On the Adaptation of an Agile Information Systems Development Method

Mehmet N. Aydin, University of Twente, The Netherlands
Frank Harmsen, Capgemini, The Netherlands
Kees van Slooten, University of Twente, The Netherlands
Robert A. Stegwee, University of Twente, The Netherlands

ABSTRACT

Little specific research has been conducted to date on the adaptation of agile information systems development (ISD) methods. This article presents the work practice in dealing with the adaptation of such a method in the ISD department of one of the leading financial institutes in Europe. Two forms of method adaptation, static adaptation and dynamic adaptation, are introduced and discussed in detail. We provide some insights plus an instrument that the ISD department studied uses to deal with the dynamic method adaptation. To enhance our understanding of the observed practice, we take into account two complementary perspectives: the engineering perspective and the socio-organizational perspective. Practical and theoretical implications of this study are discussed.

Keywords: agile method; information systems development; method adaptation; method engineering

INTRODUCTION

Despite the best endeavors in the area of information systems research and practice, the effective use of information systems development methods (ISDMs) remains an issue on both academics’ and practitioners’ agendas (Iivari, Hirschheim, & Klein, 2001). In the 1980s and 1990s, the rationales behind structured, brand-named ISDMs, the so-called conventional methods, were being questioned as being IT oriented, complex, rigid, and inappropriate for postmodern forms of organizations whose distinctive character was to be adaptable to continual change (Sauer & Lau, 1997). Recently, agile — denoting “having a quick resourceful and adaptable character” (Merriam-Webster OnLine, 2003) — ISDMs, or agile methods in short, have appeared as a solution to the long-standing problems related to conventional methods.

This article is mainly concerned with the adaptability of agile methods (i.e., the extent to
which a method is to be adapted to the project situation at hand or vice versa), yet points out the need for further research in order to understand other distinctive aspects of agile-systems development and to make sense out of the dispersed field of agile methods (Abrahamsson, Warsta, Siponen, & Ronkainen, 2003). As we shall see later on, many studies concerning the effective use of ISDMs adopt the notion of adaptation but use different terms or concepts in their theoretical constructs (see, for example, “method fragment adaptation” in Baskerville & Stage, 2001; “scenario use” in Offenbeek & Koopman, 1996; “method tailoring” in Fitzgerald, Russo, & O’Kane, 2000; “situational or situated method engineering” in Harmsen, Brinkkemper, & Oei, 1994; Slooten & Brinkkemper, 1993; “context-specific method engineering” in Rolland & Prakash, 1996; “method engineering” in Siau, 1999).

Two limitations with these studies have motivated us to carry out this research. First, the existing studies use different perspectives and provide countervailing arguments for the notion of adaptation. Second, the proposed models appear to be limited to theoretical arguments and need empirical findings to support their arguments. More precisely, as Fitzgerald, Russo, and O’Kane (2003, p. 66) state, “little research has been conducted to date on method tailoring specifically.” This observation is particularly true for agile methods.

Our research addresses these two limitations and illustrates the working practices in a large-scale IT department dealing with the adaptation of an agile method, DSDM (dynamic systems development method), elaborated later on, in different project situations. Besides giving a description of the observed practice, this article argues the need for a multitheoretic lens — combining the engineering and the socio-organizational perspectives — and uses it to elaborate the notion of adaptation in agile-systems development. Similar to the research approach adopted by Fitzgerald et al. (2003), this article inductively draws lessons from agile-method adaptation in practice rather than testing hypotheses defined in advance. In doing so, the article provides valuable insights for both practitioners and academics concerning the effective use of agile methods in large-scale IT departments.

The structure of the article is as follows. First, the motivation behind the research has been outlined in this section. The remainder of the article consists of three key sections: (1) a review of related research, (2) the conduct of this research, and (3) discussions and conclusions of the research.

**REVIEW OF RELATED RESEARCH**

Given that the existing explanations concerning method adaptation are fragmented and countervailing, we need a framework in which to organize the previous research relevant to method adaptation. Such a framework will also help us indicate the focus of this article. Before introducing the framework, we will clarify our interpretation of “adaptation” and its usage in this article. The term adaptation simply implies “a modification according to changing circumstances” (*Merriam-Webster OnLine*, 2003). Since its significance might vary, for the purpose of this article, we further define “method adaptation” as a process or capability in which agents, through responsive changes in and dynamic interplays between contexts, intentions, and method fragments, determine a system development approach for a specific project situation. With this definition we aim to stay at an abstract level that will allow us to organize related research conducted previously. Before explaining the terms in the definition, two key perspectives concerning method adaptation are introduced.

As noted in Baskerville and Stage (2001), existing studies related to method adaptation follow one of two key perspectives: the engineering perspective representing the positivist views of natural science, and the socio-organizational perspective representing interpretative views of social science (see Table 1). The former is of interest to the school of method engineering, emphasizes the structural aspects of the method, and usually employs contingency-based models for method adaptation. The latter appears to be concerned with better understanding of how a method and its components...