Chapter 3.10
Tools for Collaborative Business Process Modeling

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INTRODUCTION

A business process can be defined as a set of related tasks that are carried out within a business or organization in order to obtain certain output that should add value for the business client or organization (Gunasekaran & Kobu, 2002). An enterprise can be then analyzed and integrated through its business processes. Thus, business process modeling (BPM) becomes a fundamental part of business process management, as it enables a common understanding and analysis of a company's business processes. Particularly, BPM using computer-aided design tools and a standard visual form of notation to describe, validate, and simulate business processes has taken on a new importance (Jonah, 2002).

There are a number of situations when BPM should be accomplished by many participants from different locations. One example may be the formation a virtual enterprise (VE), since all organizations within the VE should jointly define the rules and procedures of the common business processes. Another example may be the development of reference models to be employed in different branches within a single organization, or in different organizations. Participants in collaborative business process modeling (CBPM) activities may have different (or partial) competences and responsibilities within the business process to be modeled, or have similar (or common) ones. The former case will most likely apply to the first example, while perhaps the latter would correspond to the last one.

While efficiently managing the development of business process models is considered to be a challenge itself, the need of collaboration among participants with different background and skills poses additional requirements in terms of a consistent information flow between the participants

in the process, the timely sharing of data and information, and harmonious support for the collaborative aspects of work (Mentzas, Halaris, & Kavadias, 2001). Therefore, CBPM should encompass a set of procedures capable to (Lonchamp & Denis, 1997):

- Support the designers as far as possible during their collective work.
- Provide a sufficiently detailed model of collective design work for supporting it effectively.
- Provide a meta-model including concepts for describing all the various perspectives (process, organizational, functional, data and product views), as well as formal modeling techniques.

CBPM software tools could provide these functionalities and make possible obtaining business process models developed in a collaborative manner. Hence, our study focuses specifically on CBPM tools. While there are many available tools for enterprise analysis and business process management (particularly for the Web environment), not all of them fully support BPM. In this article, we develop a framework to synthesize the main requirements of CBPM tools. We then review a great number of available tools and classify them. The objective is to obtain a guide which provides a base for a correct selection of a CBPM tool. This guide would help selecting a tool depending on project or work requirements, BPM techniques adopted, degree of collaboration, knowledge of participants about BPM, etc. The study also point out to some areas where current BPM tools should be enhanced to cope with the specific features of CBPM.

BACKGROUND

Only few references deal with CBPM: Dean, Lee, Orwing, and Vogel (1994) develop and evaluate an electronic meeting system (EMS) based activity modeling group. They use a form-driven modeling tool with a link to a graphical viewer for the capture integrated models. The EMS tool supports large group integration definition for function (IDEF0) modeling activity modeling. They compare modeling efforts supported by the EMS tool with those supported by analyst with a single-user tool, and conclude that the former allows a greater number of individuals to participate efficiently in model development.

In Dean, Lee, Pendergast, Hickey, and Nunamaker (1997), the authors discuss collaborative modeling issues in the context of software engineering. They provide a complete methodology for collaborative activity and data modeling, and scenarios, system use cases, and prototypes definition. The authors develop EMS modeling tools designed to allow users working in parallel to contribute directly during meetings.

Lonchamp et al. (1997) introduce the notion of collaborative work support and indicate a methodology for process modeling based both in design aspects (for decision-oriented modeling of methods and their creative activities) and cooperation aspects (collective modeling, conflict resolution task). In their work, a tool containing features for collaborative work (i.e., pop-up menus and dialogue boxes used in an asynchronous manner) is proposed.

Pendergast, Aytes, and Lee (1999) develop two tools to support collaborative graphical modeling and present a methodology for collaborative enterprise analyzer (EA). In the first tool, the users create (informal) graphical business models by groups. Later, analysts extract activity and data descriptions from these models and enter them into relational databases via text forms. Data are imported into an IDEF case tool. In the second tool, the system present the graphical models in a number of different ways, as well as access to graphics generated from a variety of commercial sketching tools. Although they do not use CBPM, they use a collaborative tool for create informal

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