UMM Add-In: A UML Extension for UN/CEFACT's Modeling Methodology

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1 Introduction

The tighter coupling of enterprises in regard to information system technology has also changed the way business processes are modeled. Modeling inter-organizational business processes is necessary in order to gain a profound and unique representation of the processes involved. However this requires a new methodology especially designed for modeling inter-organizational business processes. The United Nation's Center for Trade Facilitation and Electronic Business (UN/CEFACT) took up the challenge and started to develop such a methodology. The research efforts became known as UN/CEFACT's modeling methodology (UMM) [1]. UMM enables the business modeler to capture the business knowledge independent of the underlying implementation technology such as ebXML or Web Services.

Due to the popularity of the Unified Modeling Language (UML) the UMM is built on top of it. UMM is defined as a UML profile - i.e. a set of *stereotypes*, *tagged values* and *constraints* - in order to customize the UML meta model for the specific purpose of modeling the collaborative space in B2B.

Although the standard is well developed and documented, its complexity and mightiness make it difficult for the novice user to perceive from scratch. Therefore a tool, supporting the modeler in creating a valid UMM model would help those inexperienced with UMM. We have developed such a plug-in for the UML modeling tool Enterprise Architect [5] called *UMM Add-In* [6]. We highlight the main features of the Add-In and show how the tool facilitates the use of the methodology.

2 The UMM Add-In

The UMM Add-In consists of several distinctive features helping the modeler on his way towards a valid UMM model.

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[5] http://www.sparxsystems.com.au
[6] http://ummaddin.researchstudio.at

UMM specific toolbar. In order to create a UMM model it is convenient to drag and drop UMM stereotypes from a toolbar onto the modeling canvas. Thus, the stereotypes as defined in the UML profile for UMM are integrated into Enterprise Architect and provided in a toolbar.

UMM Requirements Engineering support. While elaborating a UMM model the business knowledge is collected during interviews between business domain experts and business analysts. The information gathered is captured in so called UMM worksheets. Traditionally worksheets were completed using a word processor and stored separately to the model. With the introduction of the UMM worksheet editor in the UMM Add-In the modeler can store model and worksheet information together which guarantees consistency and accuracy.

Semi automatic generation of UMM artifacts. Most activities while creating a UMM model are reoccurring and follow similar patterns. One of the major goals of the UMM Add-In is to relieve the modeler from repeating activities and provide support for the semi automatic generation of modeling artifacts. E.g. the creation of the initial structure of a UMM model is performed automatically by the UMM Add-In.

Validation of the UMM model. Any UMM model is valid if it follows the constraints specified in the UMM specification. During the modeling process artifacts are created in an iterative manner and often errors occur. The UMM Add-In provides a UMM validator checking the constraints specified in the specification against any given UMM model. In case of factual errors in the model the user is provided with detailed error messages helping to correct the model.

Transformation to choreography languages. Once a valid UMM model is created, it is envisioned to transform the business logic defined into IT-platform specifics. Currently the UMM Add-In supports the mapping of the process definitions to process specification languages as used in services oriented architectures namely ebXML's Business Process Specification Schema (BPSS) and Business Process Execution Language (BPEL).

Modeling business documents using UN/CEFACT's Core Components. Apart from the business process specific extensions, the UMM Add-In also offers features to model the business documents exchanged in a business process. For business document modeling the current implementation supports the use of the UML profile for UN/CEFACT's core components (UPCC). The data model created can then be used to automatically generate XML schema representations.

References

1. UN/CEFACT: UN/CEFACT's Modeling Methodology (UMM), UMM Meta Model - Foundation Module. (September 2006) Technical Specification V1.0, http://www.unece.org/cefact/umm/UMM_Foundation_Module.pdf.