
Local Area Artworks: Collaborative Art Interpretation On-Site

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Abstract

In this paper we present Local Area Artworks, a system enabling collaborative art interpretation on-site deployed during an exhibition in a local art gallery. Through the system, we explore ways to re-connect people to the local place by making use of their personal mobile devices as interfaces to the shared physical space. We do this by re-emphasizing the local characteristics of wireless networks over the global connectivity to the Internet. With a collaborative writing system in a semi-public place, we encourage local art discussions and provide a platform for the public to actively participate in interpretations of individual artworks. Our preliminary findings suggest that people were (to our surprise) not questioning the inner workings of our system. Through engaging with the system, individuals felt being part of the exhibition. However, no coherent piece of text emerged during the runtime of the exhibition.

Author Keywords

Collaborative editing; mobile phones; proximity detection; wireless networks; participation; deliberation; art gallery.

ACM Classification Keywords

H.5.m. Information interfaces and presentation:
Collaborative computing.

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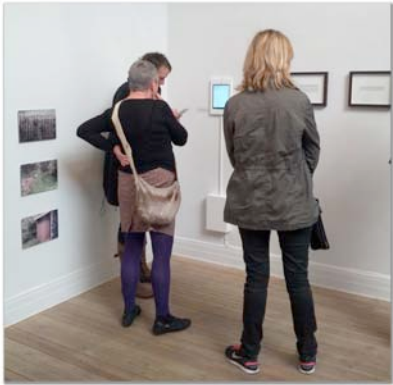


Figure 1. Visitors interacting with the system through their personal devices to write comments.

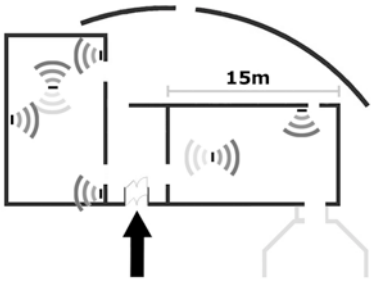


Figure 2. Floor plan of the gallery indicating where DIPs are located.



Figure 3. Close up of a digital interpretation panel (DIP) with instructions next to it.

Introduction

Wikipedia has long been the role model for the feasibility of enabling constructive participation in collaborative deliberation online [1]. But what happens if similar technologies for participation and deliberation are brought into the physical local environment in order to foster local communities where they meet? With *Local Area Artworks*, we explore such an approach, where participation is closely tied to a particular locality in the community. It is based on a notion of *re-localizing wireless networks* [3], that is, a shift of attention from the general experience of the internet and the fantasy of always-on global connectivity to the mixed reality of local networks where online and offline encounters are interwoven.

In this project we have deployed an on-site collaborative art interpretation system in an art gallery in Aarhus, Denmark. With the system we provoke existing orthodoxies of art curation by allowing anyone (visitors, staff, curators, and artists alike) to edit a collaborative interpretation of an artwork, displayed on a shared screen next to the artwork with people's personal mobile devices as a kind of remote control (Figure 1). We are interested in two key questions: Can we engage people in this setting to participate on-site through their mobile phones? Are they motivated to participate in collaborative and democratic deliberation in the form of jointly written interpretations of art?

System Overview

Local Area Artworks was deployed during an art exhibition running throughout May 2013 at the art gallery. The installation comprised of six digital interpretation panels (DIP), as one is shown in Figure 3, next to six individual artworks (Figure 2 shows a

floor plan). The panels are thought to replace curatorial text on traditional description panels with a shared space for collaborative interpretation (unstructured, free form text). Visitors connect their own smartphone (or a borrowed device) to a dedicated open wireless network that provides no Internet connection. Instead, when opening a browser, they will automatically be redirected to our web-based system. If they now move into proximity of a DIP (within 2 to 3 meters depending on the smartphone model and various attenuation factors), the browser will be redirected to an editable version of the text on the DIP. The text is live updated on the DIP (and other connected devices) when people write something. Moving to another artwork automatically redirects to the appropriate editable text. Moving out of reach of any DIP, the visitor will be presented with an overview map of the art gallery indicating where the DIPs are located (Figure 2). Each DIP provides an abstract representation of how many devices on the network are in proximity (grey dots) and how many are actively editing (colored dots), as shown in Figure 3.

The amount of text people can write on a DIP is limited to what fits on the display in a specific font size (no scrolling). After a while the display will be full, hence we provoke people to delete or edit what has previously been written. With the system, we explore tensions of read/write and global/local. The text of a given DIP can only be edited while on the local wireless network, being physically at the gallery and in proximity of the respective artwork. From the outside, all texts can be accessed in real-time but *only in read-only mode* through the webpage of the art gallery (Figure 4).

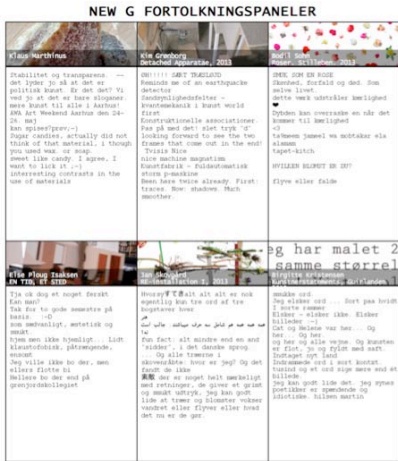


Figure 4. Read-only overview screen showing the content of the six DIPs.



Figure 5. Raspberry Pi and Wi-Fi dongle (plus cabling) mounted in white boxes below the DIPs.

Implementation

Each of the six DIPs consists of an iPad in a solid, white metal frame mounted on the wall next to an artwork. All direct interaction (touch and hardware buttons) has been disabled through the 'Guided Access' function of iOS. Below each DIP is a white box that, besides wiring and power supplies, contains a Raspberry Pi single-board computer with an attached USB wireless network dongle (Figure 5). Using the packet sniffer airodump-ng from the wireless network hacking suite aircrack-ng (www.aircrack-ng.org), each Raspberry Pi assesses the signal strength of those sniffed data packets that are sent from any wireless device on our dedicated network to the wireless router. The Raspberry Pis report this signal strength to a proximity database on our central server. When a wireless device makes a HTTP request it is first redirected to our web server by the wireless router. The web server uses the MAC address of the client as a lookup in the proximity database. The server will redirect the HTTP request to the text editor of the DIP with the highest signal strength if it is above a certain threshold; if below the threshold the request will be redirected to the overview map of the art gallery. This setup enables proximity detection at a very low price per unit of about 90 USD.

The collaborative editing is realized through a modified version of EtherPad Lite (etherpad.org). EtherPad Lite is an open source real-time collaborative editor for the web. On each DIP we display a read-only version of an EtherPad document, and provide the editable version on the mobile devices. EtherPad Lite enables edits to be live updated on the DIPs, and on the devices of other users connected to the same DIP. On the webpage of the art gallery we aggregate all six texts in live-updated read-only versions (Figure 4).

We deliberately chose a solution based on infrastructure-based proximity sensing and web-technology in order to enable participation with zero-install and minimal setup on the visitors' mobile devices. The system requires minimal interaction; navigation is triggered implicitly by walking around.

Study

At the time of writing, the system is deployed at an art institution in conjunction with an exhibition running for a month. Throughout the exhibition, we study the use of the system through observations, semi-structured interviews with visitors, and discussions with artists and curators. So far, we have conducted 15 interviews and done observations on three days, two hours each. We log a plethora of different user activities in the system and record the full history of the text being written.

Preliminary Findings

Our preliminary findings indicate that it is challenging to engage visitors in participation beyond mere consumption. Many read the text on the DIPs and move on. Those that do engage with the system may write a few words or just letters, seemingly to test out the system, and delete them again right away. Others may write lines and sentences on the DIPs. These may include free associations, plays on words, or a philosophical thought referring to the work, the artist, or the specific social and spatio-temporal context (e.g., an event at the gallery, a visit with a friend). One can also find lots of seemingly unrelated content on the displays: short messages, comments, or even advertisement for other events.

However, no coherent piece of text emerged during the short runtime of the exhibition on any of the DIPs. To



Figure 6. A smart phone connected to one of the DIPs, where people can edit the interpretations.

the contrary, individual contributions were explicitly separated through a new or even with empty lines. We observed only individual replies and references to earlier comments, changing sentences or adding something at the end. Surprising to us, people were rather hesitant to delete text written by others, which they are required to do when the display is full. From the interviews we learned that they did not think they would come up with anything better or more thoughtful than what was already there. Also deciding what to delete seemed to be a hard decision at least for some.

Three distinct ways of interacting with the system emerged. Some visitors were standing right in front of the DIP, but were only looking at their smartphones while writing. Others were often looking at the DIP and their phone in turn, as if checking that everything is appearing. Few were taking a more subtle approach, standing a bit further away, blending in with the crowd focusing solely on their phone.

We went to great lengths to disable touch input on the iPads. However, by and large, people would never dare to touch them anyway. We expect this to be due to the iPads being hidden in the metal frame and more importantly due to art galleries' general injunction and the anxiousness people tend to have of a "Do-not-touch" atmosphere [2].

Surprisingly, no one remarked on or even questioned the inner workings of the system: the fact that they were 'magically' redirected to the editor (Figure 6) of a DIP in proximity. If the browser of the phone was sufficiently new, it mostly just worked. While we anticipated the most problems and confusion with the proximity detection (e.g., randomly moving in and out),

it performed rather stable. An occasional small delay in being redirected did not seem to bother visitors; they just waited a second or two. Without serious breakdowns in the interaction we observed that people did not actually reflect on the inner workings of the system.

Conclusion

In this paper, we report on initial findings of deploying Local Area Artworks in an art gallery. Our design goal was to enable the kind of collaborative deliberation as observed on Wikipedia in a local space. The system was designed to make participation through personal devices as seamless as possible. While the latter seemed successful, we mainly observed that the system was used for writing individual comments and remarks, and not for the production of a coherent art interpretation.

Acknowledgements

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