A Method for Eliciting Goals for Business Process Models Based on Non-Functional Requirements Catalogues

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ABSTRACT

While traditional approaches in business process modeling tend to focus on "how" the business processes are performed (adopting a behavioral description in which business processes are described in terms of procedural aspects), in goal-oriented business process modeling, the proposals strive to extend traditional business process methodologies by providing a dimension of intentionality to business processes. One of the key difficulties in enabling one to model goal-oriented processes concerns the identification or elicitation of goals. This paper reports on a case study conducted in a Brazilian hospital, which obtained several goal models represented in i/Tropos, each of which correspond to a business process also modeled in the scope of the study. NFR catalogues were helpful in goal elicitation, uncovering goals that did not come up during previous interviews prior to these catalogues' use.*

Keywords: *ARIS, Business Processes Models, Goal Elicitation, Goal Models, Non-Functional Requirements, Tropos*

INTRODUCTION

The increasing competitiveness drives organizations to promote change in an attempt to improve the quality of the services and products they offer. In recent years, many of the efforts related to managing change in organizations have been conducted in the scope of Business Process Reengineering (Hammer, 1990; Hammer & Champy, 1993). This is based on the assumption that change in business processes should generate radical improvements in critical performance measures (such as cost, quality, service and speed) (Hammer & Champy, 1993). Moreover, it is believed that implementing radical changes in business processes is the

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way to achieve dramatic and satisfactory results (Hammer, 1990; Hammer & Champy, 1993).

Business Process Modeling is the activity which provides a deep understanding about the organizational processes, so as to grasp how to promote the aforementioned improvements (Hammer, 1990; Hammer & Champy, 1993). However, predicting how a given enterprise environment should respond to changes by simply adopting a business-process centered view is unfeasible since there is a large number of issues to be considered, such as infrastructure, power and politics, organizational culture, etc. (Yu, 1995). Given this multitude of issues, understanding an organizational setting often requires a number of perspectives (Yu, 1995).

While traditional approaches in business process modeling tend to focus on "how" the business processes are performed (adopting a behavioral description in which business processes are described in terms of procedural aspects), in goal-oriented business process modeling (Yamamoto et al., 2006; Neiger & Churilov, 2004), the proposals strive to extend traditional business process methodologies by providing a dimension of intentionality for the business processes (Kavakli & Loucopoulos, 2003). The Zachman (1987) framework also highlights the importance of "motivation" as a driver for enterprise management and system development. Therefore, in the context of business process modeling, goal modeling is extended not only to capture concerns and motivations of the stakeholders in the achievement of business processes, but to incorporate issues related with the strategy of the enterprise as a whole.

Recently, goal-oriented approaches have been largely addressed in the literature of Requirements Engineering (RE), focusing on how these approaches support requirements analysis and modeling for system development (Kavakli & Loucopoulos, 2003). In this context, goals are defined as objectives that should be achieved by the system and its environment (Lamsweerde, 2001). When goals are decomposed and the responsibility to achieve a goal is allocated to the system (as opposed to its environment) a goal becomes a requirement on the system (Lamsweerde, Darimont, & Letier, 1998). If the object under consideration is not a software system but a business process embedded in its organizational environment, goals for business processes may be regarded as objectives to be achieved by the execution of a business process in its environment. Following this analogy, as goals guide the design of the target system in goal-oriented RE, goals guide the creation of business processes in goal-oriented business process engineering. In this scenario, goal elicitation is a key activity as it will helps us understand if the activities carried out truly relate to the organization's strategy.

Most of research initiatives related to goals focuses on goal modeling and analysis, while the area of goal elicitation has remained largely neglected. As a result, goal elicitation remains a challenging activity with problems with respect to methodological guidance (some problems are for example identified in Halleux, Mathieu, and Andersson (2008) and Singh and Woo (2008)). We have experienced this firsthand while conducting a case study in a Rheumatology Department of a hospital in Brazil. The problems we encountered in goal elicitation motivated us to study this subject in further depth. As a result, we propose in this article a systematic way to identify goals in a given organization, thus contributing to the area of goal elicitation. In this case, goals are elicited as part of the so-called AS-IS model, i.e. a stage in which both goals and business processes are aimed at identifying the organization as it is today (in other words, prior to potential business process change). In particular, we investigate here the use of Non-Functional Requirement (NFR) catalogues (Chung et al., 2000; Cysneiros, 2009) in order to tackle the difficulty in identifying business goals. We have observed that a number of non-functional requirements defined in the scope of the NFR framework can be abstracted and extrapolated to identify (soft)goals which have strategic relevance for business process models and that had not been previously identified with other techniques.

This paper is structured as follows: initially, we situate the reader in relation to the