Chapter 12
Mapping Participatory Design Methods to the Cognitive Process of Creativity to Facilitate Requirements Engineering

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ABSTRACT

This chapter describes the User-Driven Creativity Framework: a framework that links several Participatory Design (PD) activities into one combined method. This framework, designed to be accordant with the mental process model of creativity, aims to integrate user involvement and creativity in the early stages of application requirements, gathering, and concept development. This chapter aims to contribute to recent discussions on how user-centered or participatory design methods can contribute to information systems development methodologies. The authors describe a mobile language learning case study that demonstrates how an application of the framework resulted in system (paper) prototypes and unveiled perceptions of learners and teachers, effectively yielding the necessary in-depth user knowledge and involvement to establish a strong foundation for further agile development activities. This chapter provides engineers or end-user representatives with a hands-on guide to elicit user requirements and envision possible future application information architectures.

INTRODUCTION

Creativity

Creativity is a very important component in the process of innovative product and application design. This is true especially in the early stages of the design process (Snider, Dekoninck, & Culley, 2011), where creativity is often considered an essential prerequisite for designers to come up with innovative ideas for new products or software. However, in some accounts, the role of creativity in design is somewhat elusive, up to the point of becoming the 'mystical' element in design (Fallman, 2003), valuing the designer's values and taste over methodology and control. Adding this somewhat 'mystical' perception of creativity to the often 'ill-structured' early design phases (Guindon, 2012), designers can use some helpful tools facilitating creative thinking. For this reason, several aids have been developed to facilitate and stimulate creative thinking in product design cycles (Lucero & Arrasvuori, 2012; Shneiderman, 2007; Vass, Carroll, & Clifford, 2002); in addition, several academic (e.g. the DESIRE conferences on creativity and innovation in design, ACM Creativity and Cognition) and non-academic (e.g. HOW Design Conference) conferences focus on the role of creativity in design.

The concept of creativity has been approached in literature from a variety of different angles, ranging from a psychological point of view describing (Findlay & Lumsden, 1988) and assessing (Kim, 2006) creative processes, to more practical approaches, such as the development of both physical (Lucero & Arrasvuori, 2012) and digital (Vass, et al., 2002) tools to support creativity and ideation. Specifically in PD, most literature describes strategies on how to create new designs based on the users' current practices (Blomberg, Giacomi, Mosher, & Swenton-Wall, 1933), though some publications have already stressed and explored the role of creativity in participatory design (Bodker, Nielsen, & Graves Petersen, 2000; Dalsgaard & Halskov, 2010; Muller, 2003; Steen, 2001).

When considering IS Requirements Engineering (RE), the impact of creative thinking has long been underestimated as a decisive factor for building competitive and imaginative products that avoid re-implementing the obvious (Maiden & Gizikis, 2001), existing solutions with little added value. However, the requirements analysis has been described as a task of discovery (Robertson & Heitmeyer, 2005) where the requirements engineer has an overview of the business problem, stakeholder requirements and available technology, and is thus ideally placed to innovate (Robertson, 2005). The importance of creativity, both from a philosophical and a more pragmatic point of view, has recently been echoed by requirements engineers in a focus group study (Cybulski, Nguyen, Thanasankit, & Lichtenstein, 2003). The study unveils a conceptual framework for understanding creativity in RE and argues that further research needs to investigate how this creativity in RE may be facilitated.

User Involvement

It is a well-known practice in user-centered design to involve end users at the earliest stages in the design process (Cooper, 2007; Courage & Baxter, 2004; Hackos & Redish, 1998). In early design stages, it is essential for designers to gather as much insights into the users and their contexts of use, in order to create effective designs that address the users' needs and concerns.

The concept of user involvement is not restricted to user-centered or User Experience (UX) design practices and also receives attention in several Information System (IS) development methodologies. The latest generation of these methodologies is characterized by short iterations and continuous feedback from stakeholders to validate the incremental development process,

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