

## Chapter 6

# Resistance Factors in Software Processes Improvement: A Study of the Brazilian Industry

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### ABSTRACT

*Several companies have been carrying out software processes improvement projects. However, some of them give up before the project ends, and others take much longer than expected to get it accomplished. This way, identifying the resistance factors that influence the implementation of such projects might serve as a reference to professionals in this area on the one hand, and help to manage future projects on the other, through the use of preventive actions that either lessen or eliminate the resistance factors' consequences. For this matter, this chapter presents a survey with 36 professionals involved in initiatives of software processes improvement in 18 companies in the state of Rio Grande do Sul, Brazil.*

### INTRODUCTION

The quality of software products is highly related to the quality of the software process (Rocha, Maldonado, Weber, & Kival, 2001). As a consequence of this and the demands of the software market, the companies are establishing software processes improvement projects in order to better

the quality of their software products, have a competitive differential in relation to their competitors, enable their entrance in the international market, reduce costs and meet deadlines. However, there may be many resistance factors influencing the course of a software process improvement project, mainly if these projects are performed in small companies with scant resources. Moreover, some companies begin but not conclude the project, and others take much longer than expected to

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## Resistance Factors in Software Processes Improvement

Table 1. Summary of national and international standards

Standard	Objective	How
ISO/IEC 15504	Perform software processes assessments, aiming at processes improvement and determining the processes capabilities of an organization.	Through the implantation of processes related to software engineering and a measurement model, which allows the assessment of a certain process' capability.
CMMI - Staged Representation	Providing a guide to improve processes and empower the organization to manage the development, acquisition and maintenance of products or services.	By serving process areas structured in 5 sequential maturity levels that allow the definition of an organization's profile as a whole.
CMMI -Continuous Representation	Providing a guide to improve processes and empower the organization to manage the development, acquisition and maintenance of products or services.	Through the refinement of each process area. These process area are grouped in categories and in 6 levels of capability that allow the definition of the organization's profile in each process area.
NBR ISO/IEC 12207	Help defining the processes that involve the software's life cycle.	Through the implantation of processes of the software's life cycle, which must be adapted to the organization's or to the projects' characteristics.
MR-MPS	Offering the Brazilian market a cheaper qualification alternative.	By serving area process in 7 maturity levels that allow reaching short-term results.
NBR ISO 9001/2000	Meet the clients' needs, understand their current and future needs and exceed their expectations.	By setting up an effective Quality Management System.

get it accomplished. In this context, this study aims at identifying resistance factors in software processes improvement projects by means of a survey comprising companies in the state of Rio Grande do Sul, Brazil.

The relevance of such a research project relies on the following reasons: it can contribute significantly to the management and control of the resistance factors in future in software processes improvement projects through the implementation of preventive actions; the data found here may serve as reference to professionals involved in projects alike and to researchers in the area of Software Engineering as well. There is little work in the field of software quality sharing this very objective, or either, based on companies' empirical experience.

This chapter is organized in sections: section 2 introduces a general overview of software process improvement standards; section 3 presents a collection of published experiences concerning resistance factors in software processes improvement; section 4 describes the methodology ad-

opted in this study and it presents the consolidation of research; section 5 analyzes results and the last sections presents future researches and final considerations.

### Software Processes Improvement

It is believed that, by improving a software process, one can enhance product quality because, according to Sommerville (2003), the quality of the process exerts a significant influence on the software quality. In this section some widely adopted national and international standards will be described, with the main objective of highlighting their focus of action. Except for CMMI model, it is observed that the standards presented in this section do not exclude one another, that is, they are complementary. This evidence is confirmed by MR-MPS (SOFTEX, 2005), which developmental basis consists of the union of ISO/IEC 12207 (ABNT, 1998), ISO/IEC 15504 (ISO/SPICE, 2003) regulations and the CMMI-DEV (CMMI, 2006).

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