

Preface

The history of business process management can be traced back to the early days of office automation in the 1980s when personal computers became available for businesses to use in everyday office computing. While it is debatable which year should be marked as the start of personal computing, the early 80s saw many inventions of personal computing including the VisiCalc Spreadsheet software and the WordStar software for word processing in 1978, IBM PCs in 1981, and Apple Lisa Computer with a graphical user interface in 1983, and the Microsoft Windows software in 1985. These inventions made it possible for businesses to process a lot of information quickly and cheaply and led to the dramatic increase of company sizes because computers made it possible to coordinate large and complex business operations on a global scale.

The office automation in the 80s also sparked the boom of local area networks based on the invention by Robert Metcalfe in 1973. With the ability to send information via networks and the computerization of the white-collar workers, business process automation became a possibility in the late 1980s. The creation of Mosaic Communications Corporation (later renamed Netscape) by Marc Andreessen and his colleagues and the formation of the World Wide Web Consortium in 1994 signaled the arrival of the Internet age, making it possible for average users to use the Internet to initiate business processes. The inauguration of the Workflow Management Coalition in 1993 marked the birth of a new information technology, i.e., business process management systems.

Business process management systems are also known as workflow management systems, which automate the hand-off of tasks and the transmission of documents within an organization. Over two hundred commercial workflow management systems were reported in a survey of workflow technology (Georgakopoulos, Hornick, & Sheth 1995). Other information technologies such as document management systems, call centers, and enterprise resource planning systems have developed workflow capabilities as well. Business process management is now the core component of e-business technology, and many IT vendors have incorporated workflow capability into their software offerings.

The new trends in workflow technology include (1) making the workflow technology accessible via the Internet by end users and developers, (2) enabling the workflow systems to access information resources via web services, (3) improving the flexibility of workflow technologies to enable rapid and inexpensive organizational and process changes, and (4) embedding the workflow technology components into the service-oriented corporate infrastructure. Furthermore, the workflow vendors have gone through a major shakeup as many large software vendors such as Oracle, Microsoft, IBM and the like acquired successful workflow companies that have proven business process management technologies in the past few years.

Web services are the latest approach to integrate enterprise applications, a core challenge of corporate information technology (Gottschalk et al., 2002). As the business world moves towards globalization, firms are expanding their territories into new markets abroad to create new growth. To support globalization, a firm needs to integrate various information systems built on different platforms at different times. Further, the globalization of business requires a distributed computing environment that allows companies to support the computing needs of various operational units.

As a result, the web services technology can help integrate business processes by creating an open, distributed system environment and promises to reduce the cost of business process management because it enables process integration without “hardwiring” the code (Leymann et al., 2002). As a result of process automation based on Web services, firms are locked into the products from a single vendor, thus enhancing the flexibility of the enterprise system infrastructure.

This book assembles a number of chapters that highlight new developments in the area of business process management and workflow technologies. This book is organized into four main sections, each of which has a number of chapters that address unique issues in the technologies and applications of business process management.

ORGANIZATION OF THE BOOK

This book is organized into four main sections and each of which has a number of chapters.

Section 1: Business Process Modelling and Management

Chapter 1 Business-Oriented Process Management (Ming-Chien Shan) examines the issues and information needs of business managers when operating a business process. It argues that these needs can be satisfied by means of new layer within business operation software stack- Intelligent Business Operation Management Layer (IBOM). IBOM functionality is then presented.

Chapter 2 Business Process Portfolio Management: A Strategic Alignment Perspective (Shawn Clark and Brian Cameron) explores the role of strategic, social, process and technical factors as enablers of Business Process Portfolio Management (BPPM). It presents a model for strategic alignment when developing process portfolio through effective integration and alignment of these factors.

Chapter 3 Business Process Modeling (Donald Chand and Alina M. Chircu) presents different business process modelling notations through the use of examples and then discusses the inherent complexity of modelling business processes.

Chapter 4 Building Semantic Business Process Space for Agile and Efficient Business Processes Management: Ontology-Based Approach (Gunwoo Kim and Yongmoo Suh) shows how to build semantic business process space (SBPS) by incorporating semantics with business processes. The chapter defines a variety of generic and specific business process ontologies the sales order process and using a scenario demonstrates how to realized semantic BPM .

Chapter 5 Business Process Management and Six Sigma: Leveraging the Synergistic Relationship (Suresh Subramoniam, Venky Shankararaman, K. V. Krishnankutty and Ravi Chinta) explores the concepts and methods of business process management and Six Sigma. The chapter then proposes two approaches for integrating BPM with Six Sigma and presents case studies that demonstrate value through this integration.

Section 2: Business Processes and Service Oriented Architecture

Chapter 6 Discrete Event Models for Web Service Processes (Yuhong Yan and May Hayder) models a business process as a composition of individual web services and then propose a discrete event system model for modelling and computing web service processes.

Chapter 7 Enhancing E-Commerce Processes with Alerts for Credit Card Payment (Dickson K.W. Chiu, Winnie N.Y. Yan, Eleanna Kafeza, Matthias Farwick, and Patrick C.K. Hung) uses the example of credit card payments to illustrate the use of alerts to enhance e-commerce processes based on a Service Oriented Architecture. The chapter presents the design of the mechanism and the system that implements the alert notification process.

Chapter 8 Integrating and measuring business and technology services in the context of enterprise architecture (Péter Fehér) explores the integration of business processes and technology through service structures. Using a case study on payment processing, the chapter presents an enterprise architecture model that includes business and IT services, business and IT processes along with suggestions on how to measure them.

Section 3: Business Process Management Systems

Chapter 9 Model-Based Validation of Business Processes (Alireza Pourshahid, Liam Peyton, Sepideh Ghanavati, Daniel Amyot, Pengfei Chen and Michael Weiss) proposes a model-based approach to validating a business process. The approval process at a major teaching hospital for access to sensitive patient data in a data warehouse is used as the example process to demonstrate the applicability of the approach.

Chapter 10 On Flexibility in Business Process Management Systems (Amit V. Deoker and Nazim Taks) argues that since a Business Process Management System (BPMS) provides support for managing change within a business process, the BPMS must itself be flexible and amenable to changes at various levels. It then presents the various dimensions along which a BPMS can be made more flexible.

Chapter 11 Extending Workflow for Knowledge Flow Automation (Surindera Sarniker and J. Leong Zhao) introduces the concept of “knowledge workflows” which is a new perspective on extending workflows to support knowledge transfer processes.

Chapter 12 Specification, Characteristics, and Performance of Scientific Grid Workflows (Radu Prodan) explores grid computing and presents a new scalability analysis technique to help understand performance losses when executing scientific workflows in heterogeneous grid environments.

Section 4: Applications of Business Process Management

Chapter 13 BPM in Financial Services (Randall E. Duran) focuses on the financial services domain and describes the context, history, benefits and challenges of applying Business Process Management (BPM) to this domain. Additionally, it argues a combination of BPM with Service Oriented Architecture (SOA) will be most effective in improving efficiency and profitability.

Chapter 14 Business Process Reengineering a Sustained Trend? An Analysis about the Practice in Major German Companies (Thomas Hess and Dagmar Schuller) presents the approach and results of a study conducted to investigate the Business Process Engineering (BPR) practices in major German corporations. Additionally, this chapter also discusses broader business implications of this study.

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