Reuse-Oriented Business Process Modelling Based on a Hierarchical Structure

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Abstract. Managing variability in business processes has attracted a lot of research interest. Some of the current works try to manage variability at runtime and others at design time. We are interested in the latter where it consists of managing different process variants in order to enable their reuse. Even though there exist different proposals dealing with variability at design time most of them suffer from the major shortcoming of decision support in choosing the suitable alternatives. In this context, we propose a framework that allows for reusing business process models by means of a hierarchical structure. In this paper, we present our ongoing research in defining this framework: its data structure as well as first thoughts about maintaining it.

Keywords: Business process modelling, configurable business process, hierarchical structure, reuse, merging business process models.

1 Introduction

Process Aware Information Systems (PAISs) [1] are used to manage and execute operational processes involving people, applications and data sources on the basis of business process models. The discipline that is concerned by this process-centric trend is known as Business Process Management (BPM) [2].

In Business Process Management the objective of the Business Process modeling phase is to capture the behavioural aspects of a certain business goal into a business process model [3]. There are several modeling approaches that can be split in two categories. The first one consists of designing business process models from scratch, which is an error prone and time consuming task [4]. The second category relies on reusing existing business process models.

The advent of Reuse-Oriented Development (ROD) in BPM brings a number of frameworks used to support the design of business process models exploiting proven practices. One of these frameworks is the configurable process model.

Configurable process models are constructed via the aggregation of several variants of a process model [5]. In fact, under different requirements, different

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business processes could achieve the same business goal. We call these business processes business process variants. Since they model in essence the same business goal, these variants share many commonalities. Therefore, managing these variants can be made easier by handling the common parts just once and not for each variant separately.

A key aspect of variability handling in process modeling is the explicit representation of variation points. A variation point is a special placeholder in the configurable process model in which variants are defined. During the business process modeling phase, the configurable process model is configured by setting up the variation points according to a user’s specific requirements. These variation points capture different requirements that discriminate between the distinct parts of business process variants through configuration parameters.

To manage a configurable process model, we propose a hierarchical structure that captures variability of business process models. The rationale we opt for a hierarchical structure, which explicitly captures variation points, is to provide a user-friendly experience during the modeling phase while not overwhelming the modeler with cumbersome details from start.

The remainder of the paper is structured as follows. Section 2 introduces a use case scenario to motivate the use of configurable process models in business process management. The example describes 10 process variants of a business process. The hierarchical structure is presented in Section 3 where we formally define it and present how the motivating example can be modeled using it. Section 4 discusses some related work while Section 5 concludes the paper.

2 Motivating Example

In this section we are presenting a fictitious use case example. We have tried to imagine scenarios where different variants of the same business process may appear while satisfying the same business goal.

We have identified 10 possible variants for a business process related to customer enrollment in an insurance contract with Blue Company (fictitious insurance company).

For presentation simplicity, we have used numbers (i.e., 1 to 13) to represent tasks involved in these business process variants. These tasks are:

1. Outdoor sales: When a registration is initiated for example by a third party partner or during an exhibition.
2. Office registration: When a customer moves to the company’s office for initiating a registration operation.
3. Internet registration: When a customers initiates a registration operation via the Internet.
4. Membership upgrade: When a customer is already registered but he wants to upgrade his insurance type.
5. Registration for a staff member: The customer is working within Blue Company.