Structuring Complex Software Processes by „Process Landscaping“

Volker Gruhn, Ursula Wellen

University of Dortmund, Department of Computer Science, Software Technology, 44227 Dortmund, Germany
{gruhn, wellen}@ls10.cs.uni-dortmund.de

Abstract. Process Landscaping is a method, which supports modelling of related processes. These processes can be modelled on different levels of abstraction. Interfaces between processes are considered as first class process entities. It prevents losing an overview of the whole framework of processes and ensures that decisions about processes are not burdened out by an overwhelming amount of details. In this article we discuss the approach of Process Landscaping by developing a real-world software process.

1 Introduction

Modelling of software processes can have various purposes like documentation, analysis and improvement of software process models [Gru92, BFG93, CW95], software process improvement [ABC96, BJ95, SNT98] and software process execution [DG98, EAD99]. Independent of the concrete purpose most process modelling projects have to identify the core processes and define their chronological order of modelling. Furthermore, they have to identify and specify the interfaces between processes.

To ensure that the overall context of process modelling does not get lost one should concentrate on a small number of core software processes and distinguish between processes with and without direct interfaces to customers (internal and external processes) [HC93]. It becomes obvious that interfaces have to be modeled already on an abstract level (that means at the very beginning of a modeling project) when a number of processes has to be modeled and when the involved process modellers cannot easily identify how these processes are related. Additionally, the lack of manager's understanding of the purpose and benefits of process modelling sometimes requires modelling processes on different levels of detail. It is important to abstract from details of certain processes or even from certain processes as a whole to keep in view the whole process framework.

The salient features of the method of „Software Process Landscaping“ are

- identification of the core software processes and their positioning on a top level view of a process landscape,
- explicit modelling of interfaces between software processes,
- switching between different levels of refinement,
- extension by process model details only where needed.
Especially the second feature differentiates process landscaping from other process modelling methods like those based on event-driven process chains [MS96], Petri Net-like languages and data flow diagrams, where interfaces are not first class entities. Therefore corresponding software process modelling tools do not provide mechanisms for checking interface consistencies.

In section 2 we discuss the process landscaping method in terms of key activities carried out. In section 3, the development of a real software process landscape is discussed. Section 4 sums up our experiences with applying process landscaping to real world software processes and gives an overview of our future research directions.

2 The Process Landscaping Method

A process landscape describes how software process models are related. Figure 1 gives a schema of a process landscape on the most abstract level. On this level, we do not identify individual process models, but we deal with clusters of process models which are logically related (for example, because all of them describe processes from the area of configuration management). The clusters are related by cluster interfaces represented on this level by two-headed arrows. To each of these clusters the method of process landscaping can be applied again. Based on refinements of this kind, we start from high level descriptions. We can add details about all entities of process models (like activities, object types, tools, etc.) wherever needed.

Fig. 1. Schema of a process landscape

We put a process landscape into a system of coordinates. The x-axis ranges from processes with direct interfaces to customers (called customer processes in the following) to supporting processes. The y-axis describes the dimension of the customer life cycle. It starts when a customer comes into life and terminates when the customer relationship terminates. The term "customer" is used in a rather general