Mobile Media: The Convergence of Media and Mobile Communications

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Introduction

With media convergence, new forms of media use have emerged: users can enhance a media encounter by controlling the streams of information and have the ability to interact with not only the media itself, but also the content provider and other users. Technical developments have also resulted in affordable off-the-shelf production equipment. Today it is probably easier to set up a worldwide accessible radio station on the internet than it is to get employment in a traditional radio station. Hence control over media production is diverging and new, sometimes less traditional, content providers are entering the media industries. However, research on media convergence has mostly addressed stationary settings. But with the growing phenomenon of mobile information technology (IT), it is becoming increasingly important to consider mobility as a dimension of media convergence and mobile media as a new research field.

Mobile informatics

Informatics is the design oriented study of information technology use with the intention of contributing to the development of both that use and the technology itself.[1] The central interest of informatics is to intervene and contribute to the process of change rather than to merely observe and describe it. The IT studied to date has, however, been primarily of a stationary nature – such as desktop computing– but as mobile IT increasingly becomes a part of our daily life, mobile informatics has started to emerge as research field. Mobility can be understood as a mobile situation defined by the environmental, physical and social aspects surrounding the individual and how these affect the possibility of performing certain activities.[2] In some sense everybody is mobile, and the professional use of IT in organisations as well as more everyday and mundane use is changing towards increased mobility. The change is largely due to the shift towards a service society and in organisations there is a trend of performing various tasks as projects requiring cooperation and high levels of mobility among employees. Modern communications technology, the rapid development of wireless networks and handheld terminals have also helped increase society's mobility. Mobile informatics is consequently defined as a research field concerned with the development of innovative and useful services for the mobile society.

Mobile information technology

Mobile information technology is currently dominated by cellular phones, personal digital assistants (PDAs) and laptops, although different handheld technologies inherit features from each other so that different appliances are actually incorporated into one device. The main challenge in mobile technology design is no longer how to develop handheld devices with the necessary data processing power, but rather the many different and innovative ways of using and interacting with technology when we are on the move. The feature that really allows users to perform desktop tasks in a mobile setting is the possibility of connecting to the internet using wireless technology. This is the first step towards an information technology culture of 'anywhere, anytime'. In the not too distant future we will see the release of the third generation telecommunications technology, 3G. The high bandwidth of this technology renders possible high-quality multimedia services on mobile devices,[3] such as videoconferencing, voice chat and smooth internet access.

Mobile media in practice

The following three examples demonstrate the present state of mobile media useage and are drawn from a current research project on mobile informatics. In each case large groups of media users have come together in a temporary mobile context, that of a public entertainment or sporting event. The participants have chosen to be mobile because they share a common interest in an event, their main interest is not in the media itself. Using mobile media gives them additional information and the possibility of retrieving information on demand to enhance the experience of the event. In all three cases multi-channel platforms were implemented for event visitors. Users equipped with Wireless Application Protocol (WAP) or Short Message System (SMS) enabled cellular phones could take advantage of the mobile media channels provided. WAP makes it possible to request information over a telecommunications network, while SMS enables the service provider to push information to users.

The Swedish Rally

The Swedish Rally is an annual three-day motor sports event in Sweden, attracting close to half a million spectators. Almost 100 drivers race each other over an area of around 8000 square miles. The spectators have to travel for hours to reach their favourite spots during the race. Long caravans of vehicles drive through the woods, sometimes creating traffic jams. The Rally is covered by the Swedish national public radio, SR, using analogue and digital radio broadcast and more recently the internet. The multi-channel platform used last year provided rally news, the history of the rally, entry lists for the races, maps of the area, traffic recommendations, the radio schedule for race coverage, race results,

penalties, retirements, area traffic information, and service information (eg parking possibilities). Mobile media users could select what kind of information to subscribe to and how they accessed it. Some people preferred to receive race rosters through SMS, while others liked to connect via WAP to survey current statistics. Some users also utilised small radio receivers to listen to SR's coverage and used SMS and WAP to get additional race information during broadcasting breaks.

As part of our research we attended one of the special stages at dusk to observe the audience, gathered in the woods, and a group of test users. As the night rolled in and darkness settled over the crowd, the back-lit WAP phones proved easy to use in the dark for checking the programme. Ten minutes after the first car should have turned up, it became obvious that the race was delayed, but no reason for the delay had been announced on the radio. Then the mobile phones started to beep! SMS messages were being received, informing subscribers the delay was due to spectators crossing a photocell, thus disturbing the race-timer, and that the race should start any minute, which it did.

The Roskilde Festival

The Roskilde Festival is an annual four-day music festival in Denmark attracting nearly 100 thousand participants last year. Set up in a vast fenced-off field, the festival has eight stages – each with a different musical focus – and most visitors camp on specially organised sites in the immediate vicinity. In addition to information disseminated extensively via the print media, relevant information can also be found on the festival's web site. Amongst other things it includes a newsletter, the festival programme, the festival's history, chat rooms and various facts, and during 1998 the site boasted over one million hits per month. During the festival it is possible to access the internet using terminals at the festival site. There is also a daily festival newspaper, as well as information monitors in bars and at gates. The multi-channel platform made it possible for mobile media users to consult the festival programme and to check which bands were currently performing on the different stages. Users could also be notified a couple of minutes before each band came on stage via SMS.

At last year's festival nine people tragically lost their lives due to the crowding in front of the stage during a concert by the USA rock band Pearl Jam. Despite the rainy weather, around 80,000 people had gathered in the vicinity of the stage for this top attraction. With the WAP service it had been fairly easy for mobile media users to keep up with events and news during the festival, occasional SMS messages were received, and of course the printed programmes were to hand. However, in the course of the wet afternoon, unease suddenly spread through the crowd and the concert was terminated prematurely. With the band's reputation for being particularly touchy, spectators were not unduly surprised: someone had probably thrown something at the singer or shouted an insult. But people began

asking around and rumours spread that 15 people had been injured. Everyone seemed to know someone who could have been involved. Where were they? Had people been killed? Shows were cancelled and printed programmes soon lay disgarded in the mud. SMS messages kept being received, but neither they nor the WAP services were giving information relating to events during the Pearl Jam concert. Eventually, late at night a formal statement by the organisers announced that a number of people had been hurt. Everyone was requested to call home to let relatives know they were alright. However, as a result of all the phone-calls the telecommunication networks broke down, further isolating festival participants. The inadequate information strategy and infrastructure was thus a cause of some inconvenience and considerable worry.

The Swedish Match Cup

In mid-June, the small island of Marstrand off the Swedish west coast becomes the focal point for sailing enthusiasts when the Swedish Match Cup is staged on the surrounding waters. The Cup is unique in the way spectators can easily follow the race from the shore, from boats or from any of the small islands along the course. Information about the Cup was made available via a multi-channel platform and a local newspaper, while live video coverage and other information was accessible over the internet and a number of huge arena monitors and loudspeakers were placed at strategic points on Marstrand.

On the day of the quarterfinals, the Marstrand ferry had been carrying spectators since early morning and they now lined the cliffs waiting for the battle to start between Magnus Holmberg, the popular Swedish skipper, and world renowned Peter Gilmour from Australia. During the race the two boats almost collided and Gilmour was forced to give way to Holmberg who went on to win the race. However, Gilmour made an official protest. As the umpires considered the protest, it and sailing rules were the main topics of conversation among the spectators during the lunch break. While the information monitors provided some information, people with WAP-phones could add facts published on the WAP site to the discussion and when the decision to overrule the protest was made, they were the first to know.

Discussion

The three cases show how mobile technology can be used as media channels and demonstrate users' experiences of mobile media. The media coverage available to spectators was either provided at the site or accessed through mobile IT carried by the user. It is the need for useage in a mobile context that determines which media technology is used. The purpose of going to an event is to participate and experience the atmosphere, and the use of any type of media is only a way of retrieving event-related information. This puts challenging demands on mobile media. The WAP

enabled cell phones fulfilled the requirements of being portable and robust, but in the case of Roskilde Festival failed to facilitate the instant retrieval of information. For those participating in such events, the need for up-to-date accurate information takes precedence over any preference for a particular technology and when necessary will move from one channel to another to obtain that information. The convergence between media coverage and mobile communications is consequently the result of the users' mobile behaviour. This is exemplified in the Swedish Match Cup case when the audience left the race area for a lunch break, but still expected to receive the latest news.

The use of mobile media takes place, however, in extremely diverse conditions and this impacts on how successful it is at delivering the required information to users. In the Swedish Rally case, it was dark which meant the printed programme was hard to use, but the mobile phones worked flawlessly, thanks to the simple interface, their portability and the adequate GSM coverage. At Roskilde, on the other hand, mobile media were discarded as soon as it became obvious that information was not being updated. Initially the mobile media worked, but became ineffective when the organisers were unable to deal promptly with the tragic situation and continue to provide up-to-date content. Furthermore, the mobile technology proved to be neither dynamic nor robust enough when thousands of people attempted to phone home simultaneously.

Conclusion

Handheld devices, mobile communications and conventional media are converging. Traditional media such as newspapers, radio and television have set the standards for information quality, accuracy and delivery. And it appears that mobile IT users expect accurate, timely and high quality information delivered through reliable channels. People's interest in sporting or entertainment events tend to make them familiarise themselves with the different media channels (radio, TV, the internet etc) through which they can obtain relevant information. Interest in a particular aspect and/or personal preference may influence the choice of media channel, but fast retrieval of up-to-date information is usually more important. As soon as a media channel proves to be either inaccurate or fragile, the consumer will abandon it for a more reliable alternative. The rapidly increasing penetration of sophisticated mobile IT into society, and the demands users make on that technology, indicates that a new research area of 'mobile media' is emerging.

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Notes

[1] This definition comes from B. Dahlbom, 'The New Informatics', *Scandinavian Journal of Information Systems*, 8, no. 2 (1996), pp. 29-48.
[2] Steinar Kristoffersen and Fredrik Ljungberg, 'Mobile Informatics' in *Planet Internet*, ed. K. Braa et al (Studentlitteratur, 1999).
[3] U. Varshney and R. Vetter, 'Mobile and Wireless Networks', *Communications of the ACM*, 43, no. 6 (2000), pp. 73-81.