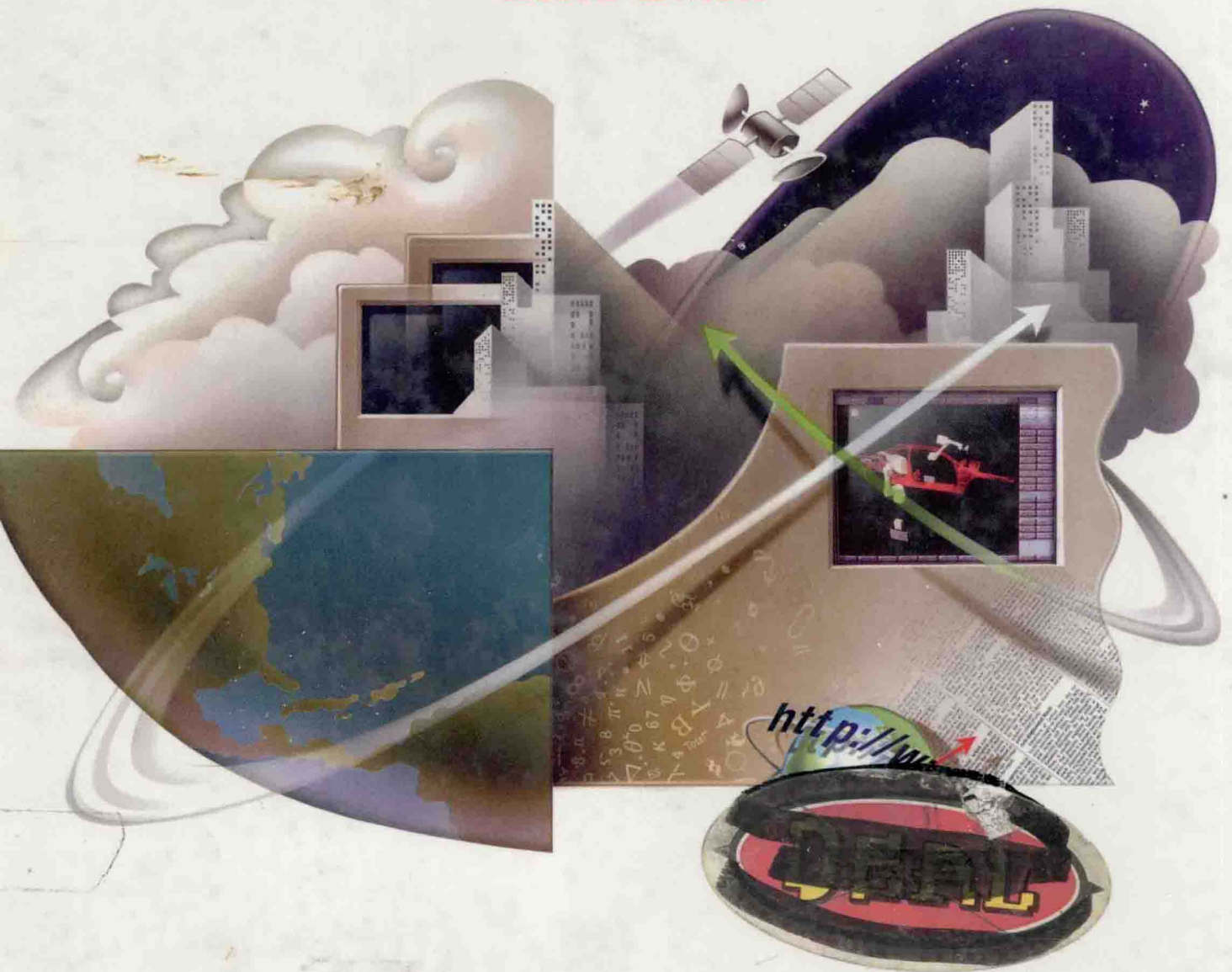


# M ESSENTIALS OF MANAGEMENT INFORMATION SYSTEMS *Organization and Technology* SECOND EDITION



Kenneth C. Laudon ▲ Jane P. Laudon

*Second Edition*

# Essentials of Management Information Systems

*Organization and Technology*

*Kenneth C. Laudon*

*New York University*

*Jane Price Laudon*

*Azimuth Corporation*



PRENTICE HALL, Upper Saddle River, New Jersey 07458

Library of Congress Cataloging-in-Publication Data

Laudon, Kenneth C., 1944-

Essentials of management information systems : organization and technology / Kenneth C. Laudon, Jane P. Laudon. — 2nd ed.

p. cm.

Includes index.

ISBN 0-13-595596-3

1. Management information systems. I. Laudon, Jane Price.

II. Title.

T58.6.L3753 1996

658.4'038'011—dc21

96-36860

CIP

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Interior Design: Suzanne Behnke

Cover Design: Maureen Eide

Composition: Carlisle Communications, Ltd.

Cover Art: Valerie Sinclair



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Upper Saddle River, New Jersey 07458

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Prentice-Hall International (UK) Limited, *London*

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Prentice-Hall of India Private Limited, *New Delhi*

Prentice-Hall of Japan, Inc., *Tokyo*

Simon & Schuster Asia Pte. Ltd., *Singapore*

Editora Prentice-Hall do Brasil, Ltda., *Rio de Janeiro*

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1



# Preface

*Essentials of Management Information Systems: Organization and Technology (Second Edition)* is based on the premise that professional managers in both the private and public sectors cannot afford to ignore information systems. In today's business environment, information systems have become essential for creating competitive firms, managing global corporations, and providing useful products and services to customers. Briefly, it is difficult—if not impossible—to manage a modern organization without at least some grounding in the fundamentals of what information systems are, how they affect the organization and its employees, and how they can make businesses more competitive and efficient.

Accordingly, we have written this book to provide a concise introduction to management information systems that undergraduate and MBA students will find vital to their professional success. *Essentials of Management Information Systems* has many of the same features of our larger text book, *Management Information Systems: Organization and Technology (Fourth Edition)*. However, core MIS concepts are presented in 15 chapters, making the text especially well-suited for introductory MIS courses, courses lasting less than one semester, and courses requiring a smaller MIS text to combine with hands-on software, case studies or other projects.

## THE INFORMATION REVOLUTION IN BUSINESS AND MANAGEMENT

This book reflects three powerful trends that have recast the role of information systems in business and management:

- The Internet and other global communications networks link together key participants in the value chain of a business—vendors, manufacturers, distributors, and customers. We can now design global business organizations linking factories, offices, and mobile sales forces around the clock. A few years ago this was a dream.
- Globalization of markets puts new emphasis on organizational design and management control. When parts originate in Korea, assembly occurs in Mexico, and finance, marketing and general counsel are in New York, companies face tough challenges in designing the proper organization and managing the work.
- The transformation of the United States and other advanced industrial countries into full-fledged information economies puts new emphasis on productivity of knowledge workers, short product lifecycles, and knowledge and information as a source of competitive advantage.

In essence, the work of an organization—and its employees—depends on what its information systems are capable of doing. Increasing market share, becoming the high-quality or low-cost producer, developing new products, and increasing employee productivity, depend more and more on the kinds and quality of information systems in the firm. Information systems can lead to more efficient and effective organizations, new styles and procedures of management, new strategies, and new organizational roles.

## NEW TO THE SECOND EDITION

This edition maintains the strengths of earlier editions while showing how the Internet and related technologies are transforming information systems and business organizations. The second edition was reworked from start to finish to integrate the issues surrounding the growing use of the Internet more fully into the MIS course. This new direction is reflected in the following changes:

**THE INTERNET.** An entirely new chapter on the Internet and enterprise networking (Chapter 9) describes the underlying technology, capabilities, and benefits of the Internet with numerous illustrations from real-world companies. The chapter carefully analyzes the benefits and limitations of this world-wide network of networks.

**INTERNET INTEGRATED INTO EVERY CHAPTER.** Every chapter contains a Window On box, case study, or in-text discussion of how the Internet is changing a particular aspect of information systems. Strategic uses of the Internet, electronic commerce, intranets, Java software, intelligent agents, Internet-based group collaboration, and Internet security are among the topics given detailed coverage.



**THE INTERNET CONNECTION AND INTERACTIVE INTERNET PROJECTS.** The **Internet Connection** can be found in each chapter. The Internet Connection interactively shows students how to use the Internet for research and management problem-solving and helps professors integrate the Internet into the MIS course.

The Internet Connection icon in the text directs students to various sites on the World Wide Web of the Internet where they can find interactive projects, additional case studies, or resources related to topics and organizations discussed in the chapter. Students might be asked to use an interactive Web site to work on a project such as planning a sales conference, to conduct research, or to see a demonstration of an important MIS concept. The user first links to the Laudon-Laudon Home Page [<http://www.prenhall.com/~laudon>] via either a university or home Internet service. From the Laudon-Laudon Home Page the user can link directly to the Web resources specified for each Internet Connection session.

**NEW LEADING-EDGE TOPICS.** Full chapters address the challenges and opportunities created by information systems in today's global networked environment: Enterprise Networking and the Internet (Chapter 9); Managing Knowledge (Chapter 12); and Managing International Information Systems (Chapter 15); address these themes. The text includes up-to-date coverage of topics such as:

- The Internet and the information superhighway
- Electronic commerce
- Intranets
- Java and the software revolution
- Systems for knowledge management
- Virtual organizations
- Data warehousing and multidimensional data analysis
- Intelligent agents
- Genetic algorithms

**EXPANDED TREATMENT OF BUSINESS REENGINEERING, ORGANIZATIONAL CHANGE, AND ORGANIZATIONAL DESIGN USING INFORMATION TECHNOLOGY.** Chapter 10 contains a detailed discussion of redesigning businesses processes using information technology. Experiences of real-world organizations performing business reengineering are described in this chapter and integrated throughout the text. The entire text reflects a heightened emphasis on the use of information technology in organizational change and organizational design.





**ATTENTION TO SMALL BUSINESSES AND ENTREPRENEURS.** We have expanded the text to devote more attention to the specific management, organization, and technology issues relevant to small businesses and entrepreneurs using information systems. Specially designated chapter-opening vignettes, Window On boxes, and ending case studies highlight the experiences of small businesses using information systems.

## UNIQUE FEATURES OF THIS TEXT

*Essentials of Management Information Systems: Organization and Technology (Second Edition)* has many unique features designed to create an active, dynamic learning environment.

- **Interactive Multimedia Edition:** The textbook is available in a new multimedia interactive format on CD-ROM. The Multimedia Edition features the full 15 chapters of the printed text plus 10 additional videos explaining key concepts, simulations, interactive exercises, audio previews, line art, and research articles. With specially prepared “BulletText” summaries, hyperlinked graphics, and complete hypertext linking of concepts, definitions, and applications, the multimedia version can be used independently of the hard cover version or in conjunction with the hard cover text as an interactive study guide. All supplements for the printed version may be used with the Multimedia Edition.
- **An 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. A special diagram accompanying each chapter-opening vignette graphically illustrates how management, organization, and technology elements work together to create an information system solution to the business challenges discussed in the vignette. The diagram can be used as a starting point to analyze any information system problem.
- **Real-World Examples:** Real-world examples drawn from business and public organizations are used throughout to illustrate text concepts. Each chapter opens with a vignette illustrating the themes of the chapter by showing how a real-world organization meets a business challenge using information systems. More than 100 companies in the United States and over 80 organizations in Canada, Europe, Australia, Asia, and Africa are discussed (see the Organizations and International Organizations indexes).

Each chapter contains three WINDOW ON boxes (WINDOW ON MANAGEMENT, WINDOW ON ORGANIZATIONS, WINDOW ON TECHNOLOGY) that present real-world examples illustrating the management, organization, and technology issues in the chapter. Each WINDOW ON box concludes with a section called *To Think About* containing questions for students to apply chapter concepts to management problem solving. The themes for each box are:



**WINDOW ON MANAGEMENT:** Management problems raised by systems and their solution; management strategies and plans; careers and experiences of managers using systems.



**WINDOW ON TECHNOLOGY:** Hardware, software, telecommunications, data storage, standards, and systems-building methodologies.



**WINDOW ON ORGANIZATIONS:** Activities of private and public organizations using information systems; experiences of people working with systems.

- **A truly international perspective:** In addition to a full chapter on Managing International Information Systems, all chapters of the text are illustrated with real-world examples from over eighty corporations in Canada, Europe, Asia, Latin America, Africa, Australia, and the Middle East. Each chapter contains at least one WINDOW ON box, case study or opening vignette drawn from a non-U.S. firm, and often more. The text concludes with five major international case studies contributed by leading MIS experts in Canada, Europe, and Australia—Andrew Boynton, International Institute for Management Development (Switzerland); Len Fertuck, University of Toronto (Canada), Helmut Krcmar and Bettina Schwarzer, Hohenheim University (Germany); Tapio Reponen, Turku School of Economics and Business Administration (Finland); and Peter Weill and J.B. Barolsky, University of Melbourne, (Australia).
- **Pedagogy to encourage active learning and management problem-solving.**

*Essentials of Management Information Systems* contains many features that encourage students to actively learn and to engage in management problem-solving.

**GROUP PROJECTS:** At the end of each chapter is a group project that encourages students to develop teamwork and oral and written presentation skills. The group project exercise asks students to work in groups of three or four to research a specific topic, analyze the pros and cons of an issue, write about it, and orally present the group's findings to the class. For instance, students might be asked to work in small groups to analyze a business and to suggest appropriate strategic information systems for that particular business or to develop a corporate ethics code on privacy that considers E-mail privacy and employers' use of information systems to monitor work sites.

**MANAGEMENT CHALLENGES SECTION:** Each chapter concludes with several challenges relating to the chapter topic that managers are likely to encounter. These challenges are multifaceted and sometimes pose dilemmas. They make excellent springboards for class discussion. Some of these Management Challenges are the organizational obstacles to building a database environment, agreeing on quality standards for information systems, and major risks and uncertainties in systems development.

**TO THINK ABOUT QUESTIONS:** Concluding every WINDOW ON box, these questions require students to apply chapter concepts to real-world scenarios. These questions frequently ask students to assume the role of managers, use multiple perspectives, consider different alternatives, and think creatively. The questions can be used for class discussion or for short written projects.

**CASE STUDIES:** Each chapter concludes with a case study based on a real-world organization. These cases help students synthesize chapter concepts and apply this new knowledge to real-world problems and scenarios. International case studies concluding the text provide additional opportunities for management problem-solving. Additional case studies and projects are provided on-line through the Internet Connection. Professors can assign these case studies for class discussion or for term projects.

**INTERACTIVE LEARNING:** The CD-ROM version provides an interactive, computer-managed instruction component that lets students learn at their own pace. Students apply text concepts to management problems in interactive exercises. Additional interactive learning projects are provided through the Internet Connection.



## BOOK OVERVIEW

The six parts of the book are designed to be relatively independent of each other. Each instructor may choose to emphasize different parts.

Part One is concerned with the organizational foundations of systems and their emerging strategic role. It provides an extensive introduction to real-world systems, focusing on their relationship to organizations, management, and important ethical and social issues.

Parts Two and Three provide the technical foundation for understanding information systems, describing hardware, software, storage, and telecommunications technologies. Part Three concludes by describing how all of the information technologies work together in enterprise networking and internetworking with other organizations through the Internet.

Part Four focuses on the process of redesigning organizations using information systems, including reengineering of critical business processes. We see systems analysis and design as an exercise in organizational design, one that requires great sensitivity to the right tools and techniques, quality assurance and change management.

Part Five describes the role of information systems in capturing and distributing organizational knowledge and in enhancing management decision-making. It shows how knowledge management, work group collaboration, and individual and group decision making can be supported by the use of knowledge work, artificial intelligence, decision support, and executive support systems.

Part Six concludes the text by examining the special management challenges and opportunities created by the pervasiveness and power of contemporary information systems: ensuring security and control and developing global systems. Throughout the text emphasis is placed on using information technology to redesign the organization's products, services, procedures, jobs, and management structures, with numerous examples drawn from multinational systems and global business environments.

## CHAPTER OUTLINE

Each chapter contains the following:

- A detailed outline at the beginning to provide an overview.
- An opening vignette describing a real-world organization to establish the theme and importance of the chapter.
- A diagram analyzing the opening vignette in terms of the management, organization, and technology model used throughout the text.
- A list of learning objectives.
- Marginal glosses of key terms in the text.
- Management challenges.
- An Internet Connection icon directing students to related material on the Internet.
- A chapter summary keyed to the learning objectives.
- A list of key terms that the student can use to review concepts.
- Review questions for students to test their comprehension of chapter material.
- A set of discussion questions that can be used for class discussion or for research topics.
- A group project to develop teamwork and presentation skills.
- A chapter-ending case study that illustrates important themes.
- A list of references for further research on topics.



## **INSTRUCTIONAL SUPPORT MATERIALS:**

### **Software**

A series of optional management software cases called *Solve it! Management Problem Solving with PC Software* has been developed to support the text. *Solve it!* consists of 10 spreadsheet and 10 database cases drawn from real-world businesses, a data diskette with the files required by the cases, and several Internet projects. The cases are graduated in difficulty. The case book contains complete tutorial documentation showing how to use spreadsheet and database software to solve the problems. There are separate *Solve it!* case books for Windows and DOS software tools. 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 Corporation, 124 Penfield Ave., Croton-on-Hudson, New York 10520 (Telephone 914-271-6321).

### **Instructor's Manual**

The Instructor's Manual written by Dr. Glenn Bottoms of Gardener-Webb University, features an in-depth lecture outline and answers to key terms, review and discussion questions, case studies and group projects. This supplement is also available on disk.

### **Test Item File**

New to this edition is a separate, expanded Test Item File, written by Dr. Bindiganavale Vijayaraman of the College of Business Administration, University of Akron. This edition includes true/false, multiple choice, fill-ins and essay questions, rated according to level of difficulty.

### **Computerized Test Bank**

Prentice Hall Custom Test allows instructors to create and design tests as well as maintain student records. The Custom Test is comprised of the questions from the Test Item File. It is PC compatible.

### **Video Cases**

Ten video cases based on the real-world corporations and organizations featured in the text are available to adopters. The video cases illustrate the concepts in each section and can be used for class discussion or written projects. The video cases are analyzed in the Instructor's Manual.

### **Powerpoint Slides**

Over 100 electronic color slides created by Dr. Edward Fisher of Central Michigan University are available to adopters. The slides, which illuminate and build upon key concepts in the text, can be customized to suit class needs.

### **Transparencies**

One hundred full-color transparency acetates are also available to adopters. These transparencies, taken from figures in the text, provide additional visual support to class lectures.

### **The New York Times "Themes of the Times"**

To enhance access to important new items, a compilation of relevant Information Systems articles is available through an exclusive arrangement between Prentice Hall and The New York Times. Professors may order class quantities through their Prentice Hall sales representative.

## Interactive Multimedia Edition

The Multimedia edition features the full 15 chapters of the printed text plus 10 additional videos explaining key concepts, simulations, interactive exercises, audio previews, line art and research articles.

## Web Site

Please visit this book's Web Site for online exercises at <http://www.prenhall.com/~laudon>.

## ACKNOWLEDGMENTS

The production of any book involves many valued contributions from a number of persons. We would like to thank all of our editors for encouragement, insight, and strong support for many years. We are grateful to our editor, Jo-Ann DeLuca for her energy in guiding the development of this edition, to Richard Wohl for supporting the project, and to Nancy Evans for her tireless marketing work. We thank Audrey Regan for directing the preparation of ancillary materials and commend Katherine Evancie of the Prentice Hall Production Department for guiding production of this text.

We are deeply indebted to Marshall R. Kaplan for his invaluable assistance in the preparation of this edition. Special thanks to Professors Glenn Bottoms, Bindiganavale Vijayaraman and Edward Fisher for their work on the supporting materials.

The Stern School of Business at New York University and the Information Systems Department provided a very special learning environment, one in which we and others could rethink the MIS field. Special thanks to Vasant Dhar, Ajit Kambil, Robert Kauffman, and Stephen Slade for providing critical feedback and support where deserved. Professor Norm White was especially helpful in commenting on the technical chapters and we thank him. Professor William H. Starbuck of the Management Department at NYU provided valuable comments and insights.

The late professor James Clifford of Stern's Information Systems Department made valuable recommendations for improving our discussion of files and databases. Jim was a wonderful friend and colleague, and we will miss him deeply.

Professor Al Croker of Baruch College and NYU, Professor Kenneth Marr of Hofstra University, Professor Edward Roche of Seton Hall University, Professor Sassan Rahmatian of California State University, Fresno, Ashok Malhotra and Emilio Collar of IBM, Jiri Rodovsky, and Russell Polo provided additional suggestions for improvement.

We are truly grateful to our colleagues in the MIS field who shared their expertise and comments with us. We want to thank Len Fertuck, Andrew Boynton, Helmut Krcmar, Tapio Reponen, Bettina Schwarzer, Joel Barolsky and Peter Weill for contributing case studies. They deeply enrich the text.

One of our goals for *Essentials of Management Information Systems* was to write a book which 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* are listed in the back end papers of the book. We thank them for their contributions. Consultants for this new edition are: Jason Chen, Gonzaga University; Werner Schenk, University of Rochester; Doug Brinkley, Naval Postgraduate School; Tung Bui, Naval Postgraduate School; Gerald Kohers, Sam Houston State University; Don Springer, University of Portland; Erma Wood, University of Arkansas-Little Rock; William Harrison, Oregon State University; Barbara Libby, Niagara University; and Susan Kinney, Wake Forest University. It is our hope that this group endeavor contributes to a shared vision and understanding of the MIS field.

# 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 Ph.D. from Columbia University. He has authored fourteen books dealing with information systems, organizations, and society. Professor Laudon has also written over seventy-five articles concerned with the social, organizational, and management impacts of information systems, privacy, ethics, and multimedia technology.

Professor Laudon's current research focuses on four areas: understanding the value of knowledge work; the social and organizational uses of information technology; privacy of personal information; and the development of multimedia, interactive digital higher education materials. 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 a consultant on systems planning and strategy to several Fortune 500 firms and as an educator for major consulting firms in the U.S..

Ken Laudon's hobby is sailing.



**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: Organization and Technology* reflects a deep understanding of MIS research and teaching as well as practical experience designing and building real world systems.



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