Chapter 17
Designing Interactive Architecture:
Lessons Learned from a Multi-Professional Approach to the Design of an Ambient Computing Environment

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ABSTRACT

Interactive architecture bridges in itself two design traditions, i.e. design of interactive systems on the one hand, and architecture as the tradition of designing our built environment on the other hand. This article reports from our ongoing project focused on the design and implementation of an interactive environment for public use. The article describes the project, reviews and outlines the main design challenges as pinpointed in the literature on interactive architecture, and describes the practical challenges identified in this particular project. This article then presents the participatory design approach adopted in this project to overcome these challenges, and describes and analysis the methodological implications from this project. These implications include the lessons learned from the coordination of a geographically distributed design team, "role gliding" as the reinterpretation of the designers as users in the participatory design process, and a shift from communities of practices to mixtures of professions.

INTRODUCTION

Interactive architecture (Bullivant, 2005) bridges in itself two design traditions, i.e. design of interactive systems (e.g. Benyon, et al., 2004) on the one hand, and traditional architecture (e.g. Ching, 1943) as the tradition of designing our built environment on the other hand. As such, this emerging area, in which digital technologies are used as one design material (Vallgårda & Redström, 2007) amongst others in the creation of new built environments, challenges the traditional approach to systems design, as well as the methods applied to arrive at well-grounded

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digital solutions. More specifically, interactive architecture as an emerging design practice calls for an architectural approach to interactive systems design, and for an interactive systems design approach to the design of our built environment. As formulated by Sengers, et al. (2004) the recent movement forwards ubiquitous computing calls for such a bridge between architecture and interactive systems design:

Imagine a world without architects, where only engineers construct buildings. With a keen eye towards functionality, these engineers would make sure buildings were sound, but something would be lacking. People would miss the richness of architecture – the designed connection to their lives, history, and culture. The designed experience of these buildings would be irrelevant to their social and personal concept of buildings. Yet this is the world researchers are inadvertently creating with ubiquitous computing *(Sengers, et al. 2004, p. 14)*.

Most recently this challenge has been addressed in a number of papers in the area of participatory design and related design approaches including e.g. reports on design of immersive environments for public use (Robertson, et al., 2006), design of co-creative media environments (Watkins & Russo, 2005), and design of museums as interactive public places for cultural engagement (Watkins, 2007), exhibition design (Taxén, 2004) and educational programs (e.g. Roussou et al., 2007). While these studies document the design cases and the methods applied in these projects there is still a need for new studies that explicitly sets out to address this seemingly gap between architecture and interactive systems design and to contribute with new knowledge and specific insights related to methodological approaches to design in the area of interactive architecture.

In this article we report from our ongoing project focused on the design and implementation of a unique interactive environment for public use, with the specific purpose of gaining new knowledge on how to further develop the participatory design approach to address development projects in the area of interactive architecture.

The rest of the article is structured as follows. We first outline and review the related research in this area, followed by a description of the main design challenges as pinpointed in the literature on interactive architecture. We then present the project at hand and the practical challenges identified in this particular project followed by a description of the participatory design approach adopted in this project to overcome these challenges, and describes and analysis the methodological implications from this project. Based on the observations made in this project and the implications drawn from these observations, the article ends with the outlining of a number of conclusions related to participatory design in the area of interactive architecture.

Related Research

Research on methods and design for interactive architecture spans across several areas including approaches like ambient intelligence and ubiquitous computing from the interactive systems field, and a turn towards digital materials in the field of architecture. Below I will outline some of the most recent attempts made to bridge the areas of interactive systems design and architecture to create a knowledge base, and point of departure for research into interactive architecture.

Reviewing current research on this topic within the field of interactive systems design we find documented research on design of ambient information systems (Pousman & Stasko, 2006) ambient intelligence (Ruyter & Aarts, 2004) i.e. computerized environments, and its use in everyday life (e.g. Cai & Abascal, 2006), and research into intelligent architecture and design of interactive places for architecture and entertainment (e.g. Sparacino, 2008).

From the field of architecture we find a similar movement into the area of interactive architecture including e.g. reviews and application of inno-