

Chapter 8

An Approach for Integrated Lifecycle Management for Business Processes and Business Software

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ABSTRACT

The lifecycles of business processes and business software interact with each other since business software is used to support business processes, and requirements on business software are derived from business processes. By integrating these lifecycles, it is possible to test if the business software meets the process-based requirements as well as to identify which impacts changes of the software product have on the business process. In this chapter, the authors give an introduction into these interdependencies. Foundations of lifecycle management, business process modeling, and performance engineering are presented, followed by the description of a framework for an integrated lifecycle management for business processes and business software. This framework is based on business process simulation and software performance prediction. The evaluation of the framework is described by applying it to an example of use and the results are discussed. The chapter closes with a conclusion and an outlook on future work.

DOI: 10.4018/978-1-4666-2199-2.ch008

INTRODUCTION

Business processes and business software both possess specific lifecycles. These lifecycles interact with each other, since business software is used to support the execution of business processes. Thus, requirements on business software are derived from the business processes to be supported. These requirements are, however, variable. During its “life,” a business process is subject to various changes (e.g. new legal basic conditions, restructuring of an organization, technological progress, new business strategy, changed target values for key performance indicators), which lead to changed or new requirements for the corresponding business software. Requirements are the central interface between the business process and the software product. The requirements specification is the basic input for the design of the software architecture. Thus, changes in a business process cause changes in the business software architecture via requirements changes. The other direction of influence is, however, also possible: business software may be improved by the software vendor (independently of the customers’ business processes), creating new releases, updates or versions (which mean a change of the underlying software architecture). The modified business software may impact the execution of the business process. The impact may be of positive (e.g. reduction of media disruptions) or negative (e.g. longer execution time) nature. In this context, the software vendor can show the benefits that the modified business software has on the customer’s business processes in order to convince the customer of buying the modified software. Furthermore, companies developing individual software often offer after sales services for their customers or maintain the software based on a contract with the customer. These software developing companies should be enabled to react more efficiently and effectively on changes of process-based requirements by an integrated

lifecycle management for business processes and business software. An integration of both lifecycles creates benefits for both the software vendor (provision of better sales arguments) and the customer (quick and adequate adaptation of the business software according to changes in business processes). For these reasons, the lifecycle of business software should be closely associated to the planning and execution of the business processes in a company. The better both are synchronized, the more efficient is the company. To the same degree, if the framework requirements of a company are changing, the company has to adapt its business processes and the related business software. Thus, it is reasonable to argue for both the business process and the business software with the term “lifecycle” and for its methodic handling with an engineer-like approach. Hence, an integrated consideration of the lifecycles of business processes and their supporting business software is evident.

Requirements Management represents the interface between the lifecycles of business processes and business software. Besides the functional requirements, which can be (more or less) directly derived from the business processes to be supported, also non-functional requirements play an important role concerning the development and maintenance of customer-specific business software. One of the major non-functional requirements on business software is performance, due to the often critical nature of business processes. The performance of business processes is measured using specific key performance indicators (KPIs), e.g. duration, costs. Target values of KPIs represent requirements to the business software. These requirements are mapped on one or more software metrics. In this way, it is possible to test if the business software meets the process-based requirements. Based on the determination of process performance by simulating business process models and the performance prediction of a software product using architecture simulation, a

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