Workshop on Collaboration with Interactive Walls and Tables: Informative Art

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Abstract. Informative art is a project that combines dynamically updated information and visual art. The information is shown on a wall-mounted display, to give the impression of an ordinary painting. Aiming towards a calm integration of information technology, it acts as a subtle awareness display, constantly giving an immediate overview of information. The information may easily be shared between members in a group as a “conversation piece”, yet is invisible for others, as the information is embedded in the visual art.

1 Introduction

Calm technology implies that computers should disappear into the “background” of our architectural space and easily switch between the center and the periphery of our attention [1]. This has been addressed by several, e.g. to explicitly support the work in an office [2]. When walls and tables start to work as computer screens, how may information be presented according to the notion of calm technology? Ambient displays, decorating the architectural space, have been explored as a background media [3] e.g. as media in group awareness [4] and stock portfolio information [5]. Similar to information visualization they can provide an overview of complex information “at a glance”. By combining the possibilities given by ambient media and information visualization in an architectural space, information displays may be designed as “informative adornments”. This way, dynamical information presented constantly in the background of its viewers, may trigger conversations and support group work.

1.1 Informative art

Informative art has previously been developed, as a playful combination of traditional wall decorations (such as posters and paintings) with dynamic computer displays [6]. A piece of informative art is reminiscent of a certain painter in style, but instead of providing a static image its visual appearance is continuously updated to reflect some dynamically changing information. The resulting visualization is then shown on a wall-mounted display to give the impression of an ordinary painting. (See Figure 1.a)
The long-term goal is that informative art will take a similar place in our daily environment as traditional artworks do today, while at the same time provide information that is relevant for the place that it is situated in, acting as a calm technology and a “conversation piece”.

Painters, whose styles previously have been used as inspiration [6], include Piet Mondrian, Bridget Riley, Andy Warhol and Mark Rothko. Data that has been visualized in previous examples of informative art includes e-mail traffic, current weather conditions around the world, earthquake data and the activity level in a room. This data was chosen for early prototype purposes, thus not designed to support face-to-face collaboration. However, we believe that a piece with other information sources could trigger face-to-face interaction.

2 Weather by Mondrian

To get some perceptions on how people perceive informative art, we have conducted a preliminary study of a weather forecast, designed reminiscent to the style of the Dutch artist Piet Mondrian (see Figure 1.a, b). The piece was displayed for a week in a semi-public area, where a group of people got a brief introduction. A total of 40 questionnaires was handed out during the week. The result showed that, provided with an introduction, most people could read the information, even if some misinterpretations did occur. The majority perceived it as an enjoyable and non-intrusive piece; someone even told us that he did not want us to take it down. Without introduction however, it was impossible to read the information and in fact, several did not expect it to contain any information.

Fig. 1. a) Informative art can be placed in a lunchroom to provide timely and relevant information, either about the context that it is situated in or some other source. b) A weather forecast, superficially looking like a Mondrian painting where each colored square represents one day. The size of each square reflects the temperature for that day so that the higher the temperature, the larger the square. The color shows the weather condition, yellow represents a sunny day, blue represents rain and red clouds. The display is read left to right, top to bottom, where the first square (top-left) represents the today’s weather, the next one tomorrows and so on.
3 Future work

There may be no ultimate solution to support face-to-face collaboration in work environments. There are however more or less enjoyable and/or calm [1] alternatives, regarding on how information may be presented and shared face-to-face. An application that is constantly running in the background of its viewers, visualizing dynamical information, may support group work indirectly, as it might trigger conversations about the information. As we are interested in studying the long-term use of informative art, it is important to find environments and information that are suitable for this kind of technology, possibly involving work environments. It may work as a “conversation piece”, as the information easily can be shared between members in a group, yet being invisible for others. We will now discuss some ideas for face-to-face collaboration and interaction moving beyond a “conversation piece”.

"How are we doing?"
Ambient Orb is a small ambient display, using the architectural space to indicate that a stock portfolio changes [2]. We suggest that similar information related to a company, e.g. current and history data about the production in a factory, or the number of customers visiting a warehouse, could be visualized by informative art. As it is only readable by those “who know” it can be situated in a space where customers or other people might appear, such as a lunchroom or a coffee place. People, who do not know that it is an information display, may still enjoy it as an adornment, probably not even aware of that it reveals information.

"Affecting the meeting"
If a piece of informative art reflects upon its context, people might start to behave differently, as they become aware that their behavior affects the visualization. We are interested in displaying data that relates to voices. For example, a piece in a meeting room could react on voices e.g. if someone’s voice is more prominent than others. This could affect the face-to-face communication in the meeting, or lead to future conversations about the communication in the meeting, even if the piece is a background display, acting as an adornment.

4 Expectations of the workshop

I am interested in creating an understanding of how interactive, architectural spaces may support face-to-face collaboration. I would especially like to discuss different interaction styles for architectural spaces, applications that have a ubiquitously available functionality and disappearing infrastructures. Calm information technology that easily moves between the periphery and center of attention would be interesting to discuss, e.g. how an application may be salient on demand. I hope that the workshop will generate possible research directions, not only for informative art but also for new projects.
5 Contributor’s background

I am a M.Sc. student in Informatics at the Future Applications Lab, which is founded by Dr. Lars Erik Holmquist at the Viktoria institute in Gothenburg, Sweden. I previously have a Bachelors Degree in Cognitive Science from the University of Skövde, Sweden. My research interest includes information visualization and interaction techniques for architectural spaces, moving beyond the desktop computer. I am especially interested in how the periphery and center of attention becomes important issues in the design of these spaces, as I find that the interaction with an intelligent environment should resemble the interaction with physical ordinary things like chairs, desks and pictures. I find this workshop very interesting and hope that it will generate ideas on how to continue with informative art and beyond, inspiring new projects.

6 References