Integration of Diagrammatic Business Modeling Tools

Dina Neiger
Monash University, Australia

Leonid Churilov
Monash University, Australia

INTRODUCTION

Historically, diagrammatic representations of processes have been widely used to effectively communicate complex and interrelated ideas and concepts (Albarn & Smith, 1977; Elder, 1992). *Business processes* are no exception. As businesses (and consequently *business processes*) became more complex, the diagram, with its ability to combine "verbal, numerical and visual functions with analytic and associative processes of thought" (Albarn & Smith), became an essential tool in the array of instruments used by business analysts and modelers (Clemen & Reilly, 2001; Davis, 2001; Elder; Howard & Matheson, 1989; Keller & Teufel, 1998; Kirkwood, 1998/2001; Klaus, Rosemann, & Gable, 2000; Kros, 2001; Nuttgens, Field, & Zimmerman, 1998; Scheer, 1999, 2000). In this article, we review a unified approach to the use of diagrams for *business process* and *decision* modeling in the context of decision support.

Modeling features that can be regarded as relative weaknesses for one class of diagrams (e.g., *decision* modeling diagrams) are, in fact, the strong points for the other suggested class (e.g., process modeling diagrams). It is therefore natural to expect that a suitable combination of process and decision modeling approaches would increase the power of the resulting diagram as an effective tool for business analysis and modeling.

The objectives of this article are as follows:

- To introduce an *event-driven process-chain* diagrammatic tool for modeling *business process*
- To use a *triangulation paradigm* (Jick, 1979) to enhance the power of *business process* and *decision* modeling diagrammatic tools
- To introduce the concept of a *decision-enabled process modeling diagram* that is derived from combining *process modeling* and *decision* modeling diagrams in a single conceptual tool

The *customer order management cycle* (COM) will be used to illustrate concepts discussed in this chapter. An *event-driven process chain* (EPC) is presented. Then we discuss the differences between the *business process* paradigm and *decision* modeling paradigm, and use the *triangulation paradigm* to introduce the new concept of a *decision*-enabled process modeling diagram. This is followed by a discussion of a logical framework that unifies *business process* and *decision* modeling diagrammatic tools under a single decision support roof.

BACKGROUND: EVENT-DRIVEN PROCESS CHAIN

While the causal loop diagram (CLD) and influence diagram (ID) translate the mental representation of the business into models that identify objectives, variables, influence, and feedback loops in the *business process,* they do not provide the sequential flow of steps necessary to execute the *business process.* The EPC is a graphical tool that is widely used to model the function flow of the *business process* as a sequence of events and functions, with the events being function triggers and results (Davis, 2001; Keller & Teufel, 1998; Klaus et al., 2000; Nuttgens et al., 1998; Scheer, 1999, 2000). The EPC model provides a comprehensive description of steps involved in the process and, as such, it is claimed to provide *decision* support in so far as allowing the *decision* maker to identify the sequence of events and functions within a process, the functional inputs and outputs, and the stakeholders involved with the *decision*-making process (Davis; Scheer, 1999, 2000).

An EPC can be formed at the various levels of the *business process*. At the highest level, the EPC has as many functions as there are strategic organisational objectives. In the case of the customer order management scenario, the functional objective is to maximize the overall profit of the business. This function can be broken down into a chain of events and functions with each function aimed at achieving lower level organisational goals such as specifying a purchasing order or specifying the production plan (Figure 1).

The EPC on its own is limited to the description of functional flows and corresponding objects such as functions and events. Other business flows, such as organizational, target, control, output, human, and information flows and corresponding classes of objects such organizational units, goals, functions, events, messages, outputs, data, and resources are not included.

Scheer (1999, 2000) developed the concept of an extended EPC (eEPC) to include other business flows and corresponding classes of objects to represent a consolidated *business process* model. The eEPC concept is presented by the so-called ARIS house of business engineering. The ARIS house provides a complete description of the consolidated business model (Figure 2) through different views of the eEPC, such as the data view, function view, output view, and organization view. The concept of views avoids the complexity of an all-in-one meta-business-process model without the loss of information that would have been inevitable if the model was subdivided into simpler but separate submodels.

The function view combines function, goal, and application software components of the business model. The link between goal and function is obvious; the one between application software and function is less so. Scheer's (1999) argument is that the software defines the processing rules of a function and therefore should be included in the function view.

Organizational unit, human output, machine resource, and computer hardware are responsible for the execution of the function and included in the organization view.

Data view includes environmental data as well as events and messages triggering or triggered by functions.

Remaining model entities represent all physical and nonphysical input to and output of the function and are part of the output view.

Figure 1. Event-driven process chain as appears in Scheer (1999)