Preface

The Internet and associated technologies are playing an ever-increasing role in the lives of businesses and academic organizations. As these technologies grow in use, organizations are striving to improve their use within the organization. Intelligent Support Systems play an important role in developing competitive technologies in the Internet world. Additionally, knowledge capture, use and sharing are extremely timely issues for businesses as they deal with virtual communities and virtual organizations. In order to get the most from these emerging technologies and understand how to best manage knowledge, academics, researchers and practitioners must have access to latest information describing the most current research and best practices in the use and development of these technologies. This book provides just that. The chapters in this timely new book are a compilation of research on how to develop and implement information systems. Additionally, the authors tackle the difficult topics of defining virtual organizations and utilizing them to gain advantage. Furthermore, the chapters describe the optimal knowledge management techniques and practices. The authors represent a wide variety of organizational and cultural backgrounds and share their insights in the following chapters.

Chapter 1, “Intelligent Agents and the World Wide Web: Fact or Fiction” by Sudha Ram of University of Arizona (USA), proposes that collaborative multi-agent systems are a very promising approach for managing information overload. The author indicates that it will be necessary to move beyond the current Web interaction paradigm of direct manipulation to indirect management of the Web. The author describes how multi-agent systems have the capabilities to make the transition from the current paradigm more smoothly.

Chapter 2, “Comparing U.S. and Japanese Companies on Competitive Intelligence, IS Support and Business Change” by Tor Guimaraes of Tennessee Technological University (USA), Osamu Sato of Tokyo Keizai University and Kideaki Kitanaka of Takushoku University (Japan), reports on the findings of a field test of how effectively U.S. and Japanese business organizations are identifying strategic problems and opportunities, and how effectively they implement business changes and use IS technology to do so.

Chapter 3, “Knowledge Assets in the Global Economy: Assessment of National Intellectual Capital” by Yogesh Malhotra of Syracuse University (USA), discusses the developing need for assessing knowledge capital at the national economic level. The chapter further reviews a national case study of how intellectual capital assessment was undertaken, suggests implications of such assessment methods, and offers areas needing advancement.
Chapter 4, “Knowledge-Bases Systems as Database Design Tools: A Comparative Study” by W. Amber Lo of Millersville University and Knowledge-Based Systems, Inc. and Joobin Choobinch of Texas A & M University (USA), surveys tools used in prototype database design and compares these tools with respect to four aspects: database design support, tool flexibility, expert system features and implementation characteristics. The results of the study indicate that, in general, there is a lack of support for all phases of design, for group database design, for graphic support, for empirical verification of the tools’ effectiveness, for long-term maintenance of the tools, and for specialized knowledge representation.

Chapter 5, “Policy Agents to Support CSCW in the Case of Hospital Scheduling” by Hans Czap of University of Trier, demonstrates the concept of a policy agent used in hospital scheduling. This agent is able to represent individual preferences and goals, and thus may act as a personal assistant to support solving standard problems like operating room scheduling. The chapter demonstrates the representation of preferences and goals in order to make adaptations to changes in the environment and shows how the interaction works.

Chapter 6, “Building an Agent: By Example” by Paul Darbyshire of Victoria University of Technology (Australia), is written in response to the growing need of people who are interested in the emerging Web-based technologies and desire to build their own agents. This chapter demonstrates the problems of building an agent using the example of an email helper.

Chapter 7, “Intelligent Agents in a Trust Environment” by Rahul Singh of University of North Carolina, Greensboro, and Mark Gill of Arizona State University (USA), addresses the need for intelligent agents to include a mechanism for handling trust. The chapter then discusses how the agents can be used as intermediaries in electronic commerce. This work responds to the growing use of the Internet for commerce and banking activities and acknowledges the important role trust plays in online transactions.

Chapter 8, “A Case Study on Forecasting of Scrapped Products through Simulation and Fuzzy Reasoning” by Jorge Marx-Gómez and Claus Raustenstrauch of Otto-von Guericke University, Magdeburg (Germany), suggests a method to forecast the timing and quantities of scrapped products. The method combines a simulation approach with fuzzy reasoning. The prediction model presented is based on life-cycle data, such as sales figures and failures and impact factors such as lifetime wear and tear. The chapter presents the results of an empirical study wherein the model was to use life-cycle data of photocopiers to forecast the returns.

Chapter 9, “Newshound Revisited: The Intelligent Agents That Retrieves News Postings” by Jeffrey Goldberg of Analytic Services (ANSER) and Shijun Shen of Tygart Technology (USA), reports on the authors’ experiences implementing an Intelligent Internet Agent, Newshound. Newshound can be trained to recognize a desired topic and scan Usenet newsgroups looking for new examples of that topic. The chapter also introduces two additional intelligent agents: Chathound and Webhound. Finally, the authors discuss the inter-agent communication layer, the facilitator for cooperation between ANSER’s intelligent agents.
Chapter 10, “Investigation into Factors That Influence the use of Web in Knowledge-Intensive Environments” by Yong Jin Kim and H. Raghav Rao of SUNY, Buffalo and Abhijit Chaudhury of Bryant College (USA), develops a set of hypotheses regarding the relationship between the Technology Acceptance Model (TAM) constructs and external variables. The study reported here gives insights regarding the questions of when to implement a new technology and who is an eager user of new technologies to learn. The chapter also is one of the first papers to use TAM in the context of knowledge-management systems.

Chapter 11, “A Study of Web Users’ Waiting Time” by Fiona Fui-Hoon Nah of University of Nebraska—Lincoln (USA), evaluates Nielsen’s hypothesis of 15 seconds as the maximum waiting time of Web users and provides approximate distributions of waiting time for Web users. The chapter discusses the literature on waiting time and reports on a study conducted by the author. The chapter recommends that researchers and practitioners understand users’ waiting time behavior, propose and evaluate techniques to reduce users’ perception of waiting time, and recommend a trade-off between aestheticism of Web page design and download/access time.

Chapter 12, “Stickiness: Implications for Web-Based Customer Loyalty Efforts” by Supawadee Ingsriswang and Guisseppi Forgionne of University of Maryland (USA), applies the concept of customer loyalty in traditional businesses to digital products or services in order to describe a conceptual model of online stickiness. Using the conceptual model, the authors identify the measures that determine the stickiness of the Website and describe the applications of the stickiness value.

Chapter 13, “‘No’ is Not ‘Not’ Comparisons of Negation in SQL and Negation in Logic Programming” by James Jones of University of Arkansas at Little Rock (USA), focuses on the expressive power of weak negation in logic programming. Weak negation is not presently well understood and is easily confused with negation in SQL. The author describes weak negation and, to a lesser extent, discusses strong negation in logic programming.

Chapter 14, “Knowledge Management and New Organization Forms: A Framework for Business Model Innovation” by Yogesh Malhotra of Syracuse University, proposes a sense-making model of knowledge management for new business environments. The chapter then applies this framework in order to facilitate business model innovations necessary for sustainable competitive advantage in the new business environment, characterized by dynamic, discontinuous and radical pace of change.

Chapter 15, “Implementing Virtual Organizations in Business Networks: A Method of Inter-Business Networking” by Roland Klueber, Rainer Alt and Hubert Österle of University of St. Gallen (Switzerland), describes a method that addresses the need for a holistic view and methods that support implementation of business networks. The method described includes the dimensions of strategy, process and IS required for establishing and managing business networks. The authors describe
a project implementing a business-networking solution for electronic procurement. The scenario described shows how a structured approach helps to identify scenarios, aids in implementation, and applies previously created and newly created knowledge.

Chapter 16, “Managing Knowledge for Strategic Advantage in Virtual Organization” by Janice Burn and Colin Ash of Edith Cowan University (Australia), looks at the virtual organization and suggests that the basic concepts of virtual management are so poorly understood that there are likely to be very few such organizations gaining strategic advantage from their virtuality. The authors provide clear definitions of virtual organizations and different models of virtuality that can exist. The chapter presents six virtual models with a dynamic framework of change and offers specific examples applying the models to organizations.

Chapter 17, “Virtual Organizations That Cooperate and Compete: Managing the Risks of Knowledge Exchange” by Claudia Loebbecke of Copenhagen Business School (Denmark) and Paul van Fenema of Erasmus University (The Netherlands), explores the art of controlling knowledge flows in cooperative relationships. The chapter conceptualizes types of knowledge flows and dependencies, resulting in four configurations. The authors propose control strategies that allow companies engaged in cooperation to anticipate deviant trajectories and define adequate responses.

Chapter 18, “Becoming Knowledge Powered: Planning the Transformation” by Dave Pollard of Ernst & Young (Canada), identifies possible strategies, leading practices and pitfalls to avoid in each phase of his award-winning process to transform the company from a knowledge-hoarding to knowledge-sharing enterprise. The chapter describes the challenges involved in identifying and measuring intellectual capital, encouraging knowledge creation, capturing human knowledge in structural form, and enabling virtual workgroup collaboration.

The role of intelligent agents in optimizing Website performance and development and in enhancing security of Websites, as well as knowledge management’s place in the virtual organization and in establishing and maintaining competitive business advantage are just some of the timely topics contained in this important new book. The information contained herein will be useful to academics as they attempt to understand the theory of intelligent agent systems, to researchers as they attempt to evaluate the efficacy of these systems and understand the intricacies of the emerging field of virtual organizations, and to business people and practitioners as they strive to implement the most current, best practices in knowledge management, intelligent systems and virtual organizations. This book is a “must have” for all those who want to understand how to achieve and maintain competitive advantage in this increasingly virtual world.

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