



SECOND
EDITION

INFORMATION TECHNOLOGY IN BUSINESS

**Principles,
Practices, and
Opportunities**

James A. Senn

The background of the page is a light gray with a complex, abstract pattern of thin, intersecting lines and larger, darker geometric shapes. These shapes include rectangles, triangles, and irregular polygons, some of which are filled with a darker gray or black. The overall effect is a modern, architectural, and somewhat chaotic design that suggests a digital or technological environment.

INFORMATION TECHNOLOGY IN Business

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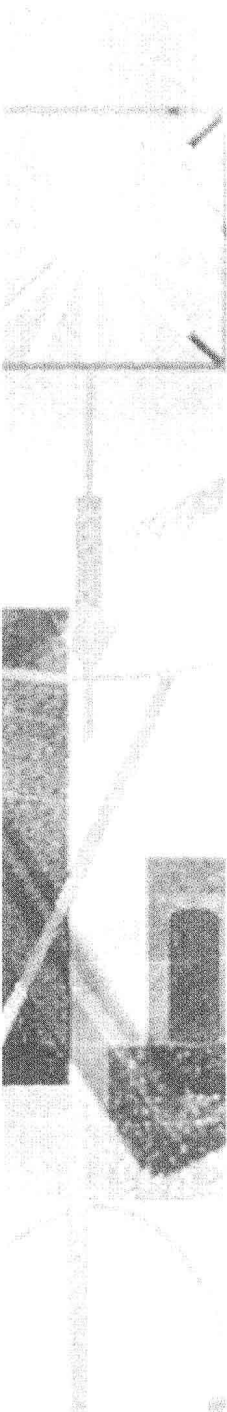
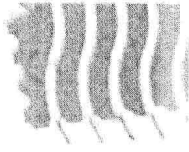
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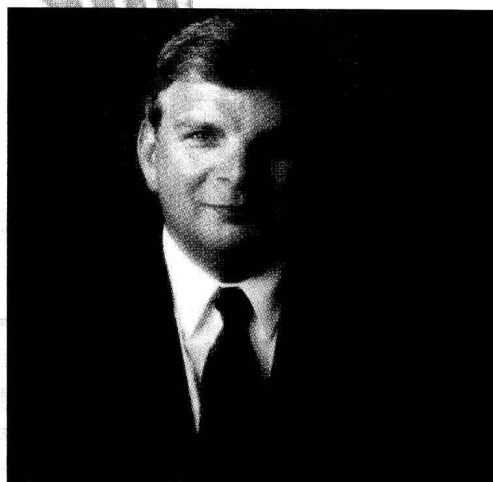
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To Tyler

(To whom every encounter is an opportunity)

*With an easy laugh and a warm smile—
essential assets for the journey ahead—
you'll always capture Grand Pa's attention.*



ABOUT THE AUTHOR

Jim Senn is known internationally as a dynamic speaker on management, corporate strategy, and information technology. He is Director of the Information Technology Management Group, well known for its many activities that facilitate and promote research and communication between information systems professionals, executives, researchers, and organization managers. The group is international in its focus and interacts with executives around the world on a continuing basis.

Senn is also Professor of Information Systems in the College of Business Administration at Georgia State University in Atlanta. Under his six-year leadership as Chairman of the Department of Computer Information Systems at Georgia State University, the department gained widespread international recognition for its programs and activities. It received an overall national ranking by *Computerworld* as the number two program (second to the Massachusetts Institute of Technology) in the United States and was identified as having the top curriculum in the nation.

Senn interacts widely with businesses in many countries. He is the author of several leading books on information systems and systems development that have been translated into multiple languages for use in many countries. He has written numerous articles and papers appearing in leading professional and academic publications. He is also a highly regarded facilitator at corporate and technology planning sessions and frequent interviewer of leaders and executives. Their views are often included in his regularly appearing column about business strategy and his numerous articles and papers. He addresses audiences around the world on strategies for personal and corporate success.

Preface

You've overheard it . . . probably said it yourself: "The Internet makes everything different." These frequently repeated words crystallize the feelings of many about the most important influence on business life since the introduction of microprocessors in 1971. It's evident that the Internet, the near seamless and worldwide web of networks, is a pivotal force that is triggering leaders to consider new possibilities and redefine expectations in business. It is unlocking new sources of enlightenment and entertainment, not to mention communication and commerce, in daily life. Even more important, perhaps, is the realization that Internet-led innovations are emerging daily, with no end in sight.

The Internet—the Net—is causing us to change the way we look at information, the nature and delivery of products and services, and the ways we keep in touch. The very content of these items has changed as well. In many instances, they incorporate colorful graphics, sound, video, and animated images. These forms are commonplace on the Net and elsewhere, dramatically augmenting everyday text. For many people these multimedia forms are rapidly becoming the norm in important communications.

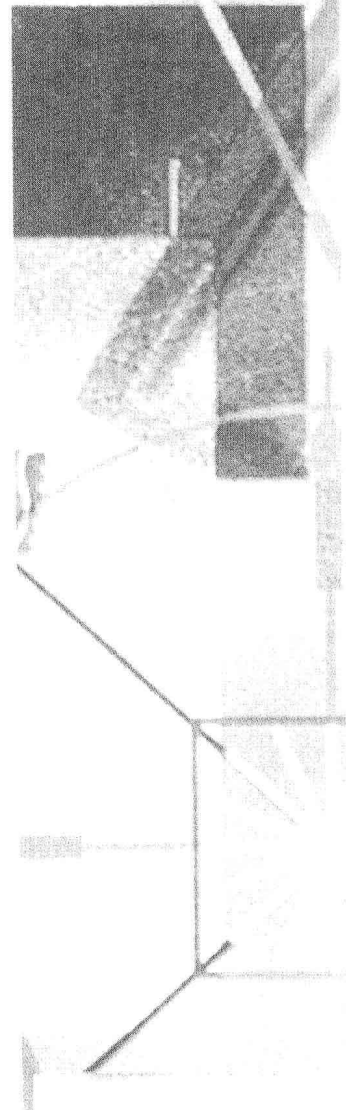
What does this all mean? A myriad of scenarios is emerging; however, one thing is certain. Those who have a firm grasp on the capabilities of the Internet, multimedia, and the characteristics of the underlying information technology are most likely to influence, or at least capitalize on, their application to the world around them—business or personal.

The Internet and multimedia are among the most visible icons in the continuing evolution of information technology in business. Those companies and individuals having the *know-how* to combine their resources in *computers* and *communication systems*—the principal elements of information technology—are the most likely to be successful in their endeavors. Moreover, their application of the *principles* of IT, in combination with an awareness of the best *practices*, provides the greatest *opportunity* for their success. However, it's no surprise to anyone in business today that many of yesterday's practices—division of labor (not career development and job enrichment) and an education for a lifetime (rather than a lifetime of education), for example—no longer apply. It is precisely this realization that has led so many companies to rethink, or *reengineer*, their previously sacred business practices.

The Second Edition

This book's title, *Information Technology in Business: Principles, Practices, and Opportunities*, reflects the basic realities and promise of information technology in business, both globally and locally. It suggests the book's distinguishing characteristics:

- Focus on **information technology**
- Emphasis on **problem solving**
- Examination of actual **business experiences**
- Application to **professional practice**



This second edition includes extensive discussions of the practical uses of information technology (IT) in business internationally, a distinguishing characteristic of the very successful first edition. You'll recognize the many examples of business practice throughout the book, all chosen to show how the world's best-known firms are capitalizing on IT to serve their stakeholders effectively. Because IT is not just for big business, as you know, I've also included many examples that illustrate the impact of IT in creating opportunities for small business and individual entrepreneurs: artists, athletes, entertainers, inventors, journalists . . . the list is almost endless.

New Chapters Expand Principles and Practices

This edition features comprehensive new chapters on the Internet—including its most widely used resource, the World Wide Web—and on multimedia technologies. Drawing on these chapters, I incorporate applications of the Net, the Web, and multimedia into many of the company practices described throughout the rest of the book.

This book is organized into five parts. The first module, "An Introduction to Information Technology," introduces the principles of information technology and describes the reasons for its extensive use in all types of businesses. You'll find the Internet chapter in this module (in Chapter 3), introduced early so it can be used in all the chapters that follow.

"Tech Talk," the second part, describes in detail the components of computers, including hardware and programs. A vast array of business uses of these IT components is described through illustration. If you're already familiar with the technical aspects of IT, this part will be useful to review the most recent developments in IT.

Part 3, "Single-User Systems," examines the productivity tools people find most useful: spreadsheet programs, database systems, word processing, desktop publishing, presentation systems, and computer graphics. This part also discusses the development of single-user systems, including selection of both computer and communication hardware as well as personal productivity programs. I've created an entire chapter on multimedia to describe how companies are capitalizing on the power of graphics, audio, video (and more) to streamline their operations and augment services for their customers. This chapter also illustrates, step by step, how to build a multimedia presentation using widely available authoring tools. This chapter will assist you in getting your students up to speed in doing electronic presentations.

"Multiuser Systems," Part 4, explores the way businesses interconnect many users, within departments and across work groups, and throughout an enterprise. End-users also share IT resources that are distributed across miles, countries, or continents. Developing shared databases and shared applications places special requirements on the know-how of IT professionals, as this part also discusses.

Part 5, "IT Issues and Opportunities," explores important challenges surrounding the use of information technology, including the issues of ethics, personal privacy, and IT security. The final chapter examines the emerging developments that will take us to the next steps in the Information Age.

New Features Highlight Practice

The themes of principles, practices, and opportunities are integrated into the hundreds of company illustrations spanning the chapters of this book. I further highlight the themes in each chapter with special insert features:

- **Rethinking Business Practices** explores the way companies have changed their way of conducting business by challenging conventional practices and capitalizing on their information technology capabilities
- **Information Technology in Practice** discusses innovative and effective applications of IT that are making people and organizations more successful

In these features you'll find a candid (and sometimes gritty) discussion of company practices related to the chapter's focus. For instance, you'll see how intranets are used at Visa, the well-known bank card company, and how Europcar, the European car rental company, used IT to restructure its business practices throughout Europe. Another feature will discuss why Xerox chose to outsource its existing worldwide information systems applications to EDS. Then there's the story of how Cable Network News (CNN) protects against illegal use of the programs it broadcasts around the world.

Chapter Cases

Each chapter ends with a story of real companies and real people in the form of a comprehensive case. For example, you'll see how the nationwide tool company, Snap-on Tools, is using intranets to keep its dealers up to date, making them both more successful. ESPN's highly successful SportsZone on the Internet is also explored. Then there's the emergence of digital cash and the story of how one company, Amsterdam-based DigiCash, is making its mark around the world. Or take the case of doing business from scenic Carmel, California, home of well-known necktie maker Talbott Ties. You will see how Talbott uses IT to support its roving sales force and yet ensure that its customers obtain the products they want when they need them.

New technology uses are featured in the cases as well. The use of data warehouses by SNCF, the French national railroad, is discussed at the end of Chapter 11. Another case focuses on the troublesome millennium bug. Most IT professionals are watching, as you surely are, to see how this problem gets resolved.

Video Cases

Each part of the book concludes with a media case that is supplemented by a news clip from the ABC News/Prentice Hall Video Library or the *Wall Street Journal* video library. I think you'll find these timely and topical cases can be used to spur discussion on some of the key IT issues for today—and for tomorrow. Will people grow to shop on-line? What will become of the Network computer? What does Bill Gates go to see at Comdex, the giant computer trade show? For that matter what does *he* expect for the future of IT? These are among the questions posed in the combination of cases ending each section of the book and in the video footage available to instructors using the book.



Critical Connections

Critical thinking is an important part of solving problems and capitalizing on opportunities. A special Critical Connection feature emphasizes problem solving. Each chapter introduces a challenge facing an individual or company and draws on the principles and practices discussed in the chapter. At the end of the chapter, these experiences are revisited and conclusions are drawn. Each Critical Connection concludes with a series of discussion questions. Like the other examples throughout the book, Critical Connections focus on a wide variety of businesses from small single-owner start-ups to multinational corporations like McDonald's and Levi Strauss.

Reality Checks

I often find it useful to step back from what I'm doing, or what I'm reading, to consider the ramifications of what's happening. For this reason I've included a series of Reality Checks in every chapter. Each Reality Check is a personal assessment of a particular principle, practice, or opportunity, and is drawn from a vast array of IT experiences in the worlds of business, government, and research.

Photo Essays

The "mind's eye" augments written descriptions by allowing us to visualize experience. To further share the experiences of people and companies, I've created a series of photo essays that tell stories through photographs, images, and display screens. Each photo essay tells a step-by-step story in pictures. For example, in Chapter 2 you'll see how Nigel Holmes, the inventor of infographics, uses this powerful medium to describe Olympic athletes in *Sports Illustrated* magazine. In Chapter 10, you'll see how a company can use Lotus Notes to manage important projects when team members are in different parts of the world. The Federal Express photo essay in Chapter 11 takes you behind the scenes to show how the successful overnight carrier uses IT to honor its slogan (When it's absolutely, positively, gotta be there . . .) repeating the company's "overnight success" every day. Check out the other photo essays too. They're both fun to read and informative.

The Appendix: Landmark Events in the History of Information Technology time line uses a variety of photographs to trace the key events leading up to IT as we know it today. And, if you're buying a new model PC to replace your current one, be sure to check out the PC Buyer's Guide.

Group Projects and Applications

Since people often learn best when they learn from each other and through the firsthand gathering of information, you'll find a set of group projects included in every chapter. The project descriptions focus on a current topic relevant to the subject of the chapter. Each describes a topic for investigation, divides up the responsibility among group members, suggests a means for assembling information, and presents an approach to present results to the class. The projects require team members to get into the field, visiting companies or interviewing businesspersons.

Net_Work Projects Explore the Internet

Elements of the Internet are woven throughout this book. However, of special significance are the Net_Work projects included in each chapter. These projects, which can be completed by individuals or teams, are designed to showcase the many capabilities and features of the Internet and the World Wide Web. Net_Work projects will visit corporate and government sites, utilize the search engines to locate information, teach how to download software and documents, explore the multimedia possibilities provided by plug-ins—even venture into cybercruiting to see the career opportunities that are posted at various Web sites. Net_Work projects begin in the first chapter where the specific capabilities to use the Internet from your campus are identified.

Additional Learning Aids

Each chapter includes a variety of other learning aids designed to assist readers in testing their understanding and ability to apply the principles and practices described in the chapter. Included in each chapter are:

- A detailed outline that previews the chapter's contents
- Learning objectives that focus readers on *understanding* key concepts and frameworks
- An opening vignette describing a practical use of information technology in business
- A running marginal glossary of key terms introduced in the chapter
- A chapter summary keyed to learning objectives
- Key terms useful for review
- Review questions that test understanding of the chapter
- Discussion questions that raise thought-provoking, often controversial, issues
- Suggested readings for pursuing topics introduced in the chapter

Learning System Resources

Instructors using *Information Technology in Business: Principles, Practices, and Opportunities, 2nd ed.*, will be provided with a complete system designed to facilitate education and learning in the dynamic field of IT. Each component of this system has been carefully crafted to ensure that the learning experience is rewarding and effective for instructor and student alike. They are available to instructors who adopt this book for their classes and have their bookstore order from the publisher.

INSTRUCTOR'S RESOURCE MANUAL The Instructor's Resource Manual is a complete tool for preparing college lectures. It includes one chapter for each chapter of the text and contains a chapter overview, teaching tips, learning objectives, lecture outlines, and solutions to all questions in the text.

TEST ITEM FILE A printed Test Item File is also available to adopters. More than 1,000 multiple choice, true/false, and short answer/essay questions are included. Tests are arranged on a per-chapter basis.

PRENTICE HALL CUSTOM TEST A computerized version of the printed Test Item File allows instructors to design and create tests as well as maintain student records and provide online practice testing for students. Windows PH Custom Test is a PC-compatible software package.

POWERPOINT PRESENTATION SLIDES Also available to adopters are PowerPoint presentation slides. These slides, created in PowerPoint 4.0 for Windows 3.1 and Windows 95 (or later versions), outline each chapter of the text and incorporate tables and graphs as well.



VIDEO LIBRARY Video cases, consisting of interviews, critical analyses, and network news reports drawn from the library of ABC News and *The Wall Street Journal*, are available to instructors who adopt this book for their classes and have their bookstore order it from the publisher. The cases are chosen because of their widespread applicability to business and their usefulness and appeal to students, and draw on such ABC News programs as *Nightline*, *World News*, and *This Week with David Brinkley*. The video clips accompany the media cases that conclude each part of the text.

A video guide, to assist instructors, is included in the Instructor's Resource Manual.

ACETATES A set of 100 color acetates is provided to facilitate in-class lectures. These acetates are adapted from the four-color art in the textbook.

WORLD WIDE WEB SITE New to this edition is a Web site which supports the text. The site, located at <http://www.prenhall.com/senn> contains a section for students and a section for instructors. The student section includes photo essays, technology updates, and additional part-ending cases, as well as Web links to companies mentioned in the text and an interactive study guide organized by chapter. The instructor section contains password-protected access to the instructor's manual and other teaching resources.

Additional Student Learning System Resources

To further augment learning, two powerful resources are available to adopters of this book.

IT Works CD-ROM: Courseware for Information Technology *IT Works CD-ROM* is an innovative multimedia educational tool that can be used one-on-one with students to demonstrate basic computer concepts and applications. It employs sound, motion video, colorful high resolution graphics, and animation.

IT Works CD-ROM consists of four modules:

- Inside the Computer Explorer. This Explorer examines the computer's system unit, inside and out (front and rear). The student simply clicks on a component to learn more about it.
- Peripherals Explorer. This Peripherals Explorer activity introduces students to common input/output devices, storage devices, and storage media which might be configured with a PC.
- Online Explorer. This Explorer simulates going online. The student can "log on" and learn to navigate the Internet, America Online, and a BBS.

- **Applications Explorer.** The Applications Explorer gives the student a lesson on the different classes of software programs available. They can explore various applications in four categories: productivity, multiuser applications, home/personal, and system software.

Acknowledgments

The fact that this book is characterized by so many descriptions of actual IT applications and experiences is a result of the tremendous support and involvement of companies and their leaders as well as a seasoned research team.

Business Leaders A large number of business executives from North America, Europe, and Asia participated in the development of this project by sharing first-hand with the author their business experiences and insights, as well as those of their companies and employees. They were willing to discuss their successes (as well as other experiences that became “significant learning events”). A large number are identified through their company names in this book. I appreciate their support and candor.

I’m also indebted to the many businesses that allowed me to use their logos as well as their stories.

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Learning System Support The supplements for this book were developed with the assistance of many. Their efforts will enable students and instructors alike to seek and achieve a practical and forward-looking knowledge of the opportunities emanating from the effective use of information technology in business.

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Brief Contents

Part 1 An Introduction to Information Technology

Chapter 1	Information Technology: Principles, Practices, and Opportunities	2
Chapter 2	A Tour of a Computer System	46
Chapter 3	A Tour of the Internet and the World Wide Web	104

Part 2 Tech Talk

Chapter 4	The Central Processor and Memory	146
Chapter 5	Secondary Storage and Input/Output Devices	194

Part 3 Single-User Systems

Chapter 6	Electronic Spreadsheets: Powerful Problem-Solving Tools	252
Chapter 7	Database Applications for Personal Productivity	300
Chapter 8	Multimedia Presentations	338
Chapter 9	Developing Single-User Systems	394

Part 4 Multiuser Systems

Chapter 10	Multiuser and Network Computing	438
Chapter 11	Shared and Distributed Data	502
Chapter 12	Developing Shared IT Applications	546
Chapter 13	Business Information Systems and Information Technology in Industry	608

Part 5 IT Issues and Opportunities

Chapter 14	Issues in Information Technology	658
Chapter 15	The Information Age: Next Steps	698

Appendix: Landmark Events in the History of Information Technology	728
---	------------

Concise Dictionary of IT Terminology	735
---	------------

Credits	C-1
----------------	------------

Subject Index	I-1
----------------------	------------

Name, Company, and Product Index	I-13
---	-------------



Contents

Preface xxi

Part 1 An Introduction to Information Technology

Chapter 1 Information Technology: Principles, Practices, and Opportunities 2

<i>Information Technology Keeps You On-the-Go and On-Schedule</i>	3
Welcome to the Information Age 5	
The Evolution of the Information Age	5
The Characteristics of the Information Age	6
What Is Information Technology? 12	
Computers	15
Communications Networks	20
Know-How	20
The Principles of Information Technology 21	
The Functions of Information Technology	21
The Benefits of Information Technology	25
IT at Work: Caterpillar's Virtual Reality	28
The Opportunities for Information Technology	30
Information Technology Is All Around Us, Improving Our Lives	31
The Responsibilities of Using Information Technology	36
The Career Side of Information Technology 36	
Information Technology as a Career	36
Information Technology as an Aid to Your Career	37
<i>Case Study: Information Technology Outruns Runners of the New York Stock Exchange</i>	44

Chapter 2 A Tour of a Computer System 46

<i>IT Helps Combine Journalism and Art at the Associated Press</i>	47
Hardware: Computing, Storing, and Communicating 49	
Input Devices	49
The Processor	53
Output Devices	55
Secondary Storage Devices	59
Peripheral Equipment	59



Programs: In Charge of the Hardware	60
Software Packages	62
Programming Languages	68
Custom Software	68
Software Trends	69
Information: The Reason for Using Information Technology	70
Data	70
Text	70
Sound	70
Images	71
People: The Most Important Element	72
Users	72
Information Technology Professionals	73
Procedures: The Way It Goes	76
Operations Procedures	76
Backup and Recovery Procedures	77
Security Procedures	78
Development Procedures	78
An Introduction to Systems	78
Personal/Single-User Systems	78
Multiuser Systems	79
Information Technology in Practice at ITT Sheraton Hotels:	
An Example	80
ITT Sheraton	80
Reservatron Worldwide Reservation System	81
Property Management System	83
Back Office System	86
The Executive Offices Staff	88
Information Technology at ITT Sheraton's Reservatron System	89
Information Processing	89
<i>Case Study: Hyatt Hotels Help Business Travelers Set Up a Base Camp</i>	<i>98</i>
<i>Photo Essay: Nigel Holmes's Infographic Shares the Vital Statistics and Secret Taboos of the U.S. Centennial Olympic Team</i>	<i>100</i>

Chapter 3 A Tour of the Internet and the World Wide Web 104

<i>A Mosaic for the Future</i>	<i>105</i>
Origin of the Internet	106
Computers on the Internet	107
Internet Addresses	109

Capabilities of the Internet	111
Communications Capabilities	111
Retrieval Capabilities	114
Browsing the World Wide Web	119
Browsing the Web's Many Pages	119
Browser Software	122
WWW's URL Addresses	126
Navigating the WWW	127
Internet Information	129
A Final Word	129
<i>Case Study: The Snap-on Intranet</i>	137
<i>Photo Essay: Tripod Develops a Web Site</i>	140
Part 1 Video Case: Opportunities for Investing in the Internet	144

Part 2 Tech Talk

Chapter 4 The Central Processor and Memory 146

<i>The Microprocessor Reaches Adulthood</i>	147
The Central Processing Unit (CPU)	148
Control Unit	150
Arithmetic/Logic Unit (ALU)	150
Memory	151
Memory Size	152
RAM and ROM	153
Flash Memory	156
PCMCIA Card Memory	156
Inside the System Unit	158
Processor Chips	161
Memory Chips	165
Ports	167
Add-in Boards	167
Plug and Play	170
The Processing Sequence	170
The Machine Cycle	171
Registers	171
Processor Speed	172
Determining Processor Speed	175
Increasing Computer Speed	176
<i>Case Study: DigiCash Makes Money Electronic</i>	187
<i>Photo Essay: The Making of a Microprocessor</i>	189

