

A Holistic View on Future Snapshot Media

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ABSTRACT

In this paper, we describe our previous and current work on people's everyday photography, or more broadly: snapshot media. The digital revolution, wide availability of internet connections, and mobile phones as media creation devices are changing the way people create and use media. We identify three phenomena that will shape the future of snapshot media: the heterogeneity of current technical environment (especially in mobile media), the future role of paper, and the association of information with snapshot media in the form of metadata, context information, and user tagging. To design and do research in this heterogeneous environment we propose a more holistic view in studying people's media creation and use.

Keywords

Snapshot photography, mobile phone cameras, social metadata, heterogeneity, paper media, digital media.

INTRODUCTION

Three technological advantages have changed and are currently changing people's everyday photography: the digitalization of photos, the availability of broadband internet connections, and the integration of cameras into mobile phones. The digitalization has made snapshot photographs into digital objects that can be edited, copied infinitely, stored into minimal physical space, and subjected to computational methods. The wide availability of internet access at home has made the sharing and communicating with photos and other media easier than ever before. Thirdly, the camera phone has changed the role of the camera: the camera phone is always carried with, it has an inherent network access, and access to contextual and social information.

In this position paper we describe our view on the future of *snapshot media*. By snapshot media we mean pictures, video, sound, and text created by non-professionals (*i.e.*, consumers) for non-commercial and non-artistic reasons, and the devices used to do this are basic consumer media creation devices, computers, and media management and editing software. In other words, we extend *snapshot photography* to cover the new uses and new media already in popular use.

Previous and Current Work

Our main body of work is in the three consecutive mobile photo systems MMM-1, MobShare, and PhotosToFriends.

The MMM-1 system (Mobile Media Metadata version 1) was an implementation of a metadata generation process which demonstrated the special characteristics of mobile phones as media creation devices [3, 6]. The main lesson learned from designing and implementing the system, and the following user studies, was that designing metadata for everyday photography is a complex task that involves problems not previously identified in media metadata for public or commercial use. On the other hand, the system did show the potential of camera phones for leveraging contextual information at the time of capture, and the new types of photographs that the "always with" characteristic of the mobile phone camera facilitated.

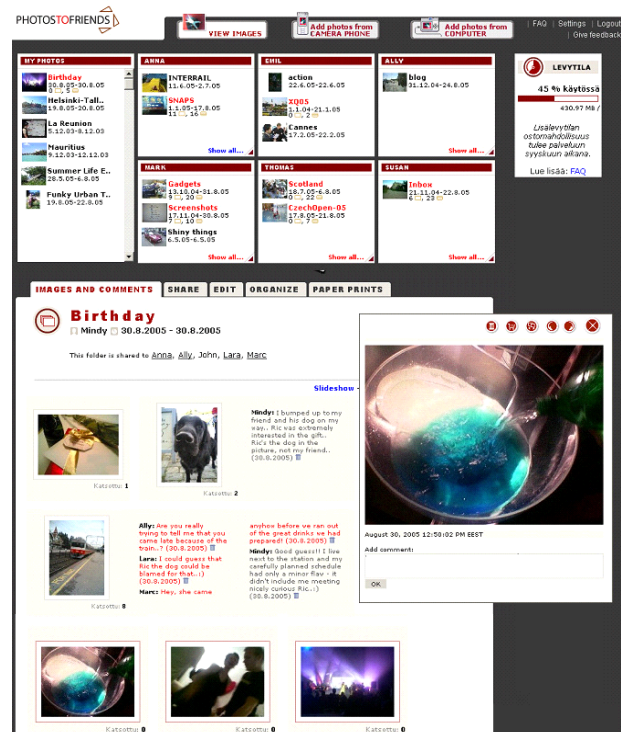


Figure 1. The web user interface of PhotosToFriends.

The second system built was a mobile photo sharing system MobShare, which focused on user-centric design, especially traditional snapshot photography and a specific user study made on camera phone users [5]. The system was tested in two user trials, each lasting 5-6 weeks, and altogether 87 people took part in the trials. The main lesson

learned was a qualitative understanding of what kind of social uses people can have for mobile photos shared over the internet, namely commenting and discussions, forming of groups to share photos with, the role of photo sharing as a means for keeping in touch, and the lifecycle of a mobile photo from capture to archival. The system also showed how design decisions can have a strong effect on the way the photos are shared and on the photos themselves [4].

The third system built was a more commercially oriented version of MobShare named PhotosToFriends. It was designed and implemented by Futurice, who was the company also involved in the previous two systems. The commercial nature of PhotosToFriends made it possible to analyze quantitatively 2223 anonymous users and to identify restrictions and opportunities related to creating a business out of photo sharing. The main lesson learned was the importance of making the user aware of ongoing social activity (*i.e.*, discussions, viewings, visits) in the system through notifications and UI components. The quantitative user studies supported this by showing how social activity in a shared photo gallery peaked right after the sharing of the gallery, and surprisingly, did not diminish right away but lasted for few months. Currently PhotosToFriends has been further developed to a service named Kuvaboxi, which is the leading online photo sharing service in Finland.

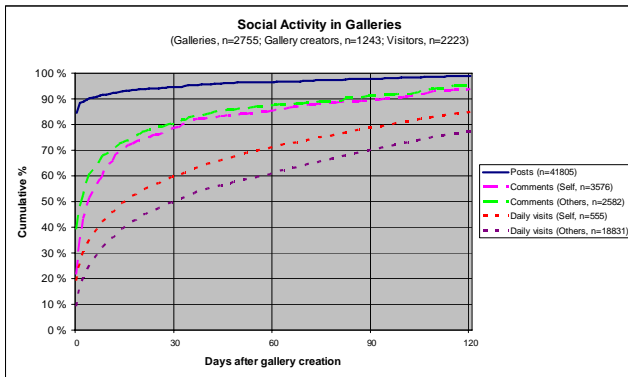


Figure 2. Cumulative data on social activity of 2755 photo galleries in PhotosToFriends from the day of the gallery creation to four months later.

Our current work has focused on a general study on snapshot media. We have conducted an in-depth user trial where we gave a camera phone, a photo printer, and an online photo sharing service for ten people to use for 6-8 weeks. Parallel to this qualitative study we had a web survey in popular Finnish websites on people's photography habits and perceptions. The survey was answered by twelve thousand people. We have also further studied the role of metadata in snapshot media based on the systems designed and the associated user trials [1, 2].

FUTURE SNAPSHOT MEDIA

Based on our previous and current work on mobile media and people's everyday photography we have identified

three research themes of importance in designing and predicting the future of snapshot media.

Heterogeneity

Current systems, devices, and services that facilitate people's uses for their personal (*i.e.*, snapshot) photos and media are very heterogeneous. In the basic lifecycle of a photograph there is a wide variety of technology in each phase: devices and programs for capturing the photo, means for transferring the photo to another device, applications and services to share or publish the photo, a myriad of ways to view the photo, and a variety of technology to archive the photo. The heterogeneity is emphasized even more in camera phone systems, where the camera itself is open for programming and inherently connected to the internet.

To a designer of snapshot media systems one of the main challenges is to address this heterogeneity in integrating new designs into current systems and practices. To a researcher of mobile media this presents the problem of generalization: the media created and people's uses for it are shaped by the technologies used in the system. Therefore, the user behavior of one mobile media system can not be generalized without discussing the characteristics of the technology used. For example, comparing user studies on photo sharing with MMS to user studies made on other mobile photo sharing applications (*e.g.*, MobShare) should identify the limitations and characteristics of both technologies. In other words, discussions on pervasive image capture and sharing should always mention the particular technology used to avoid misleading generalizations.

The Future of Paper

Digitalization is one of the major milestones in the history of photography. We are still in the middle of the ramifications that digitalization and information technology have created. In the digital revolution of photos the paper photos are often seen as the symbol of old technology that is replaced, and much of this is true: film-based photography will never be the same and digitalization is changing the whole business, as well as people's everyday photography.

However, paper as a media platform has certain advantages that digital media does not have. It is concrete, physical and requires no external power, which makes it easy to read and view, easy to give to someone, it is not limited to computer screens in physical space, and the experience of viewing and editing paper media is different than digital. Also, paper photos have over a century of tradition in people's lives. Therefore, people value paper photos as "real photos", for example, in gift giving or as a personal keepsake. Finally, photos on paper are often seen as the best way of archiving photographs for future generations. In other words, paper as a platform for personal media has both practical advantages and emotional advantages which should not be forgotten in the digital era.

We do not believe that the role of paper photos will be the same as before (*e.g.*, 10x15 individual prints). We do believe that an understanding of the benefits of both formats,

digital and paper, will be critical in designing future services and products for snapshot media. An example of leveraging the best of both formats is the growing popularity of photo books, which can be edited and designed digitally and then printed as physical books. These concrete books have much more emotional value than their electronic counterparts.

Social Metadata, Context Information, and Tagging

The third theme we find important in the future of snapshot media is the way information is associated with the media either as social metadata, contextual information, or as user-generated tags.

By social metadata we mean storing information about the social activity around a media object (*e.g.*, comments, sharing information, views, and the associated people doing the activity). In addition to content describing metadata, which describes the media at the time of capture, we see social metadata, which describes what has happened to the media after capture, as important in organizing and re-using media and in storing information important to the users.

By context information we mean the information available to the capture device at the time of capture, such as nearby Bluetooth devices, location, and calendar events (see, *e.g.*, Merkitys-Meaning and ZoneTag). This information is easily available and can also be used in organizing and re-using media. For example, both of the applications mentioned use Flickr as a way of leveraging the context information in browsing pictures.

By tagging we mean user-generated free keywords that users can associate with media. The prime example of this is Flickr, where people can add any keyword to a picture. These keywords are not used primarily for organizing, but for interaction. Because of the way Flickr leverages tags in surfing the vast public photo archive, the tags have become more of an invitation for interaction in the form of viewing photos rather than means for organizing one's personal photo collection.

We see these three features or phenomena related. All of them are information that is associated with a media object to enable new uses for the media. All of them are also connected to the social uses for media rather than the more traditional role of metadata: organization. We see these three phenomena as the first steps in a path towards having relevant user-generated metadata in future media.

HOLISTIC VIEW

To understand better the three themes presented above, we have adopted a holistic view on snapshot media. The research and design should not be limited to certain media capture devices, photo sharing systems, or types of media. Based on our user interviews, photography is a common and an integral part of people's lives, and people see it as one thing. The potential users of future media systems do

not make clear distinctions between their mobile photos, digital still photos, and film-based paper photos. Therefore, to better understand, for example, the role of camera phone photos in everyday life, we need to look at people's photography and communication practices in general and how users adapt to the heterogeneous technical environment.

In addition to traditional snapshot photography, current research should be aware of people's communication and interaction practices with digital media (*e.g.*, instant messaging and social networking websites like MySpace or Habbo Hotel), and everyday use of professional media (including online and offline computer games). We see the future of snapshot media focusing more on the social and interactive uses (*e.g.*, forming social relationships, emphasizing togetherness and shared values, and interaction through media) than the more traditional use of documenting important people and events in family history.

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