

Chapter XVI

Using WfMS to Support Unstructured Activities

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ABSTRACT

In this chapter the authors propose a solution to handle unexpected exceptions in WfMS. They characterize these events deeply and recognize that some of them require immediate reaction and users can not plan their response in advance. Current approaches that handle unexpected exceptions are categorized by their resilience property and it is identified that supporting unstructured activities becomes critical to react to these events. Their proposed system is able to change its behaviour from supporting structured activities to supporting unstructured activities and back to its original mode. They also describe how the system was implemented and we discuss a concrete scenario where it was tested.

1. INTRODUCTION

Workflow Management Systems (WfMS) are based on the premise that procedures are able to define the details of the work carried out in organizations. Since procedures and control data emerge from the overall system, the WfMS is much more flexible than traditional information systems, and any change to the procedure or control data

may be easily accomplished. Using a WfMS, the organization is released from the task of routing the process and all related information through the different tasks and affected actors.

This original development of WfMS was biased by the rationalistic view that organizations follow procedures on a rigid way to achieve their goals (Suchman, 1983). However, organizations also require flexibility when performing their

daily operations and procedures do not necessarily contain all the required information to accomplish the work. This clash between the original objectives of WfMS and the concrete organizational requirements lead to a difficult acceptance of these systems by their target market during the nineties (van der Aalst and Berens, 2001).

It has been shown by various ethnographic studies that the idealistic smooth procedural work is not always followed (Suchman, 1983; Bowers et al., 1995). Often, procedures are only used as guidance, since users adapt to the peculiarities of the situations not completely reflected in procedures. We thus have two different scenarios usually referred as *unstructured*, when users perform unrestricted activities eventually guided by an available procedure, and *structured* when procedures determine the user actions.

These two scenarios should be taken into account when supporting organizational activities. However, WfMS are traditionally algorithm-based and developed with a special focus on the structured scenario. One of the main disadvantages of this approach is the lack of flexibility to adjust to concrete user demand (Abbott and Sarin, 1994). An *exception* is therefore a situation where the WfMS is not able to support the users performing organizational activities.

Various researchers have addressed this lack of flexibility. However, the majority of the proposed solutions are still biased by the rationalistic approach, where more primitives are inserted on the WfMS to handle exceptions but always under any sort of an algorithm-based control. Even when primitives are inserted to increase adaptability, they have their roots on the original workflow model and therefore do not support totally unstructured activities.

In this chapter we describe a solution developed to address the problem that traditional WfMSs have coping with unstructured activities. We assume there will always be situations where users should be able to decide on what are the most suited

activities to fulfill organizational goals, with or without restrictions imposed by the system.

2. ADJUSTING THE WFMS TO ORGANIZATIONS

The work processes carried out by organizations have been identified to belong to a continuum ranging from totally unstructured to completely structured (Sheth et al., 1996). It is interesting to note that the majority of the available organizational information systems tend to fall close to both sides of the spectrum boundaries (Sheth et al., 1996), thus leaving a significant gap in between. Unfortunately, traditional WfMS fall into the highly structured boundary and thus contribute to this gap. WfMS emphasize the execution of work models and thus have a normative engagement (Schmidt, 1997). Closer to the other end of the spectrum limits, Suchman (1987) proposes the notion of maps, which position and guide actors in a space of available actions, providing environmental information necessary to decision making but avoiding the normative trait. Email systems, the newly developed collaborative Web platforms sharing information among users and group support systems are examples of systems that fall close to the unstructured limits of the spectrum. Usually these systems promote interaction and do not have a normative engagement.

Since traditional WfMS fall close to the structured limits of the spectrum, they are inadequate to cope with unstructured processes. To support the continuum of organizational needs, WfMS should cope with the whole spectrum of structured and unstructured activities. This requirement has been identified by different authors (Ellis and Nutt, 1993; Abbott and Sarin, 1994). In our solution, we propose a system that is able to switch its behavior from model guidance to map guidance, back and forth. We start this section by discussing the limitations of two definitions of

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