Emphasizing User Participation in Business Processes

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ABSTRACT

Modeling business processes is still a challenge as shown by the number of viewpoints proposed in the last years; these viewpoints stress the orchestration of work, the conversations between the participants, the handling of business entities. This paper presents an approach, called PartiM, aimed at emphasizing the participation of users by means of participation models. Users, by looking at their participation models, can clearly understand what their involvement is expected to be, in terms of tasks and decisions. The development of models proceeds in an outside-in manner: first, binary collaboration models are defined, which describe how two parties interact in order to achieve a common goal; then, for each participant, a participation model is produced, which shows how the related collaborations will be handled. Two case studies are presented to exemplify the approach.

Keywords: Business Process Models, Collaboration Models, Outside-In Development, Participation Instances, Participation Models

INTRODUCTION

A business process defines a standard way to achieve a given business goal, such as the production of a product or service (Rummler & Brache, 2005). Business processes cross functional boundaries in that they involve members of different departments; common examples are developing a new product, ordering goods from a supplier, and processing and paying an insurance claim (Davenport & Short, 1990).

Over the last years, a number of viewpoints (van der Aalst, Weske & Wirtz, 2003) have emerged which exerted great influence on the design of notations and languages for business processes. These viewpoints propose different ways of organizing the basic constituents of cooperative environments, i.e. the operational activities, the coordination activities and the common field of work (Schmidt & Simone, 1996). Operational activities are units of work meant to produce some changes in the underlying common field of work, which is a repository of artifacts (business data and documents). Coordination activities are responsible for organizing the operational activities in the proper sequence. At the beginning of CSCW (Computer Supported Cooperative Work), coordination was left to the users who tried to achieve it by means of various means, includ-
ing shared databases and e-mails (Holt, 1985). Then, explicit coordination techniques were introduced in order to come up with repeatable processes.

In the centralized viewpoint, where efficiency is the major goal, coordination is carried out by the business processes through control-flow elements, which are responsible for organizing the operational activities in sequential, alternative, repetitive and concurrent paths, as needed. A business process is then like a master who distributes the work among the participants. In the centralized perspective, participants are meant to interact with the processes and not with each other. They are presented with todo lists showing the tasks that have been assigned to them by the processes; by clicking on the items of their todo lists, they can perform the corresponding tasks. When a task has been completed, the decision on the next one to be carried out is taken by the process through a control-flow building block.

A business process involves a number of participants denoted by their roles; swim lanes are usually associated with roles so as to group the corresponding tasks. Tasks and control-flow elements are the major building blocks, while swim lanes are the major structuring mechanisms. Well-known notations and languages, such as BPMN (Business Process Model and Notation) and BPEL (Business Process Execution Language), support the centralized viewpoint.

It is not easy for participants to understand their real involvement when they look at the model of a business process based on the centralized perspective. They can find their tasks in the swim lane associated with their role, but the task flow for a given participant may be hard to identify because the task flows of all the participants are mixed, in the process model.

The participation of users in processes is made more evident, if the process is decomposed into several “role” components: this is the essence of the role viewpoint. In the RAD (Role Activity Diagramming) approach (Ould, 2005), each role component is structured as a process including the tasks pertaining to the role; components interact with each other by means of send/receive operations.

While it is generally accepted that rigid processes made a significant contribution to repetitive, standardized work (i.e. routines), they do not seem to be adequate to situations requiring knowledge intensive work (Riss, Rickayzen, Maus & van der Aalst, 2005). Knowledge intensive work is usually associated with individual agility, which is the ability for the participants to take part in the coordination of the work to be done; they do so, by autonomously selecting the tasks to carry out, when needed, on the basis of their judgment and experience.

The conversational viewpoint and the case viewpoint promote individual agility through conversations and through the handling of individual artifacts, respectively.

The conversational viewpoint emphasizes conversations, which are patterns of interaction between pairs of participants. A well-known such pattern is the conversation for action (Winograd, 1987-1988), in which two parties, i.e. a requester and a provider, reach mutual agreement through a number of negotiations.

While conversations focus on the interactions and on the related actions, it is not infrequent that a business process is meant to handle the life cycle of a particular class of artifacts, such as purchase orders or insurance claims. The case viewpoint (van der Aalst, Weske & Grünbauer, 2005), where the case is the artifact to be handled by the business process, considers the state of the case, rather than the completion of the process activities, as the primary driver of the process evolution. The control flow turns out to be much simpler and agility is achieved because the participants select the tasks to perform on the basis of the state of the case.

This paper presents an approach, called PartiM (Participation-oriented modeling of business processes), that draws upon the conversation viewpoint and the case viewpoint and extends them in the direction of providing a better integration with the artifacts to be acted on. In PartiM, the development of models proceeds in an outside-in manner: first, binary collaboration...
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