Chapter 5.22

Planning and Managing the Human Factors for the Adoption and Diffusion of Object–Oriented Software Development Processes

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ABSTRACT

Although there are a large number of contemporary software development processes/methodologies available to assist and guide software professionals in developing software systems, there is no specific process that can assist organizations in planning and managing their transition to this new work environment. As a result, there are still a large number of information technology (IT) organizations that have not yet implemented any object-oriented (OO) process. For them, the transition to a new work environment and the adoption and utilization of a software process implies a number of problems, commonly including necessary human and organizational resistance to the ensuing cultural change. This chapter provides IT organizations and professionals with insights into the most important key success factors that may promote the entire process of organizational change. We investigate the effect of various human factors on the adoption and diffusion of an object-oriented software development process. Some of the human factors include motivation, leadership, resistance to culture change, and willingness and readiness to change. In addition, this chapter explores the significant role of these factors in controlling the entire process of implementing an OO process in practice, emphasizing the significance of planning and managing these "soft" factors to achieve clear advantages and gain enviable results.

INTRODUCTION

This chapter investigates and examines the effect of various human behavioral patterns during the organizational transition to an object-oriented (OO) work environment, and the adoption and diffusion of an OO software development process. Technology is only a tool; what makes the difference is the individual who makes use of the technology, and the culture that motivates people to realize and understand the advantages of adopting such technology (Zakaria & Yusof, 2001).

During any paradigm shift, human tendencies play a critical role that may invariably result in either success or failure. Examples of such human aspects may include cultural change coupled with people's resistance, motivation, education and training, communications, and leadership. Collectively, these factors can form either opposing or supporting forces that may influence and impact on the entire transition process. Therefore, human aspects must be seriously considered, well addressed, planned, and managed for a rewarding result.

Past studies (e.g., Gibson, 1999; Ioannidis & Gopalakrishnan, 1999; Nambisan & Wang, 1999; Auer & Dobler, 2000; Jurison, 2000; Burshy, 2001) of the process of organizational transition have related the transition process to how organizations adopted innovation, ideas, new technologies (e.g., Web services and e-business), or new "ways of doing things" (e.g., the adoption and deployment of an OO process).

What these processes missed in the past was the first (and the most critical) step towards the adoption of a new technology. They all missed the study of moving organizations from their current state or environment to their desired one where they can feel comfortable, familiar, and confident to adopt and diffuse an innovation or new technologies such as OO processes. Getting organizations ready to adopt and diffuse a new technology involves a number of serious managerial decisions that must be made to provide full management support, dedication, and commitment. Organizations must feel comfortable and familiar with the new way of "doing things" before any attempt is made to implement these new ways in practice to avoid or lessen people's natural resistance to change, and also increase their acceptance and readiness.

Hence, the main objective of investigating the impact of human issues is to gain a full understanding of individual behavior during the transition and also to examine different human factors that influence the response of individuals within organizations toward the adoption of an OO software development process.

ORGANIZATIONAL CHANGE AND HUMAN FACTORS

"The greatest difficulty in the world is not for people to accept new ideas, but to make them forget about old ideas." John Maynard Keynes

People Behavior During Organizational Change

During an organizational transition, different people play different roles, such as motivators, adopters, resistors, opposers, and neutral or observers (Bridges, 1995). How they respond to change during transition can, and in most cases does, dominate and determine the success or failure of the entire project. The inextricable reality is that people are different, and so act and react to changes differently; from time-to-time even the same person can behave in a different manner.

Bridges (1995) claims that changes are always accompanied by natural resistance, as changes often drive people out of their comfort zone. Consequently, people can develop a resistance to change and become the main obstacle to the whole organizational change.

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