Chapter 8

SketchBoard:
Design and Evaluation of Interactive Tools for the Design Review Process

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ABSTRACT

This chapter seeks to investigate the subject of the design review process and its embedment in digital media, with a primary focus on mobile interactive surfaces. Despite the growing body of academic research on the topic, there is a gap in evaluating how aspects of the design review process can be performed with digital media. The main point of this study is to combine empirical and conceptual design components to evaluate a new communication medium called SketchBoard that uses interactive surfaces to perform selected tasks of the design review process. This study specifically contributes to the state-of-the-art of visualization, communication, and participation aspects of the design review process and mobile interactive surfaces.

1. INTRODUCTION

The zoning ordinance is a prime text-based source of information on land use and district regulations. It is regularly referred to and used by urban planners, property owners, developers, attorneys, local governing bodies, and members of zoning appeals boards. However, there is a lack of comprehensibility of the technical information and concepts on the zoning ordinance document that causes frustration and bewilderment.

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for urban planning stakeholders. It is also uncommon to have accompanying maps, graphics, and diagrams that support the readability and intelligibility of the zoning ordinance document. Thus, computing and visualizing Floor Area Ratio (FAR) are difficult activities when referring to the text-based document. FAR refers to the ratio of a building’s total floor area compared to the size of a building’s parcel, as shown in Figure 1. In addition, setbacks that are specified under a zoning ordinance can impose constraints which can make it impossible to achieve the permitted FAR. Even though these definitions are somewhat clear, without illustrations they are cumbersome to comprehend (Vishkaie, 2014; Kaufman, 1963).

Furthermore, the work conducted within the design review process is complex because it requires enhancements to the participatory communication aspects; participatory communication refers to creating shared understanding, perception, and knowledge between urban planning stakeholders within a collective decision-making environment. Moreover, participatory communication within the design review process should empower the voice and visibility of urban planning stakeholders through simple visualization, thus discovering solutions to their complex design problems (Vishkaie, 2014; Tufte & Mefalopulos, 2009).

However, these various aspects of the design review process significantly rely on conventional tools such as paper, pen, pencil, tape measure, large binders, multiple stacks of bylaws, and so on, as well as desktop computer applications such as Computer Aided Design (CAD), Planning Support System (PSS), and Geographic Information System (GIS) software. Yet, these existing tools and technologies used in the design review process lack simplicity, usefulness, and mobility (Vishkaie, 2014).

Although, mobile, small interactive surfaces are proliferating, there remains a gap in determining whether computer aided planning can fully capitalize on the benefits of interface and interaction design of such surfaces. Specifically, there is an absence of empirical research studies to identify how urban planning stakeholders can benefit from using mobile, small interactive surfaces within the design review process. Yet, by characterizing the contemporary trend of interactive surfaces, perhaps as one solution amongst many, this exploratory study speculates that integration of a mobile, small interactive surface such as a tablet with SketchBoard could potentially enhance the participatory communication and visualization needs within the design review process (Vishkaie, 2014).

The goal of this exploratory study was to design and evaluate SketchBoard, a communication medium that uses interactive surfaces to perform selected tasks for the design review process. This study explored how technology can be used to support communication, participation, visualization, and analysis throughout the design review process. As part of the user-centered design process, the primary goal of this exploratory study was to create a minimal interface and interaction design for SketchBoard that will allow urban planners with limited computer skills to take part
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