Chapter 4.21

# Knowledge Management Practices in Brazilian Software Organizations:
## The Case of SERPRO

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## EXECUTIVE SUMMARY

This chapter explores knowledge management practices in a software organization. It argues that software companies are knowledge intensive organizations and therefore they must properly address the matter of knowledge management. This case study highlights the importance of understanding the practices of knowledge management and describes knowledge acquisition, protection, transfer, and application practices in the context of a Brazilian software organization. The authors hope that this chapter increases understanding of existing knowledge practices in software organizations.

## INTRODUCTION

Software development and maintenance are knowledge intensive activities. Fast technology development and reduced time to market make software business thoroughly dynamic. Software organizations in general must rely upon the ability of its software engineers to adapt to a challenging environment and, in consequence, their results can be highly influenced by its intellectual capital. In this context, knowledge management can be one influential factor affecting software organizations' performance and therefore must be properly addressed.

Specifically regarding the software engineering context of a Brazilian software organization, results of a recent survey (Furquim, Oliveira,

and Amaral, 2007) show that knowledge repositories were not used by software practitioners, who preferred to use the organization's software process portal as a knowledge base. These results motivated the development of this case study to understand which knowledge management practices are developed at the referred Brazilian software organization.

## Knowledge Management in Software Organizations

According to von Krogh, Ichijo, and Nonaka (2001, p. 38) it is much easier to talk about knowledge management than to act accordingly. To the authors, as it has been practiced in organizations, knowledge management is a disturbing paradigm instead of a reforming one. Alavi and Leidner (2001) recommend a conceptual structure to the analysis of organizational knowledge management based on the view of the organization as a knowledge system. In accord with this structure, organizations consist of four groups of socially enacted knowledge processes: a) creation, b) storage and retrieval, c) transfer and d) application.

From the point of view of Grover and Davenport (2001) knowledge processes can be resumed in knowledge generation, knowledge codification and knowledge transfer/realization. Lee and Choi (2003) believe that knowledge management processes can be resumed in create, store, share and use knowledge. Gupta and Govindarajan (2000) claim that knowledge management comprises two large tasks: accumulating and mobilizing knowledge. The task of accumulating knowledge concerns knowledge creation (learning by doing), acquisition (internalizing external knowledge) and retention (minimizing the loss of proprietary knowledge). The task of mobilize knowledge can be disaggregated into a set of sub-tasks: knowledge identification (uncovering opportunities for knowledge sharing), knowledge outflow (motivating potential senders of knowledge to share it), knowledge transmission (building effective and

efficient channels for knowledge transfer) and knowledge inflow (motivating potential receivers to accept and use the incoming knowledge).

Lai and Chu (2000) reviewed different knowledge management theoretical models, and grouped the different knowledge management tasks they found in the literature in a set of six activities: a) initiation, b) generation, c) modeling, d) repository, e) distribution and transfer and f) use and retrospect. To Gold, Malhotra, and Segars (2001) successful knowledge management can be understood as an organizational capability to acquire, protect, convert and apply knowledge combined with a knowledge infrastructure consisting of technology, structure and culture.

To Guptara (1999) the main reason of failure of knowledge management initiatives lies on organizational culture. Figallo and Rhine (2002, p. 119) affirm that real incentives and demonstrations of faith in the new cultural direction can foster a knowledge sharing culture in organizations. Besides culture, there are several other factors that influence the success of a knowledge management initiative. Jennex and Olfman (2005) summarized 12 critical factors that impact knowledge management initiatives and knowledge management systems, which are: integrated technical infrastructure; knowledge strategy; common enterprise wide knowledge structure; motivation and commitment of users; organizational culture; senior management support; establishment of measures to assess the impact and effectiveness of the knowledge management system; existence of a clear goal and purpose for the knowledge management system; learning organization; easy knowledge use supported by the knowledge management system functions; work processes and knowledge protection. Yeh, Lai, and Ho (2006) summarized the knowledge management enablers and success factors found on the literature in four main categories: strategy and leadership; culture; people and information technology.

To understand knowledge management in software organizations it is necessary understand these

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