

# User Applications of Mobile Multimedia

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## ABSTRACT

Capturing and sharing are the most apparent applications for mobile multimedia. Alongside, new user applications are evolving. How these applications are rooted into the everyday lives of consumers is the focus of research carried out at the National Consumer Research Centre in Finland. We attempt to proactively explore emerging user applications through experimentation and market monitoring. Future work will also focus on ethnographic studies of multimedia use and testing of commercial multimedia services.

## 1. INTRODUCTION

The mobile industry sees great growth potential in multimedia. First, multimedia is an important justification for the development mobile technology. Broadband connections, for instance, are popularized by explaining that they are capable of live video transmission. Second, there is little growth on the mature markets of telephone calls and messaging. Average revenue per user has continuously declined as technology has matured and competition become enhanced.

Mobile multimedia highlights the twofold uses of mobile phones: connectivity and content [12]. Typically, mobile phones are used for telephone conversations or messaging (connectivity). More recently, mobile services such as the purchase of logos and ring tones has become more popular (content). Mobile services – or m-commerce – are definitely a growing market although the speed of growth remains slower than often expected [1,17].

Especially user-generated mobile multimedia challenges established domains (connectivity vs. content, community vs. business, interactivity vs. passivity). Therefore, mobile multimedia might well give birth to new social practices. For instance, photo-blogging supports active connectivity to others by sharing content.

Capturing and sharing are the most apparent applications for multimedia as cameras and MMS (Multimedia Messaging Service) have become standard features of mobile phones. Users are free to invent applications within certain technical limits such as camera resolution and bandwidth, and commercial constraints such as price and service availability.

It seems that capturing has been more popular than sharing as people currently use their phones predominantly as cameras rather than photo-messaging devices. This has, nevertheless, already had social implications as the notion of picture worthy has changed perhaps more than it would have with regular digital cameras [3,9].

In any case, there are many upcoming applications of mobile multimedia. Internet technologies such as streaming media and podcasting show that multimedia incorporates numerous potential trajectories. The World Wide Web shows that there is ample room for technologies which support interpersonal connectivity and commercial services.

The technology base for providing sophisticated multimedia for consumers is maturing rapidly. Multimedia applications such as streaming media, visual radio, interactive television and multimedia blogging are soon ready for adoption on the mass market. These both challenge and complement the interpersonal uses of mobile multimedia.

The next two sections reflect mobile multimedia based on experiences gathered in research projects at the National Consumer Research Centre in Finland, which is an interdisciplinary independent governmental research unit organized under the Ministry of Trade and Industry. In order to be proactive and support the development of commercially successful innovations, our research has been both experimental and monitoring. We believe that a combination of these two approaches guides us to make reasonable interpretations on future practices connected with mobile multimedia. The approaches address the relevance of mobile multimedia and its implications on product and service development. Emerging user applications are developed into commercial services, service platforms and handset features for the mass market.

## 2. EXPERIMENTING WITH USES

The mobile industry has lacked similar user-producer communities evident in the Internet. Due to this, product development has been industry led and users have more or less adapted to the framework rather than expanded it. WAP (Wireless Application Protocol) is the notorious failure of this approach. SMS (Short Message Service) is the notable exception. SMS is by nature a very generic technology which is suitable for a variety of specific communication purposes.

Multimedia offers similar generic potential as SMS. Therefore, it is very important to carry out research on the social, technological and business implications of the use of mobile multimedia. Being the likely first killer application of mobile multimedia, capturing and sharing practices are likely to reveal social patterns which in turn might become widespread and affect technological development.

Our special research interest relates to the invention of meaningful uses, i.e. popular applications for mobile multimedia. Being a

relatively new phenomenon, meaningful uses for mobile multimedia are still sought for.

We have used an explorative approach to study how users adopt streaming video, which represents a novel multimedia service [14,15]. Similar approaches have been used by Koskinen et al. [9] on multimedia messaging and Kasesniemi et al. [5] on video messaging. Theoretically, our research relates to the works of Ling, Katz and Aakhus, and Licoppe and Heurtin [7,10,11].

So far we have been able to describe experienced usefulness and social and interactional patterns of use. We have also recognized that initial enthusiasm quickly turns into getting bored.

We and others have come a long way, but results have still been meager from the perspective of a holistic understanding of mobile multimedia. Successful unifying advances in social studies on mobile telephony have not been easy to translate into the multimedia domain [4,6,8]. This is largely due to the dispersed nature of the development and adoption of multimedia. We have come to believe that it is not particularly meaningful to study each multimedia application separately.

### 3. ADOPTING COMMERCIAL SERVICES

Finding meaningful uses and applications is obviously a necessary prerequisite for individuals to become interested in mobile multimedia. Large scale interest, in turn, is necessary to attract technological development and investments.

We have monitored the up taking of mobile services on the Finnish market for a number of years [1,2]. This approach stems from diffusion and acceptance theories [16,18], and is a popular approach in systems research on mobile services [13,17].

Finland is an interesting case because it has been one of the leading mobile nations during the GSM era. Being the home country of the multinational handset and network supplier Nokia, many innovations are launched early in Finland. SMS, WAP and MMS are examples of such services. Current novel mobile services such as digital television and visual radio are functional in Finland. Finland is a small and rather homogenous country, which makes it possible to reach large proportions of consumers relatively easy.

Our results challenge established business strategies for mobile services. For instance, we can report that sociodemographic factors such as age, gender and education do not explain adoption. Furthermore, users prefer flexibility over efficiency. Current pricing levels and pricing schemes slow down the adoption of mobile services. On the other hand, users are prepared to try out services provided these are cheap and easy to use. Our results show that finding the niche for mobile services is still taking place in Finland. It is still too early to draw extensive conclusions on the adoption of multimedia on the Finnish market.

The relevance of monitoring the overall adoption of mobile services is twofold. First, it shows the overall popularity of mobile services. Second, it shows the relative popularity of different mobile services. In this respect, the adoption perspective is necessary to understand the pace, direction and magnitude of the development.

### 4. FUTURE WORK

We believe mobile multimedia will expand the uses of mobile phones. Phones are very likely to remain an important medium for

communication but alongside will develop a wide variety of services. How well multimedia applications succeed will depend both on competition from established media such as television, radio and the Internet, and on the emerging interpersonal uses of multimedia.

In this respect, we see the evolution of new social practices as an interplay between user invention and commercial product development. Users need to invent meaningful uses in order to raise the potentiality of profitable markets. Businesses, on the other hand, need to provide users with ample opportunities to try out services and be responsive to user feedback.

The challenge for research will be to unite the two multimedia domains (user generated / commercial) and the two approaches (experimental / monitoring). We attempt this partly by doing technology assessments and ethnographic studies with new kinds of uses. Alongside, we shall continue to carry out user surveys to keep up to date with the adoption.

We have recently started a two year project on user information in the product development process of interactive information technology. Consumer experiences from novel services of which many have to do with mobile multimedia are sought for in the project. Companies know that the consumer market differs from the professional market. For instance, there is a family owned company currently providing an interactive MMS-based experience service for businesses that is going to launch a multimedia consumer travel service. This type of research resembles a short term intervention at a late stage in an ongoing product development process.

For a more holistic and long term view on mobile multimedia, our research center and the University of Art and Technology Helsinki are preparing a proposal to study the adoption of mobile multimedia from an ethnographic perspective. Our proposal to the National Technology Agency of Finland has been selected for continued development within a technology program focusing on the regeneration of business and management.

Suitable users for both projects are recruited from a 1200 member consumer panel operated by the National Consumer Research Centre.

Capturing and sharing have a significant role in early user applications of mobile multimedia because the circumstances are fruitful: the socioeconomic system supports them, they are straightforward to use and users find them meaningful. Other widespread applications are likely to emerge later. The National Consumer Research Centre shall proactively study future uses and monitor the evolution of uses. We believe that this twofold approach will be fruitful for assessing the impact of emerging practices for multimedia in mobile telephony.

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