Chapter 30

A Rule-Based Approach to Model Business Process

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ABSTRACT

Up to the present, the modeling of business process mainly focuses on the flow-control perspective, regardless of the logic relationships between models. Although the value of business rules in business process modeling has been recognized by many organizations, it is not fully clear how business rules can be used to model business process models. Business rules are powerful representation forms that can potentially define the semantics of business process models and business vocabulary. This chapter is committed to model the business process based on SBVR, then use the method mentioned below to transform a plain text rule statement into BPMN files.

1. INTRODUCTION

To date, business process modeling manly focuses on the flow-control perspective. There are several problems in using business process as modeling languages to define the business process, mainly that they are not understandable for business people and that they are procedural languages, which means that they specify how business processes should be executed and in what order, making the business process inflexible if implemented in a workflow management system.

Business rules define the business objects and the constraints of business objects. A business process model is called rule-based if the logic of its control flow, data flow and resource allocation is declaratively expressed by means of business rules (Goedertier, Haesen, & Vanthienen, 2008).
Business rules are powerful representation forms that can potentially define the semantics of business process models and business vocabulary, and it can be used directly for controlling business processes.

But business rules are usually specified in natural language. It’s well-known that natural language is often ambiguous and error-prone. For this reason, there are interesting proposals of using structured natural language. Recently, OMG promoted the use of structured English in the business rules framework SBVR, short for Semantics of Business Vocabulary and Rules.

In this paper, an approach is summarized to model business process, based on SBVR statements and some metamodels (Herbst, 1995).

2. BACKGROUND

2.1 Business Rule

A business rule is a statement that aims to influence or guide behavior and information in an organization (Steinke & Nikolette, 2003). Business rules are as close to the business as we can get. For example, a life insurance company might have a business rule saying that applications for a new pension plan are decided upon within three days. A business rule in the context of immigration might be that applications for green cards are put aside if the identity of applicants cannot be established legally. The five structural categories of business rules are (Wagner, 2005):

- **Integrity** (or constraints); For example: Each project must have one and only one project manager.
- **Derivation** (conditions resulting in conclusions); For example: Platinum customers receive a 5% discount. John Doe is a platinum customer. As a conclusion, John Doe receives a 5% discount.
- **Reaction** (Event, Condition, Action, Alternative action, Post-condition); For example: An invoice is received. If the invoice amount is more than $2,000 then a supervisor must approve it.
- **Production** (condition, action); For example: If there are no defects in the last batch of cars then the batch is approved.
- **Transformation** (change of state); For example: A man’s age can change from 28 to 29, but not from 29 to 28.

A variety of rule languages have been developed over the past decade, and the most common used rule modeling languages are Rule Markup Language, Simple Rule Markup Language (SRML) and Semantics of Business Vocabulary and Business Rules (SBVR). As Rule Markup Language, specification is based on xml structure, less readable than the textual representation, and SRML has less technical support, we decided to use the SBVR as the business rule modeling language.

2.2 Business Process

Business Processes are sets of activities that create value for a customer (Muehlen, 2004). While research in Business Process Management initially focused on the documentation and organizational governance of processes, organizations are increasingly automating processes using workflow systems, and are building elaborate management systems around their processes. Such management infrastructures integrate modeling, automation, and business intelligence applications. The inclusion of compliance management activities is a logical next step in governing the business process life cycle.

A variety of modeling languages exist for the specification of process models, and they can be classified according to their focal modeling construct (Muehlen, 2004):
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