Chapter 18

Using Wiki for Managing Knowledge in Agile Software Development

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ABSTRACT

The movement towards agility is one of the most significant changes in industrial software engineering over the past decade. In the practice of agile methodologies, there are different types of knowledge that is created, communicated, and consumed. For the benefit of the stakeholders involved, there is a pressing need to manage this knowledge, both during development and beyond deployment of a software system. This chapter proposes a framework comprising related conceptual models as means for understanding the use of Wiki for managing knowledge in agile software development. In doing so, Wiki is considered beyond that of a technology or a tool, as a facilitator of knowledge, and placed in a larger context of the Social Web environment. For the sake of practicality, a number of illustrative examples are given, and implications of deploying a Wiki are highlighted.

INTRODUCTION

In the past decade, there have been a number of paradigmatic changes in the ecosystem of industrial software engineering, including the movement towards agility. The agile methodologies (Highsmith, 2009; IIBA, 2013) are part of a shift from predictive to adaptive approach towards software development. It has been shown in a number of empirical studies that agile methodologies are being increasingly deployed in many organizations, of different sizes, for software projects with teams that are geographically collocated or dispersed (Smite, Moe, & Ågerfalk, 2010; Brown, 2012).

The involvement of people in the process is among the hallmarks of agile software development (Martin, 2003). In pursuing an agile project, certain knowledge is created, communicated, and consumed by people in that project. This knowledge plays a significant role in different ways. The ability of an organization to manage such knowledge effectively is among the critical success factors of the project (Perkins, 2006; Schneider, 2009). For the organization respon-
sible for the project, such knowledge forms its \textit{competitive advantage} (North & Kumta, 2014) and contributes to its \textit{organizational memory} that needs to be recorded and preserved for subsequent action, be it social, technical, legal, or otherwise (Girard, 2009). There could be irreparable loss of valuable knowledge if knowledge is left unattended, if organizational personnel leave (Rus & Lindvall, 2002), or if there are long gaps in the use of knowledge (Boughzala & Dudezert, 2012). It is therefore crucial to explore and examine means that can accommodate the technical as well as non-technical dimensions of managing knowledge in agile software development.

There are a number of candidate means in the constantly-evolving \textit{technological ecosystem} of an agile project. In the past decade, one technological means, namely that of the \textit{Social Web} (O’Reilly, 2007), has gained acceptance and prominence. The noteworthy applications within the Social Web environment include \textit{Wiki} (Leuf & Cunningham, 2001). The purpose of this chapter is to examine the potential of Wiki and to explore the prospective uses of Wiki for managing the knowledge created, communicated, and consumed in agile software development, from the perspectives of software engineering as well as that of the Social Web.

The rest of the chapter is organized as follows. First, background and previous work on agile methodologies and Wiki is presented. This is followed by introduction of elements of a conceptual framework for systematically integrating Wiki for managing knowledge in agile software development, and the limitations of a commitment to Wiki. Next, directions for future research are outlined. Finally, concluding remarks are given.

\section*{BACKGROUND}

This section provides relevant background, and previous work relating agile software development, knowledge management, and Wiki.