Business Enterprise, Process, and Technology Management: Models and Applications

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Chapter 1
Business-Oriented Process Management................................................................... 1
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This paper highlights all the relevant issues and required features from a business operation point of view. It presents an overall intelligent business operation scenario to highlight the required tasks and relevant issues to meet the needs of business managers and business operators. It then outlines the approaches and design to deal with these issues and provides the needed functionality. Finally, it summarizes the study and discusses future work.

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Business process portfolio management is an emerging field of research and practice, opening the door to new and ever more exciting process-oriented modes of management, tracking, planning, and knowledge management. This paper focuses on the strategic alignment of strategic, social, processual, and technical factors as enablers of business process portfolio development and management, and highlights the linkages associated with the alignment and integration of these factors. The authors also pose a combination of key questions and decision criteria that may be taken into account when planning and structuring business process portfolio initiatives.

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This chapter presents a variety of business process modeling notations that range from programming logic flowcharts to the new standard, BPMN (Business Process Modeling Notation), as put forth by the
Business Process Management Initiative (BPMI) (http://www.bpmi.org). Specifically, it discusses (1) the use of unstructured programming flowcharts in modeling business processes and their adaptation in process flow diagramming notation, (2) the UML activity diagram, and (3) BPMN, a comprehensive notation for documenting and modeling complex business processes. Using simple examples, this chapter brings out the inherent complexity of modeling business processes and the need for modeling tools that synchronize and align the mental models of business users, process analyst and information technology (IT) systems developers in order to correctly represent the intended process.

Chapter 4
Building Semantic Business Process Space for Agile and Efficient Business Processes Management: Ontology-Based Approach
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Business process management (BPM) was initially adopted as a silver bullet by the companies, whose competitiveness relies heavily on their business processes and accurate knowledge to execute the business processes with agility and efficiency. However, current practices of BPM suffer from several fundamental problems, including difficulty with automatic discovery and the integration of business processes across organizations. Many studies uncovered that the main cause of these problems lies in insufficient semantics on business processes; thus, this chapter shows how to build semantic business process space (SBPS) by incorporating semantics with business processes. To that end, the authors first define a variety of generic and specific business process ontologies for the limited area of sales order process. The authors then explain how the SBPS satisfies the requirements for successful implementation of semantic BPM (SBPM) and demonstrate with a scenario how SBPM can be realized in the environment of SBPS for the agile and efficient BPM.

Chapter 5
Business Process Management and Six Sigma: Leveraging the Synergistic Relationship
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In this chapter, the authors establish the existence of a synergistic relationship between two complementary methodologies, Business Process Management (BPM) and Six Sigma, through literature review and suggest methods to exploit the same. Six Sigma provides incremental improvement through its analytical abilities and is complemented by BPM which provides the data from the ongoing processes on a real time basis. The authors discuss two perspectives on how to synergize these methodologies. Firstly, achieve hybrid BPM-Six Sigma by substituting Improve and Manage steps of BPM with the DMAIC of Six Sigma methodology. Secondly, utilize Six Sigma methodology for analysis on data generated by BPM. The application of the integration of BPM and Six Sigma is presented through case studies from financial services companies. The authors also present the key features of BPM tools that can assist Six Sigma in every phase of its implementation.
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Web service processes are business processes composed of individual Web services. Web service process description languages, used in both choreography and orchestration, are influenced by techniques from workflow modeling, formal methods and software engineering. Since such languages are based on software scripts to be executed by a process engine, their expressive power indeed is beyond classic discrete event system models, such as process algebra and Petri nets. This chapter analyzes and compares different Web service process description languages, discusses the issues in using discrete event system models to model Web service processes, and also compares Web service processes with workflow processes. The chapter also discusses the suitable methods based on the formal models for various computing tasks, such as verification and validation.

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With keen competition and the continuous quest for service improvement, e-commerce processes are becoming increasingly complex. Recent adoption of the Service-Oriented Architecture has further facilitated cross-organizational process enactment and enabled e-commerce enhancement. Despite a customer interacting with one website, multiple parties are actually involved at the backend such as logistics, services, and payment. As the payment process is indispensable for transactions, the authors choose this as the case study. To enhance the security of the payment process, credit card providers have already been using secure processing services to encrypt the credit card information. But if an unauthorized person knows the credit card information, they can still perform any payment illegally. To address this problem, the authors design a Notified Credit Card Payment System (NCCPS) to handle the notification and confirmation process enhancement. Through an Alert Management system component, the NCCPS systematically integrates the communication between merchants, banks or credit card service providers, and mobile service providers by the means of Web services and SMS technologies. The NCCPS also integrates with the customer service call center for the cancellation processes and exception handling. The authors demonstrate the effectiveness of the use of Web services and alerts in e-Commerce and process integration.
Chapter 8
Integrating and Measuring Business and Technology Services in the Context of Enterprise Architecture

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The main goal of this chapter is to analyse the relationship between business value-adding processes and technology solutions (integration of business/processes and technology through service structures), and to guide measurement, control, and optimisation efforts of organisations based on the enterprise service structure. To achieve these goals is to develop an enterprise architecture model that includes business and IT services, business and IT processes, and measurement possibilities.

Chapter 9
Model-Based Validation of Business Processes

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Validation should be done in the context of understanding how a business process is intended to contribute to the business strategies of an organization. Validation can take place along a variety of dimensions including legal compliance, financial cost, customer value, and service quality. A business process modeling tool cannot anticipate all the ways in which a business process might need to be validated. However, it can provide a framework for extending model elements to represent context for a business process. It can also support information exchange to facilitate validation with other tools and systems. This chapter demonstrates a model-based approach to validation using a hospital approval process for accessing patient data in a data warehouse. An extensible meta-model, a flexible data exchange layer, and linkage between business processes and enterprise context are shown to be the critical elements in model-based business process validation.

Chapter 10
On Flexibility in Business Process Management Systems

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Business Process Management Systems (BPMS) provide the necessary infrastructure for managing business processes, in both intra-organizational and inter-organizational contexts. These process support systems also provide the technical support for managing changes in business processes, either at design time or run-time. Consequently, it is necessary for a BPMS to be flexible and amenable to changes at
various levels. This chapter highlights key dimensions along which process support systems such as BPMS can be made more flexible, provides an overview of the existing body of knowledge on these dimensions, and motivates the future work in this direction. The intention is to provide the reader a strong starting point for either conducting a more detailed literature study or pursuing further research along any of these dimensions.

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Effective execution of business processes also requires the provisioning of relevant knowledge to workers in various business contexts. Knowledge flow automation aims to enable seamless transfer of knowledge by supporting the capture and sharing of organizational knowledge related to business processes. Given the strong correlation between the flow of work and the flow of knowledge, workflow systems are a natural platform for supporting knowledge flow. However, existing workflow technology does not yet provide the needed mechanisms suitable for supporting knowledge flow. This chapter presents an overview of different types of workflow-based knowledge management systems that provide knowledge workers with the required knowledge while supporting the flow of work. In addition, a new perspective is presented on extending workflows to support knowledge transfer processes by introducing the concept of “knowledge workflows” and outline future research directions in this area.

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Grid computing promises to enable a scalable, reliable, and easy-to-use computational infrastructure for eScience. To materialize this promise, Grids need to provide full automation of the entire development and execution cycle starting with application modeling and specification, continuing with experiment design and management, and ending with the collection and analysis of results. Often, this automation relies on the execution of workflow processes. Not much is known much about Grid workflow characteristics, scalability, and workload, which hampers the development of new techniques and algorithms, and slows the tuning of existing ones. This chapter describes techniques developed in the ASKALON project for modeling and analyzing the executions of scientific workflows in Grid environments. The authors first outline the architecture, services, and tools developed by ASKALON and then introduce a new systematic scalability analysis technique to help scientists understand the most severe sources of performance losses that occur when executing scientific workflows in heterogeneous Grid environments. A method for analyzing workload traces is presented, focusing on the intrinsic and environment-related characteristics of scientific workflows. The authors illustrate concrete results that validate the methods for a variety of real-world applications modeled as scientific workflows and executed in the Austrian Grid environment.
Chapter 13
BPM in Financial Services

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This chapter examines the context, benefits, and challenges of applying business process management (BPM) to financial services. First, it reviews how processes and technology have evolved in the financial services industry, and identifies how BPM technologies can improve efficiency and profitability of financial institutions. Next, the chapter discusses the strategic benefits that BPM can provide. Agile development of new business ideas, standardization and reuse of processes, and management of business environment complexity are three strategic benefits that are explored. Finally, practical concerns related to applying BPM in banks are examined along with approaches for overcoming common challenges. The observations and analysis presented are based on experiences implementing BPM projects for financial institutions based in Asia, Europe, and North America.

Chapter 14
Business Process Reengineering a Sustained Trend?: An Analysis About the Practice in Major German Companies

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Business Process Reengineering (BPR) is an important aspect of Business Process Management. The concept of BPR has been widely discussed in the past decade; however, it remains undetermined how prevalent the applications of Davenport, Hammer and Champy’s ideas are, especially with respect to their relevancy for actual business practice. This paper analyses which ideas of BPR actually have been implemented in practice many years after the “hype”. Based on a survey, the BPR-practices of major German enterprises listed in the German stock market are investigated. The study indicates that BPR is important in practice, although not all ideas of BPR seem to be wholly implemented. Especially the ideas of radical redesign of business processes and the process-oriented organizational structure could not be confirmed by the survey.

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About the Contributors

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