
Playful Civic Engagement Using Large Public Displays

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Abstract

We investigate the use of large public displays for interfaces that foster engagement with important public issues. We are interested in playful interfaces that invite casual passers-by to state an opinion or pose a question, and that gently point to possibilities for more information and action. We describe a set of possible designs, and the initial implementation of one based on a “refrigerator magnet” metaphor.

Keywords

Civic engagement, political engagement, large public displays, refrigerator magnets, MadLibs

ACM Classification Keywords

H5.3. Information interfaces and presentation (e.g., HCI): Group and Organization Interfaces.

General Terms

Human Factors

Introduction

Civic engagement plays a key role in democratic society. However, there are major disengagement issues in many countries, including in the United States and to a lesser although still significant extent in

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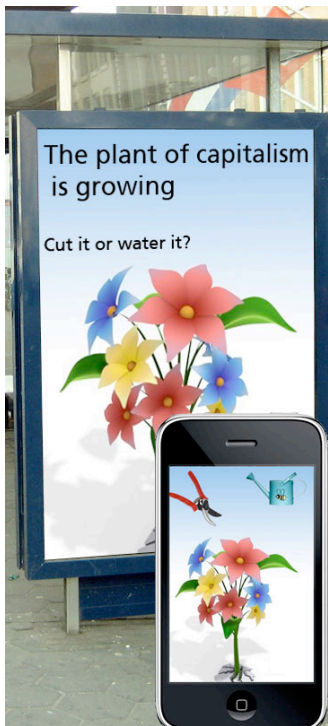


Figure 1: Photoshop mockup of interacting with a public display using the “Tamagotchi” metaphor

Germany, particularly among younger citizens. Further, culturally, the conditions under which people want to interact with institutions are changing, again particularly for younger citizens who increasingly prefer to express their views and address issues through informal peer networks, and to participate in formulating action rather than following the lead of top-down authorities [1].

The work described here was done at the Hasso Plattner Institute in Potsdam, Germany, and is part of a larger research project, centered at the University of Washington, to investigate innovative socio-computational systems to support public engagement and participation [2]. Motivated by these issues, and at the same time by the increasing number of large interactive public displays, we are led to ask:

Can large public displays play a useful role in civic engagement?

Given the changing face of civic engagement, and the nature of public displays and their deployment, we are interested in playful interfaces that invite casual passers-by to participate in stating an opinion or opening a question, and that may gently point to possibilities for more information and action, rather than requiring a substantial interaction and conveying a message of serious work and the obligations of citizenship (although in the end in fact the issues may well be serious and intertwined with citizenship).

Design Alternatives

In the early stages of the design process, we considered a range of design alternatives, representing these in a combination of sketches, textual descriptions, and Photoshop mockups.

One design was based on a “refrigerator magnet” metaphor. There is a supply of virtual magnets, with words and phrases describing problems, actions, organizations, comments on them, and so forth. The user can then drag the virtual magnets onto the display and arrange them to make a statement, raise a question, or suggest an action. Human nature being what it is, it was clear from the start that allowing complete freedom in what could be written would likely lead to offensive content and the rapid removal of the application from the display. We hoped to head this off by pre-selecting the words and phrases, while still allowing freedom to compose a wide range of statements and suggestions, including irreverent or cheeky ones. At the same time, the design included an email address for submitting suggestions for additional topics and phrases, both to crowd-source the extension of the available vocabulary and also to provide some counterbalance for the control over the content exerted by totally pre-defining the vocabulary elements.

A second design was based on the MadLibs game, and constrains the sentence grammar to always yield grammatically correct sentences (in contrast to the refrigerator magnet interface, which allows total nonsense sentences). Here, the display provides a sentence template, such as “_____ is the most important issue facing _____ today! For more information and actions see _____”, where the first blank can be filled in from a stock of issues, the second with regions or stakeholder groups, and the third with names and URLs of NGOs, activist groups, and others. (So a filled-in example would be “Climate change is the most important issue facing the world today! For more information and actions see <http://www.350.org>.”) The display would also flip through thumbnails of the

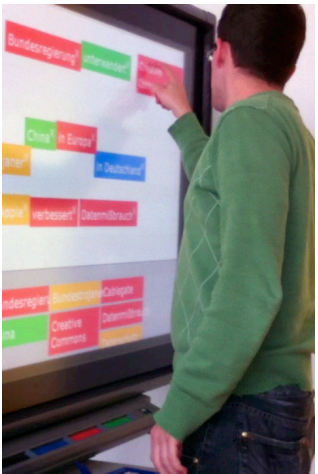
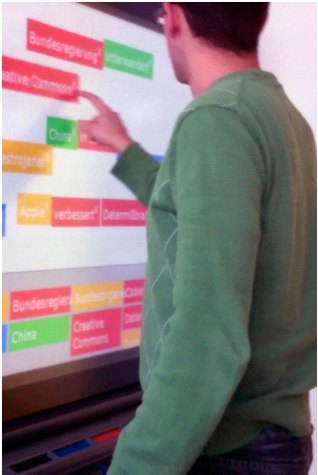


Figure 2: Interacting with the Refrigerator Magnets prototype on a SmartBoard

organizations' webpages as the user browsed through organizations. We also wanted to have some irreverent versions of the statement, such as "a trumped-up" rather than "the most important", "a totally wrongheaded view" rather than "more information and actions", and so forth. And as before, there should be an email address to suggest additional content.

We also brainstormed several other interfaces, such as one based on the Risk game ("nuclear power takes over Europe"), and Tamagotchi (Figure 1 - "The plant of capitalism is growing! Cut it or water it?").

Another design dimension is how the user interacts with the display. When the user can touch the display, touch interaction is very likely the best choice. When this isn't possible, interaction via a mobile phone (using Bluetooth or interaction via a web browser on the device) seemed like good alternatives.

To help select an initial prototype for implementation, we took a poll among our research project group and solicited other comments, particularly with respect to our goals of playfulness and connection with politics and engagement.

Implementation

We selected "refrigerator magnets" for our initial implementation (Figure 2), using a website and web browser to generate the display. We supported interaction both using a touch screen and using a second browser on a mobile phone (or any other device) synchronized with the large public display. We use Javascript and CSS elements for the interaction; the data is processed via PHP and stored in a MySQL database.

The refrigerator magnets are HTML-div-containers that can be added, moved, and deleted, and that snap to other magnets on the panel. This functionality is implemented using the Yahoo! UI Library.

In our second pilot we added a search query function: snapped-together magnets that form a sentence are then automatically used to perform a search query on the topic. To implement this, selected magnets have lists of URLs from relevant news sources and organizations attached. After the magnets are snapped together, we perform a Google search on one of the news sources or organizations using the implicit query. Abstracts of the first four results are then presented to the users, who can then decide whether they want to go on to view the full web pages of a given result.

For interaction using a mobile phone, we use two different browser windows, one on the public display and the other on the mobile device. To synchronize the windows, the browsers continuously query the database server for updates using AJAX. If there is a change to either display, the browser of the other display receives JSON data with the changes. The browser then parses the data and performs the update, so that they again show the same view.

To support evaluation we log all user interactions by sending AJAX requests to store the information. Using this log we can replay the movement and arrangement of the magnets at any time in the past.

Preliminary Evaluation Results

For our initial test, we deployed the prototype on a SMART Board™ touch-enabled display in a hallway in our building. All interactions were logged as described

above, and a webcam recorded images of the participants interacting with the display. (A sign on the display alerted passers-by to the data collection.) The replay function for the interaction log, along with the webcam images, allowed us to analyze the complete interaction when desired.

The first pilot was done with simple magnets to get an initial assessment of the number of meaningful vs. nonsense statements that were formed. We recorded 1,076 interactions over 4 days. By using the replay function we manually selected all statements that users formed. We took the resulting 76 statements and asked 16 coders to assess which statements are understandable. The coders assessed 60% of the statements as understandable. We subsequently added the snapping functionality and a web search for relevant topics after statements are formed.

The intended use of the prototype was via the touch-enabled display, but we also had unintentionally left the capability for interaction via synchronized browsers in place as well. This was then used by someone to manipulate the display remotely. While annoying at the time (since in the process the person crashed the system and we lost a day's worth of data), it turned out to provide some useful research data: our design to avoid inappropriate content by constraining the vocabulary could be subverted by a user arranging very large numbers of small refrigerator magnets to make individual letters and then arbitrary words.

Conclusion and Future Work

We have presented an early deployment and test of the use of large public displays for civic engagement. Our results to date have been encouraging but very

preliminary. The last author plans to continue the work with students at the University of Washington, including implementing other variations of the system (in particular the MadLibs design) and deploying them in much more public places. (We had hoped to test the system on a public display in an U-Bahn station in Berlin, but unfortunately ran out of time.) We will also conduct a longer-term evaluation in Seattle, including assessing precursors of civic engagement by the users, such as interest in learning more about an issue via an organization's website, or by taking an action such as contacting an elected official. Our main research question has also given rise to a series of additional interesting questions, many of them revolving around the value tensions and their resolution in the design and deployment of these systems, in particular between freedom of expression on the one hand, and public acceptability and coherence on the other.

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References

- [1] Bennett, W. Lance. Changing Citizenship in the Digital Age. In *Civic Life Online: Learning How Digital Media Can Engage Youth*. MIT Press, 2008.
- [2] "Engage" project website, University of Washington, 2011.
<http://dub.washington.edu/projects/engage>.