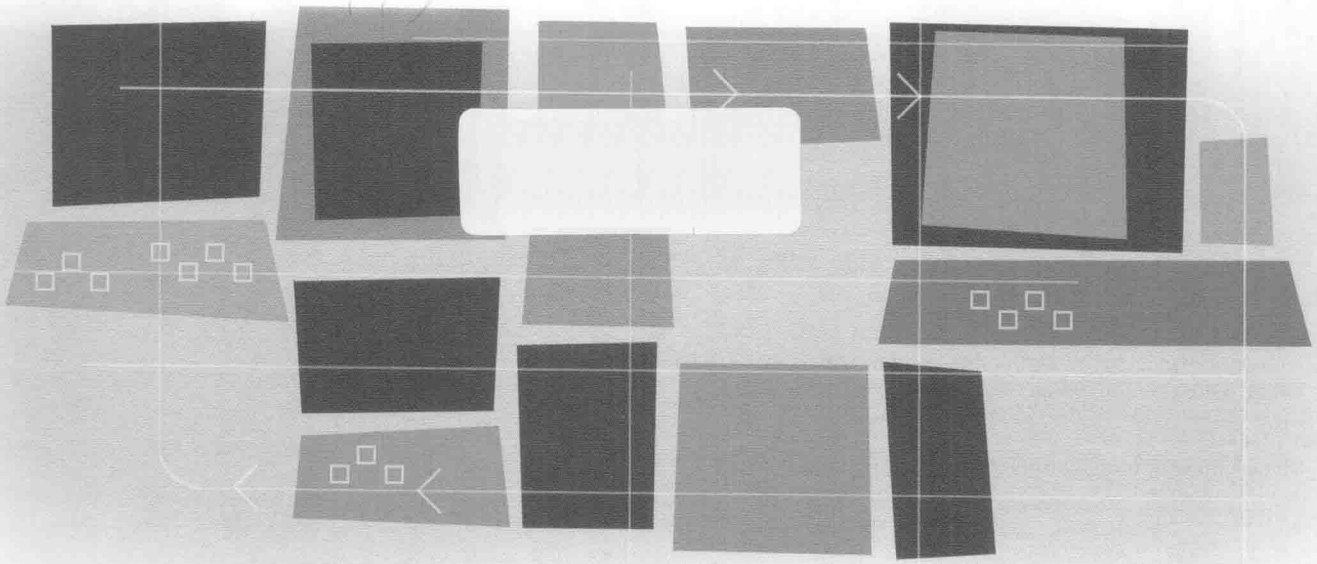
KENNETH C. LAUDON • JANE P. LAUDON

ESSENTIALS OF MANAGEMENT INFORMATION SYSTEMS

Managing the Digital Firm | SIXTH EDITION



Essentials of Management Information Systems

Managing the Digital Firm

SIXTH EDITION

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New York University

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Azimuth Information Systems

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FOR

Erica and Elisabeth

About the Authors

Kenneth C. Laudon is a Professor of Information Systems at New York University's Stern School of Business. He holds a B.A. in Economics from Stanford and a Ph.D. from Columbia University. He has authored twelve books dealing with electronic commerce, information systems, organizations, and society. Professor Laudon has also written over forty articles concerned with the social, organizational, and management impacts of information systems, privacy, ethics, and multimedia technology.

Professor Laudon's current research is on the planning and management of large-scale information systems and multimedia information technology. He has received grants from the National Science Foundation to study the evolution of national information systems at the Social Security Administration, the IRS, and the FBI. A part of this research is concerned with computer-related organizational and occupational changes in large organizations, changes in management ideology, changes in public policy, and understanding productivity change in the knowledge sector.

Ken Laudon has testified as an expert before the United States Congress. He has been a researcher and consultant to the Office of Technology Assessment (United States Congress) and to the Office of the President, several executive branch agencies, and Congressional Committees. Professor Laudon also acts as an in-house educator for several consulting firms and as a consultant on systems planning and strategy to several Fortune 500 firms. Ken has worked with the Concours Group to provide advice to firms developing enterprise systems.

At NYU's Stern School of Business, Professor Laudon teaches courses on Managing the Digital Firm, Information Technology and Corporate Strategy, and Electronic Commerce and Digital Markets. Ken Laudon's hobby is sailing and he is a veteran Newport to Bermuda Race captain.

Jane Price Laudon is a management consultant in the information systems area and the author of seven books. Her special interests include systems analysis, data management, MIS auditing, software evaluation, and teaching business professionals how to design and use information systems.

Jane received her Ph.D. from Columbia University, her M.A. from Harvard University, and her B.A. from Barnard College. She has taught at Columbia University and the New York University Graduate School of Business. She maintains a lifelong interest in Oriental languages and civilizations.

The Laudons have two daughters, Erica and Elisabeth.

Essentials of Management Information Systems: Managing the Digital Firm reflects a deep understanding of MIS research and teaching as well as practical experience designing and building real-world systems.

Essentials of Management Information Systems: Managing the Digital Firm, Sixth Edition, is based on the premise that information systems knowledge is essential for creating competitive firms, managing global corporations, adding business value, and providing useful products and services to customers. This book provides an introduction to management information systems (MIS) that undergraduate and MBA students will find vital to their professional success.

Digital Integration of the Enterprise: The Emerging Digital Firm

The growth of the Internet, the globalization of trade, and the rise of information economies have recast the role of information systems in business and management. Internet technology is supplying the foundation for new business models, new business processes, and new ways of distributing knowledge.

Companies are relying on Internet and networking technology to conduct more of their work electronically, seamlessly linking factories, offices, and sales forces around the globe. Leading-edge firms, such as Cisco Systems, Dell Computer, and Procter & Gamble, are extending these networks to suppliers, customers, and other groups outside the organization so the firms can react instantly to customer demands and market shifts. Cisco Systems corporate managers can use information systems to "virtually close" their books at any time, generating consolidated financial statements based on up-to-the-minute figures on orders, discounts, revenue, product margins, and staffing expenses. Executives constantly can analyze performance at all levels of the organization. This digital integration both within the firm and without, from the warehouse to the executive suite, from suppliers to customers is changing how we organize and manage a business firm. Ultimately, these changes are leading to fully digital firms where all internal business processes and relationships with customers and suppliers are digitally enabled. In digital firms, information to support business decisions is available any time and anywhere in the organization. Accordingly, we have subtitled this text *Managing the Digital Firm.*

New to the Sixth Edition

This edition highlights the major enterprise applications and technologies that are being used for achieving digital integration and enhancing organizational performance. It also calls attention to the need to demonstrate the business value of information systems in the organization and provides students with additional projects for hands-on problem solving. The following features and content reflect this new direction.

New Chapter on Enterprise Applications for Digital Integration

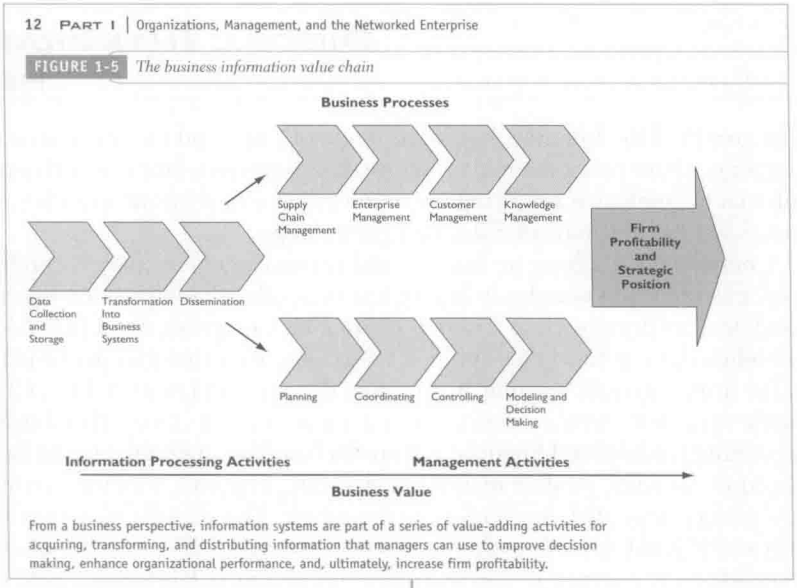
A new full chapter (Chapter 10) is dedicated to supply chain management, customer relationship management, enterprise systems, and new system platforms for delivering enterprise-wide services. It explains how these applications work, how they provide value for the business, and the challenges of building and using them successfully.

NEW CHAPTER ON KNOWLEDGE MANAGEMENT SYSTEMS

Knowledge management systems are another core enterprise application and one of the fastest-growing software applications in business today. A new chapter (Chapter 11) provides in-depth coverage of leading-edge, enterprise-wide knowledge management systems for capturing, distributing, and applying organizational knowledge. The chapter shows how companies are using these enterprise-wide knowledge management systems along with knowledge work systems and intelligent techniques to improve organizational performance and management decision making.

NEW FOCUS ON THE BUSINESS VALUE OF INFORMATION SYSTEMS

The text puts new emphasis on the importance of information systems for creating value for the firm. New material in Chapter 1 alerts students to the need to demonstrate how information systems contribute to better management decisions, more efficient business processes, and higher firm profitability. Chapter 14, "Understanding the Business Value of Systems and Managing Change," includes the most up-to-date findings in the MIS field on how to measure the business value of information systems. Throughout the text, chapter contents and case studies call attention to organizational and managerial factors that help the firm benefit from its information technology investments.



The business information value chain illustrates how information systems create value for the firm by helping managers make better decisions and by improving the execution of business processes.

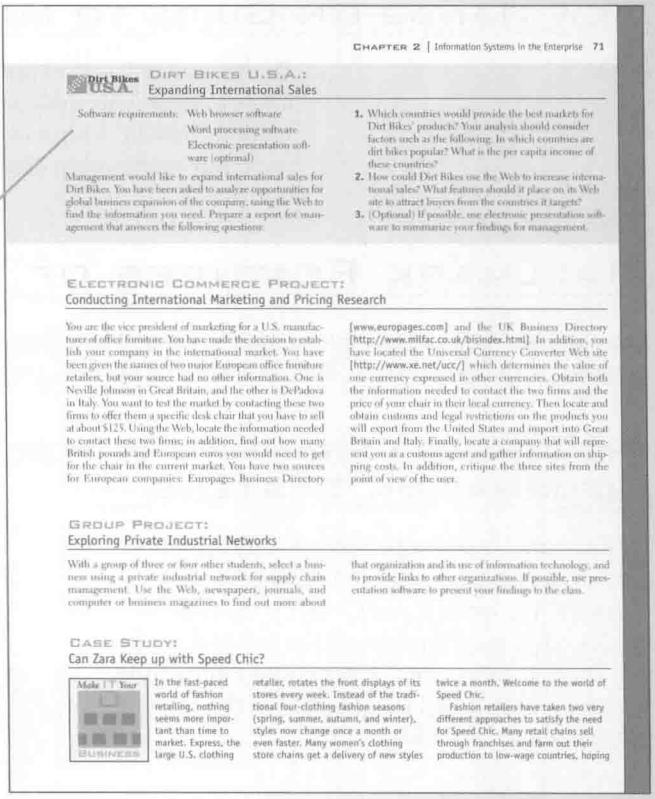
NEW RUNNING CASE FOR REAL-WORLD PROBLEM SOLVING

A running case at the end of each chapter provides students with opportunities for problem solving in an ongoing real-world business scenario. Students learn about a simulated company called Dirt Bikes U.S.A. where they can apply their information systems knowledge to problems facing this growing company. Examples of running case projects include the following:

- Analyzing Dirt Bikes' supply chain
- Identifying opportunities for knowledge management at Dirt Bikes
- Analyzing the return on investment for a new employee training system for Dirt Bikes
- Performing a competitive analysis for Dirt Bikes
- Redesigning Dirt Bikes' database for customer relationship management

Each chapter contains a project requiring students to use application software, Web tools, or analytical skills to solve a problem that Dirt Bikes U.S.A. has encountered. Each assignment lists the software tools that students will need to use to solve the problem and the questions students need to answer.

The complete running case project and any required files are on the Laudon Web site and the Laudon Multimedia CD-ROM.



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Dirt Bikes U.S.A.

DIRT BIKES U.S.A.:
Expanding International Sales

Software requirements: Web browser software
Word processing software
Electronic presentation software (optional)

Management would like to expand international sales for Dirt Bikes. You have been asked to analyze opportunities for global business expansion of the company, using the Web to find the information you need. Prepare a report for management that answers the following questions:

1. Which countries would provide the best markets for Dirt Bikes' products? Your analysis should consider factors such as the following. In which countries are dirt bikes popular? What is the per capita income of these countries?
2. How could Dirt Bikes use the Web to increase international sales? What features should it place on its Web site to attract buyers from the countries it targets?
3. (Optional) If possible, use electronic presentation software to summarize your findings for management.

ELECTRONIC COMMERCE PROJECT:
Conducting International Marketing and Pricing Research

You are the vice president of marketing for a U.S. manufacturer of office furniture. You have made the decision to establish your company in the international market. You have been given the names of two major European office furniture retailers, but your source had no other information. One is Neville Johnson in Great Britain, and the other is DePadova in Italy. You want to test the market by contacting these two firms to offer them a specific desk chair that you have to sell at about $125. Using the Web, locate the information needed to contact these two firms; in addition, find out how many British pounds and European euros you would need to get for the chair in the current market. You have two sources for European companies: Europages Business Directory [www.europages.com] and the UK Business Directory [http://www.mitfac.co.uk/bisindex.html]. In addition, you have located the Universal Currency Converter Web site [http://www.xe.net/ucc/] which determines the value of one currency expressed in other currencies. Obtain both the information needed to contact the two firms and the price of your chair in their local currency. Then locate and obtain customs and legal restrictions on the products you will export from the United States and import into Great Britain and Italy. Finally, locate a company that will represent you as a customs agent and gather information on shipping costs. In addition, critique the three sites from the point of view of the user.

GROUP PROJECT:
Exploring Private Industrial Networks

With a group of three or four other students, select a business using a private industrial network for supply chain management. Use the Web, newspapers, journals, and computer or business magazines to find out more about that organization and its use of information technology, and to provide links to other organizations. If possible, use presentation software to present your findings to the class.

CASE STUDY:
Can Zara Keep up with Speed Chic?

Make IT Your Business

In the fast-paced world of fashion retailing, nothing seems more important than time to market. Express, the large U.S. clothing retailer, rotates the front displays of its stores every week. Instead of the traditional four-clothing fashion seasons (spring, summer, autumn, and winter), styles now change once a month or even faster. Many women's clothing store chains get a delivery of new styles twice a month. Welcome to the world of Speed Chic.

Fashion retailers have taken two very different approaches to satisfy the need for Speed Chic. Many retail chains sell through franchises and farm out their production to low-wage countries, hoping

UPDATED CHAPTER ON TELECOMMUNICATIONS, NETWORKS, AND WIRELESS COMPUTING

We have extensively revised Chapter 8, "Telecommunications, Networks, and Wireless Computing," to focus on the most important features of contemporary telecommunications systems and on wireless networking. The chapter provides a detailed description of Wi-Fi wireless networking technology and provides case studies and in-text discussions of wireless networking applications. The discussion of connectivity that was formerly in Chapter 9 has been integrated into this chapter.

NEW LEADING-EDGE TOPICS

In addition to new coverage of enterprise applications and the business value of systems that we have already described, this edition includes up-to-date treatment of the following topics:

- Wi-Fi wireless networks (Chapter 8)
- Wi-Fi security issues (Chapter 15)
- Computer forensics (Chapter 5)
- Peer-to-peer and grid computing and the utility computing model (Chapter 6)
- Web services and enterprise application integration (EAI) software (Chapters 6 and 13)
- Next-generation Internet and the Semantic Web (Chapter 9)
- Business process management (Chapter 13)
- Search-based advertising (Chapter 9)
- Object-oriented modeling (Chapter 13) and Unified Modeling Language (UML) (Chapter 15)

NEW HANDS-ON GUIDE TO MIS

We have added a new appendix that provides students with hands-on knowledge they can apply in their MIS student projects and in the workplace. The Hands-On Guide includes helpful "how-to" instructions on how to design and normalize a relational database, how to use entity-relationship diagrams, and how to write SQL queries.

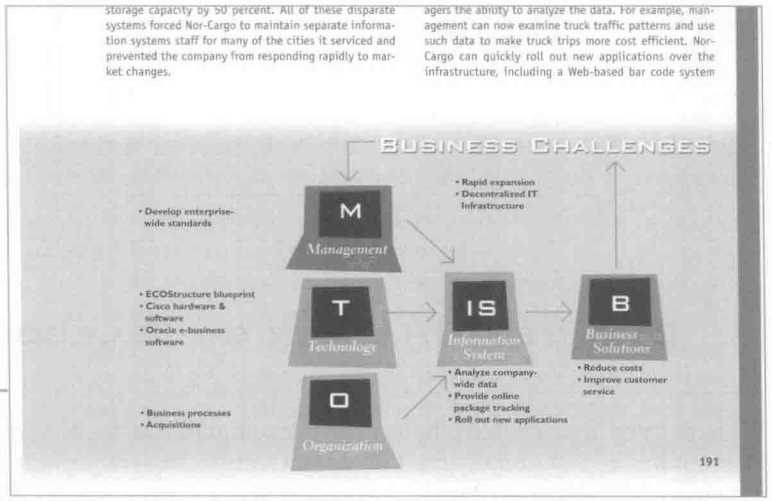
HALLMARK FEATURES OF THIS TEXT

Essentials of Management Information Systems: Managing the Digital Firm, Sixth Edition, has many unique features designed to create an active, dynamic learning environment.

INTEGRATED FRAMEWORK FOR DESCRIBING AND ANALYZING INFORMATION SYSTEMS

An integrated framework portrays information systems as being composed of management, organization, and technology elements. This framework is used throughout the text to describe and analyze information systems and information system problems, and is reinforced in the student projects and case studies.

A special diagram accompanying each chapter-opening case graphically illustrates how management, organization, and technology elements work together to create an information system solution to the business challenges discussed in the case.



REAL-WORLD EXAMPLES FROM DOMESTIC AND INTERNATIONAL ORGANIZATIONS

Real-world examples drawn from business and public organizations are used throughout the text to illustrate text concepts. More than 100 companies in the United States and nearly 100 organizations in Canada, Europe, Australia, Asia, Latin America, and the Middle East are discussed in long and short case studies and within the body of each chapter.

movement of all of its products from raw materials to customer purchase. P&G uses data collected from point-of-sale terminals to trigger shipments to retailers of items that customers have purchased and that the stores need to restock. Electronic links to suppliers enable P&G to order materials from its own suppliers when its inventories are low. The system helps P&G reduce its inventory by allowing the company to produce products as retailers demand them. P&G is implementing an Ultimate Supply System that uses Internet technology to link retailers and suppliers to its private corporate intranet. By having retailers and suppliers integrate their systems with P&G's systems, P&G hopes to reduce product cycle time by half, inventory costs by $4.5 billion, and systems costs by $5 billion. The case study concluding Chapter 11 discusses Procter & Gamble in more detail.

Similarly, Safeway U.K. has electronic links to suppliers with whom it can share information about forecasts, shelf space, and inventory in its supermarkets; the suppliers can track demand for their products, adjust production, and modify the timing and size of deliveries. The suppliers can download Safeway's information into their enterprise systems or production planning systems. Suppliers send Safeway information about product availability, production capacity, and inventory levels.

Although private industrial networks are primarily used today to coordinate the activities of a single firm and its business partners, some can encompass an entire industry, coordinating the business processes for the key players in that industry, including suppliers, transporters, production firms, distributors, and retailers. For example, the OASIS system Web sites link U.S. electrical utility companies in regional power pool groups to sell their surplus power to wholesalers and to locate the transmission facilities for moving the power between its source and the customers.

A few industrial networks have been built to support collaboration among firms in multiple industries. General Mills, Kellogg, Land O'Lakes, and Monsanto now use a shared

Chapter concepts are illustrated with examples from real-world companies.

VARIETY OF CASE STUDIES

This text provides a variety of case studies to help students synthesize chapter concepts and apply their new knowledge to real-world problems and scenarios. Every chapter contains a short chapter-opening case, two short Window on cases, and a long chapter-ending case. At least one case study per chapter is based on a non-U.S. firm, and often there are more. Concluding the text are three long International Case Studies written by leading MIS scholars.

Each chapter contains two Window on boxes (Window on Management, Window on Organizations, or Window on Technology) that present real-world examples illustrating the management, organization, and technology issues in the chapter.

384 PART III | Organizational and Management Support Systems for the Digital Firm

WINDOW ON TECHNOLOGY

DaimlerChrysler Learns to Manage Its Digital Assets

Make IT Your BUSINESS

It is difficult enough for companies to manage all the materials they use to market a single brand. When the company is marketing several brands nationwide, the difficulties are multiplied. DaimlerChrysler, with global headquarters in Germany, found itself facing a major challenge in trying to manage all of the materials for its Chrysler Group serving the United States to maintain a consistent image.

Chrysler Group has tens of thousands of digital assets, including images that it uses in its marketing channels and dealer network. These assets could be found both inside and outside the organization, but they were so decentralized that users were often unable to find what they needed. Chrysler works with a number of advertising agencies and had difficulty maintaining an accurate catalog of all the different images and information that was either generated or used by these agencies. If someone needed a front view of a Jeep Grand Cherokee that was high quality enough to use in print, for example, the person would not necessarily know whether such an image existed or if there was a photo that could be resized. Many times Chrysler would shoot another photo rather than search through different vendors and photography sources. Duplicating an asset that had already been created and allowing various internal departments and agencies to use different formats for these assets added unnecessary costs.

To better manage these digital assets, DaimlerChrysler created a system known as the Accelerated Digital Asset Management System (ADAM) based on Artesia Technologies' TEAMS digital asset management software. TEAMS has capabilities for capturing, managing, and reusing video, audio, images, graphics, and text. Because TEAMS uses open standards technology, it is relatively easy to synchronize with other enterprise software.

Chrysler started by consolidating all of the information on warranties, incentives, and autos/configuration information for building vehicles on its Web site, and storing it in a common database. The information was not always in file formats that could be used by Web technologies, so Chrysler had to translate the information into a common medium that could be used by those technologies. The company then incorporated graphics, photographs, and video into the database. ADAM combines the graphic information with Chrysler's other digital information containing brand content. Artesia's tools provide capabilities for adding video, graphical, and photographic information into the database, assigning metatags (special coding to identify files, their contents, and how they can be used), and cataloging the information so that those who need it can access it. Once a file is input into ADAM, the system automatically indexes the content for subsequent search and retrieval.

ADAM helps Chrysler Group in brand asset management where the company's creative department works with advertising agencies to develop multimedia materials, and it also helps the company distribute this content after it has been created. The system is useful any time the company needs a specific image, for example, for brochures or print magazine ads. Chrysler's sales and marketing groups use ADAM to manage the materials in their dealer kiosks, Web sites, training activities to dealerships, and customer relationship management work. ADAM will help them include video in their cataloged material.

Other groups in the organization are interested in ADAM for both cataloging and storing multimedia material. DaimlerChrysler dealer operation is considering if it is cataloging, manufacturing is considering if it is a central system for storing images and graphics, and DaimlerChrysler Services, the company's public relations organization, believes it can use the system as well.

To Think About: What are the management benefits of using a digital asset management system? How does ADAM provide value for DaimlerChrysler?

Sources: John Zappen, "Automated Marketing Asset Access," Internet World, June 2005; Artesia Technologies, "Chrysler Group Deploys Digital Asset Management Solution from Artesia to Manage Valuable Rich Media Brand Assets," November 1, 2002, and www.artesiatech.com, accessed September 9, 2005.

concepts the user may not have entered, as well as keyword frequency and the popularity of the document. The purpose of these newer tools is to increase the probability that the correct response will be in the first 10 results. Whereas a simple keyword search will return the proper result in the top 10 hitting only 20 percent of the time, products such as Darwin claim a 72 percent correct response by using multiple criteria.

There are several tools available that perform "auto-tagging" and reduce the need for managers to develop their own unique taxonomies. Semio's Tagger software is a categorization and indexing engine that identifies key phrases in documents, assigns relevance factors to these phrases, and organizes the documents into categories, creating XML-based document tags using rules that users can see and modify. Tagger can access more than 200 different document types stored in legacy, enterprise, or other intranet databases. Users can integrate existing taxonomy categories, and add, delete, or merge categories after examining how the system

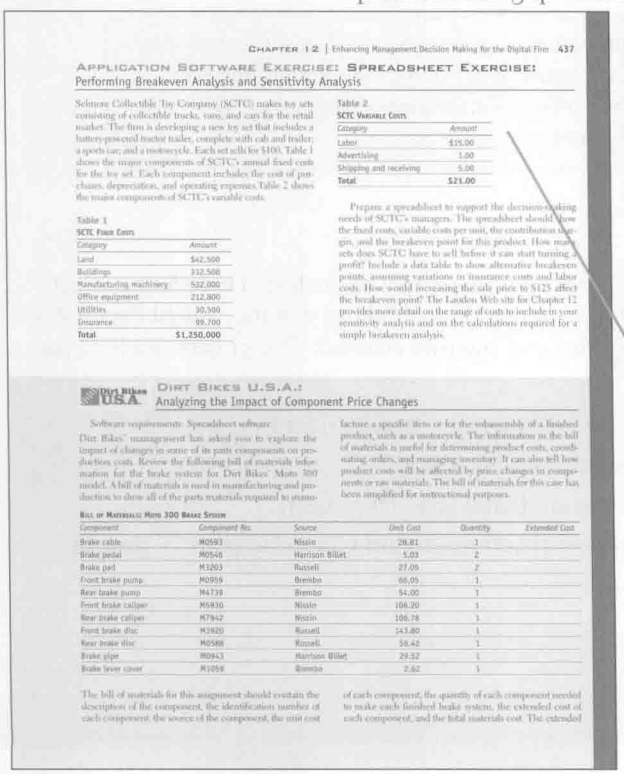
Electronic case studies on both U.S. and non-U.S. companies at the Laudon Web site provide additional opportunities for management problem solving.

VARIETY OF HANDS-ON PROJECTS

Hands-On Application Software Exercises

Each chapter features a hands-on Application Software Exercise where students can solve problems using spreadsheet, database, Web page development tool, or electronic presentation software. Some of these exercises require students to use these application software tools in conjuction with Web activities. The new Application Software Exercises include business problems such as the following:

- Improving supply chain management (Chapter 2)
- Analyzing a dot-com business (Chapter 4)
- Designing a customer system for auto sales (Chapter 13)
- Capital budgeting for a new information technology investment (Chapter 14)



CHAPTER 12 | Enhancing Management Decision Making for the Digital Firm 437

APPLICATION SOFTWARE EXERCISE: SPREADSHEET EXERCISE:
Performing Breakeven Analysis and Sensitivity Analysis

Selmore Collectible Toy Company (SCTC) makes toy sets consisting of collectible trucks, vans, and cars for the retail market. The firm is developing a new toy set that includes a battery-powered tractor trailer, complete with cab and trailer; a sports car; and a motorcycle. Each set sells for $100. Table 1 shows the major components of SCTC's annual fixed costs for the toy set. Each component includes the cost of purchases, depreciation, and operating expenses. Table 2 shows the major components of SCTC's variable costs.

Table 1
SCTC FIXED COSTS

Category	Amount
Land	$42,500
Buildings	332,500
Manufacturing machinery	522,000
Office equipment	212,800
Utilities	30,500
Insurance	99,700
Total	$1,250,000

Table 2
SCTC VARIABLE COSTS

Category	Amount
Labor	$15.00
Advertising	1.00
Shipping and receiving	5.00
Total	$21.00

Prepare a spreadsheet to support the decision-making needs of SCTC's managers. The spreadsheet should show the fixed costs, variable costs per unit, the contribution margin, and the breakeven point for this product. How many sets does SCTC have to sell before it can start turning a profit? Include a data table to show alternative breakeven points, assuming variations in insurance costs and labor costs. How would increasing the sale price to $125 affect the breakeven point? The Laudon Web site for Chapter 12 provides more detail on the range of costs to include in your sensitivity analysis and on the calculations required for a simple breakeven analysis.

DIRT BIKES U.S.A.:
Analyzing the Impact of Component Price Changes

Software requirements: Spreadsheet software

Dirt Bikes' management has asked you to explore the impact of changes in some of its parts components on production costs. Review the following bill of materials information for the brake system for Dirt Bikes' Moto 300 model. A bill of materials is used in manufacturing and production to show all of the parts materials required to manufacture a specific item or for the subassembly of a finished product, such as a motorcycle. The information in the bill of materials is useful for determining product costs, coordinating orders, and managing inventory. It can also tell how product costs will be affected by price changes in components or raw materials. The bill of materials for this case has been simplified for instructional purposes.

BILL OF MATERIALS: MOTO 300 BRAKE SYSTEM

Component	Component No.	Source	Unit Cost	Quantity	Extended Cost
Brake cable	M0593	Nissin	28.81	1	
Brake pedal	M0546	Harrison Billet	5.03	2	
Brake pad	M3203	Russell	27.05	2	
Front brake pump	M0959	Brembo	66.05	1	
Rear brake pump	M4739	Brembo	54.00	1	
Front brake caliper	M9830	Nissin	106.20	1	
Rear brake caliper	M7962	Nissin	106.78	1	
Front brake disc	M3920	Russell	143.80	1	
Rear brake disc	M0586	Russell	58.42	1	
Brake pipe	M0943	Harrison Billet	29.52	1	
Brake lever cover	M1059	Brembo	2.62	1	

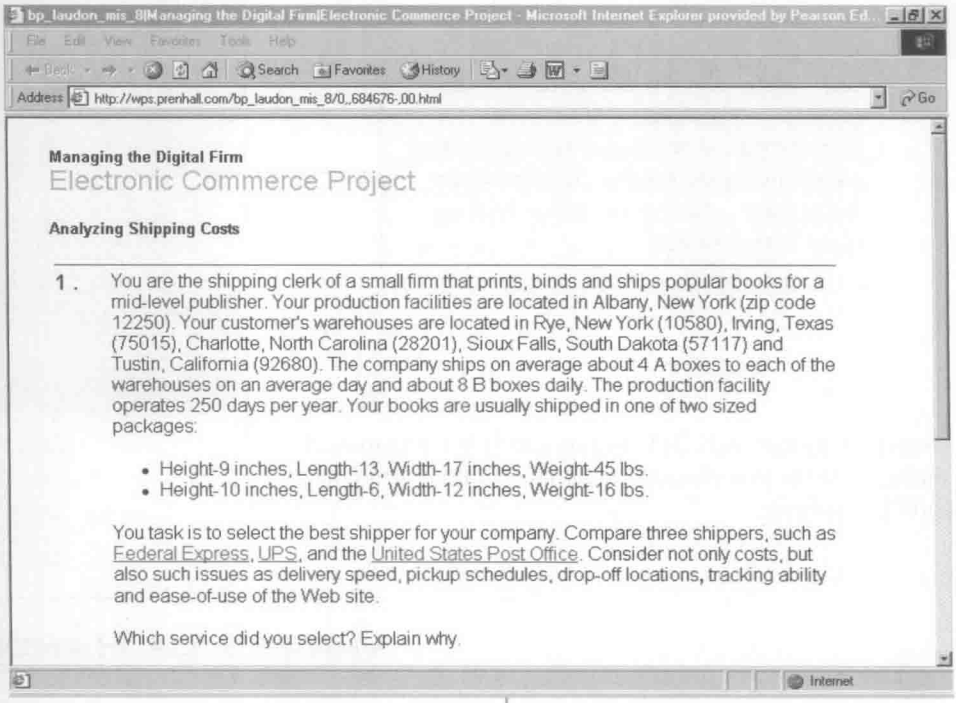
The bill of materials for this assignment should contain the description of the component, the identification number of each component, the source of the component, the unit cost of each component, the quantity of each component needed to make each finished brake system, the extended cost of each component, and the total materials cost. The extended

Students can use their application software skills to solve real-world business problems based on chapter concepts.

The application exercises are included in each chapter, on the Laudon Web site, and in the Laudon Multimedia CD-ROM along with the required data files and complete instructions.

E-Commerce and E-Business Projects

A hands-on Electronic Commerce project or Electronic Business project concludes each chapter. Students can use interactive software at various company Web sites and Web research tools to solve specific business problems related to chapter concepts. These projects encourage critical-thinking skills as students explore business resources on the Internet.



Students are presented with a problem to develop a budget for annual shipping costs. To obtain the information required for the solution, they can input data online and use the interactive software at designated Web sites to perform the required calculations or analysis.

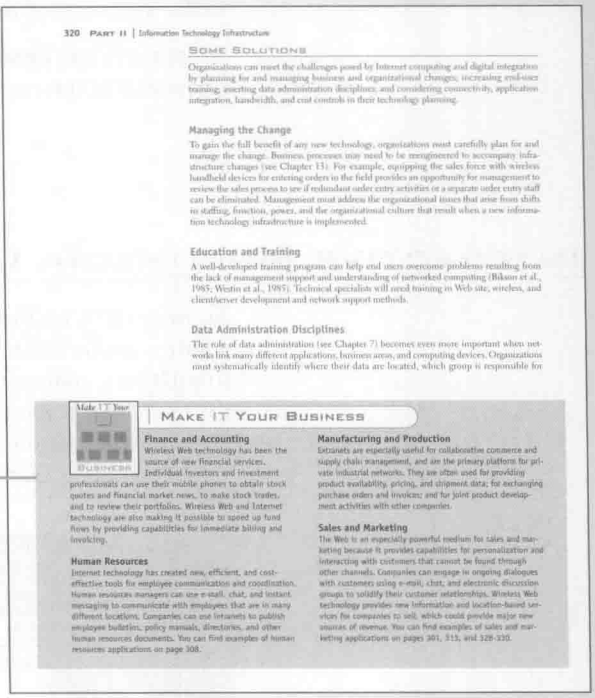
Comprehensive Projects

A long comprehensive project concludes each major part of the text. These four projects require students to apply text concepts to demanding problems that they might encounter as firms become more digitally integrated and Internet enabled. The projects include the following:

- Analyzing Business Processes for an Enterprise System (Part I project)
- Creating a New Internet Business (Part II project)
- Designing an Enterprise Information Portal (Part III project)
- Redesigning Business Processes for Healthlite Yogurt Company (Part IV project)

ATTENTION TO FUNCTIONAL BUSINESS APPLICATIONS OF MIS

A Make IT Your Business section concluding every chapter shows how the topics in each chapter specifically relate to the major functional areas of business: finance and accounting, human resources, manufacturing and production, and sales and marketing. This section also directs students to pages in the chapter on which functional business examples can be found. To further aid students in identifying these functional applications, icons are positioned adjacent to functional business examples in chapter-opening cases, Window on boxes, and chapter-ending cases.



320 PART II | Information Technology Infrastructure

SOME SOLUTIONS

Organizations can meet the challenges posed by Internet computing and digital integration by planning for and managing business and organizational changes, increasing end-user training, asserting data administration disciplines, and considering connectivity, application integration, bandwidth, and cost controls in their technology planning.

Managing the Change

To gain the full benefit of any new technology, organizations must carefully plan for and manage the change. Business processes may need to be reengineered to accompany infrastructure changes (see Chapter 13). For example, equipping the sales force with wireless handheld devices for entering orders in the field provides an opportunity for management to review the sales process to see if redundant order entry activities or a separate order entry staff can be eliminated. Management must address the organizational issues that arise from shifts in staffing, function, power, and the organizational culture that result when a new information technology infrastructure is implemented.

Education and Training

A well-developed training program can help end users overcome problems resulting from the lack of management support and understanding of networked computing (Bikson et al., 1985; Westin et al., 1985). Technical specialists will need training in Web site, wireless, and client/server development and network support methods.

Data Administration Disciplines

The role of data administration (see Chapter 7) becomes even more important when networks link many different applications, business areas, and computing devices. Organizations must systematically identify where their data are located, which group is responsible for

MAKE IT YOUR BUSINESS

Finance and Accounting
Wireless Web technology has been the source of new financial services. Individual investors and investment professionals can use their mobile phones to obtain stock quotes and financial market news, to make stock trades, and to review their portfolios. Wireless Web and Internet technology are also making it possible to speed up fund flows by providing capabilities for immediate billing and invoicing.

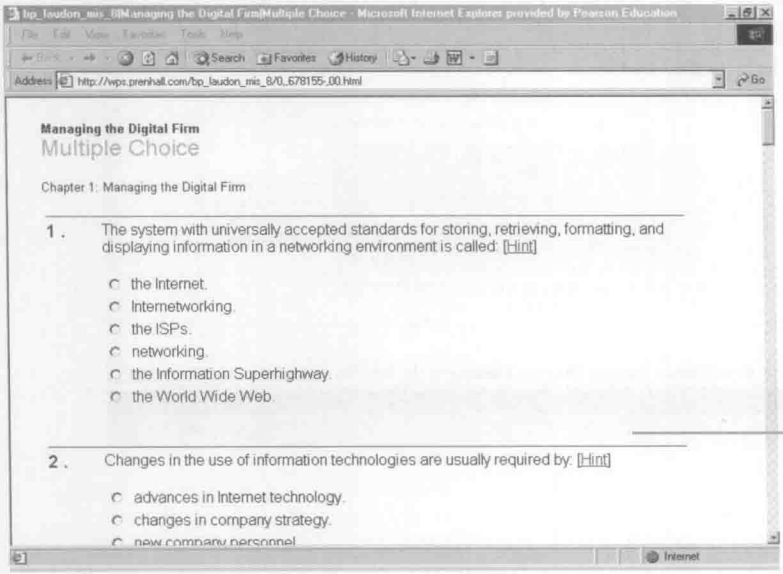
Human Resources
Internet technology has created new, efficient, and cost-effective tools for employee communication and coordination. Human resources managers can use e-mail, chat, and instant messaging to communicate with employees that are in many different locations. Companies can use Intranets to publish employee bulletins, policy manuals, directories, and other human resources documents. You can find examples of human resources applications on page 308.

Manufacturing and Production
Extranets are especially useful for collaborative commerce and supply chain management, and are the primary platform for private industrial networks. They are often used for providing product availability, pricing, and shipment data; for exchanging purchase orders and invoices; and for joint product development activities with other companies.

Sales and Marketing
The Web is an especially powerful medium for sales and marketing because it provides capabilities for personalization and interacting with customers that cannot be found through other channels. Companies can engage in ongoing dialogues with customers using e-mail, chat, and electronic discussion groups to solidify their customer relationships. Wireless Web technology provides new information and location-based services for companies to sell, which could provide major new sources of revenue. You can find examples of sales and marketing applications on pages 301, 315, and 328-330.

The Make IT Your Business icon helps students identify functional business applications of chapter concepts within the body of the chapter. Students can immediately see how chapter material relates to business careers.

COMPANION WEB SITE (WWW.PRENHALL.COM/LAUDON)



The text is supplemented by the Laudon Web site, which brings students a rich Web experience. The Laudon Web site provides a wide array of capabilities for interactive learning and management problem solving that have been carefully prepared for use with the text. They include the following:

Interactive Study Guide: Each chapter of the text features an Interactive Study Guide to help students review skills and test their mastery of chapter concepts with a series of multiple-choice, true–false, and essay questions.

Student responses to questions are automatically graded and can be e-mailed to the instructor.

Internet Connections: Internet Connections identified by marginal icons in the chapter direct students to exercises and projects on the Laudon Web site that are related to organizations and concepts in the chapter.

Internet Connection
The Internet Connection for this chapter will take you to several Web sites where you can complete an exercise to evaluate virtual storefront businesses.

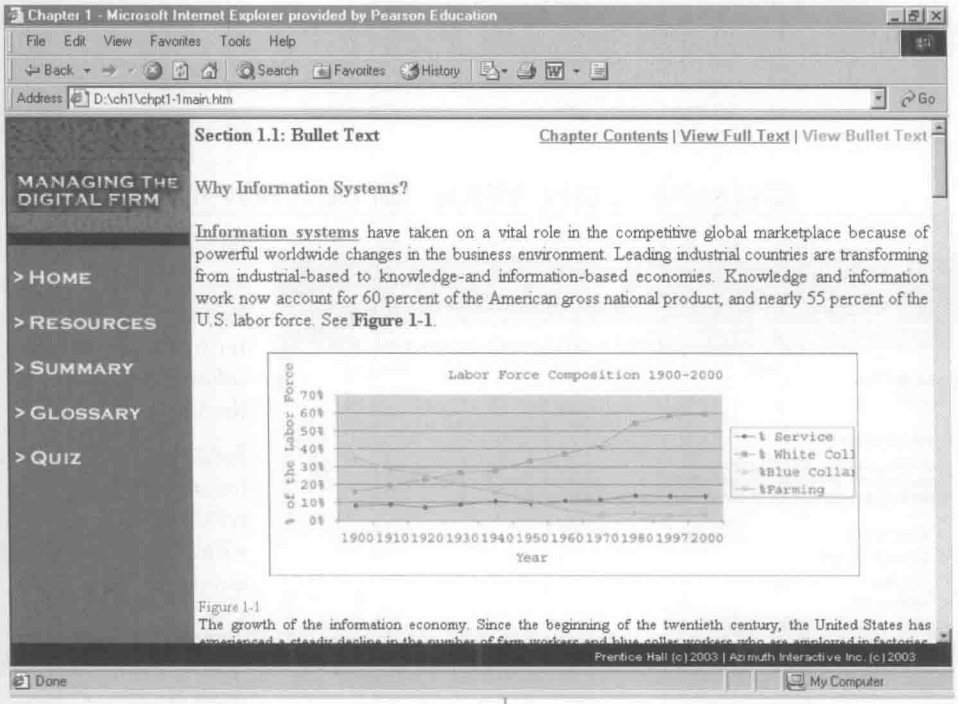
Internet Connections direct students to Web-based exercises on the Laudon Web site. Students can e-mail their work to their professors.

Additional Case Studies: The Web site contains additional case studies with hyperlinks to the Web sites of the organizations discussed.

International Resource: Links to Web sites of non-U.S. companies are provided for users interested in international material.

INTERACTIVE MULTIMEDIA CD-ROM

An interactive multimedia CD-ROM version of the text can be packaged with the text. In addition to the full text and bullet text summaries for each chapter, the CD-ROM features simulations, audio/video overviews explaining key concepts, online quizzes, hyperlinks to the exercises on the Laudon Web site, the complete running case and application software exercises with required files, technology updates, and more. Students can use the CD-ROM edition as an interactive supplement or as an alternative to the traditional text.



Bullet text highlights the key points of each chapter to help students review material before quizzes and exams. Students can reinforce and extend their knowledge of chapter concepts using the glossaries and other interactive resources in the CD-ROM edition.

TABLE OF CONTENTS

Part I introduces students to the organizational and managerial foundations of systems, their strategic role, and the organizational and management changes driving electronic business and the emerging digital firm. Chapters in Part I provide an extensive introduction to real-world systems, focusing on their relationships to organizations, management, business processes, and important ethical and social issues.

Part II provides the technical foundation for understanding information systems. Chapters in Part II describe the hardware, software, data storage, and telecommunications technologies that comprise the organization's information technology infrastructure and the role of Internet technology in creating an infrastructure for digital integration.

Part III describes the role of information systems in enhancing business processes and management decision making across the enterprise. It devotes an entire chapter (Chapter 10) to enterprise applications because they have been so widely used for digital integration to improve organizational performance. Another full chapter (Chapter 11) deals with knowledge management systems because in an information economy much of a firm's value depends on its ability to create and manage knowledge. Part III also describes decision-support and executive support systems that enhance firm performance by helping managers make better decisions.

Part IV focuses on the process of building and managing systems in organizations. Chapter 13 describes how companies use new information systems to redesign their organizations and business processes and the role of new technologies such as Web services for rapid application development and digital integration. Chapter 14 explains how successful systems depend on understanding the business value of systems and managing system-related change. Chapter 15 addresses the need to ensure that the right set of technologies, policies, and procedures are in place for information system quality, security, and control.

CHAPTER OUTLINE

Each chapter contains the following:

- An opening case describing a real-world organization to establish the theme and importance of the chapter
- A diagram analyzing the opening case in terms of the management, organization, and technology model used throughout the text
- A series of chapter Objectives in easy-to-understand language for students
- Management Challenges related to the chapter theme
- Marginal glosses of key terms in the text
- An Internet Connection icon directing students to related material on the Internet
- Make IT Your Business icons and discussions directing students to portions of the chapter dealing with functional business applications of chapter concepts
- A chapter Summary keyed to the learning Objectives
- A list of Key Terms that students can use to review concepts
- Review Questions for students to test their comprehension of chapter material
- Discussion Questions raised by the broader themes of the chapter
- An Application Software Exercise requiring students to use application software tools to develop solutions to real-world business problems based on chapter concepts
- A Dirt Bikes U.S.A. running case project
- An Electronc Commerce Project or an Electronic Business Project
- A Group Project to develop teamwork and presentation skills
- A chapter-ending long Case Study illustrating important themes

INSTRUCTIONAL SUPPORT MATERIALS

Instructor's Resource CD-ROM (0-13-145149-9)

Most of the support materials described in the following section are conveniently available for adopters on the Instructor's Resource CD-ROM. The CD includes the Instructor's Resource Manual, Test Item File, TestGen Software, PowerPoint slides, and the helpful lecture tool "Image Library."

Image Library (on Instructor's Resource CD-ROM)

The Image Library is an impressive resource to help instructors create vibrant lecture presentations. Almost every figure and photo in the text is provided and organized by chapter for convenience. These images and lecture notes can be easily imported into Microsoft PowerPoint to create new presentations or to add to existing ones.

Instructor's Manual (on Web and Instructor's Resource CD-ROM)

The Instructor's Manual features not only answers to review, discussion, case study, and group project questions but also an in-depth lecture outline, teaching objectives, key terms, and teaching suggestions. This supplement can be downloaded from the secure faculty section of the Laudon Web site and is also available on the Instructor's Resource CD-ROM.

Test Item File (on Instructor's Resource CD-ROM)

The Test Item File is a comprehensive collection of true–false, multiple-choice, fill-in-the-blank, and essay questions. The questions are rated by difficulty level and the answers are referenced by section. An electronic version of the Test Item File is available in TestGen on the Instructor's Resource CD-ROM.

PowerPoint Slides (on Web and Instructor's Resource CD-ROM)

Electronic color slides created by Azimuth Interactive, Inc., are available in Microsoft PowerPoint. The slides illuminate and build on key concepts in the text. Both students and faculty can download the PowerPoint slides from the Web site, and they are also provided on the Instructor's Resource CD-ROM.

Web Site (www.prenhall.com/laudon)

The Laudon/Laudon text is supported by an excellent Web site at www.prenhall.com/laudon that truly reinforces and enhances text material with the complete Dirt Bikes U.S.A. running case, Electronic Commerce and Electronic Business projects, hands-on Application Software Exercises, Internet Connection exercises, an Interactive Study Guide, International Resources, additional case studies, and PowerPoint slides. The Web site also features a secure password-protected faculty area from which instructors can download the Instructor's Manual and suggested answers to the running case, Internet Connections, and E-Business/E-Commerce projects. The site has an improved online syllabus tool to help professors add their own personal syllabi to the site in minutes. Please see the complete description earlier in the preface.

Videos

Prentice Hall MIS Video, Volume 1 (0-13-027199-3)

The first video in the Prentice Hall MIS Video Library includes custom clips created exclusively for Prentice Hall featuring real companies, such as Andersen Consulting, Lands' End, Lotus Development Corporation, Oracle Corporation, and Pillsbury Company.

Prentice Hall MIS Video, Volume 2 (0-13-101500-1)

Video clips are provided to adopters to enhance class discussion and projects. These clips highlight real-world corporations and organizations and illustrate key concepts found in the text.

Online Courses

OneKey www.prenhall.com/onekey

OneKey lets you in to the best teaching and learning resources all in one place. OneKey for Laudon/Laudon's *Essentials of Management of Information Systems,* Sixth Edition, is all your students need for anywhere—anytime access to your course materials conveniently organized by textbook chapter to reinforce and apply what they've learned in class. OneKey is all you need to plan and administer your course. All your instructor resources are in one place to maximize your effectiveness and minimize your time and effort. OneKey for convenience, simplicity, and success . . . for you and your students.

WebCT www.prenhall.com/webct

Gold Level customer support, available exclusively to adopters of Prentice Hall courses, is provided free of charge on adoption and provides priority assistance, training discounts, and dedicated technical support.

Blackboard www.prenhall.com/blackboard

Prentice Hall's abundant online content, combined with Blackboard's popular tools and interface, result in robust Web-based courses that are easy to implement, manage, and use—taking your courses to new heights in student interaction and learning.

CourseCompass www.prenhall.com/coursecompass

CourseCompass is a dynamic, interactive online course management tool powered exclusively for Pearson Education by Blackboard. This exciting product allows you to teach market-leading Pearson Education content in an easy-to-use customizable format.

Tutorial Software

For instructors seeking application software support to use with this text, Prentice Hall is pleased to offer the PH Train IT CD-ROM and the Web-delivered PH Train & Assess IT for Office 2000 and XP. These exciting tutorial and assessment products are fully certified up to the expert level of the Microsoft Office User Specialist (MOUS) Certification Program. These items are not available as stand-alone items but can be packaged with the Laudon/Laudon text at an additional charge. Please go to www.prenhall.com/phit for an online demonstration of these products or contact your local Prentice Hall representative for more details.

Software Cases

A series of optional management software cases, *Solve it! Management Problem Solving with PC Software,* has been developed to support the text. *Solve it!* consists of 10 spreadsheet cases, 10 database cases, and 6 Internet projects drawn from real-world businesses, plus the data files associated with the cases. The cases are graduated in difficulty. The case book contains complete tutorial documentation showing how to use spreadsheet, database, and Web browser software to solve the problems. A new version of *Solve it!* with all new cases is published every year. *Solve it!* must be adopted for an entire class. It can be purchased directly from the supplier, Azimuth Interactive Corporation, 23 North Division Street, Peekskill, New York, 10566 (**telephone: 800-416-6786; Web site: www.mysolveit.com**).

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One of our goals was to write a book that was authoritative, synthesized diverse views in the MIS literature, and helped define a common academic field. A large number of leading scholars in the field were contacted and assisted us in this effort. Reviewers and consultants for *Essentials of Management Information Systems: Managing the Digital Firm* are listed in the back endpapers of the book. We thank them for their contributions. Consultants for the Sixth Edition include David Bahn, Metropolitan State University of Minnesota; Stanley Lewis, University of Southern Mississippi; Sherri Shade, Kennesaw State University; and Douglas Turner, State University of West Georgia.

It is our hope that this group endeavor contributes to a shared vision and understanding of the MIS field.

K.C.L.
J.P.L.