

More TV! – Support for local and collaborative production and consumption of mobile TV

Engström, Arvid¹
Esbjörnsson, Mattias
Juhlin, Oskar
Interactive Institute
{arvide, mattia, oskarj}@tii.se

Norlin, Cristian
Ericsson, Research
cristian.norlin@ericsson.com

Abstract

New mobile phones come with basic video editing facilities. Given a constantly evolving technology, it is possible to envision new mobile devices with more elaborated video editing applications. We suggest that mobile video editing could be informed by collaborative professional TV-production functionalities. It would then allow functionalities supporting collaborative recording of various camera angles and real time editing. It would enable production of content covering distributed events and situations, and almost synchronous production and consumption.

We argue that such applications would be useful e.g. for sport spectators who struggle with experiencing distributed events such as car rally racing or bicycle racing. Already, mobile technologies are massively used to capture and share multimedia content of both video and photography during such events, which indicates an interest for new applications in the area. Furthermore, new applications would provide more support to an emerging form of community life where people interact both on the internet, and also meet physically, like in more traditional social life.

1. Introduction

We suggest research on applications whereby video media material will be locally, collaboratively and timely produced and shared with others within their peer group in mobile situations. Thus, more TV will be generated in new social situations by non-professional people.

These applications are motivated first by a number of contemporary trends of media production and media sharing on the Internet in the area of user content creation, such as blogging, podcasting, and wikis, and by similar attempts made by mobile phone manufacturers to incorporate mobile blogging¹ and high quality video recording

functionality.² Second, it is motivated by the existence of specific social practices related to sport spectating where the audience struggle to get an overview and understand the global part of an distributed event, but also experience the details of it [Esbjörnsson et al, 2006].

The suggested area is of interest for the emergent research on applications for mobile communities. However, the traditional focus on communities within computer science has mostly been on the use of Internet to support online communities, such as MUDs [Curtis, 1996], virtual communities [Koch and Wörndl, 2001] or newsgroups [Whittaker et al, 1998]. In these social environments people still meet face to face, but under new definitions of 'meet' and 'face' [Stone, 1991]. Despite the fact that some studies (within HCI and CSCW-research) discuss geography-based online communities [Millen and Patterson, 2002] they rarely discuss the interrelationship between activities taking place in the real world and those which takes place online. But increasingly it is accepted that online communities rarely exist only online; many have off-line physical components [Preece and Maloney-Krichmar, 2005], see for example how motorcyclists benefit from message-boards on the web when organizing and discussing their activities on the road [Esbjörnsson et al, 2003] i.e. when keeping their community together. Either they start as face-to-face communities and then parts of, or all of, the community migrates on to digital media, or conversely, members of an online-community seek to meet face-to-face. Communication is hardly ever restricted to a single medium [Preece and Maloney-Krichmar, 2005]. There is an interrelationship between what is taking place online and what happens when the community members meet face-to-face. It is also the fact that most online group interaction occurs within existing formal or informal groups, for example the soccer team

Ericssons new Cyber-shot™ product line [Sony Ericsson, 2006].

² See for instance the forthcoming Nokia N93 which is capable of MPEG-4 VGA video capture and features for editing [Nokia, 2006].

¹ See for instance the, Lifeblog from Nokia [Nokia, 2006] or the connection to Blogger in Sony

[Kavanaugh et al, 2005], i.e. people are already part of each other's social networks. Our participation in social networks is dynamic and negotiated, typically based on an exchange of costs and benefits. We invest time and energy in relationships with individuals and groups, and we expect some return in terms of direct or indirect benefits [Kavanaugh et al, 2005].

The paper is structured as follows. We will first argue for a methodological approach which identifies relevant use cases and studies available TV-production to inform design. Then, we present mobile applications which support user content creation and sharing. We will then present detail requirements based on studies of sport spectating and TV-production. Finally, these experiences are summarised as a list of general requirements for a system.

2. Method

In order to investigate the application area of mobile collaborative TV production and consumption, the research would benefit if it was informed with studies of salient case studies containing critical characteristics of importance for the generation of new applications. We suggest incorporation of ethnographic field work and technical reviews. In this case by studying practices where people are involved in collaborative and mundane socialising at geographically distributed locations, as well as professional and collaborative TV production. Such detailed studies of social practices inform the design process in which new application emerge, become implemented and then evaluated.

By combining empirical findings with knowledge on technology we argue that such research may uncover interesting findings that inform the design, and by that broadening the scope, complementing current initiatives on mobile media/mobile TV.

3. Related work

There are a number of projects investigating the social practices around picture taking and sharing by the use of digital cameras and PCs [Frohlich et al, 2002; Crabtree et al, 2004] as well as with camera phones [Battarbee, 2003; Wilhelm et al, 2004], and how this can be supported by means of new functionality. The results display the importance of capture memories for personal use, but also to review and communicate experiences with others [Frohlich et al, 2002]. The social side of picture sharing is also emphasized by Crabtree et al [2004], who discuss the active production of

accounts, i.e. how the users create stories while sharing and displaying images. But also the importance of being able to control access to, and track the use of photographs, something that could be missed when increasing the possibilities for image sharing. Battarbee et al [2003] looks closer on the use of MMS, where a lot of effort is put into creating some form of co-experience. Wilhelm et al [2004] do also discuss the social aspects of photo capture, and sharing. They propose better means for image annotation immediately after capture, and the possibility to upload and share. They argue that it is more important to capture, share and browse on the phone, and use a computer to ease search, sharing and quick browsing.

Another phenomenon with similarities to what is mentioned above concerns video sharing. A recent study on 'Understanding Videowork' [Kirk et al, 2007] investigates "...what people do with video, documenting whatever capturing, editing, archiving or sharing behaviours they undertake...". They emphasize the behaviour among the teenagers in their study, who had little or no interest in using a video camera. The principal capturing method for them was to use their mobile phones, which was something they already possessed [Kirk et al, in submission]. This affected what was recorded, seeing that traditional video cameras were only brought to events, while mobile phones are used whenever, for whatever. Despite that the teenagers disliked using video cameras they really enjoyed video capturing, but emphasizing spontaneity in capturing as important. This spontaneity was also visible in how to share the material. It was often done immediately after recording, either through Bluetooth connection, email, or watching on each others phones. They did not see the point of manipulating the clips, seeing that these were short snippets of action, and the information they would like to provide was often included in the clip title.

In line with the findings presented by Kirk et al [2007], Van House et al argue that camera phones will soon be the dominant platform for low end consumer digital imaging [Van House et al, 2005]. In their study on a prototype system facilitating sharing pictures directly from a camera phone, they found that participants initially shared 57% of their personal pictures. After introducing a sharing guesser, the sharing proportion reached 75%.

4. Sport spectating

We have conducted ethnographic studies of spectators at mundane sport events distributed over large areas, where the competition takes place on a

number of geographical places simultaneously.³ We explored the role of the spectators, i.e. how they actively attempt to create a pleasant spectator experience; how they combine their efforts in gaining an overview of the event, as well as how they are striving for a detailed up-front view; how the rhythmic temporality of these events lead to the spectators putting an effort in killing time between the moments filled with action, etc.

Using our observations from behind the scenes, and with spectators, at six car rally events we also draw out the distinctive problems that spectators face with their experience of sport, and how we might design for a richer experience.

A first point to make is that spectating is valuable for the rich experience generated of being at the race. For the car rally spectators we studied, being out in the woods at a rally meant missing the overview provided by watching the race on television. Yet, this is replaced with a rich experience full of the incredible and momentary experience of rally cars passing by at high speed and at a close range. However, this can generate something of a 'viewing paradox' – the event is viewed close up, but the significance of those events are often not known until later. Detail and emotion are richly experienced, but the overall context and story can be lost. When talking to those who edited the TV versions of rally events, they emphasized to us how they would try and "find the story" in the race, something impossible to see as a single group of spectators. Yet while there is value in communicating some of the general context of the race - and spectators already seek this – technologies should not take spectators attention away from what they can see and experience, since these are at the centre of the live spectating experience. A second point is that spectators are active spectators, in that they put considerable effort into trying to understand what they see, and talking about this with others. Spectators are not simply passive recipients of the cars going by, it is through their interaction and observation, that they produce the race as an enjoyable experience. For example, some spectators when interviewed expressed an interest in which car was performing best on this special stage, others simply what car was passing at the moment. This information is not necessarily that provided by television – rather it is what is happening 'just now' - in front of and around the spectator. This information, when established by spectators increased active personal

³ See for example our previous studies of the spectator experience at rallies [Esbjörnsson et al, 2006].

engagement in the experience. Therefore, in developing new technologies spectators should not be considered as passive recipients. Rather the active engagement of spectators should be encouraged, for example, through a connection between the information provided, and the activity and position of the spectator. Third, any technology needs to take into account the social aspects of spectating. Being a rally spectator is a social activity seeing that people go there to enjoy the company of others. In many ways spectating is valuable because of the 'local resources' that it provides for conversation with companions. The rally is full of conversation topics, things to talk about while waiting for action to unfold. This is also the case when discussions start after overhearing that others possess interesting information regarding the race. Accordingly a new technology should benefit from this, and give incentives for making it even more social.

Rally spectating per se is a rather limited social practice. But its social characteristics resemble other forms of sport spectating e.g. field horse racing, professional cycling or running competitions. In all these cases the audience struggles with combining an experience of the overview with the details of the race.

Amateur collaborative TV productions could in these situations add to the experiences of the events. The experience could be improved if they got to see what happen at other places, and if they got information on the overview of the event related to their own experience. This requires first that the spectators produce and consume the TV program themselves. Second, it requires simultaneous production and consumption. It is during the event that the TV-programme is most relevant as a way to address the viewing paradox and to enable active spectatorship.

5. TV production

We suggested as a starting point that applications whereby video media material will be locally, collaboratively and timely produced and shared with others within their peer group in mobile situations. In the following we will present a mobile TV concept which shares many of these requirements on a collaborative TV-production application.

The interaction designer Akemi Tazaki [2006] published a workshop paper at CHI 2006 where she presented a design idea, which basically moves a professional collaborative TV-production facility into the mobile area. The concepts she envision,

called the “instantsharecam”, would allow collaborative capturing, editing and viewing of video. It has a number of key features. First, its interface is designed according to the professional division of labour in TV-production. It has interaction support for sharing, production including being a cameraman, and editing. Second, it has feature to decide who would receive the broadcast. Third, sharing is done in real time when recording. However, her idea does not include facilities for real time editing, as we have argued for in this paper.

The idea has been investigated as an “experience prototype” in a number of design workshops. She has collected comments on the idea, as if it already existed as a product. No detailed implementation is conceived, nor any specific user studies. This limits the research, since the potential in such a design approach has much to do with design solutions on a more detailed level. In the following, we will e.g. discuss how professional real time editing is done and how it is technically supported.

Broth [2005] investigates mediated workplace interaction between the participants of a production team that collaboratively create a live television program. His study shows how the interaction between image producer and script in the control room, and camera operators in the studio, to a considerable extent is non-verbal and relies on all members’ ability to predict each others’ actions. Also, the communication taking place is asymmetrical, in the sense that the participants in the control room talk between themselves and to the camera operators through head sets, but camera operators communicate mainly through choices in framing of a shot and camera movement. This action, which Broth calls proposal-acceptance, is repeated throughout the duration of the production. It demonstrates the importance of a shared understanding of the desired result and of each participant’s role in producing live TV edited in real time.

Timing is identified as a crucial factor in producing live TV [Broth 2005]. He describes how participants are constantly working to detect the meaning of actions performed by other members of the team and how these actions relate to other events in the studio, in the control room and in the technical system. These actions must be well timed to convey the intended meaning to other participants. For instance a camera move to a proposed close up shot should be distinct and timed so that it does not interfere with the live editing. Thus, the participants’ ability to predict relevant actions to be covered, to act with timing and to

communicate internally are identified as critical factors in live TV production.

6. Discussion

The application is intended to provide the sport spectator with a better experience. The application must somehow fit with users social practices. As we have discussed, with reference to use cases in mobile sport spectating:

- It would provide tools to provide both better overview of the event, as well as detailed view
- It would extend the audience’s abilities to become active spectators
- It would provide them with an additional resource for socialisation.

Drawing on the studies of professional TV production it would:

- Allow professional division of labour in TV-production
- Means for communication between the collaborators
- Means for real time editing

But it is also important to recognise that the TV-production will be pursued by amateurs, rather than professionals, which will add to the list of requirements:

- Allow learning of forms of collaboration
- Allow on-going negotiation and corrections of misunderstandings

At the same time it is important to recognise the technical limitations in mobile technology such as:

- Available bandwidth in mobile telecommunication
- Processor power in mobile devices
- Limitations in the user interface on mobile devices
- Limitations in mobile camera capacity

7. Conclusion

We have discussed the demand and possibilities in applications whereby video media material will be locally, collaboratively and timely produced and shared with others within their peer group in mobile situations. The idea is somewhat convincing. Currently, TV production is costly and hard to organise. Thus, if we find ways in which amateurs could get support to produce more advance video or

TV content, much more media could be produced in situations where there are new audiences of various kinds. We envision highly niched audiences which would like to watch mobile collaborative programs mostly in mobile use situations. However, the specific ways in which such applications should be designed is harder to envision and extended research is needed.

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ⁱ Authors listed in alphabetical order