Chapter 8

Guidance in Business Process Modelling

Andreas Bartho, Gerd Gröner, Tirdad Rahmani, Yuting Zhao and Srdjan Zivkovic

Abstract This chapter shows how process modellers can be supported by guidance. If a telecommunication provider introduces a value-added service, this might involve the establishment of new business processes, whose specification is not trivial. A guidance engine can help a process engineer develop a new business process by stepwise refining, i.e. creating a more concrete version of the process from an abstract version. The guidance engine identifies inconsistencies and proposes possible refinement steps. The topics covered in this chapter range from theoretical foundations of business process refinement over the formalisation of refinement problems in ontologies to implementation issues. The presented solutions were developed in the MOST project.
8.1 Introduction

Today, there is a rapidly increasing pressure in the market forcing the industry into the transition from a fixed and isolated business structure to flexible interoperation of businesses in a chain or a grid of interdependent value-added services. Ordinarily a value-added service encapsulates a tangible set of activities together with some data and behaviour constraints between them. Value-added services are offered by a service provider, such as the telecommunication provider from the case study of this book, to a service purchaser, such as the provider’s end customers, in exchange of money.

One strongly related discipline to service engineering and consequently value-added services is Business Process Management (BPM). From a BPM viewpoint a value-added service can also be seen as an encapsulation of a business process. On the other hand, business processes might be necessary to back up the value-added service in an enterprise.

A prominent technique used in BPM since the 90s is Business Process Modeling, which is used to describe behavioural constraints of a process, or a value-added service, respectively. The modelling of business processes is a complex task which requires the expertise of several people within an organisation and can only be accomplished through collaboration. The end result of the modelling stage will be a process that incorporates all relevant business requirements in one model, hence will make it difficult to understand different parts of the model that were included successively over time.

One of the increasingly important techniques to reduce the complexity of process models is modelling on different interrelated levels of abstraction. For this purpose we will focus on refinement as a special way of dealing with modelling levels in one and the same modelling language like the Business Process Modeling Notation (BPMN). This chapter shows how ontology technology can be used to provide guidance for the stepwise refinement of a BPMN process and thus make it easier and less error-prone. The presented results are from the MOST project, which aims to Marry Ontology and Software Technology.

The chapter is structured as follows: Sect. 8.2 integrates the process refinement approach into the telecommunication case study. Sect. 8.3 presents the state of the art in process refinement along with its limitations and defines syntax and semantics of process models and process refinements. Sect. 8.4 shows in an example how guidance for process refinement may look like, using a guidance engine. Then the realisation of an ontology-based guidance engine is explained. It follows an evaluation in Sect. 8.5, and finally, Sect. 11.5 concludes the chapter.

8.2 Motivating Scenario

Due to increased competition in the field of telecommunication the telecommunication company has decided to expand their field of operations by providing value-