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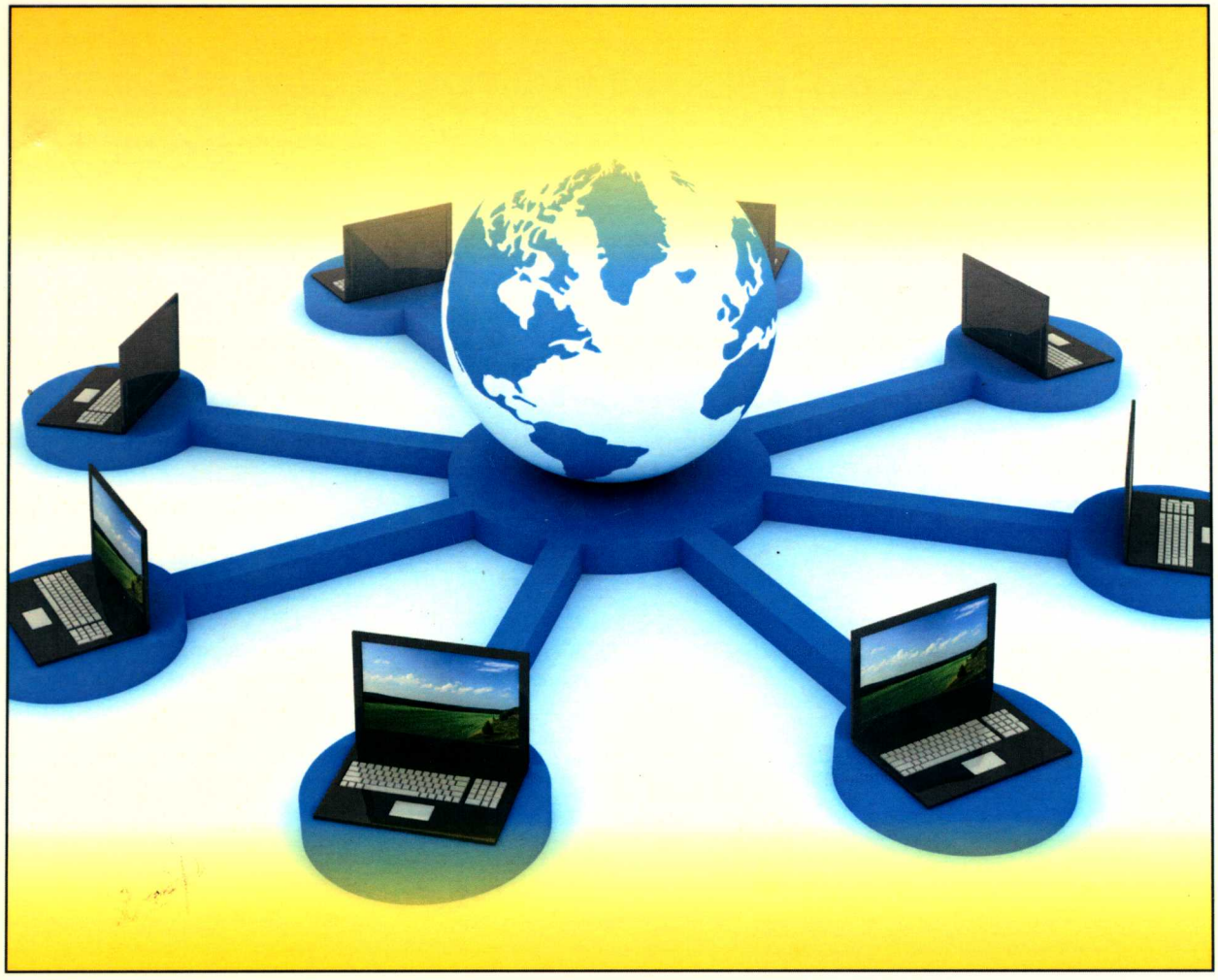
Enterprise Information Systems Design, Implementation and Management

Organizational Applications



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Enterprise Information Systems Design, Implementation and Management:
Organizational Applications

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BUSINESS SCIENCE Reference

BUSINESS SCIENCE REFERENCE

Hershey · New York

Director of Editorial Content: Kristin Klinger
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Publishing Assistant: Travis Gundrum
Typesetter: Casey Conapitski
Production Editor: Jamie Snavely
Cover Design: Lisa Tosheff
Printed at: Lightning Source

Published in the United States of America by
Business Science Reference (an imprint of IGI Global)
701 E. Chocolate Avenue
Hershey PA 17033
Tel: 717-533-8845
Fax: 717-533-8661
E-mail: cust@igi-global.com
Web site: http://www.igi-global.com/reference

Library of Congress Cataloging-in-Publication Data

Enterprise information systems design, implementation and management : organizational applications / Maria Manuela Cruz-Cunha and Joao Varajao, editors.
p. cm.
Includes bibliographical references and index.
Summary: "This book investigates the creation and implementation of enterprise information systems, covering a wide array of topics such as flow-shop scheduling, information systems outsourcing, ERP systems utilization, Dietz transaction methodology, and advanced planning systems"--Provided by publisher.
ISBN 978-1-61692-020-3 (hardcover) -- ISBN 978-1-61692-021-0 (ebook) 1. Management information systems. 2. Information technology--Management. I. Cruz-Cunha, Maria Manuela, 1964- II. Varajão, João, 1972- III. Title.

HD30.213.E583 2010
658.4'038011--dc22

2010006618

British Cataloguing in Publication Data
A Cataloguing in Publication record for this book is available from the British Library.

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Preface

ABOUT THE SUBJECT

"*An enterprise system has the Herculean task of seamlessly supporting and integrating a full range of business processes by uniting functional islands and making their data visible across the organization in real time.*"[1]

For the last decades, it is being recognized that that enterprise computer-based solutions no longer consist 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 other, transposing the functional/technological islands to the so-called 'islands of information'. Solutions must be 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. But, 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 are at same time responsible by tremendous gains in some companies and tremendous losses in others. So, their adoption should be carefully planned and managed.

Responsiveness, flexibility, agility and business alignment are requirements of competitiveness that enterprises search for. And 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 the enhanced versions of 31 papers selected from the international conference CENTERIS – Conference on ENTERprise Information Systems held in Ofir, Portugal in October 2009. These selected contributions discuss the main issues, challenges, opportunities and developments related with 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.

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In the second chapter, the authors demonstrate, by using a case study, how it is possible to achieve the alignment between business and Information Technology (IT). They describe several phases of project development, from planning strategy, enterprise architecture, development of businesses supporting tools and keeping dynamic alignment between the business and the IT. The authors also propose a framework, framed under an enterprise architecture that guarantees a high level of response to the applications development or configuration as improves its alignment to business by solving some limitations of traditional software development solutions namely: difficulty in gathering clients requirements, which should be supported by the applications; difficulty to connect the organisation processes used to answer the client, which must also be integrated in the applications and the difficulty to develop the applications that can follow the business cycle. To test the approach, this was applied to a real case study consisting in the configuration of an application that manages the relationship with the clients.

The third chapter aims to present a proposal for a model that supports organizational governance through the alignment of business with Information Technology - IT. Firstly, it was observed that there are some paradigms which limit the use of enterprise architectures and hinder governance functions. Secondly, it focuses on the IT unit, where IT systems and subsystems are interrelated and the performance levels of the organization are aggregated, creating a macro-structure system capable of supporting corporate governance and IT. Finally, the IBM's Component Business Model - CBM® was applied to represent relationships of IT unit with the organization, through decomposing the organization into business components that supply and demand services to facilitate their governance and management.

Section 2
Business Process Modelling

The second section of the book includes four chapters devoted to enterprise/business modelling and supporting representation methodologies and technologies.

Ontologies, being "an explicit specification of a conceptualization", have tried to capture knowledge within the aspects of concepts (used to represent a domain entity), relations (representing an interaction between the domain concepts), functions (a special case of relations), axioms (which represent true statements) and instances (used to represent domain elements). The Enterprise Ontology can be seen as a collection of terms and definitions relevant to business enterprises that can be used as a basis for decision making. The fourth chapter presents a new concept of Enterprise Ontology, proposed by Dietz, and defined as the realization and implementation essence of an enterprise proposing a distinction world ontology and system ontology. The traditional way to model processes, like the BPMN, draw events, activities and data in a sequence of symbols that may not represent completely all the actions in presence and, above all, does not detect and identify consistency between actors and actions. However, BPMN diagrams can also be used to represent various actions and models proposed by Dietz as the transaction, "Process" and "State" diagrams. Both ways of representing have advantages and disadvantages and can be used, either isolated or together to give a deep representation of reality.

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Security Management Services Based on Authentication Roaming between Different Certificate Authorities 72
Masakazu Ohashi, Chuo University, Japan
Mayumi Hori, Hakuoh University, Japan

In chapter five, the authors propose to incorporate the authentication roaming technology with existing social infrastructures from the perspective of users instead of that of service providers. By conducting experiments in the Business to Consumer (B to C) environment, the authors' research demonstrated and confirmed the effectiveness of the authentication roaming technology to realize a safe and convenient network society. This technology contributes to the construction of a citizen-centric, reassuring system especially for mobile and transportation by proposing a cooperation system for the mobile information services based on the XML Web Services technology. The aim is to enable mobile users to access a variety of essential information for maintaining safety and comfortable management of networks and enable them to make an educated decision regarding the treatment they may receive in case of trouble.

Chapter 6
Perceived Moderating Ability of Relational Interaction vs. Reciprocal Investments in Pursuing Exploitation vs. Exploration in RFID Supply Chains 85
Rebecca Angeles, University of New Brunswick, Canada

Rebecca Angeles looks at the perceived ability of two variables, reciprocal investments and relational interaction, to moderate the relationship between the independent variables, components of IT infrastructure integration and supply chain process integration, and two dependent radio frequency identification (RFID) system variables, exploitation and exploration. Using the moderated regression procedure, the study presented seeks to test the ability of both reciprocal investments and relational interaction to moderate the relationship between the independent and dependent variables using data gathered from 87 firms using an online survey. Results show that relational interaction is an effective moderator between the dependent variable, exploitation, and the following independent variables: data consistency, cross-functional application integration, financial flow integration, physical flow integra-

tion, and information flow integration. Neither reciprocal investments nor relational interaction effectively moderated the independent variables, IT infrastructure integration and supply chain process integration and the other dependent variable, exploration.

In the current context of globalization and with the increasing need to automate the work, modelling business processes has become essential. Modelling helps not only to understand processes but also to anticipate changes and build a flexible structure. In chapter seven, the authors adopt from software engineering the concept of reverse-engineering. For organizations with unmodelled BP, reverse-engineering is a way to provide process models ready for improvement or usage in other stages of the business process lifecycle. This chapter proposes a method for business process reverse-engineering fulfilling these requirements. It consists of a multi-view metamodel, covering all perspectives of a process, and a detailed approach to guide the business process modeller. The approach was tested on a web application from the French academic Information Systems.

Section 3
Organizational Knowledge

Managing and exploiting organizational knowledge regarding the needs to support business decision are concerns addressed in the five chapters of Section 3.

Chapter 8 proposes concepts for designing and developing decision support systems that acknowledge, explore and exploit the fact that conversations among people are the top-level "supporting device" for decision-making. The goal is to design systems that support, configure and induce increasingly effective and efficient decision-making conversations. The proposal sees the sum total of decisions being taken in an organization as the global decision process of the organization. The global decision process of the organization is structured in decision processes corresponding to organizational domains. Each organizational domain has associated a unit decision process. If the organizational domain contains organizational sub-domains, then its compound decision process is the union and composition of its unit decision process and the unit decision processes of its sub-domains. The proposal can be seen as extending, enlarging and integrating group decision support systems into an organization-wide system. The resulting organizational decision support system, by its conversational nature, may become the kernel decision support system of an organization or enterprise. In this way, the global decision process of the organization may be made explicit and monitored.

In chapter nine, the authors review a model of the conservation of information (COI) applied to organizations. Following this review, the chapter includes a brief review of the mathematics in support of this model and its implications for the development of theory. Then the model is applied to a review of the status of telemedicine and e-health in Georgia, which the authors had begun to study last year. After the reviews, they discuss future steps and draw conclusions about the model and its benefit to organizational attention and decision-making.

A firm's capability to transfer its existing knowledge to various stakeholders and translate knowledge into action determines its success in today's volatile global business environment. However, while many firms systematically manage data and information, managing knowledge remains a controversial issue. One of the reasons for this is inconclusiveness about what knowledge is and whether it can be managed. In order to more precisely define knowledge and its management, the author proposes a knowledge warehouse conceptual model (KW-CM) for practically and systematically assimilating of knowledge within organizational business processes. This conceptual model integrates aspects of knowledge that encompass business processes, stakeholders and other organizational information systems within the existing data warehouse (DW) conceptual model. In addition, the chapter presents a formal architecture, definitions and guidelines that describe the KW components and processes for leveraging data and information into knowledge. The proposed KW-CM is demonstrated with an example of a DW which handles information regarding customer product usage.

Over the years many organizations have invested in Business Intelligence (BI) systems. While BI-software enables organization-wide decision support, problems are encountered in the "fit" between

systems' provision and changing requirements of a growing amount of BI (end-) users. Chapter eleven aims at investigating the factors that influence the "fit" between Business Intelligence (BI) end-users, tasks and technologies (BI-FIT). Based on an extensive literature study on the elements of BI-FIT, in this research the BI-FIT Framework is developed that shows the most relevant factors and the inter-relationships between BI end-users, tasks and technologies. The framework can be used to help organizations to identify and fulfil the needs of BI end-users, thereby improving adoption and increasing satisfaction of the BI end-user base.

Chapter twelve aims to present specific features concerning information management in the Continuous Improvement area of the Americas Long Carbon sector in ArcelorMittal. The aim is also to learn what the informational resources related to continuous improvement area are and describe how the process of managing information actually happens. The study was based on theoretical models of Davenport (1998) and Choo (2006) and tried to understand how the efficient management of information can aid in decision making at organizations. The result of the documentary research revealed the existence of initiatives throughout the different units in the Americas and also revealed corporate tools for information management. The field research results indicate the need for a structured and formalized model of information management that responds to users in adequate time, while alert to the need for policies that encourage the sharing of information related to the improvement of processes, products and services.

Section 4
EIS Design, Application, Implementation and Impact

The five chapters of Section 4 address the tremendous challenge associated to the design and implementation of Enterprise Information Systems in organizations.

The new market trends are forcing companies to constantly reorganize their business processes so that they can react quickly to the new economic challenges. Although not always, enterprise information systems provide an appropriate response to these situations due to several reasons, such as technology failure, lack of adaptable configuration tools or even the financial investment required, which makes it unaffordable to companies. Chapter thirteen presents a functional model for ERP systems (called FME) that would guarantee a baseline structure to build solutions which would provide a complete configuration and, therefore, a timely reaction to market fluctuations. This model also summarizes some of the most used functionalities of the available ERP systems.