Chapter XV
A Method for Knowledge Modeling with Unified Modeling Language (UML):
Building a Blueprint for Knowledge Management

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ABSTRACT
Since knowledge management (KM) is considered to be an important function of the successful business operation, many organizations are embracing KM. The success of a KM project is dependent upon its contents. This chapter presents a method for building an effective knowledge model which can help businesses analyze and specify knowledge contents. The method takes a decision-oriented view. For the modeling language of the method, unified modeling language (UML) has been chosen. The method is applied to the vessel scheduling process in a maritime shipping company. The steps and rules are explained using an example, and the strengths and weaknesses of the method are discussed.

INTRODUCTION
Over the past years, interest in knowledge management (KM) has grown explosively. Today KM is considered to be an important function of the successful business operation, and many organizations are embracing KM. In general, KM activities include creating, structuring, organizing,
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retrieving, sharing, and evaluating an enterprise’s knowledge assets. KM is a systematic approach to managing organizational knowledge. Numerous studies on KM have been conducted from general theories to specific KM systems. However, “the area occupied by methods and techniques that are neither too general nor specific” are not so well covered (Wiig, Hoog, & Spek, 1997, p. 15). Unlike in IT systems and architecture, research on the methods that help systematically analyze what organizations need to manage is less popular in KM sectors.

As pointed out by Cook (1996), most KM projects focus on the process rather than the knowledge contents that need to be managed. This approach assumes that organizations already understand what they need to know, though often not the case. Organizations must thoroughly analyze knowledge needs before they begin any KM projects. Knowing what one needs to know is the first and most important step in achieving success in KM. It is the knowledge contents that provide businesses with value. It is the contents that help corporations succeed in a global market. The success of a KM project is dependent upon its contents—contents to help understand the market, solve business problems, or support decision-making processes.

The key idea of KM is to provide a way whereby knowledge contents are created, shared, and utilized in an efficient and effective manner. Therefore, it is critical to analyze these knowledge requirements. Managers need a tool with which to analyze knowledge contents needed in business processes and decision-making. The knowledge model will help specify knowledge contents and show their flows into the business processes. This chapter presents the rationale for knowledge modeling as a foundation for successful KM projects. A method is proposed for building an effective knowledge model, taking a decision-oriented view. As a modeling language of the method, the unified modeling language (UML) has been chosen. The method is then applied to the vessel scheduling process in a shipping company.

NEED FOR KNOWLEDGE MODELING

Modeling refers to creating a simplified representation of a complex reality. It is a means of creating abstraction. More rigorously, a model is a representation of a set of components of a process, system, or subject area, generally developed for the understanding, analysis, improvement, and/or replacement of the process. A model must specify the structures and formal relationships among components. Thus, a model helps in understanding a process or behavior, predicting an outcome, or analyzing a problem. Today, the role of modeling in specifying and documenting systems is gaining popularity (Eriksson & Penker, 2000).

A knowledge model is an abstraction of a KM system. What the knowledge model will do is to provide a simplified view of the knowledge needs, structures, and relationships among components of the KM system. It will act as the basis for communicating, improving, and defining knowledge requirements needed to support the business. The knowledge model functions as the plan for KM to support a business (Eriksson & Penker, 2000). It provides what is needed, not what is currently available, and it sets the environment for formulating strategy for obtaining knowledge not currently available. A knowledge model is stable and does not change frequently since it is built around business processes and the requisite knowledge at the conceptual level.

KNOWLEDGE MODELING METHODS IN PRACTICE

Conducting knowledge modeling effectively requires a collection of methods, techniques, and
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