Ineffective Decision Making in Adopting an Agile Software Development Methodology

John McAvoy
University College Cork, Ireland

Tom Butler
University College Cork, Ireland

INTRODUCTION

Agile software development (ASD) is now widely used in the software development industry; accordingly, it has been the focus of research with studies featuring in a variety of journals—notable examples are special issues of IEEE Computer (Volume 36, Issue 6) and IEEE Software (Volume 20, Issue 3). The decision by organisations and project teams to adopt an agile methodology is of particular interest to researchers, with the main aim of such studies being to produce a tool or system to assist in that decision. Examples of this research stream are to be found in research by Boehm and Turner (2003, 2004), McAvoy and Sammon (2006), and Pikkarainen and Passoja (2005). Decision making in these treats it as occurring over a short time frame, ending with a specific decision. In Mintzberg, Raisinghani, and Théorêt (1976), decision making is seen to be bounded by the identification of a need for action and ends with a commitment to take specific action. Despite Mintzberg et al.'s (1976) bounding of decision making, commitment to a particular decision can not be assumed to last. The implementation of a decision is longitudinal—that is, its lifecycle is from the commitment to action through to the completion of the action or actions. Throughout the implementation of a decision, many more related decisions are made: for example, decisions based on such considerations as: Do we continue to adopt? Do we need to alter the original decision? Do we need to reassess the actions decided upon? The decision to adopt a software development methodology aligns more with a longitudinal view of decision making than with conceptualizations of decision making as a once off phenomenon. Robin and Finley (1998) argue that the operationalisation of a decision is more significant than the method adopted to arrive at the initial decision. Thus, it may be deduced that in investigating the adoption of an ASD, there needs be a consideration of decision making beyond that of a single meeting or decision point, and the focus broadened to include the impact of time on how decisions are made and actions taken. It is clear from the studies quoted that over the lifecycle of a decision various factors can impact on outcomes associated with decision taking. For example, the group that makes or applies the decision can have a major impact on resulting outcomes, which can be negative—McGrath (1984) for example, discusses many of the decision-related factors that group interaction can influence.

BACKGROUND

Even before the advent of agile software development, Myers (1998) described the existence of a plethora of software development methodologies. What makes ASD interesting and unique among IS development methodologies is its inherent stance on decision making, and the attributes and values that affect decision making; there is, however, a dearth of research in this area.

It is significant that there exists no single agile software development methodology; rather, agile is a collection of methodologies that have a core of common principles or values. The agile manifesto (available at http://agilemanifesto.org) describes the core values that underlie all agile methodologies, namely:

- Individuals are more important than processes and tools;
- Working software is more important than comprehensive documentation;
- Customer collaboration is more important than contract negotiation;
- Responding to change is more important than following a plan.

The manifesto, its origins, and its importance to the agile methods are discussed in a variety of studies including, for example: Lindvall, Basili, Boehm, Costa, Dangle, Shull et al. (2002); Fowler and Highsmith (2001); Boehm and Turner (2004); Highsmith (2004); Koch (2004).

From the perspective of decision making, the first value—individuals are more important than processes and tools—is the most relevant. For example, at the core of ASD is the development team which forms the nucleus of actors in the ASD process. Highsmith (2004), for example, emphasizes the importance of a good team for the success of ASD projects, while Hazzan and Tomayko (2003) describe XP (extreme programming, one of the most popular ASD methodology) as being based on team interaction—the emphasis on team interaction in agile is therefore more important than in other software development methodologies. In the agile scheme of things, the ASD team is empowered to, and expected to, make decisions. Schuh (2004) specifically associates agile with empowerment and trust, to the extent that the team is argued to have collective responsibility for the delivery of all functionality (Cohn, 2004). To enable empowerment, it is argued that teams need to be well-functioning and cohesive: Auer, Meade and Reeves (2003) describe such teams as effective social networks that interact well (Boehm and Turner, 2003) and which are bound tightly together (Highsmith, 2004). It may therefore be concluded that ASD can be seen as more aligned with Theory Y over Theory X (McGregor, 1960) approaches to managing software development teams, as Theory Y postulates that team members will be more effective when decision making responsibilities are delegated to them (cf. Cartwright, 2002; Landy & Conte, 2004).

It is characteristic of teams in general (be they software development teams or not) that they are empowered to make group decisions; that said, it is the level of empowerment and cohesion that is unique to teams that adopt and use ASD approaches (Stephens & Rosenberg, 2003). Thus, Stephens and Rosenberg point out that "agile methods have a much higher emphasis on people then previous methodologies."

In traditional command and control management scenarios, decisions are implemented by the team, with the decision making responsibility and ownership being conferred on the team leader or manager. In ASD, the team makes, and is responsible for, decisions; for example, extreme programming allows developers to decide on whichever course of action, provided they still meet projects goals (McBreen, 2002). Therefore, it may be argued that the decision to adopt an ASD methodology will be greatly impacted by the development team, from the initial decision through the multiple decisions throughout the adoption.

CONCERNS WITH ASD AND DECISION MAKING

As argued, the decision to adopt a software development methodology such as ASD involves multiple decisions over an extended period. The initial decision to adopt ASD is merely the first of many decisions by a software development team; hence, it is argued here that the empowered and cohesive ASD team will influence these decisions and, therefore, the ultimate success of the initial decision to adopt. Accordingly, it is argued here that by empowering a highly cohesive team the possibility of ineffective decision making increases. In effect, one of the core values of ASD can become one of its main sources of problems with regard to decision making.

Cohesion can be, and is often, regarded as being a positive influence on team performance: for examples, Balthazard, Potter, and Warren (2004),

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