Preface

ABOUT THE SUBJECT

Over the last decades, enterprise computer-based solutions have no longer consisted of isolated or dispersedly developed and implemented MRP (Material Requirements Planning) and MRP II solutions, CRM (Customer Relationship Management) solutions, electronic commerce solutions, ERP (Enterprise Resources Planning) solutions, and others. Solutions are integrated, built on a single system, supported by a common information infrastructure central to the organization, ensuring that information can be shared across all functional levels and management so that users can see data entered anywhere in the system in real-time and, simultaneously, seamlessly allow the integration and coordination of most (if not all) the enterprise business processes.

The topic of Enterprise Information Systems (EIS) is gaining an increasingly relevant strategic impact on global business and the world economy, and organizations are undergoing hard investments (in cost and effort) in search of the rewarding benefits of efficiency and effectiveness that this range of solutions promise. However, as we all know, this is not an easy task! It is not only a matter of financial investment! It is much more, as this book shows. EIS is at the same time responsible for tremendous gains in some companies and tremendous losses in others. Therefore, their adoption should be carefully planned and managed.

Responsiveness, flexibility, agility, and business alignment are requirements of competitiveness that enterprises search for. We hope that the models, solutions, tools, and case studies presented and discussed in this book can contribute to highlight new ways to identify opportunities and overtake trends and challenges of EIS selection, adoption, and exploitation.

ORGANIZATION OF THE BOOK

This book integrates a collection of contributions that discuss the main issues, challenges, opportunities, and developments related to Enterprise Information Systems from the social, managerial, and organizational perspectives in a very comprehensive way and contribute to the dissemination of current achievements and practical solutions and applications in the field.

This collection of 15 chapters is written by a group of around 40 authors that include many internationally renowned and experienced authors in the EIS field and a set of younger authors, showing a promising potential for research and development. At the same time, the book integrates contributions
from academe, research institutions, and industry, representing a good and comprehensive representation of the state-of-the-art approaches and developments that address the dimensions of this fast evolutionary thematic.

Sociotechnical Enterprise Information Systems Design and Integration integrates 15 chapters that are briefly introduced in the next paragraphs.

The sustainable growth dilemma requires providing well-matched prosperity to the current citizens and preserving life-quality standards. The modern growth decisively exploits skillful provisions acquired from fossil and fissile earth stocks, through technical non-conservative ways. The instant advantages are paid by the elimination of contamination. The engineer’s doings in the new millennium have to cope with ecological quality objectives, curbing the industrialism practices, to provide the visibility of all induced changes, and to apply responsible recovery measures. Here, an overview of the state-of-the-art is shown, in particular addressing: the design of ‘product-service’ items, deliberately considering the early specifications for the lifecycle and the dismissal phases, and the integration prerequisites in the supply chain management, explaining the usefulness of network aids and the connected commercial modifications. The challenge is extraordinary and involves socio-cultural aspects, too. The discussion, although offering sketchy images, concerns technical suggestions to assess the life cycle eco-coherence as total company challenge: the business design conditions embed compulsory legal issues, requiring worldwide management, at the global village range.

The second chapter, “Combining ERP Systems with Enterprise 2.0” by Wang and Greaseley, discusses both the complementary factors and contradictions of adoption ERP-based systems with Enterprise 2.0. ERP is well known as IT’s efficient business process management. Enterprise 2.0 supports flexible business process management, informal, and less structured interactions. Traditional studies indicate efficiency and flexibility may seem incompatible because they are different business objectives and may exist in different organizational environments. However, the chapter breaks traditional norms that combine ERP and Enterprise 2.0 in a single enterprise to improve both efficient and flexible operations simultaneously. Based on multiple case studies, the chapter analyzes the benefits and risks of the combination of ERP with Enterprise 2.0 from process, organization, and people paradigms.

Lima, Garcia, and Caran, in “Building an Ontological Model for Software Requirements Engineering” describe the development of a model for the engineering requirement based on ontology. The development patterns are not used efficiently, especially for non-observance of the principles of requirements engineering. The overall objective of the chapter is to propose the use of an ontology based on the artifacts of software requirements engineering and can be used on any project developed in any organization. The method uses experimental procedures, which are held in experiments with real situations in a project in progress at a reputable company in the development of hardware, but that currently covers its business in the software services industry. As a result, there was an improved understanding of software requirements, as well as its trace within the scope of the project, that is, one can easily traverse the model and identify all the artifacts impacted by the change.

In the fourth chapter, “On Selection, Implementation, and Operations of ERP Systems,” Völker and Munkelt give recommendations for selecting, implementing, and operating ERP systems. It is not intended to be a complete guideline for introducing ERP. Instead, the authors indicate special aspects that are important from their point of view. The chapter addresses practitioners who are responsible for selection, implementation, and operations of ERP systems, especially IT and project managers. General process
models are given for the two main IT projects of this domain, ERP system selection and ERP system implementation. The main structure of the chapter matches the phases of these projects. The authors' suggestions stretch from project management, business process reengineering, application development, reporting, and customizing to choosing hardware and key users, data migration, and user training. While other publications give rather general advice, recommendations in this chapter are selected to be use-oriented and easy to apply. The recommendations do not depend on any particular ERP system.

The exploratory study developed by Hustad and Olsen focuses on ERP post-implementation issues in Small-and-Medium-Sized Enterprises (SMEs). In “ERP Post-Implementation: A Study of a Small-and-Medium-Sized Enterprise,” the authors conducted a case study in a small Norwegian retail company, which experienced a performance dip that lasted longer than expected. The case demonstrates how overwhelming the ERP competence requirements can be for an SME. Errors in the configuration of the ERP system and improper training led to frequent workarounds. The workarounds, in turn, led to significant problems and many errors in the database. This led to a general level of frustration with the system and a high stress level in the company. This study has implications for SMEs planning to implement ERP systems.

The exploratory study presented by Mantakas and Doukas in “Analyzing Enterprise System Post-Implementation Use of Manufacturing Processes in Greek SMEs” assesses the maturity of the use of manufacturing processes by Small and Medium-Sized Enterprises (SMEs) which run enterprise information systems (ESs). The chapter considers a reference set of manufacturing best practice processes and analyzes which of these processes are used and which are not on a sample of 15 Greek SMEs. It explores the causes of process non-use from the ES implementer’s perspective. The analysis shows that several production planning, scheduling, execution, and costing processes, which could in principle add value to the sample companies, are not used, even after 7 years on the average of ES operation. Most deficiencies can be attributed to the companies’ lack of process-specific knowledge. An implication is that the analysis of the use of detailed processes should be part of the process and ES maturity assessments, and should precede the evaluation of higher-level business process orientation metrics.

In chapter seven, “A Decision Support System for ERP Implementation in Small and Medium-Sized Enterprise,” Ali, Xie, and Cullinane present a study that investigates the implementation of Enterprise Resource Planning (ERP) systems in Small and Medium-Sized Enterprises (SMEs) and the role played by certain Critical Success Factors (CSFs) in implementation. Based on primary data collected, the relationship between the variables of time, cost, and achievement is formulated for each CSF. A simulation model based Decision Support Systems (DSS) is developed to assist resource allocations in ERP implementation, such as time and budget allocated to address each CSF. The DSS also facilitates making decisions to achieve more desired performance, measured by higher achievement, lower cost, and shorter implementation time. By drawing upon this model, the authors forecast how SME can better utilise and prioritise different CSFs and resources by choosing the best implementation strategy before real life implementation, thus saving time and money.

Information flows across the organization are complex, and procedures employed to understand, share, and control organizational knowledge and experiences should be properly supported by collaborative environments. Nevertheless, few collaborative methodologies have been proposed to describe and evolve business processes. In the future, business processes models should be the result of cross-team and cross-departmental collaboration, with involved business people sharing their personal knowledge.
and formalizing it. This chapter focuses on a methodology for business process discovery and the importance of integrating local information into coherent and sound process definitions. Business Alignment Methodology (BAM) is a methodology that provides guidance about how organizational practices and knowledge are gathered to contribute to business process improvement against current BPM approaches.

Barão and Silva, in “Applying SNARE-RCO to Evaluate the Relational Capital of an Organization: The SH Case Study,” consider that social networks are important artifacts of organizations. The relational capital of an organization tends to include intangible factors, and consequently, it is not always possible to have this value from accounting systems because it is almost invisible in conventional forms of information systems. There are several evaluation network models, but there is still a need for models to evaluate relational capital tangibles and intangibles. The SNARE (short for “Social Network Analysis and Reengineering Environment”) is now used to evaluate the relational capital of a knowledge-intensive organization. In this case, the authors use the SNARE-RCO model (short for “Relational Capital of Organizations”) as a basis to evaluate the relational capital of an international software-house: the SH company. Analyzing partner-developer SH product improvement requests, the model is used to uncover the relational capital value. This chapter presents the network layout under study and shows how to define Human, Structural and Relational Capital SNARE-RCO properties, aiming at evaluating six months of partner-developer relationships.

In chapter ten, “Methods for Quality Assessment in Enterprise VoIP Communications,” Neves et al. address the most relevant methods used to evaluate the voice quality in the communications context of modern enterprises, where VoIP is used as an emerging technology with impact in their activity. Relevant factors for service providers and enterprises using VoIP technology are described, such as those related to the measurement of intelligibility and with impact on the overall voice communications quality. In addition, the most important voice quality evaluation methods recommended by the International Telecommunication Union (ITU) are presented in this chapter, along with the main features that can be used to improve voice communications. Fundamental concepts behind voice quality evaluation models are highlighted, such as intrusive, non-intrusive, objective, subjective, and parametric methods. After addressing the most relevant theoretical and methodological aspects, a recent application of voice quality monitoring for VoIP communications is described as the result of a research and development project. After its successful implementation, this monitoring system is now fully operational and integrated in voice quality assessment equipment currently in the market.

“ChronoFindMe: Social Network Location-Based Services,” by Nogueira and Silva, focuses the exponential growth of Social networks such as Facebook, over the past decade. This growth led to the exploration of new services that could enhance users’ experiences and constitute a driver for even more followers. With the proliferation of smartphones and the increasing search for applications that enable the sharing of experiences, social networks became eager to integrate into mobile devices, taking advantage of their impressive omnipresence and panoply of sensors. Amongst the sensors, the most notable are the localization sensors (GPS) that allow for the development of location-based services that use the geographical position to enrich user experiences in a variety of contexts, including location-based searching and location-based mobile interaction. ChronoFindMe enhances location-based services by adding a temporal component not present in current approaches. The authors allow information about past and future locations to be considered by defining an architecture that provides location-based services
to users of social networks. This information includes data about time and space, which can be accessed through the social network or a specific mobile application, using privacy policies to assure users’ privacy.

The evaluation of the alignment level existing between a business process and the supporting software systems is a critical concern for an organization, as the higher the alignment level is, the better the process performance is. Monitoring the alignment implies the characterization of all the items it involves and definition of measures for evaluating it. This is a complex task, and the availability of automatic tools for supporting evaluation and evolution activities may be precious. This chapter presents the ALBIS Environment (Aligning Business Processes and Information Systems), designed to support software maintenance tasks. In particular, the proposed environment allows the modeling and tracing between business and software entities and the measurement of their alignment degree. An information retrieval approach is embedded in ALBIS based on two processing phases including syntactic and semantic analysis. The usefulness of the environment is discussed through two case studies.

ITIL is considered a framework of Best Practice guidance for IT Service Management, and it is widely used in the business world. In spite of this, ITIL has some gaps in Risk Management specification. This chapter approaches this problem in ITIL and compares IT risk management in ITIL to other IT Governance Frameworks. Despite ITIL stating that risk should be identified, measured, and mitigated, it is not clear on how to proceed (no concrete process is defined on how to deal with risk). To solve this, the authors propose to map the M_o_R risk management framework in ITIL, mapping every M_o_R process in ITIL, therefore adopting a strong risk management in ITIL, based on concrete guidelines, without changing the framework. In this chapter, the authors summarize the necessary guidelines and show a planning for future work.

Information has become an essential resource for the survival and sustainable development of modern organizations, which face the constraints of their unstable and continuously changing economic and technological environments. In order to manage effectively this valuable resource, organizations need information systems that play a critical role in information management and in supporting complex organizational processes. In particular, to support innovation processes and short time-to-market constraints organizations’ information systems must be agile and flexible. The information systems’ urbanization may be considered as one of the main solutions proposed by researchers since the late 1990s to help organizations build agile information systems. Nevertheless, despite the advantages of this concept, it remains too descriptive and presents many weaknesses. For example, there is no useful approach dedicated to urbanized information systems construction. In this chapter, the authors propose a development approach of software solutions that are compliant with the information system urbanization rules characterized by their main dimensions.

Chapter 15 describes a simulator used by accounting students to mimic the official process of filling out a Personal Income Tax form. According to the Portuguese law, this form describes the amount of the employees’ Personal Income Tax withheld within a company, which must be submitted periodically to the Portuguese Tax Administration. This process is accomplished through an E-government tool accessed by only authorized company staff, which makes it impossible for accounting students to use it. This presents an obstacle for students who are learning about accounting because they cannot experiment with the “real” process in the courses they are studying. By using the proposed simulator that imitates the behavior and interface of the official tools, students can “learn by doing.”
EXPECTATIONS

The book provides researchers, scholars, and professionals with some of the most advanced research, solutions, and discussions of Enterprise Information Systems design, implementation, and management, and is targeted to be read by academics (teachers, researchers, and students of several graduate and post-graduate courses) and by professionals of Information Technology, IT managers, Information Resources managers, Enterprise managers (including top-level managers), and also technology solutions developers.

We strongly hope it meets your expectations!

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