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Beyond advertising

large displays for supporting people's needs and activities in public space

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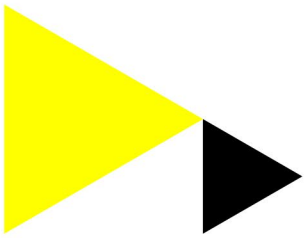

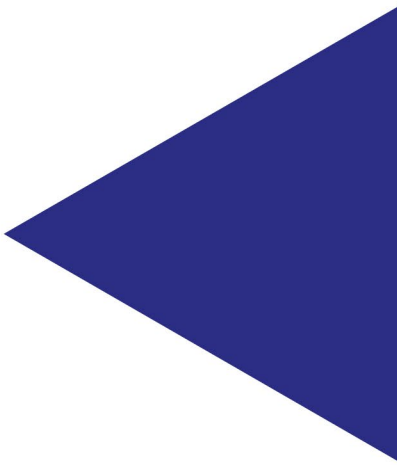

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Creating Tomorrow

Beyond advertising: Large displays for supporting people's needs and activities in public space

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Abstract
This paper explores how displays can be used to support human needs and activities in public spaces rather than be employed for commercial purposes only. Based on our analysis of screen usage around the world, eight different categories of usage are described and motivated. For the purpose of illustration, this paper discusses the results of a user study of BiebBeep, a touch screen application built to enhance the social and information function of a library.

Keywords
Communal displays, touch screens, public space, social media, user-generated content, public displays

ACM Classification Keywords
H5.m. Information interfaces and presentation (HCI): Miscellaneous.

General Terms
Design, Experimentation, Human Factors

Introduction
Nowadays it could be noted that the most widespread application of public screens is advertising. However,

screens can be used for other purposes. For example, some researchers and (commercial) developers have begun to demonstrate that screens can also be used to inform, engage and connect people in public spaces (e.g. [6][2]). In this paper, a classification of different types of applications of public screens is described. To further demonstrate that screens have interesting potential beyond commercial practices, the design and study results of BiebBeep, an application for touch screens in public spaces, is presented.

Applications of public screens

Over the last years, the number of big and small screens in public spaces has been growing considerably. Most of these screens have one dominant application: advertising. However, there are many more possible applications of public screens. Based on our analysis of more than two hundred screen applications worldwide, eight categories of applications could be distinguished: (1) Advertising, (2) Information, (3) Art, culture and aesthetics, (4) Entertainment, (5) Influencing (atmosphere, mood or behavior), (6) Improving customer experience, (7) Communication, (8) Participation. The first five applications can be seen as self-explanatory. The other categories will be briefly explained next.

To the sixth category, *improved customer experience*, belong applications that use screens or projections to improve upon a service delivered by an organization or company. For instance, the surface of a table in a restaurant can be turned into a touchscreen that enables customers to preview and order their food, and to play games with other customers in the restaurant. *Communication* applications (7) are those that enable interaction between people that are in the vicinity of the screen and also enable communication with people elsewhere through the screen, for instance via social media. The *Participation* category (8) covers the involvement of people in discussions concerning social or communal issues, for instance via polls on a screen.

Why is advertising omnipresent?

The reason for advertising being the most commonly known application of public screens is not surprising. This type of application builds on a tradition of outdoor advertising that has been present in public space for decades. Furthermore, digital billboards have a clear business model: advertisements bring in money. For the other seven applications it is much more difficult or impossible to base such a model on direct financial revenues. The revenues of these applications are often social (e.g. improved perception of safety or atmosphere of a public space) rather than economic. Since the revenues of a more attractive public space are not easy to express in terms of money, it is hard to find investors for screens involving little or no advertisements. For the people moving through public space however, the other seven applications are in principle much more attractive than advertising. To illustrate, while people are on the internet for the purpose of finding information, communication, entertainment, and so on, they are generally not there for the purpose of finding advertisements. Thus, the reason why these other types of applications are more interesting is that these better meet public needs and expectations.

Needs and activities in public space

Public screens both have the potential to disturb and to enhance public spaces. For successful implementation for passers-by in particular, but (possibly) also for

those who invest in the screen, it is essential that the type of screen, applications and content suit the public space and context in which they are placed. Most of the applications mentioned —hereby mostly excluding the purpose of advertising and improving customer experience— directly or indirectly meet some basic human needs or support key activities. A fundamental human need is the need for interpersonal attachments [3]. Many activities in public space, such as sitting on a bench in your neighborhood or taking a stroll in the park are aimed at, or result in meeting other people, or at least in staying in their vicinity [4, 5]. Previous research on public screens has suggested that screens can support such need for social interaction [1, 6]. Other important activities for human beings are collecting, communicating about, creating and sharing information [7]. In public space this could, for instance, mean exchanging information about interesting places or activities in a neighborhood on a public screen. New public library buildings in the Netherlands aim to meet both of these needs: the information need and the social need. The latter need is, for instance, met by consciously creating attractive spaces, such as a grand cafe. Therefore, the New Library of Almere has been chosen as a place to experiment with BiebBeep, which has been developed to support the information and social function of this public space.

The BiebBeep system

BiebBeep presents information on a large touch screen with a portrait orientation in the New Library in Almere. Locally relevant information objects from the Internet, such as local news, events and new acquisitions via RSS, Tweets, Flickr photo's or YouTube videos flow slowly from the bottom to the top of the screen. By touching an information object, users can take a closer look at the information. BiebBeep's special feature is that both library personnel and visitors can add information to the screen via social media. The reason that BiebBeep uses RSS feeds and social media is that many people already use these in their daily life. Therefore, users and library personnel are not severely burdened with extra learning tasks to fill the system with content. BiebBeep has been based on an application called Buzzcuit that has been built to experiment in (semi) public spaces such as in neighborhoods, shops and office buildings.

Figure 1. BiebBeep in the New Library in Almere

Results of a user study

In order to determine whether BiebBeep, which has been developed in collaboration with library (staff) members, actually improves the meeting and the information function of the library, a user study was conducted. In three days (for almost 16 hours in total), 403 passers-by were observed in the library. Of those 403 people, a representative mix of 28 people that interacted with the screen were interviewed near the screen. The following sections briefly report on this user study.

Information services. In general, people thought the system was a useful addition to the library. The information that was considered most useful were the announcements of cultural events and library activities. However, user observations and logged interactions indicated that the most viewed items were photos (some of which added by other visitors) and videos. Visitors used Twitter much more for socializing than for the purpose of informing each other.

Social interactions. BiebBeep turned out to facilitate social interactions on three different levels. Firstly, participants were observed to be using the screen together. By using a touch screen that automatically invites people to be near the screen, it was anticipated that BiebBeep would serve as a social icebreaker. In most cases however, interactions occurred between people that already knew each other. Secondly, through the information on the screen about activities in the library, people turned out to be encouraged to engage with their social environment. Finally, the Twitter data showed that people used the system to engage with other members of the diverse library community. Particularly youngsters seemed to be the early adopters of this functionality.

Discussion

Although the study results show that BiebBeep has the potential to support a public need for information and social interaction, challenges still remain. These include strategies for engaging a group of unfamiliar users to interact and (socially) engage with a touch screen. Furthermore, the business model of a screen without advertising is far from straightforward. Therefore, the costs and benefits of such screens should be made more explicit to all parties involved. We believe that further discussion and user studies would help to uncover the value and benefits of screens that go beyond advertising.

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