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Discussions in Space

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ABSTRACT

In-place digital augmentation enhances the experience of physical spaces through digital technologies that are directly accessible within that space. This can take place in many forms and ways, e.g., through location-aware applications running on the individuals' portable devices, such as smart phones, or through large static devices, such as public displays, which are located within the augmented space and accessible by everyone. The hypothesis of this study is that in-place digital augmentation, in the context of civic participation, where citizens collaboratively aim at making their community or city a better place, offers significant new benefits, because it allows access to services or information that are currently inaccessible to urban dwellers where and when they are needed: in place. This paper describes our work in progress deploying a public screen to promote civic issues in public, urban spaces, and to encourage public feedback and discourse via mobile phones.

Author Keywords

Public screens, mobile media, locative media, place-based community engagement, mobile interaction, urban informatics

ACM Classification Keywords

H5.m. [Information interfaces and presentation]: Miscellaneous.

INTRODUCTION

Discussions in Space (DiS) is a project offering an additional, experimental channel to engage with Brisbane residents as part of a Brisbane City Council (BCC) urban planning project, which requires a consultation phase with Brisbane residents. The DiS project facilitates a public civic discussion and opinion forum through the installation of a large public screen, which passers-by can interact with using their mobile phone's SMS, Bluetooth, camera and Internet capabilities. The installation promotes civic topics, issues and questions and invites the general public to submit their opinion to the publicly visible screen, hence providing a platform for collective expression and public discourse amongst Brisbane residents. Collaborative and distributed editing and censoring capabilities ensure that the content reflects the norms and values of the installation providers, namely the university partner and the Brisbane City Council.

The project provides and investigates forms of in-place digital augmentation, which refer to the ability to enhance the experiences of citizens in physical spaces through digital technologies that are directly accessible within that space. This can take place in many forms and ways, predominantly through location-aware applications running on the individuals' portable devices, such as mobile phones, or through large static devices, such as public displays, which are located within the augmented space and accessible by everyone.

The hypothesis of this research project is that in-place digital augmentation, in the context of civic participation, where citizens collaboratively aim at making their community or city a better place, offers significant new benefits compared to conventional online forums or wikis – as used today. For instance, it allows a wide range of urban dwellers to access services and information and to engage with each other, where and when it is mostly needed, in place. Currently, such in-place access or engagement is either not available at all or too cumbersome to reach.

Our study is specifically interested in system designs that effectively engage with residents who councils generally have difficulties to engage with, as indicated by interviews with urban and neighbourhood planners. The BCC refers to these demographics as “backyard buddies” (the not interested and involved, transient, younger residents) and “loyal locals” (the time poor professionals and young families who might have some emotional connection to their neighbourhood as new home owners). In contrast to the third group, the “neighbourhood guardians” (older residents who have been living in the same area for many years), these two groups either do not care enough to engage on their own accord and co-create their urban environment or, although interested, they simply do not find the time in their busy lifestyles to visit time-consuming community consultation events.

Our initial user study with residents in Melbourne and Brisbane (Satchell, Foth, Hearn, & Schroeter, 2008) align with these findings of interviewing members of the council. The following research questions as well as the system design decisions of the prototype presented in this paper were informed by these studies.

RESEARCH OBJECTIVE AND QUESTIONS

The key research objective of this study is to examine whether bringing the means of digitally augmented participation to previously unreachable spaces such as the commute, the supermarket or the coffee break, can improve the frequency, quantity and quality of civic dialogue, in what ways and, most importantly, how would

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the digitally augmented participation need to be designed from a human-computer interaction perspective. The study's vision and contribution to new knowledge lies within the discovery of answers to the following research questions:

How can interactions, applications and technologies be innovatively designed to allow urban residents to take a more active role in making their community and city a better place? What are the nuances of use of such applications by different user groups, and what are the problems and implications of deploying them in urban environments, e.g. from a technology point of view, a content-oriented point of view, the users' perspective and the public authorities' perspective?

RELATED WORK

The great potential of the more location-centric media channels such as public screens and mobile phones have been widely recognised (Goodman, 2005; Lane, Thelwall, Angus, Peckett, & West, 2005; Martin, Penn, & Gavin, 2006; Wilcox, 2009) in order to achieve Jane Jacobs' premise: "Cities have the capability of providing something for everybody, only because, and only when, they are created by everybody" (1962).

Wilcox (2009) notes that in order to inspire an engaged participation by today's urban citizens, a regular "daily visibility" of local, civic issues is needed. Particularly displays are able to offer this unescapable "push" mechanism of such content, most effectively in previously difficult to reach spaces such as the commute, the supermarket or the coffee break (Goodman, 2005). These locations are able to grab peoples' attention in moments of pause during their daily activities (Martin et al., 2006).

In combination and interaction with today's widely spread, powerful mobile phones, the envisaged improved visibility, accessibility and inclusivity that these media offer, is consequently seen to improve the rates of civic dialogue and engagement (Goodman, 2005). Cameras in mobile phones for example can be used as an interface to initiatives that aid the government's planning process. Lane et al. (2005) see public authoring as a powerful force to enrich the public domain through the sharing of information, knowledge and experiences by ordinary people about the places they live, work and play in. However, these observations remain mostly speculative at this stage, and only few works have investigated the design specifics of applications successfully utilizing this infrastructure in the civic context. After all, commerce and advertising is "invading" the same spaces and compete for residents' attention in much the same way, and often more aggressively.

Redhead and Brereton (2006) list concrete recommendations for content and features of public displays designed for the civic sphere, based on their experience with a long term public community screen installation within a Brisbane shopping mall, e.g. display local information from the perspective of local community, allow discussion and argument, hint at ways to negotiate access to further involvement.

TexTales (Ananny & Strohecker, 2008) is a system that allows people to send SMS or MMS messages to a public screen in order to actively engage anonymously in a threaded, themed, civic and public discussion, e.g. about "smoking in public places." They found that the conversations were not only sustained within the system, but also carried on in the physical and social space around it. The cost of sending SMSs seemed to be of no issue to the participants. Some messages received were controversial and provocative, others were even private and personal (yet publically displayed), and only a few were forms of offensive graffiti.

Wiffiti.com (MacColl & Richardson, 2008), by US based company LocaModa, is a public screen application, which publishes real-time SMS and twitter messages as well as flickr images on animated public screens. The messages can be themed through the selection of a background image and subscribed twitter tags. It has been mainly targeted at giving bar and café owners an alternative content for their TVs, but has also been utilized in large scale events, e.g. concerts and political conventions. Wiffiti is currently only available in the US, and its potential and usefulness for local councils as a civic engagement tool has not been fully explored yet. Twitter messages do not find their way to the screen in real-time. However, currently in version 4, the evolved Wiffiti application is a great example for design considerations in terms of creating "enough ambient activity to continually stimulate audience attention and encourage engagement."

ARCHITECTURE AND IMPLEMENTATION

The goal of the architecture (Figure) is to allow councils to advertise civic issues or questions related to a particular place on a situated display within that place, and furthermore provide a wide range of input and output channels in order to lower the hurdle for residents to participate in the public discourse about this topic as much as possible. Input channels refer to the ability to contribute content by posting a comment, output channels refer to the different ways of accessing the content.



Figure 1. Screenshot of the public screen

A public screen has attributes and specifications that are vastly different to mobile phones and computer screens, e.g., the size of the screen and the distance to it, the way we interact with it as well as the fact that it is a public and not a private device. Therefore, the discussion data is presented in a way that is tailored towards those attributes, rather than just reusing the standard web representation of the forum.

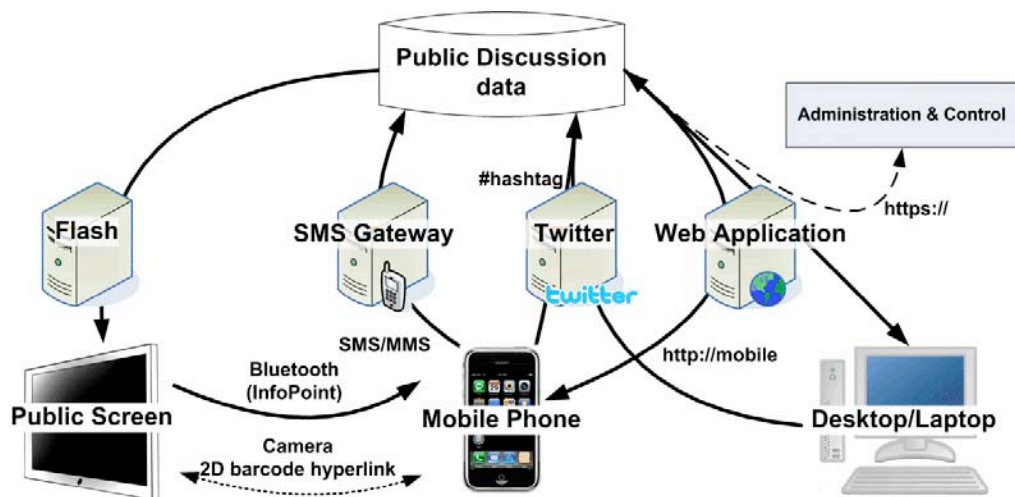


Figure 2. System architecture

Figure 1 shows a screenshot of the public screen application, developed using Flash, presenting dynamic content in a visually appealing way, which effectively engages with the audience. It promotes a particular civic topic (left) and displays what residents have to say about the topic (right) in animated speech bubbles, which rotate through an array of posts in order to grab the attention of passers-by. The array consists of the 4 most recent posts plus a random selection of 4 relevant, content bearing posts, which are updated every 2 minutes. The input channels are SMS/MMS, twitter (through hashtags), web and mobile web; and the output channels are the public screen, web and mobile web, incl. RSS feeds, as well as Bluetooth (see Figure 2).

SMS (and MMS) is the lowest common denominator in terms of technology. It is supported by 100% of mobile phones used today and nearly every mobile phone owner, especially within the demographics we are targeting, knows how to send an SMS and is therefore able to participate by posting their opinion to the system.

Alongside the mobile phone number for SMS, a specific **twitter hashtag** representing the civic topic is advertised so that twitter users can send messages to the screen by including the tag in their tweets. Twitter is currently gaining phenomenal growth in Australia, with over 1000 percent growth recorded in the first 4 months of 2009, according to Hitwise. Twitter users already use their favourite twitter client on their mobile phone, and we want to support and encourage this user base to contribute to the civic discourse. A server script regularly polls the twitter website for new entries with the tag and enters them into the discussion database, from where they are displayed on the public screen with only little delay (approx. 20 sec).

Residents can also use a **mobile phone website**, which is currently tailored for Webkit browsers, which runs on a wide range of smart phones, e.g., Android, iPhone, Symbian S60 phones, etc. To ease access to the website, the URL is promoted using 2D barcode posters around the screen. They act as real world hyperlinks, which are decoded by scanning the code with the mobile phone's

camera. Therefore, they enable users to simply point their cameras to access the site instead of unwieldy entering the URL.

The mobile website acts as an input and output channel. It not only allows users to post new messages to the screen, it also allows them to browse and view the history of previous civic discussions, which might still be ongoing through the web interfaces although not promoted on the public screen anymore (Figure 3).



Figure 3: Mobile phone application (tailored for Webkit running on Android and iPhone)

As an alternative to users who have mobile phones but no Internet access, we will also explore the use of **Bluetooth** for delivering situated content to the mobile phones that are nearby the location of the public screen. ACID (the Australasian CRC for Interaction Design) has developed the InfoPoint system, which allows us to send files via Bluetooth and without requiring custom software on the client side. Initially, we will send simple text files containing summaries of the ongoing current discussions.

A traditional desktop website is also offered to complete the various channels and provides RSS feeds on all topics to further ease access for users who prefer to use their favourite RSS reader clients. As mentioned above, the goal is to ease access to the public discussions, however, the distinctive aim of this project is to bring the content to the street, hence the focus of our current research work

lies within the public screen application and the mobile phone version of the website.

The desktop website also hosts the secured administration and control interface, which allows administrators to initiate and facilitate a public discussion by posting a topic, issue or question to the public screen. A push notification system – similar to online chat rooms – allows multiple distributed administrators to collaboratively perform the censoring and editing of the content in near real-time. The real-time nature is an important feature as it allows users to get the satisfaction of seeing their post on the public screen while they are still standing in front of it. The censoring is important because a council needs to preserve the right of having the last say of what goes onto such a screen for reasons of accountability. E.g., an anonymous system like this, which offers a “virtual megaphone” and a public forum is *not* the same as someone using an actual megaphone in person to present their opinion at the city square, in which case they can be held accountable for their actions and voice if necessary.

FUTURE WORK AND CONCLUSIONS

Over the coming months, the DiS system will be deployed in various urban contexts: a bus stop within the Kelvin Grove Urban Village (KGUV), a coffee shop, Brisbane’s town hall square, various engagement events organized by the BCC, and other selected locations within the inner city.

One goal is to develop a **content strategy** and typology for questions, topics, or issues that may provoke different types of feedback, evaluated against the following questions: How is the feedback formed if it is limited to short messages? Is such feedback useful to the council and/or the community? How can the data advance the council’s urban decision making processes, rather than making it more complex? What are the nuances of use of the different input and output channels?

To lower the hurdle of participation even further, future installation may include a publicly accessible keyboard to post messages. The next version will also see a location layer added on top of the topics to enable more fine-grained, location specific discussions with geo-tagged posts. We will also explore utilizing this public screen, mobile and web infrastructure to implement an effective survey tool, which provides benefits to all three stakeholders: the resident, the neighbourhood community and the council.

The system described in this paper is only the first version in animating residents to leave useful comments about their city, which could enhance the decision making basis for urban planners and contribute to socially sustainable neighbourhoods.

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