta, då var det snackig.
[diskussion om synonymer till snackig]
B: Blyg.
D: Nästa.
Moderator: Kämpa.
D: Lat.
Moderator: Nästa, straight.
A: Gay.
Moderator: Ja det är ett alternativ, men det var nog inte riktigt det vi menade...
A: När jag säger straight menar jag, han är rakt på sak. Inget jiddar, inget skit.
C: Mytoman.
A: Skärp dig, man ska ha det i mobilen, man kan inte ha Nasty. Skriv crack då också.
D: Straight- Crackhead.
[skratt]
D: Raw. Straight - Raw
Moderator: Då ska vi se, det var alla taggar.
[diskussion om nasty och naughty]
Moderator: Nu går vi till nästa punkt. Hur skulle man kunna använda det här programmet för att förbättra kommunikationen mellan sina vänner.
D: Om man träffar brudar, vilka brudar är det? Skickar till Chriss... nasty man.
[Mer prat om att man kan filma tjejer]
Appendix E – Findings from silent brainstorming (EN/SV)

Tags

- Slow-upbeat
- improvised - posed
- Tags that make you curious, that can be interpreted in many ways; that has many meanings (square-circular, subtle-explicit)
- crazy-innovative
- Workshops with peers (Tag: interesting-boring)
- extreme-lame
- impressive-boring
- surprising

Context

- I would like to watch my little daughter when I'm away from home
- Lära känna nya miljöer
- Vad tycker folk på min nya arbetsplats är "coolt"
- Interviews
- documentation of events
- Staged recordings (like scripted or prep'd in advance to limit nonsense)
- Holiday with family in another country (Tag: happy-missing you)
- Clothes I'm looking for in a store with friends(tag: What do you think?-ugly)
- I would like to see when friends and family is on vacation/having an adventure
- Filma stämningen på utestållen
- Sport event, Worst (game ever) great (game)
- Concert (Tag: Magic, dark) share with friends
- Restaurant (Tag: tasty, cheap) share with friends
- My latest hardware mod (labels: high-tech, geeky, cool mod)
- Filma: stämningen på bussen
- Filma: konsert
- Filma för intressegrupper eller för tävlingar, uppdrag, t.ex. "vinterbild" för sydsvenskan
- Tolkningar av aktuella händelser t.ex. USA-val, melodifestival, osv.
- Using a "grävmaskin" in my garden (tag: cute) share with friends
- Nyinköpta kläder för att få smakprov (tag: Behåll! - Sådär - Lämna tillbaka)
- I would like to see broadcasts made by comedians
- My kids playing beach tennis (Tag: fun-lazy) share with friends
- Getting to know a new work place (I'd look for videos tagged: fun-boring, cool-lame, play-work, safe-distress, relaxed-stressed, happy-sad)
- My former cat performing acrobatics (Tag: lame) Share with me
Appendix F – Expert evaluation (EN)

Comments

PE1. Statistic screen didn't show - resulted in frustration for the user when he couldn't see what kind of difference he affected on the video.

PE2. If a user selects connection point, it takes a few seconds before it disappears which means that he doesn't get any feedback that he had pressed so he will most likely press again, which results in that the application will skip one screen.

PE3. There is no man representing sad videos.

PE4. When a video is loaded "Loading, please wait" is displayed on the screen. At the same time "connection point" input is requested. The displayed text makes the user wait even though the current command is to select connection point.

PE5. Specialists desired another representation of the video. A man was a bit misleading and as a viewer you want to see how your tag changes the attributes of the video.

PE6. The pictures of how people agree with the producer tags doesn't correspond to the values in stats.

PE7. Done was a bit unclear what it did in MediaView. Maybe that confirm is a better word.

PE8. Maybe one should use the attribute words with color coding when displaying video list.

Improvements

The man that represents sad videos is added (PE3).

When viewing a video the user exits the playback by pressing "confirm" (PE7).

The bug that made pictures and stats show different results is fixed (PE6).

Even though the specialists didn't complain about this, we changed in the database so that the usage of words as uncool and uncute was exchanged with lame and ugly, to be consistent.