Chapter 78

Preventing the Increasing Resistance to Change Through a Multi-Model Environment as a Reference Model in Software Process Improvement

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ABSTRACT

Organizational process improvement offers a key opportunity for organizations to become more efficient. As a consequence, the software industry, among others, is more interested in software process improvement. However, one of the most common issues identified when an organization tries to implement a software process improvement initiative is the difficulty that they face in selecting the reference model and its adaptation to the current organization scenario. Moreover, selecting the wrong reference model according to the way the organization works becomes a trigger to increase resistance to change. This chapter presents a methodology that allows the use of a multi-model environment as a reference model so that the organization can select best practices that best fit the way it works to implement software process improvement. The results of the implementation of an improvement using the methodology proposed are also presented.

1. INTRODUCTION

The software industry is becoming an important factor at the core of the economy around the world. Therefore, organizations need to create strategic advantages in order to be competitive (Soto-Acosta et al., 2010). In this context the implementation of software process improvement initiatives is an obvious

and logical way to be competitive in the software industry (Gupta et al., 2004; Molina & Marsal, 2002; Turban et al., 2005).

It is well known that the quality of software products is largely dependent on the processes that are used to create them (Williams, 2008). Therefore, the software industry is more and more concerned about software process improvement (SPI) (Mishra & Mishra, 2009).

However, although many organizations are motivated to improve their software processes, very few know how to do so properly. One of the problems of introducing process improvement in organizations is the difficulty that an organization faces when adapting the selected process improvement model to their current scenario (Potter & Sakry, 2006; Morgan, 2007). As a result, most improvement efforts fail, stakeholders feel frustrated, organizations are more convinced than ever that they must continue doing their work as before and the resistance to change in software process improvement increases (Calvo-Manzano et al., 2012).

In this context, a key element that has been identified to achieve a successful software process improvement is the selection of what models or process areas make sense for each organization (Forrester & Wemyss, 2011). This is because even when so many models and standards are available in the market to support organizations in the implementation of process improvements, they are unable to completely address the critical challenges and needs of a software development organization (Conradi & Fuggetta, 2002). As a result two scenarios arise in organizations, resistance to the implementation of software process improvement increases and the process improvement does not obtain the expected results (CMMI working group, 2009).

The goal of this paper is to present a methodology that allows to establish a multi-model environment as a reference when implementing a software process improvement.

The multi-model environment will allow organizations to implement software process improvements with two features: 1) select those best practices that best fit the way the organization works and 2) implement multi-model processes, meaning processes based on the organization's business goals but containing best practices of more than one model or standard in order to get more efficient software processes.

Therefore, the organization is enabled with new processes that reflect the way it works so that users perceive the process as an evolution in working more efficiently.

This chapter is structured as follows: the research context section describes the importance of a multi-model environment in software process improvement; the background section introduces the methodology background; the methodology section includes the description of the methodology phases, the improvement proposed by the methodology, the three main characteristics of the methodology (how it involves stakeholders, the multi-model approach it proposes and the change management activities and knowledge management that it performs to reduce change resistance); the experiment section describes the experiment using the methodology; the results section analyses the results obtained by implementing the methodology, and finally, the conclusions of this research work are presented.

2. RESEARCH CONTEXT

Software Process Improvement (SPI) is a field of research and practice, arising out of the need to solve software development issues (Kautz et al., 2004). Therefore, SPI is the action taken by organizations to change processes, considering the business needs, so that their business goals are achieved in a more

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