

***mopix*: Playful Encounters with Surveillance in Everyday Urban Settings**

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Abstract. We introduce the design of *mopix*, a location-based mobile media sharing platform that supports interaction within public spaces. Media messages, which include photos and text messages, are distributed by users throughout their physical environment and linked to the geo-coordinates of the locations where they were created. By sharing these digital traces of a user's spatial and social contexts, users can engage in a playful process of surveilling and being surveilled. *mopix* relates location-aware and collaborative technologies in a way that supports the collective creation of a space, while simultaneously encouraging interaction between the occupants in the space in a reflective manner.

Keywords: media sharing, mobile phone applications, play, surveillance, urban computing, reflective design.

1 Introduction

An attractive application area for ubiquitous computing systems has been found in public urban spaces. Approaches such as context-awareness and media sharing have proven beneficial for the design of spatially integrated displays in which the visualized information is a reflection of the individual or community situated in that space. Such systems transform our understanding of social and physical spaces, as well as our interpretations of locality and mobility while, at the same time, addressing concerns about safety and security. As new surveillance technologies emerge, the boundaries between what is public and private, as well as serious and play, are blurred. These gray areas are further obscured when surveillance manifests itself in more subtle forms, disguised by ulterior motives and hidden beneath other intentions. [1], for example, draws attention to the pervasiveness of surveillance in the city and explores the use of surveillance as a means of entertainment. Taking subtle and unpredictable interpretations of surveillance within everyday settings into account, we wish to facilitate reflection upon the negotiated space between media sharing and surveillance. [8] highlights playful practices as a promising way to reflect and extend upon existing technological uses and interpretations. Inspired by this approach we introduce a design that engages users with surveillance in a playful and exploratory manner.

An example of a surveillance device that is quickly becoming ubiquitous is the mobile camera phone. While the mobile phone typically embodies notions of remote communication, recent trends in media sharing, context-awareness and instantaneous information access have enabled it to transgress its function as a private communication tool. The recent proliferation of digital photography in mobile devices has also given rise to mobile media sharing as a growing field of research [2, 9, 10]. Recent studies have shown that images can be used as a means of communication with others, to enrich a mutual experience, for personal reflection and to support tasks with both co-present and remote collaborators [4, 5]. Image sharing often takes place via face-to-face interaction, almost always on the phone's screen but also through direct phone-to-phone transfer such as Bluetooth or Multimedia Messaging Service (MMS) [4, 5, 9]. These examples, however, focus on the persistency of digital media despite the often ephemeral nature of the contexts in which the media was captured.

We are interested in exploiting tensions around digital content such as persistent versus ephemeral and private versus public by developing *mopix*, a location-aware media sharing system in which the content's accessibility exhibits both ephemeral and persistent characteristics. Though still in its design phase, we believe that *mopix* will provide us with insight into how future technologies can be designed to better support spontaneous, reflective and exploratory interactions with one's immediate social and spatial context within everyday urban settings. Because people are constantly on the move, photo opportunities are exactly that – opportunistic. By allowing users to not only share these digital artifacts of a space but also to annotate them with comments, we hope to support a new genre of communication in which the media serves as catalysts for playful interaction in public, as well as artifacts for socialization around which communication and explorative engagement can take place.

2 Concept

mopix provides space for personal representation within one's urban environment and for a collective re-appropriation of a predefined spatial design. We wish to facilitate a playful engagement with one's own static perceptions of a given sociality and spatiality. Playfulness means more than immersing users in urban games, but stands for an everyday practice that can be stimulated to motivate experimentation. An important aspect of stimulating playful and exploratory behavior in an urban environment is to support various forms of movements through the space. People create their own meanings for spaces through everyday practice, individually and collectively, in the specific ways in which they move through those spaces and put them to use [3]. Playful and learning practices provide a less technologically and socially bounded space [1, 8]. We wish to explore this concept by recognizing different movements, mobilities and situated practices to provide mediation between various spaces: virtual - physical, mobile - loss of mobility, creator – user.

We envision *mopix* to be a system that constitutes a virtual space that is linked to the users' immediate urban environment, transgressing the clear line between a virtual playground and the everyday physical world. *mopix* is designed to motivate a user to interact with his social and spatial surroundings in an explorative manner. Reflective

engagement with the environment is supported by public displays that are distributed in walkable distances throughout the spatial environment. This provides easy access for short-term visitors and newcomers. Paulos and Goodman, for example, point out that “the extensive use of personal, wireless communication technologies enables behavior in urban spaces to transgress the lines and protocols between public and private space” [7]. Taking this into account, *mopix*'s public displays act as digital windows that provide insight into a space's sociality in three ways. First, *mopix* provides a multidimensional understanding of one's own location, complementing one's physical and geographical position with one's social position within a shared media space. Second, the system's ability to share pictures and text messages instantaneously supports spatial interaction among people who are moving through the same spaces. Finally, the content shown on the displays will reflect the temporal flows of the people moving through a space.

mopix users share content via media messages which are sent to the server from their mobile phones. Each public display is situated within its own zone, a predefined bounded physical area. When a user uploads a photo or text message, it is distributed to the display associated with the zone in which he is physically located. If the user is situated at the intersection of more than one zone, the media content will appear on all of the associated displays. Thus, a user does not have to be in close proximity to any display in order to share content, but can do so from within his current spatial context. The *mopix* displays also support the annotation and visualization of users' comments and ratings to the presented content via touch screens on the displays. The display features media content on a rotating basis, giving preference to the newest and highest-rated photos and text messages. In this manner, spectators and consumers are enrolled as active contributors of the spatial design and reflection process.

The public display is made up of three components: the display area that presents the media content, an area that displays user comments and responses to the currently selected media and an area for the user to rate the photo or compose a comment. The media content is shown on the periphery of each display in random intervals and at random positions. As media content grows older or its rating declines, it is positioned near the outer periphery. The generation of content on a rotational basis is designed to draw attention to the display, attracting passersby in the vicinity of the display. Users can select a message on the peripheral display area to move it into the main display area by physically touching the text message or photo. This allows users to browse through various image and text messages in an explorative manner.

We will also explore how engagement with a space while being mobile is different from interacting remotely with the same space. To that end, *mopix* will also consist of a web component, allowing individual access to a web interface that links one's personal pictures and text messages to correlated coordinates on a map. When a user uploads content to the system, the GPS coordinates where the photo is taken are noted and sent to the *mopix* server along with information that identifies the user. This information is used to plot the locations of where a user has taken photos. This provides users with the ability to explore digital content in relation to a concrete spatial environment, as well as in relation to a representation of such spaces as maps. While the persistent character of the content on the public displays is collaboratively constructed, the persistency of the content accessible through the web interface is controlled by each individual user.

3 Conclusion

In this paper we introduce the design of *mopix*, a multi-media sharing platform that shall support interaction within public and private spaces. Media messages, which include photos and text messages, are distributed by mobile phone owners within their physical environment in a public urban space and linked to geo-coordinates of the location where they have been created. By sharing digital traces that are related to a user's spatial and social contexts, system subscribers and passersby engage in a playful process of surveilling and being surveilled, sharing and annotating. *mopix* relates location-aware and ubiquitous technologies in a way that will support explorative interaction among strangers within public spaces and links physical locations to collectively designed digital spaces. Through playful engagement with individually different perceptions of a spatial environment we hope to raise awareness of social practices that take place in that specific spatial setting. Even though *mopix* is in its early stage of development we believe that a design, which engages with emerging ubiquitous monitoring systems in a playful and reflective manner, will provide us with insight into how future technologies can be designed to create understanding between social and spatial differences.

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