Understanding Conflicts in Agile Adoption through Technological Frames

José Abdelnour-Nocera, University of West London, UK
Helen Sharp, The Open University, UK

ABSTRACT

In this paper, adoption of a new software development method is viewed as socio-technical innovation and change; a framework based on Bijker’s Technological Frames (TF) is developed and used to model this innovation and change. To illustrate this process findings from one case study of a large organization adopting the agile software development method are presented. Qualitative data were collected from observations, interviews, and documents and analysed using TFs. The authors’ findings show that viewing agile adoption as socio-technical innovation and change provides results that resonate with existing research in the area and extends it. The key contribution of this case study to the socio-technical literature on systems development is a practical demonstration of how TFs can be used to facilitate the socio-technical understanding and identification of conflicts between stakeholder groups while going through the adoption of a new software development method.

Keywords: Agile Methods, Empirical, Human Aspects, Technological Frame, Qualitative

1. INTRODUCTION

Change in organizations rarely happens smoothly and this is particularly the case when new tools and methods have to be adopted. The adoption of new ways of designing and developing software does not escape this problem, which can be attributed to the multidisciplinary nature of participants and stakeholders in software development projects. In this context, adoption can be characterized as a process of socio-technical innovation and change. It is argued that in such a process the views and expectations of different stakeholders need to be explicated and understood in order to facilitate adoption. The research presented in this paper builds on an existing concept, Technological Frames (TF), and offers practical insights about how this concept may be used by practitioners in the information systems domain to account for and address the views and expectations of different stakeholders. This approach is illustrated through a case study that focuses on the adoption of agile software development by a large organization.

DOI: 10.4018/jskd.2012040104
Over the last decade, a related series of lightweight approaches to software development has emerged, under the general heading of agile methods (e.g., Cockburn, 2001; Highsmith, 2002). Many different agile methods have been proposed including eXtreme Programming (XP) (Beck & Andres, 2005), SCRUM (Schwaber & Beedle, 2002), Crystal (Cockburn, 2004), and DSDM (Millington & Stapleton, 1995), each with their own emphases. In addition, techniques from related philosophies have been integrated into agile practice, such as Lean manufacturing (Poppendieck & Poppendieck, 2003) and Kanban (Anderson, 2010) and software teams adopting an agile approach have adapted a range of techniques.

Agile methods have become very popular (Tan & Teo, 2007), but adopting an agile approach is challenging since it requires a significant change from more traditional (often called plan-based) approaches. Agile methods advocate short time-boxed development, emphasizing communication between team members and with the customer, continuous integration of modified code, test-driven development, automated regression testing, rapid feedback and frequent releases. A significant change from more traditional methods is the de-emphasis on comprehensive documentation, and its replacement with alternative communication media (e.g., Davies & Sharp, 2006). Underpinning this is the practice of developing user stories which are short statements about the functionality required in the system, usually written on 3x5 inch index cards (Cohn, 2004). The role of customers is also different; the ideal situation is an ‘on-site’ customer who is available daily for discussions with the team. This ideal situation is rarely achieved in practice and the customer role is considerably more complex than originally suggested (Martin, 2009).

Large organisations face several issues when adopting Agile, e.g., which practices to adopt (Lawrence & Yslas, 2006), how to adapt them (Cao et al., 2009), how to accommodate restrictive regulations (Wils et al., 2006) and how to balance repeatable processes with uncertainty (Lycett et al., 2003). Underlying these concerns is the need for a common understanding of the new technology within all stakeholder groups. But where will conflicts arise in this process and how can they be identified and addressed? In this paper an analysis framework based on Bijker’s (1995) Technological Frames (TF) is proposed, and its use to answer these questions for one organization is described.

TF analysis identifies the factors that shape the translation by key stakeholders as they learn the new technology and how to apply it in their own context (Latour, 1986), and hence offers a way to characterize where differences may arise. TF analysis captures the assumptions, knowledge and expectations of different stakeholder groups during new technology adoption, and the practices constraining, framing and emerging in this process. In this paper, the process of agile adoption is viewed from this perspective.

Section 2 discusses previous research on agile adoption in large organisations. Section 3 provides some background on socio-technical innovation and change, upon which TF theory has been developed, and Section 4 presents the research methods and the case study. The TF analysis is presented in Section 5, while Section 6 discusses the findings and presents some conclusions.

2. ADOPTING AGILE IN LARGE ORGANISATIONS

Software process change, such as adopting agile development, represents complex organisational change and cannot be accomplished merely by replacing tools and techniques (Nerur et al., 2005). A common theme in existing research on agile adoption is the need to change perceptions, behaviours and mindsets within all stakeholder groups. This is a process of socio-technical change.

Lindvall et al. (2004) identify the greatest challenge to adopting agile practices as being the need to integrate with the existing environment, and Boehm (2002) suggests that integration with existing practices needs to be approached with care. Thomas and Baker (2008) empha-
Kuwait is the Past, Dubai is the Present, Doha is the Future: Informational Cities on the Arabian Gulf
www.igi-global.com/article/kuwait-is-the-past-dubai-is-the-present-doha-is-the-future/139214?camid=4v1a

Boundary Critique and Stakeholder Collaboration in Open Source Software Migration: A Case Study
Osden Jokonya and Stan Hardman (2013). Knowledge and Technological Development Effects on Organizational and Social Structures (pp. 194-208).
www.igi-global.com/chapter/boundary-critique-stakeholder-collaboration-open/70570?camid=4v1a