

# Experience Clip: Method for User Participation and Evaluation of Mobile Concepts

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## ABSTRACT

This paper describes experiences from using a field testing technique for collecting user experience information for evaluating mobile applications used in everyday life. Our technique is based on the usage of mobile camera phones that are used for capturing video and audio during the use of the mobile application. The users helped researchers in collecting user experience material by shooting the video clips themselves. To our surprise they also started to participate actively by presenting "miniplays" in the clips to make their point clear. Our results show that with this technique we can get richer emotional material and more versatile usage situations than with traditional observation methods, and additionally there is clearly a yet unexplored potential to develop a more systematic design method around participation.

## Categories and Subject Descriptors

H5.2 User interfaces, evaluation/methodology

## General Terms

Design, Human Factors

## Keywords

User participation, mobile application, user experience, participatory design, use of video

## 1. INTRODUCTION

The purpose of this paper is to discuss a novel technique for user-designer interaction. The technique was developed to solve a practical need in evaluating mobile services, but it was found that the technique has a strong participatory dimension. It also brings together a number of different threads in research discussions on using video in participatory design situations.

The initial problem that we tried to solve was how to collect useful fieldwork data for evaluation of location-based outdoor

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mobile applications in versatile use situations. Because the outdoor location itself (covering the pedestrian area in the Oulu city center, a dozen blocks or so) was an essential aspect of the applications to be evaluated, there was no possibility to do testing in fixed locations. Our users were as real as possible - passers-by who got interested in the offer to experiment with the service, published in a kiosk on the corner of the street. Using questionnaires and interviews did not give enough detail, and attempts to collect data by "shadowing" the users with a video camera disturbed the actual situations so much that the gathered data was next to useless.

The central idea of the technique is very simple: to avoid disturbance, we took pairs of users who were visiting the city center together, gave our application device to one and a separate mobile phone with a capability to take short video clips to another, and asked the one with the phone to take video clips when the other is using location-aware applications. This actually solved our problem of disturbance and gave us information at the level of detail we wanted, but the video clips we collected from our temporary collaborators contained, to our surprise, also much more, and that is what we are going to elaborate and reflect on in this paper.

We will proceed as follows. First, we describe the starting point, our practical problem and the research setting. Then we present what we did, what happened with the clips, and also present some results to our original questions. Finally, we discuss the phenomenon we encountered from the viewpoint of participatory design, and explore some directions for further research.

## 1.1 The Challenge of Evaluating Mobile Applications

When HCI research moved from desktop applications towards mobile devices and services, the practical problems related to doing evaluation in mobile environments rapidly become known. It is commonly accepted that data collection for evaluation of mobile services and devices is a central challenge, and that novel methods must be found for that. For example, Newcomb et al. summarize their difficulties: "We found it very difficult to create a situated context to evaluate situated interactions. Equally as difficult was capturing a user response..." [12], and Jones et al. see that "A key challenge will be to create an atmosphere that is more conducive to natural patterns of use while being accessible to research and evaluation" [8]. Meanwhile, Palen and Salzman observe "ecologically valid study of today's mobile technologies is

challenging, because the conditions for technology use are dynamic, varied, and difficult for investigators to directly observe.” [13].

Thus, evaluating mobile applications is a challenging task: the standard method of laboratory test loses the very idea of mobility, and doing tests in real life contexts sets high requirements for the data collection methods used. On the other hand, a naturalistic setting provides evaluation possibilities not available in the laboratory. Mobile applications are designed to be used in a mobile context, so they should also be evaluated in a mobile context. They are often used for supporting everyday activities tightly woven into other activities taking place at the same time. Therefore, for evaluating mobile applications, we need to complement laboratory evaluations [1] with real life field evaluations.

To address these requirements we need new methods for collecting material for user evaluations. There have been a number of attempts to overcome obvious difficulties generated by mobility. Perhaps the easiest way is to try to continue the laboratory practice in the field by "shadowing" users with a video camera, but this is pretty obtrusive and also a heavy method, more suitable for in-depth analysis than volume testing with a number of users. Less obtrusive techniques which have been tried out and reported include the use of clickstream data logs [5], equipping a handheld device with a small camera [9], and using the telephone or mobile device itself to collect voice comments [13]. In long time use the Experience Sampling method (ESM) [11] has been used for studying people in naturalistic settings by reminding them every now and then via a beeper device to fill in questionnaires probing their state of mind and activities.

In this paper we present yet another technique that eliminates the influence of a researcher being present in the evaluation situation. The technique can be used in the mobile context. It encourages the users to freely express emotions, feelings and opinions about the application.

## 1.2 Research Setting

This research work has been carried out in a nationally funded Rotuaari project. The project aims to evaluate context-aware mobile applications in a real-world environment and with real end users. The research was carried out in downtown Oulu and is named after its pedestrian area. The context-aware applications evaluated were the following:

Location aware map. The user could see her location on the map and could search for landmarks and businesses located in the city area.

Context-sensitive advertisements. Advertisements were pulled up by the user device according to the context, e.g. location and profile of the user.

The applications were used with PDAs that were loaned out without a fee to people visiting Rotuaari during the research period of one month. To get a PDA the users were requested to fill in a simple user profile and agree that their actions would be logged for research purposes. The kiosk used for loaning out the devices and instructing users is illustrated in Figure 1.

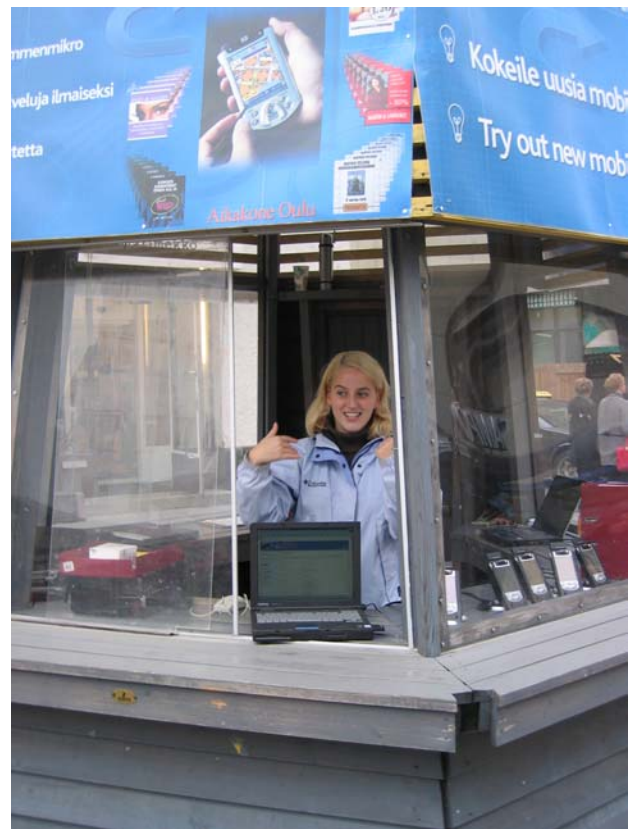


Figure 1. Information kiosk.

## 2. USER EXPERIENCE EVALUATION

Our goal was to evaluate the user experience evoked by the mobile applications in question. We wanted to identify factors that allow the design to positively influence the user experience.

### 2.1 User Experience

By 'user experience' we mean the 'totality' of subjective experience of using a device or tool in a situation. As user experience is formed in a dynamic relationship between the user and the device, the application and the usage environment, it cannot be evaluated in a vacuum. [2]

### 2.2 Problems with Evaluating User Experience

We faced problems in capturing information about the factors affecting the user experience in the field setting. We were especially interested in the feelings, emotions and subjective opinions of the users when they used the applications. With traditional methods this kind of information was hard to get.

We first used portable videocameras for capturing usage sessions. The researcher followed the users, and recorded the whole usage sessions. Our experience showed that having a videocamera in a public space such as the pedestrian area restricts the mobility of the user, as the person with a videocamera cannot move very freely. Also, passers-by easily stopped to stare at the strange-looking pair moving oddly. It was also quite difficult to get ordinary users to participate in the videotaped evaluation, so the test subjects needed to be recruited beforehand.

A videotaped usage session provided an excellent overall picture of the session under evaluation, but our experience showed that videotaping in a public, mobile environment renders the usage situation somewhat unnatural, hence potentially affecting the user experience.

We also tried out the method presented in [13] where users observe each other by taking photographs with disposable cameras and explain them with notes they write into a notebook. Our experience showed that the photos themselves did not give much information, as they typically showed a person standing in Rotuaari and staring at the PDA screen. However, some users provided us with very interesting data in the notes they wrote in the notebook. The notes described the usage situation and the feelings related to the usage. We assume that taking a photo with a disposable camera indicates an important event and provokes the user to write a note in the notebook to explain the situation. Therefore, even if the photographs themselves did not provide much extra information they presumably helped the users in the experience capturing process.

However, not many users were able to produce notes detailed enough to provide us with rich information about user experience. One reason for this might be that writing in a notebook disturbs the normal mobile activities of the user, and requires her to sit down and start writing. Also, some people may find writing about their emotions and feelings difficult.

We also applied traditional questionnaires for collecting information related to the user experience. We used a questionnaire where we applied the Emocards presented by Desmet [4] for providing the users with a tool to describe their feelings about the application. However, we quickly found out that our research setting did not favor questionnaires. Pen-based questionnaire forms were difficult to use in practice because of physical and practical constraints. Implementing an electronic questionnaire would have required the users to use text input, which proved to be difficult for our users who were usually not used to PDA devices with stylus input.

Because of the problems discussed above we decided to use a new approach for collecting user experience. We call our approach the “Experience clip” technique.

### 3. EXPERIENCE CLIP TECHNIQUE

Because of the challenging research setting (i.e. real mobile usage environment and real end users), our requirements for the user evaluation technique were complicated. We wanted especially to collect information related to the user experience, i.e. how the users experienced the usage situations, rather than only how they managed to perform predefined tasks. Therefore, we wanted to collect data from natural usage situations that would not suffer from the influence of a research setting.

#### 3.1 Principles of the Technique

Our goal was to define a technique that would:

- reduce or eliminate the influence of the researcher in the research situation,
- give users freedom to try out and explore the possibilities of the system,
- support mobile usage situations, and

not alter the environment in a way that would affect the user experience.

As mobile phones are very common in a modern city scene, their usage in public places has become ubiquitous. People use them frequently and their usage does not draw the attention of passers-by. Many new mobile phones have the capability to record video and audio. These features are very easy to use without extensive training or practice. Therefore, they can be used in collecting user experience data without disturbing the usage situation.

Our method explicitly encourages the users to participate in the design process, as they are free to decide themselves what they want to record and what kinds of clips they will provide for the research team. Users are naturally aware that the researchers are their “audience” and researchers are interested in the messages the users choose to express.

People often walk in a city center in small groups - with friends, colleagues or family members. We have exploited this by giving one person a PDA with the Rotuaari application and an accompanying person a camera phone for recording the usage situations of the first person. In this way we also exploited a natural human behavior of sharing experiences with friends. It is natural for a user to tell her friend about her feelings towards the device or the application during use.

#### 3.2 Rotuaari Experiment

We used two types of camera phones: Nokia models 3650 and 6220. Nokia supported our research by providing us with the equipment. Both phone models supported live video and audio capturing. Camera phones with similar capabilities are available from other manufacturers, too, such as Sony-Ericsson and Samsung.

We used the Experience Clip technique during three weekends of the one-month field experiment period. During the experiment, a total amount of 36 people acted as observers with camera phones. People often changed roles during usage, i.e. the PDA user became the observer and vice versa.

Our procedure during the field test was the following:

1. Give the users a PDA and a camera phone. Instruct the PDA user on how to use the applications. Also, give instructions to the observer on how to record video clips. The instructions were the following:
  - Record as many clips as possible.
  - Use the camera phone for capturing experiences related to the usage: failures, success, surprise, joy, anger, etc.
  - Aim at the user of the PDA, not at the PDA screen.
  - We showed how the video recording feature works.
  - We explained the technical constraints, such as the best distance for shooting, keeping fingers away from the lens, etc.
2. Users spent time with the PDA and camera phones. Because of the expected lifetime of the battery of the PDA, we advised them to return within two hours.
3. When the users returned with the devices, we asked them to describe what they did, how they used the applications and

how did the applications behave. We encouraged storytelling.

4. Video clips were downloaded to a PC for further analysis and deleted from the phone's memory.

None of the users used the devices longer than one hour, so we assume that the two-hour time limit did not have any effect on our test setup.

## 4. EVALUATION OF THE TECHNIQUE

Most of the videos shot complied well with our instructions and provided us with good quality information about the usage situations. However, some of the material was irrelevant and provided little added value. Next, we will discuss the factors that affected the success or failure of using the Experience Clip technique.

### 4.1 Instructions

We found that to get high quality material, we needed to give an instructional briefing to the camera phone user. If there was no time to give instructions, the quality of the material was notably inferior. The observers needed to have explained to them what kind of situations we wanted them to record. Also, as most of them had not used camera phones previously, a short introduction to technical capabilities and restrictions was necessary.

### 4.2 Relevancy of Information

As the users were able to decide for themselves what to capture, we were concerned whether the material we would receive would cover the whole spectrum of usage situations, or if it would be biased towards some specific types of uses.

Our results indicate that some users did not want their failures to be recorded. They told the user of the camera phone to stop recording if they did not succeed in using the device. Some observers stopped filming, some continued recording. However, most users were quite happy to elaborate on their failures and negative experiences. Very negative experiences sometimes resulted in shooting funny clips. For example, one user provided us a very realistic looking clip showing how he throws the device into the Baltic sea because he got so frustrated with it. This may indicate that when the user experiences strong feelings towards the application and wants to express and communicate her feelings to the designers, she no longer would only film what they were asked to film, but eventually would design and film their own ideas. This would expand the usage of video towards a powerful multimedia ethnographic tool as described by Goldman-Segall [6], and would provide the users means for participating in the design process through establishing a communication channel between the users and designers.

Compared to other techniques we used, we found that with the Experience Clip technique we would get a much wider range of usage situations and emotional responses than with methods where the researcher was involved in the usage situation. This was probably caused by the fact that if the researcher followed the users, they did not even try to use as many functions as they did by themselves. Also, when the camera phone user was a person well known to the user, it was very natural for the user to explain their emotional responses and feelings towards the application, and they could then be simultaneously captured.

### 4.3 Using a Researcher Instead of the User as the Observer

We also used camera phones so that the users did not participate in recording video clips. Our researcher did the recording by following the users when they used the Rotuuri system.

We soon realized that this affected the usage situation strongly. The usage sessions were short, and the users were not too expressive about their feelings and emotions. When asked, they explained that the presence of the researcher did not have any effect on the usage situation. They assured us that they were OK with the researcher following them, and that it did not affect their behavior. However, we could clearly see the difference in the produced material. The video clips shot by the users themselves were much richer in detail, contained more emotions, and conveyed a better feeling of real usage situations.

Also, where the researcher followed the user, in a problem situation the user did not try to manage by herself, but immediately asked for help from the researcher. When the users observed each other, we got information about how the users managed in problematic usage situations, and how they were able to solve the problems faced during use.

### 4.4 Technical Problems

Capturing high quality audio in a city environment is extremely challenging. Both our camera phone models had difficulties in capturing low male voices, and the environmental noise, such as street musicians and traffic light sounds, were also very disturbing. However, this problem was present also when we used the traditional videocamera.

Both phones had a built-in limitation for the clip length. The 6220 provided a possibility for longer clips (20 seconds), and it stored the clip much faster than the other model, thus allowing the user to start recording a new clip soon after finishing the previous one. This can be seen in the length of the clips people recorded. For example, the average total length of video clips recorded with the 6220 was 4 minutes and 8 seconds, whereas with 3650 people recorded an average of 2 minutes 22 seconds of video material. The maximum duration of material recorded with the 6220 was 10 minutes, whereas with the 3650 it was 3 minutes 37 seconds. Also, the quality of audio was better with the 6220. For these reasons, we found the 6220 to be better suited for our purposes.

There are some downloadable applications available that remove the clip length limitation, and allow the user to record as much video as the phone's memory card can store. The technical quality of the resulting video is not as good as with the original applications provided by the terminal manufacturer. In addition, we experienced severe technical problems with downloadable video recording applications that resulted in losing video material. Even though the recording application seemed to function properly, the application provided for viewing the video clips refused to show the videos. Therefore, we preferred using the original applications provided by the device manufacturer, even if the length of the video clip was restricted.

Some users had difficulties in keeping the viewfinder directed correctly, especially when the PDA user was moving. With the 3650 this was easier, as the screen used as a viewfinder is bigger. Keeping the viewfinder directed was especially difficult if the sun was shining straight into the camera. This made the screen to turn white, although the quality of the video clip was

totally acceptable. Also, as the clip had to be shot from rather close distance, the height differences of the PDA user and observer sometimes caused the viewfinder to creep upwards or downwards.

#### 4.5 Combining Clips

As the video clip length is very limited, the major problem in analysing the material is how to perceive the whole chain of actions that took place during use. For example, in one of the usage sessions the users had recorded several clips where they tried to find a restaurant where they could have lunch, but were having serious technical problems with the device. They had shot several clips where they tried unsuccessfully to get the system running. Then suddenly the next clip available showed them having lunch in a restaurant. It was impossible to figure out, if the system finally had helped them to find the restaurant, or had they just chosen a restaurant near by without the help of the system. This problem was tackled by using interview-initiated storytelling after the usage session. The users were requested to explain what they had been doing and how the system behaved. With the help of the interviews we were able to put the clips into context.

#### 4.6 User Experiences Related to the Experience Clip Technique

Users were usually willing and even enthusiastic in acting as observers and using camera phones. In fact, some users were more interested in the camera phones than the applications we were evaluating. Some users wanted to try out the features of the camera phone, and this resulted in non-relevant clips, e.g. shots of buildings, babies, bottoms of women walking in the pedestrian area, etc. With a brief introduction, the users were usually capable of using the camera phones without difficulties.

Many users seemed to have fun with observing each other. Most usage situations recorded seemed very natural. In addition to realistic usage situations, the users often created short performances. Especially frustrated users seemed to be likely to express their feeling through performances. These performances also provided us with information about the emotional responses of the users, even though they did not deal with real usage situations.

Using a camera phone for recording usage situations in a city setting did not cause notable disturbance to the environment. People are so used to seeing mobile phones in a city scene that passers-by did not pay much attention to our user groups. However, we observed that using a location aware application on a PDA in a mobile context in a public space was rather dangerous. Our PDA users followed the screen of the device so intensively that they forgot to watch their step. Luckily, our test environment was mostly a pedestrian area, so we avoided serious injuries.

#### 4.7 Analysis of Material

Analysis of video material often includes transformation into paper-based descriptions for analysis purposes. With experience clips, we also needed to combine the clips with the interviews done after the usage sessions. We created action-tables (similar to the tables presented here in this paper) of usage sessions that described the actions of the user during one session in narrative format. The experience clips were combined with the interview material to create a coherent narrative from the usage session.

The resulting action-tables described the actions of the user, emotional signals expressed during the use (i.e. laughter or moans) and verbal discussions audible in the recorded clip. In the analysis sessions, the paper-based written material was used as a primary source of discussion, but the experience clips were used at selected points to clarify or to emphasize selected topics.

We did not have tools for connecting experience clips with the paper-based material, so the clips needed to be manually searched in the analysis session. This was naturally time consuming and difficult. We are currently in the process of examining and evaluating tools that would support linking experience clips with written narratives.

### 5.8 Unexpected Participation Dimension of the Technique

Initially our idea in starting to experiment with the Experience Clip technique was just to overcome some pertinent problems in the collection of use data in mobile environments. To our surprise the experiments revealed a participatory dimension of the technique – a potential to use it in participatory design. Instead of staying within the predefined roles of user and data collector, the user pairs took a much more active stance as design collaborators, and created, acted out and recorded mini-dramas and mini comedies around use situations to make their point clear.

This is completely in line with the thread of thinking in participatory design manifested by Buur et al. [3], that it is wasting video's potential to use it only as a record of use, 'hard data', when it can be used as a media in design and communicating about design between stakeholders in the design process. It may be possible to develop a systematic approach to use experience clips in participatory design, but we have only just started to explore those possibilities.

## 5. EXAMPLES OF RESULTS

The rich material collected using the Experience Clip technique was analysed by our research team. We give here examples of results we were able to extract from the material. The examples have been selected as representative of clips that include performances that are directed to the researchers. The discussions between the users presented in the tables have been translated from Finnish by the authors. (It is a pity that it is not possible to show the delightful video clips themselves in the paper.)

### 5.1 Typical Usage Patterns

As the users were free to use the device and the related applications as they wanted, one of the things we were most interested in was how the users actually used the system. Experience clips provided us with a good tool for seeing how the users chose to use the system, and what features they found most interesting. For example, our clips showed that users were first very excited about the positioning system (see Figure 2) and they constantly followed the dot on the screen presenting their location on the map.

The clips also provided the user a tool for expressing their prior expectations towards the system. Sometimes, there was a mismatch between the prior expectations of the users and the actual service provided by the system, and experience clips were able to capture this. This provides designers with valuable

information about actual user needs. For example, the users expected the mobile ads to provide them with special offers and great bargains, and were dissatisfied when the advertisements primarily included only facts about the shops and services. The disappointment caused users to create clips where they expressed what kind of information they expected to receive through mobile ads, and how the actual ads did not fulfill their needs.



**Figure 2. Use of positioning system.**

## 5.2 Expressions of Emotions

The technique proved to be very effective in capturing emotional experiences of the users. The clips revealed both spontaneous emotional responses to the system as well as small performances that were created by the users to express their emotions.

The clip described in Table 1 illustrates spontaneous emotional responses to the use of the positioning system. It also provides an example of the social interaction between the user and observer that has been captured by the experience clip. We found that by creating usage situations where two users that were familiar with each other could interact, the users were better able to externalize and verbalize their experiences, than when they used the system by themselves or with the presence of the researcher, who was a stranger from the user point of view.

**Table 1. Experience clip describing response to positioning**

PDA user	Video shooter	Description
	“Does the dot move?”	Two young boys are walking on the street.
“It moves now!”		User is exited.
	“Wow!”	User stops.
“Check it yourself!”		PDA user moves towards video shooter and shows device screen.
	“Show it to me too.”	
“It was there a moment ago, and now it is here.”		User shows the route on the screen and sounds amazed.

The discussion captured in the experience clips illustrated by Figure 3 and summarized in Table 2 shows an example of how the users sent direct messages describing their emotional responses to the research group.



**Figure 3. A message to the designers**

As the users participated in recording usage situations, they were naturally aware of the research situation and knew that the researchers would be an audience for the recorded clips.

**Table 2. Experience clip expressing frustration of the user**

PDA user	Video Shooter	Description
“Yes I can say this because we were told to do so.”		User looks at the device and looks slightly irritated.
	“Say it once again.”	User holds the device at arm’s length and examines it.
“I am so mad. I do everything right but this does not work.”		User walks the street and looks angry.
	“You look awfully angry.”	User makes a face at the device.
“This is so irritating! Damn... “...connecting...” OKAY!”		Video shooter laughs. PDA user reads the message from screen.

Frustration towards the device and applications was one of the main triggers for creating dramatic performances (an example can be seen in Figure 4).



**Figure 4. Frustrated user.**

### 5.3 Usability Issues

As the users captured normal usage situations, the clips also provided us with information about the usability of the system. The users seemed to capture situations where they had difficulties in understanding how the system works, or wanted to propose a better solution for improving the usability of the

system. For example, the experience clip described in Table 3 illustrates a situation where the user describes the difficulty of orientating and gives a direct proposal on how the directions could be shown on the map.

**Table 3. Experience clip describing difficulties in orientation**

PDA user	Video shooter	Description
“So which direction do these streets actually go in? For example, if we now are on the corner of Isokatu and Saaristonkatu. Here should be something like...”		The user explains to someone else how the device is used. He looks at the device and shows directions with a stylus.
	“It is difficult to know in which direction you should go”  “Should there be arrows pointing in the direction you should go?”	User laughs.
“Yes, but there is no compass in the device. But anyhow, that should be the idea.”		Video shooter apparently also concentrates on the PDA screen, as the picture starts to wander

### 5.4 Technical Issues

The clips also provided us with information about the technical reliability, accuracy and operation of the system.

For example, we had problems in our context aware advertisement server that prohibited some users from receiving advertisements. Most users were very curious about getting mobile ads, so they ended up manipulating their profile and changing their locations just in order to seek the advertisements. This turned the usage of the device into a “seek-an-advertisement” game instead of targeted advertising. A combined set of remarks made by one user about receiving mobile ads is presented in Table 4. The pair create a hyperbole-loaded dramatic comedy around missing "push" advertisements. The clip illustrates well how the users were able to cope when the system did not technically operate as expected. It also gives an example of a series of events that were captured during use in several successive experience clips that together form a narrative story for the researchers.

**Table 4. Excerpts of several experience clips from one user who did not receive any mobile ads**

PDA user	Video shooter	Description
“We still haven’t received mobile ads. If the mobile ad appears, what should I do?”		User takes the device out from bag and checks the screen.
“I do not know how to change the settings for receiving mobile ads... We walk around with the device, but no-one sends us ads”		User tries to change her profile in order to receive context sensitive ads.
	“You would be a good victim for commercialism”	User looks puzzled and strokes her hair.
“Really. I think that when we receive the first one we are going to go there. No matter what it is about.”	“But no-one sends ads”	
	“We’ll do that. Should you check the ads again?”	
“I can’t find any. Where was the ad window again...? Nothing happens if I press the Info button. It’s really a pity if I don’t receive any ads.”		User presses different buttons and tries to seek ads. She raises her voice in the end.
“I’ll check if I’ve received any ads.”		Users walk around the city, sees friends and try to “find” mobile ads.
“Now the network doesn’t respond... We didn’t receive any ads, even though we wanted them!”		User looks disappointed

## 6. DISCUSSION

Our experiences with the Experience Clip technique are related to two active discussions within the participatory design community, and it connects them in an interesting way. The two discussions are one on using video not only as data but as a design media, and another is on performances in design.

### 6.1 Video as a Design Media

Using video in recording use situations to be analyzed later, a method borrowed from microsociology and anthropology, has already become an inseparable part of a variety of user-centered design methods. During the last years, however, a discussion has started that this kind of use means actually wasting the potential video can have in design, and it is possible to develop more active and efficient design methods by using video in a more participatory way.

The major proponent of this kind of approach within participatory design has been Jacob Buur, whose paper in PDC 2000 [3] was sort of a manifesto for the whole direction. In the paper Buur et al. question the use of video only as “hard data”, inherited from social science, where the emphasis is in the accountability of findings made by analytic researchers and based on that data. They then proceed by presenting their experiences in more active use of video as a design media, from which they have four different examples: collaborative designing and editing of a video documentary, co-authoring video materials, using video in collaborative sense-making with the help of a video “card game”, and using video as a reflective material by sharing tapes and negotiating stories. Another example of this way of thinking is the work done by Helena Karasti in her dissertation [10]. In her work, Karasti made video recordings at a radiology clinic and then prepared them as “video collages” that were used as discussion pieces in meetings between the future users of a radiology system and system designers. The same idea of active use of video as a reflective medium is also a central part of the Change Laboratory method developed at the Center for Activity Theory and Developmental Work Research at the University of Helsinki (see [5]), in a larger context than system design. There a set of video recordings about problematic situations in everyday practice is used as a “mirror” to bring real life into situations where the further development of work is discussed.

### 6.2 Performances in Design

Buur et al. observed, that some of their experiments had a “theatrical” character, which was considered highly useful for design. The issue of the role and nature of performances in design in general has been elaborated by Giulio Iacucci in several of his papers. For instance, Iacucci et al. [7] emphasize the ephemerality and liveliness of performances when compared to representations used in design that are static, and they identify three classes of situations where performances can relate to design. First, performances can support exploring and inventing ideas, they can support representing and communicating a scenario, and finally they can be useful in testing and experimenting with an object. The authors further present a number of examples from these three classes, and analyse them by means of three concepts. These concepts are fictional space, imagination, and interactional creativity.

The fictional space is created by the participants by performing and reacting to each other. It is not a substitution of reality, but a representation of it, a space in-between, where rules and conventions of reality can temporarily be surpassed so that fiction can take place.

Imagination, production of ideas, is related to the success of a performance. Performance is successful when created ideas can be interpreted and reacted to by other participants, when they change the fictional space as interpreted by some participant,

when ideas are inspired by the performance of physical actions in everyday contexts, or, when an idea produces an intervention in physical space that is inspiring and enlightening.

Finally, interactional creativity refers to the emergent features of collective performances, where actions and "offers" by one participant are "accepted" and reacted upon by others, and thus novel features emerge when action unfolds.

### 6.3 Analysis of Experience Clips

Now our experience clips continue the discussion referenced above in an interesting way. Practically all the previous examples mentioned in the literature where video material is co-produced (both Buur et al. and Iacucci et al. give a number of examples of this) have taken place so, that the researcher or designer has been doing the recording, while users have been enacting a scenario or improvising with a mock-up device. Only afterwards have users had the possibility to comment upon the recording, or even to participate in the editing of a piece. Besides having a working system to be used, our setting differs from this by its use of a peer recording instead of a researcher or designer recording. Using Iacucci's concepts, this generates a very different "fictional space" for the performance. The audience (researcher) both is there (because she has given the brief, and will watch the results) and is not there in person, only as a projection in the mind of the performers. This, and the fact that the two users, the recorder and the performer, are in full control of the situations (what to record, how to behave) apparently gives a much stronger sense of authorship to users than the normal situation, and feeds their imagination in a number of ways. Finally, the equal status between the recorder and performer apparently feeds the interactional creativity in the situation better than a more unequal situation between a researcher and a user: the performances were not monologs, but dialogs between the recorder and the performer - also in those cases where the recorder did not actually say anything.

With respect to earlier work, it is interesting to note that the technique seems to be situated somewhere in the middle ground between Goldman-Segall's [6] very open participant use of video, and more designer-controlled approach by Buur et al [3], who actually mildly criticize Goldman-Segall for a danger of losing sight of a design project.

## 7. CONCLUSION AND FURTHER RESEARCH

Our experience shows that the Experience Clip technique can provide rich data about the emotions, feelings and experiences evoked by a mobile application, if certain prerequisites are fulfilled. First, the users need to be instructed on what they are expected to capture, and how they should do it. Second, the users need to be motivated and willing to participate. The technique can be recommended for capturing data from mobile usage situations, and for evaluating applications outside the office environment. Thus, the Experience Clip technique can be useful as a use data collection technique for mobile devices and applications,

Additionally, the technique creates a situation where users can easily step beyond being only collectors of data for design into a more active role, to invent potential new uses and suggest improvements. Because the difficulty of organizing genuine user participation is one of the actual problems in the development of generic mobile services not accurately targeted

to a particular user group, this may be a significant finding. The obvious question and a task for further research is how this participatory tendency can be best harnessed into the use of design. For this, further and more systematic experiments are needed.

At least two further developments can be seen. One is to enlarge the sample: when camera phones are becoming increasingly common, one can even envision large-scale experiments based on the recording of video clips by using equipment that the interested people already own themselves. Another is to extend the participatory design community into a larger crowd and intensify their participation and to let users share their videoclips with others, comment on them and combine them "to create a communal construction of meaning" like Goldman-Segal suggests ([6], p. 259), and thus perhaps create a "virtual community of users" (ibid.).

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