
Distributed Participatory Design

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Abstract

Children who are not co-located with system developers because of geographic location or time zone difference have ideas that are just as important and valid as children who are easily "available". This problem is the motivation for my thesis work. I propose to design, develop, and research a computer-mediated, geographically distributed, asynchronous tool to facilitate intergenerational participatory design.

Keywords

Design, Children, Participatory

ACM Classification Keywords

D2.2. Design Tools and Techniques: Evolutionary Prototyping

General Terms

Children, Participatory Design.

Research Situation

Over the last three years, I have been deeply involved in participatory design. The passion I have for these methods is due to my belief that the best way to solve problems is to enable the affected groups to work directly with those that can craft a solution. As part of the Human-Computer Interaction Lab's inter-generational design team, Kidsteam, I have had the chance to participate in the design of children's technologies with children. Unfortunately, face-to-face co-design is not always possible due to geographical location or time differences such as time zones or school schedules. In order to enable more children to participate, my research seeks to develop design techniques that enable intergenerational, geographically-distributed, asynchronous co-design.

I am currently a Doctoral Candidate in my third year at the University of Maryland's School of Information Studies (the iSchool). This Ph.D. program is interdisciplinary and research-based. I expect to defend my proposal in the Spring semester of 2011 and my dissertation in the Spring semester of 2012.

The program consists of 25 hours of coursework beyond a Master's degree, a comprehensive

requirement called an integrative paper, the proposal defense, and the dissertation defense. In our program, candidacy is awarded after the successful completion of the integrative paper.

My integrative paper is the basis for my proposal. Utilizing participatory design techniques, I created an online system to facilitate Layered Elaboration [9]. I have already begun designing and developing my research prototype for my dissertation research.

Attending the Doctoral Consortium would be a wonderful opportunity for me. I would be able to discuss my work with researchers in the CHI community, and as important, other Ph.D. students who make up a cohort of developing researchers.

Context and Motivation

Currently, distributed co-design is achieved with non-interactive media like paper and sticky notes physically sent via courier, or non-iterative, computer-based methods like e-mail. Distributed co-design is currently difficult because of the multiple individual idea streams that the distributed co-design teams must manage such as text from an e-mail or graphics from an image file [2]. Besides the difficulty in organizing relevant media, distributed design teams need a way to see the iterations between versions and prevent versioning errors.

Some of these problems could be solved through the use of computer-supported cooperative-work tools. Although tools currently exist for simultaneous co-work, and can be extended for co-design, tools that support asynchronous co-design do not exist. In a recent project, our research team worked with students and

facilitators of the Carnegie Hall Cultural Exchange program. In this program, students from New York, Mexico City, and New Delhi participated in activities in the classroom and in an online social network. Each location had local co-design sessions, however, there was no interaction between groups due to the time-zone differences between the three locations.

This is a real problem that prohibits co-design from happening with geographically distributed audiences. In recent participatory design work with a nationally recognized artistic institution, the ability to use traditional techniques with an international audience was prohibited by tools, location, and time. As an international organization, it is important to CHI to understand how to enable truly global users to work with each other in order to solve complex problems.

Background and Related Work

Participatory Design is a high-level, overarching methodology that involves end-users in the design process. In the mid-1970's, computer-based technologies were introduced into the workplace in Europe, and workers began to feel that they were losing control of their work environment [5]. This led to the seminal work of the UTOPIA project [1], which sought to give a voice to newspaper workers in Sweden in the design of new graphics workstations in the early 1980's.

One of the earliest participatory design tools that leveraged paper-prototyping with new media was PICTIVE [7]. PICTIVE combined low-tech prototyping materials with high-tech video recording. PICTIVE used a shared design surface and included a number of low-tech materials like labels, highlighters, colored pens,

Post-it notes and pre-made icons. This technique required all parties to be in the same location at the same time.

PICTIVE led to the PICTIOL project [3]. PICTIOL is based on and shares features with TelePICTIVE, [6], an online version of the PICTIVE design technique. PICTIOL seeks to mimic PICTIVE with an online design space using predesigned shapes, “sticky notes”, and some drawing tools. Tools like these allow users to be in different locations, but still required synchronous schedules.

For the design of the International Children’s Digital Library (ICDL) [2], the traditional co-design techniques like sticky noting, low-tech prototyping, and idea frequency analysis, or “Big Ideas” [4], needed to be modified to work with a geographically dispersed group. For example, instead of low-tech prototyping with Bags of Stuff, children from geographically dispersed areas drew pictures on paper and mailed them back. Once a year, a lead team member would travel to the different countries to interview the children about their designs to get some insight. These techniques did enable geographically distributed, asynchronous co-design, but, the time to mail something internationally, the cost to travel to a site, and the lack of iterations and elaboration by all parties in a timely manner could have reduced the speed of development of the project.

Statement of Problem

The designs of children in areas not co-located with system builders, or who live in locations not easily accessed, are just as important and valid as children who are “around”. Based on the shortcomings of previous projects, there is a need for computer-

mediated, asynchronous, geographically distributed, intergenerational, participatory design tools. In order to address this need, I will need to identify the following items: the features a computer-based design tool require in order to facilitate distributed co-design with children, children’s preferred features for a computer-based distributed co-design tool, and identify the experiences of intergenerational design teams who use distributed co-design tools.

Research Goals and Methods

In order to identify the features necessary to facilitate distributed co-design, qualitative research methods, such as cooperative inquiry, interviews, and observations will be used. The contribution of this research goal is the identification of the requirements that a tool would need in order to be designed and built.

Once a prototype of the tool is built, I will use a mixed methods approach to identify users’ preferred features for the co-design tool. I will create several protocols that place users in scenarios where they co-design in a distributed environment and record observations. After that, the users will participate in a survey about the features that they worked with as well as an opportunity to make suggestions on the tool.

Once the results from the feature-set research are incorporated into the prototype, a geographically distributed, asynchronous, intergenerational design team will be formed. This Online Kidsteam will use the co-design methods afforded by the design tool to solve real-world problems. The members will keep online journals about their participation in the online team. This will allow me to know if the tool can be successful

in a real-world environment as well as the experiences that someone participating in a geographically distributed, asynchronous design team may have.

Dissertation Status

As of this submission, I have a rough draft of my proposal complete. I expect to defend the proposal in the Spring semester of 2011.

Using the prototype developed during my integrative paper process [8], I am designing the first prototype of the design tool with our intergenerational design team.

The prototype will be completed in February of 2011 after receiving feedback from my committee. Once the prototype is complete, I will be able to gather research regarding user preferences and have that data to bring to the Doctoral Consortium in May 2011. At the Consortium, I would like to show my prototype and early findings to all members of the consortium and get feedback on the work to date.

Expected Contributions

Through the process of creating the design tool and the experiences with the online Kidsteam, there are three expected contributions to the HCI research community from this dissertation research.

Developing and researching the prototype will continue to support the adoption of high-tech prototyping in the traditional low-tech prototype realm of participatory design. The outcomes of the online Kidsteam will help develop new insights and processes for working with children. Finally, the developed tool will give a voice to those who, frequently, cannot participate in co-design because of their geographical location.

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