# E-commerce
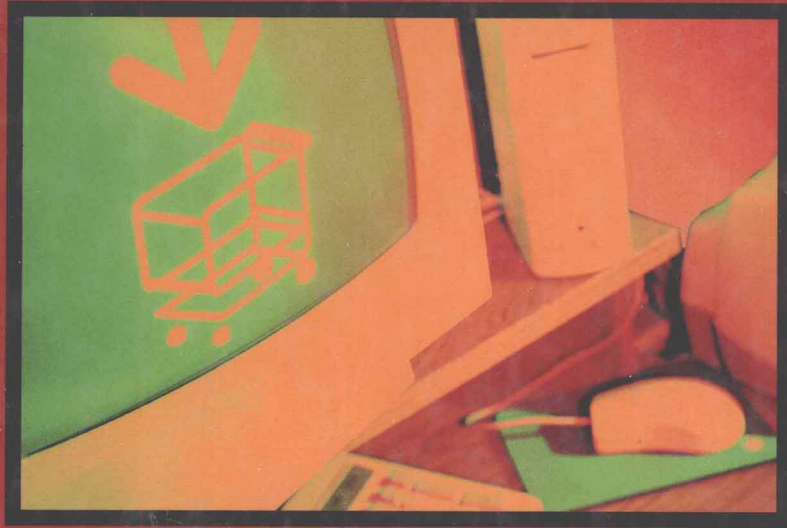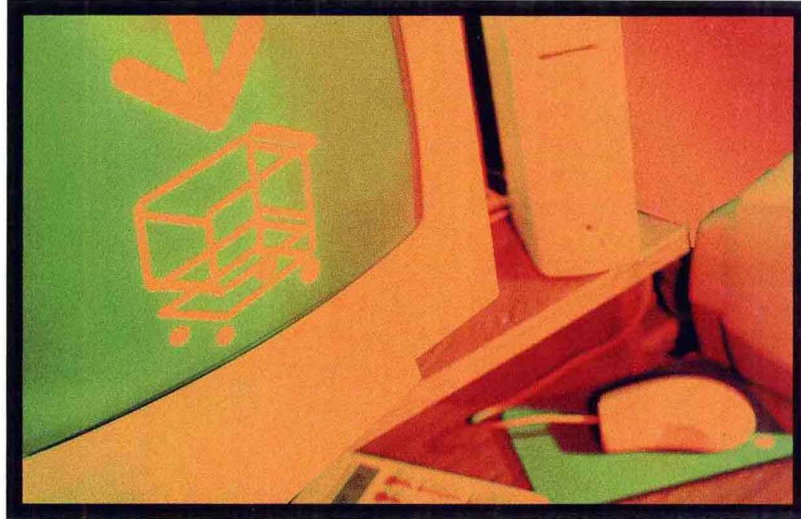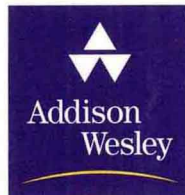
business. technology. society.

## Kenneth C. Laudon
## Carol Guercio Traver

# E-commerce

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# PREFACE

## WELCOME TO THE NEW E-COMMERCE

In the few years since 1995, electronic commerce has grown in the United States from a standing start to a $60 billion retail business and a $700 billion business-to-business juggernaut, bringing about enormous change in business firms, markets, and consumer behavior. Economies and business firms around the globe, in Europe, Asia, and Latin America, are being similarly affected. In the next five years, e-commerce in all of its forms is projected to continue growing at double-digit rates, becoming the fastest growing form of commerce in the world. Just as automobiles, airplanes, and electronics defined the twentieth century, so will e-commerce of all kinds define business and society in the twenty-first century. The rapid movement towards an e-commerce economy and society is being led by both established business firms such as Wal-Mart, JCPenney, and General Electric, and new entrepreneurial firms such as E*Trade, Expedia, and eBay. Students of business and information technology need a thorough grounding in electronic commerce in order to be effective and successful managers in the next decade. This book is written for tomorrow's managers.

The focus of our book is on the new breed of e-commerce — what we call E-commerce II — that is emerging from the explosive entrepreneurial growth period of e-commerce that occurred from 1995 to Spring 2000 (E-commerce I). The defining characteristic of E-commerce II firms is that they are profitable, sustainable, efficient, and innovative firms with powerful brand names. Students must understand how to build these kinds of e-commerce businesses in order to prepare for entry into the E-commerce II period.

Since Spring 2000, many of the once high-flying dot.coms have failed, and what seemed like a never-ending supply of venture capital to support them turns out to be quite finite. It would be foolish to ignore the lessons learned in the E-commerce I period. Like so many technology revolutions in the past — automobiles, electricity, telephones, television, and biotechnology — there is an explosion of entrepreneurial

efforts, followed by consolidation, and yet continued rapid deployment. We do not shy away from making critical, yet sympathetic, assessments of this early, exciting period in e-commerce.

In 2001, e-commerce is alive, well, and growing very fast; bringing about extraordinary changes to markets, industries, individual businesses and society as a whole. Today, e-commerce has moved into the mainstream life of established businesses that have the market brands and financial muscle required for the long-term deployment of e-commerce technologies and methods. If you are working in an established business, chances are the firm's e-commerce capabilities and Web presence are important factors for its success.

## BUSINESS. TECHNOLOGY. SOCIETY.

We believe that in order for business and technology students to really understand e-commerce, they must understand the relationships among e-commerce business concerns, Internet technology, and the social and legal context of e-commerce. These three themes permeate all aspects of e-commerce, and therefore in each chapter we present material that explores the business, technological, and social aspects of that chapter's main topic.

Given the continued growth and diffusion of e-commerce, all students — regardless of discipline or function — must also understand the basic economic and business forces driving e-commerce. E-commerce is creating new electronic markets where prices are transparent, global, and highly efficient, though not perfect. E-commerce is having a direct impact on the firm's relationship with suppliers, customers, competitors, and partners, as well as how we market products, advertise, and use brands. Whether you are interested in marketing and sales, design, production, finance, information systems, or logistics, you will need to know how e-commerce technologies can be used to reduce supply chain costs, increase production efficiency, and tighten the relationship with customers. This text is written to help you understand the fundamental business issues in e-commerce.

We spend a considerable amount of effort analyzing the business models and strategies of "pure-play" online companies and established businesses now forging "bricks-and-clicks" business models. We explore why many early e-commerce firms failed and the strategic, financial, marketing, and organizational challenges they faced. We also describe how contemporary e-commerce firms learned from the mistakes of early firms, and how established firms are using e-commerce to succeed. Above all, we attempt to bring a strong sense of business realism and sensitivity to the often exaggerated descriptions of e-commerce. As founders of a dot.com company and participants in the E-commerce I period, we have learned that the "E" in e-commerce does not stand for easy.

E-commerce is driven by Internet technology. Internet technology, and information technology in general, is perhaps the star of the show. Without the Internet,

e-commerce would be virtually nonexistent. Accordingly, we provide four specific chapters on the Internet and e-commerce technology, and in every chapter we provide continuing coverage by illustrating how the topic of the chapter is being shaped by new information technologies. For instance, Internet technology drives developments in payment systems, security, marketing strategies and techniques, financial applications, business-to-business trade, and retail e-commerce. We describe new wireless and mobile commerce technology, new telecommunications technologies that lower business costs, new software languages such as XML for expediting the flow of documents among business firms, new Internet technologies for making payments over the Internet, and new types of Internet-based information systems that support electronic business-to-business markets.

E-commerce is not only about business and technology, however. The third part of the equation for understanding e-commerce is society. E-commerce and Internet technologies have important social consequences that business leaders can ignore only at their peril. E-commerce has challenged our concepts of privacy, intellectual property, and even our ideas about national sovereignty and governance. Advertising networks maintain profiles on millions of U.S. and foreign online shoppers. Entire e-commerce industries — such as digital music — are based on challenging the intellectual property rights of record labels and artists. And many countries — including the United States — are demanding to control the content of Web sites displayed within their borders. As a result of these challenges to existing institutions, e-commerce and the Internet are the subject of increasing investigation, litigation, and legislation. Business leaders need to understand these societal developments, and they cannot afford to assume any longer that the Internet is borderless, beyond social control and regulation, or a place where market efficiency is the only consideration. In addition to an entire chapter devoted to the social and legal implications of e-commerce, each chapter contains material highlighting the social implications of e-commerce.

## FEATURES AND COVERAGE

**Real-World Business Firm Focus** From Akamai Technologies to Zoomerang.com, *E-commerce: Business. Technology. Society.* contains well over one hundred real-company examples that place coverage in the context of actual dot.com businesses. You'll find these examples in each chapter, as well as in special features such as chapter-opening and chapter-closing cases, and "Insight on" boxes.

**E-Commerce in Action Cases** Part IV of the book analyzes the business strategies and financial operating results of seventeen e-commerce companies in retail, services, B2B, auctions, portals, communities, and digital media content. Among the companies we analyze are Yahoo, Buy.com, JCPenney, Lands'End, FashionMall, E*Trade. com, Hotjobs.com, Expedia.com, eBay.com, FreeMarkets, and Ariba. For each company, we perform a brief strategic and financial analysis of the firm and assess the

near-term future prospects for the firm. These cases are ideal real-world instructional guides for students interested in understanding the financial foundation of e-commerce firms, their strategic visions and customer value propositions, and their changing strategic objectives.

**In-depth Coverage of B2B Commerce** We devote an entire chapter to an examination of B2B commerce. In writing this chapter, we developed a unique and easily understood classification schema to help students understand this complex arena of e-commerce. This chapter covers Net marketplaces, including e-distributors, e-procurement companies, exchanges and industry consortia, as well as the development of private industrial networks and collaborative commerce.

**Current and Future Technology Coverage** Internet and related information technologies continue to change rapidly. What was once a shortage of telecommunications capacity has now turned into a surplus, PC prices have continued to fall, new client-side devices have emerged, and Internet high-speed connections are continuing to show double-digit growth. While we thoroughly discuss the current Internet environment, we devote considerable attention to describing Internet II technologies and applications such as the advanced network infrastructure, fiber optics, wireless Web and 3G technologies, WiFi, IP Multicasting, and future guaranteed service levels.

**Up-to-date Coverage of the Research Literature** We have sought to include where appropriate references and analysis of the latest e-commerce research findings, as well as many classic articles, in all of our chapters. We have drawn especially on the disciplines of economics, marketing, and information systems and technologies, as well as law journals and broader social science research journals and sources.

**Special Attention to the Social and Legal Aspects of E-commerce** We have paid special attention throughout the book to the social and legal context of e-commerce. Chapter 9 is devoted to a thorough exploration of four ethical dimensions of e-commerce: information privacy, intellectual property, governance, and protecting public welfare on the Internet. We have included an analysis of the latest Federal Trade Commission and other regulatory and nonprofit research reports, and their likely impact on the e-commerce environment.

## OVERVIEW OF THE BOOK

The book is organized into four parts.

Part 1, "Introduction to E-commerce," provides an introduction to the major themes of the book. Chapter 1 defines e-commerce, distinguishes between e-commerce and e-business, defines the different types of e-commerce, and introduces the two periods of E-commerce I and E-commerce II. Chapter 2 introduces and defines the concepts of business model and revenue model, describes the major e-commerce

business and revenue models for both B2C and B2B firms, and introduces the basic business concepts required throughout the text for understanding e-commerce firms including industry structure, value chains, and firm strategy.

Part 2, "Technology Infrastructure for E-commerce," focuses on the technology infrastructure that forms the foundation for all e-commerce. Chapter 3 traces the historical development of Internet I — the first Internet — and thoroughly describes how today's Internet works. A major focus of this chapter is the new Internet II that is now under development and will shape the near-term future of e-commerce. Chapter 4 builds on the Internet chapter by focusing on the steps managers need to follow in order to build a commercial Web site. This e-commerce infrastructure chapter covers the systems and analysis and design process that should be followed in building an e-commerce Web site; the major decisions surrounding the decision to outsource site development and/or hosting; and how to choose software, hardware, and other tools that can improve Web site performance.

Chapter 5 focuses on Internet security and encryption, building on the e-commerce infrastructure discussion of the previous chapter by describing the ways security can be provided over the Internet. This chapter defines security, describes the major threats to security, and then discusses both the technology and policy solutions available to business managers seeking to secure their firm's sites. Chapter 6 focuses on payment systems. This chapter identifies the stakeholders in payment systems, the dimensions to consider in creating payment systems, and the various types of systems, and then describes in some detail digital wallets, digital cash, digital credit cards, digital checking, smart cards, B2B payment systems, and electronic billing and presentment systems.

Part 3, "Business Concepts and Social Issues," focuses directly on the business and social–legal issues that surround the development of e-commerce. Chapter 7 focuses on e-commerce consumer behavior, the Internet audience, and introduces the student to the basics of online marketing and branding, including online marketing technologies and marketing strategies. Chapter 8 is devoted to online marketing communications, such as online advertising and e-mail marketing,.

Chapter 9 provides a thorough introduction to the social and legal environment of e-commerce. Here, the student will find a description of the ethical and legal dimensions of e-commerce, including a thorough discussion of the latest developments in personal information privacy, intellectual property, Internet governance, jurisdiction, and public health and welfare.

Part 4, "E-commerce in Action," focuses on real-world e-commerce experiences in retail, services, business-to-business, auctions, portals, communities, and digital media. Chapter 10 takes a close look at the experience of firms in the retail marketplace, including both "pure-play" online firms such as Amazon, and mixed strategy "clicks and bricks" firms such as Wal-Mart and JCPenney. Chapter 11 examines the online services industries, with an in-depth look at online financial (banking, broker-

age, real estate and insurance), travel, and career services. Chapter 12 explores the world of B2B commerce, describing both electronic Net marketplaces and the less heralded, but very large arena of private industrial networks and the movement toward collaborative commerce. Chapter 13 explores the online world of auctions, portals, and communities. We describe a number of successful ventures here, including eBay.com and Yahoo, and communities such as iVillage and Alloy Online. Chapter 14 explores the world of online content and digital media, and examines the online publishing, entertainment, and learning industries.

## CHAPTER OUTLINE

Each chapter contains a number of elements designed to make learning easy as well as interesting.

**Learning Objectives** A list of learning objectives that highlights the key concepts in the chapter guides student study.



**Loudcloud**
What Is 100% Uptime Worth?

The day that Chris Wong's company, SkillsVillage.com, which helps businesses find, hire, and manage skilled contract workers, went live, he got an early morning call from the FBI. It seems within hours of launching the site, hackers had taken over SkillsVillage and used it as a front to attack a Canadian corporation.

Wong had launched the site without installing a firewall, security software that could have prevented such a hacker assault, thinking that he'd do it later. There were more important issues to deal with, or so he thought. The call from the FBI prompted Wong to change his thinking and consider outsourcing.

To handle the problem, SkillsVillage turned to another start-up, Loudcloud, a company started by Netscape co-founder Marc Andreeson. Loudcloud provides businesses with outsourced Web site infrastructure services, including all the equipment, software, Internet access, and technical support a site requires. According to Andreeson, Loudcloud has developed software it calls opsware, using off-the-shelf applications that it has customized, that supposedly systematizes all the hard work around Web operations, such as provisioning (determining what components to use), scaling (having enough capacity), and site management and monitoring.

By handing off the work to Loudcloud, clients such as SkillsVillage experience improved site performance and the ability to almost instantaneously add capacity as the site grows. Loudcloud guarantees 100% uptime—absolutely no downtime. If users ever are denied access to a site, Loudcloud provides substantial discounts off its monthly service fees, which typically run in the tens of thousands of dollars. Fortunately for Loudcloud, so far that has not happened.

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**Chapter-Opening Cases**
Each chapter opens with a story about a leading e-commerce company that relates the key objectives of the chapter to a real-life e-commerce business venture.

**"Insight on" Boxes** Each chapter contains real-world vignettes, drawn from the popular press, illustrating the themes of technology, business, and society. These vignettes create an integrated framework and coverage throughout the book for describing and analyzing the full breadth of the field of e-commerce. The boxes probe such issues as Web accessibility for the physically challenged, wireless privacy, hiring "tiger teams" of hackers to locate security threats, and online marketing's targeting of children.

## Marginal Glossary

Throughout the text, key terms and their definitions appear in the text margin where they are first introduced.
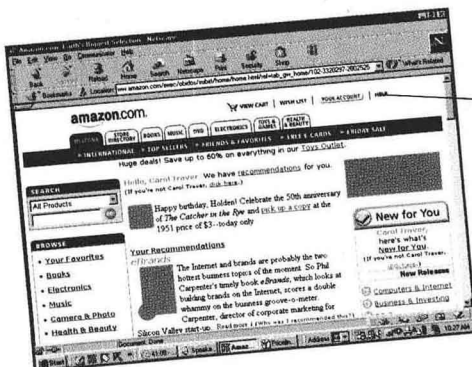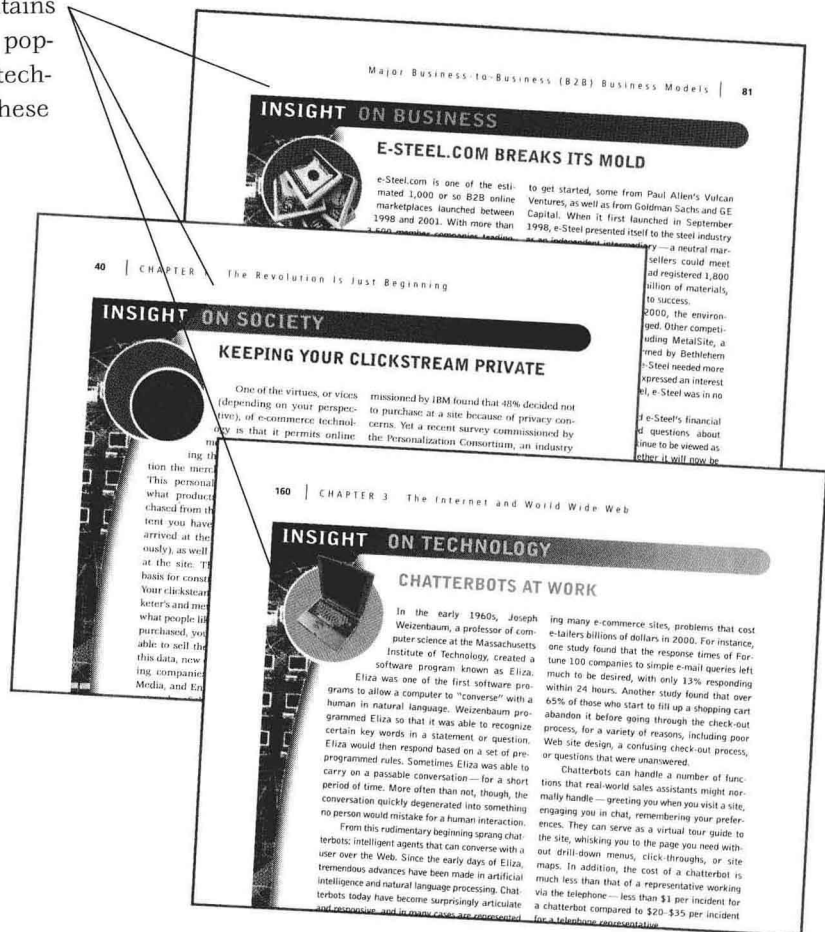


## Real-Company Examples

Drawn from actual e-commerce ventures, well over 100 pertinent examples are used throughout the text to illustrate concepts. Full-color screenshots further enliven the presentation.

**Chapter-Closing Cases** Each chapter concludes with a robust case study based on a real-world organization. These cases help students synthesize chapter concepts and apply this knowledge to concrete problems and scenarios such as evaluating the legality of Napster and assessing the business model behind Priceline.com.
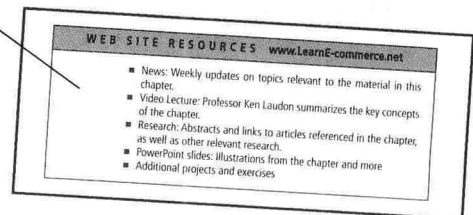
**Chapter-Ending Pedagogy** Each chapter contains end-of-chapter materials designed to reinforce the learning objectives of the chapter.

**Key Concepts** Keyed to the learning objectives, Key Concepts present the key points of the chapter to aid student study.

**Review Questions** Thought-provoking questions prompt students to demonstrate their comprehension and apply chapter concepts to management problem solving.

**Projects** At the end of each chapter are a number of projects that encourage students to apply chapter concepts. Many make use of the Internet and require students to present their findings in an oral presentation or written report. For instance, students are asked to evaluate publicly available information about a company's financials at the SEC Web site, assess payment system options for companies across international boundaries, or search for the top ten cookies on their own computer and the sites they are from.

**Web Resources** A Web section at the end of the chapter directs students to resources that can extend their knowledge of each chapter with projects and exercises and additional content at **www.LearnE-commerce.net.**

WEB SITE RESOURCES   www.LearnE-commerce.net

- News: Weekly updates on topics relevant to the material in this chapter.
- Video Lecture: Professor Ken Laudon summarizes the key concepts of the chapter.
- Research: Abstracts and links to articles referenced in the chapter, as well as other relevant research.
- PowerPoint slides: illustrations from the chapter and more
- Additional projects and exercises

**Companion Web Site Integrating Technology and Learning**  Available at **www.LearnE-commerce.net**, the Web site provides online access to innovative teaching and learning tools. This best-of-breed Web site in the e-commerce educational marketspace offers significant additional content, including:

- Weekly updates on the topics relevant to the materials in each chapter
- Timely reviews of the research literature
- Streaming video lectures for each chapter
- Editorials by the authors
- Additional exercises and Web-based projects

The Companion Web site system includes an online syllabus builder that allows instructors to create a calendar of assignments for each class and to track student activity and quiz grades with an electronic gradebook.

In addition to the Companion Web site, the Web content is available in Course Compass™, WebCT, and BlackBoard versions. CourseCompass™ is a nationally hosted, dynamic, interactive online course management system powered by BlackBoard, leaders in the development of Internet-based learning tools. This easy-to-use and customizable program enables professors to tailor content and functionality to meet individual course needs. To see a demo, visit www.coursecompass.com. Please contact your local sales representative for more information on obtaining Web content in these various formats.

## SUPPORT PACKAGE

The following supplementary materials are available to qualified instructors at the text's Web site, www.LearnE-commerce.net. Contact your Addison-Wesley sales representative for information about obtaining a password. (You can also request an Instructor's Resource CD-ROM with these materials from your sales representative.)

**Instructor's Manual**  This comprehensive manual pulls together a wide variety of teaching tools so that instructors can use the text easily and effectively. Each chapter contains an overview of key topics, a recap of the key learning objectives, lecture tips, discussion of the chapter-ending case, and detailed answers to the Case Study Questions, Review Questions, and Student Projects. To aid instructors, the manual also includes a variety of suggested course syllabi and a detailed description of the resources available at the text's Web site.

**Test Bank**  For quick test preparation, the Test Bank contains 50 questions per chapter in multiple-choice, true/false, and short-essay format emphasizing critical/creative thinking about the issues evoked by the chapter. The Test Bank is available in Microsoft Word and in Addison-Wesley's easy-to-use testing software (Test-Gen EQ

with QuizMaster-EQ for Windows and Macintosh), which allows instructors to view, edit, and add questions.

**PowerPoint Lecture Presentation** Slides illustrate key points, tables, and figures as well as Web site information from the text in lecture note format. The slides can be easily converted to transparencies or viewed electronically in the classroom.

## ACKNOWLEDGMENTS

Addison-Wesley sought the advice of many excellent reviewers, all of whom strongly influenced the organization and substance of this book. The following individuals provided extremely useful evaluations:

Prasad Bingi, Indiana-Purdue University, Fort Wayne

Tom Critzer, Miami University

Abhijit Deshmukh, University of Massachusetts

Brian L. Dos Santos, University of Louisville

John H. Gerdes, University of California, Riverside

Philip Gordon, University of California at Berkeley

Marios Koufaris, CUNY Baruch

Zoonky Lee, University of Nebraska, Lincoln

Haim Levkowitz, University of Massachusetts, Lowell

John Mendonca, Purdue University

Kent Palmer, MacMurray College

Jay Rhee, San Jose State University

Amber Settle, DePaul CTI

Sumit Sircar, University of Texas at Arlington

Pamela Specht, University of Nebraska at Omaha

David Zolzer, Northwestern State University

We also want to thank Bruce Buchanan, Professor of Marketing, New York University Stern School of Business, and Edward T. Stohr, Professor of Information Systems, Stevens Institute of Technology for generously sharing with us materials they created for their e-commerce classes. Special thanks to Jane Laudon for contributing ideas and suggestions, and discussing topics in the book.

We would also like to thank Jupiter Media Metrix for their permission to include data and figures from their research reports in our text. Jupiter Media Metrix is a global leader in Internet and new technology analysis and measurement, combining

data and analysis to provide businesses with unmatched resources for understanding and profiting from the Internet.

In addition, we would like to thank all those at Addison-Wesley who have worked so hard to make sure that this book is the very best that it can be. Susan Hartman Sullivan, Executive Editor, led the team, set the targets and goals, and pushed the project through to completion; her warm encouragement spurred us forward. Rebecca Ferris, Development Editor, coordinated, read, and commented on our drafts and provided invaluable moral support. Roberta Lewis, Development Editor, developmentally edited our manuscript and provided excellent suggestions for improvement. A special thanks is also owed to Kathy Smith, our Project Manager, who, along with Juliet Silveri, Senior Production Supervisor, did a superb job. Dana C. Weightman, Rights and Permissions Advisor, helped us secure permission for the figures and screenshots that are so integral to the text. Regina Hagen Kolenda, Senior Designer, Diana Coe, Cover Designer, and Geri Davis, Text Designer and Art Editor, have collaborated to provide us with a wonderful cover, interior design, and artwork. Michael Hirsch, Executive Marketing Manager, helped to make us aware of the needs and desires of the professors and students who will be using the text. A special thanks also to Frank Ruggirello, Publisher at Addison-Wesley when we began this project, and now Publisher at Benjamin-Cummings. Once again, his belief in our abilities gave us the courage to tackle yet another mountain.

We would also like to thank Marcia Layton Turner and Robin Pickering for their assistance in providing background research and drafts of cases and other materials, and to Russell Polo, Technical Director at Azimuth Interactive, Inc. for his review of the technical material in the text.

Finally, last but not least, we would like to thank our family and friends, without whose support this book would not have been possible.

*Kenneth C. Laudon*

*Carol Guercio Traver*

# Brief Contents

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