Chapter 2.10
A Framework for Integrating the Social Web Environment in Pattern Engineering

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ABSTRACT

In the last decade, patterns have emerged as a notable problem-solving approach in various disciplines. This paper aims to address the communication requirements of the elements of pattern engineering (namely, actors, activities, and artifacts) in general and the pattern realization process in particular. To that regard, a theoretical framework using the Social Web as the medium is proposed and its implications are explored. The prospects of using the Social Web are analyzed by means of practical scenarios and concrete examples. The concerns of using the Social Web related to cost to actors, decentralization and distribution of control, and semiotic quality of representations of patterns are highlighted. The directions for future research including the use of patterns for Social Web applications, and the potential of the confluence of the Social Web and the Semantic Web for communicating the elements of pattern engineering, are briefly explored. [Article copies are available for purchase from InfoSci-on-Demand.com]

INTRODUCTION

The reliance on the knowledge garnered from past experience and expertise is important for any creative endeavor. A pattern is one such type of conceptually reusable knowledge (Buschmann, Henney, & Schmidt, 2007b). From their origins in urban planning and architecture in the 1970s (Alexander, Ishikawa, & Silverstein, 1977; Alexander, 1979), followed by object-oriented software design in the late 1980s and the early 1990s (Gamma et al., 1995), patterns have found applications in various domains of interest (Rising, 2000; Henninger & Corrêa, 2007). For novices,

patterns are means of guidance; for experts, they are means of reference. The use of patterns has, for example, enabled the construction of high-quality distributed software architectures (Buschmann, Henney, & Schmidt, 2007a), electronic commerce applications (Kamthan & Pai, 2008), mobile interaction design (Ballard, 2007), secure systems software (Schumacher et al., 2006), use case models (Kamthan, 2009), and Web Applications (Kamthan, 2008), to name a few.

The human-centric nature of patterns has been known for some time (Coplien, 1996; Schumacher et al., 2006). For its broad acceptance and use, the knowledge in form of patterns needs to be explicably communicated to its actors.

The Social Web, or as it is more commonly referred to by the pseudonym Web 2.0 (O'Reilly, 2005; White, 2007), is the perceived evolution of the Web in a direction that is driven by 'collective intelligence' (Engelbart, 1995), realized by information technology, and characterized by user participation, openness, and network effects. The purpose of this paper is to assess the viability of the Social Web environment in serving as an ecosystem for many-to-many asynchronous and synchronous communication of the elements of pattern engineering in general and the pattern realization process in particular. For the sake of this paper, the Social Web *environment* includes Social Web technologies, applications based on those technologies, and tools for managing both.

The rest of the paper is organized as follows. The background and related work necessary for the discussion that follows is first outlined. This is followed by introduction of a theoretical framework for communicating the elements of pattern engineering via the Social Web (namely, SW4PE) that includes identifying and classifying actors of patterns, a model for the pattern realization process, and communication requirements for pattern engineering. Then, a detailed analysis of the prospects and concerns of using the Social Web for communicating the elements of pattern engineering along different dimensions

is carried out. In particular, the role of 'collective intelligence' and of the technologies/applications underlying the Social Web including blogs, folksonomy, mashups, microformats, podcasting, social bookmarking, social networking, and Wikis, is highlighted. Next, challenges and directions for future research are outlined. Finally, concluding remarks are given.

BACKGROUND AND RELATED WORK

This section presents a synopsis of terminology specific to patterns and a perspective of related work. In particular, limitations of the current media towards communicating the elements of pattern engineering are highlighted.

A Terminological Overview of the Pattern Space

There is currently no standard or a reference model for terminology related to patterns. Therefore, for the definition of the members in the *pattern space*, this section relies on selected publications (Appleton, 1997; Meszaros & Doble, 1998; Buschmann, Henney, & Schmidt, 2007b) that can be considered as authoritative.

A *pattern* is defined as an empirically proven solution to a recurring problem that occurs in a particular context. There are several possible views of a pattern. From a structural viewpoint, a pattern is typically described using an ordered list of elements that are labeled as (pattern) name, author, context, problem, forces, solution, examples, and related patterns. At times, the labels may vary across community, and other (optional) elements, such as those related to *metadata*, may be included to enrich the description.

The name element of a pattern is an evocative, often a noun-phrase, metaphor reflecting the nature of the solution; the author element gives the identity of the pattern author(s); the context

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