

SEVENTH EDITION

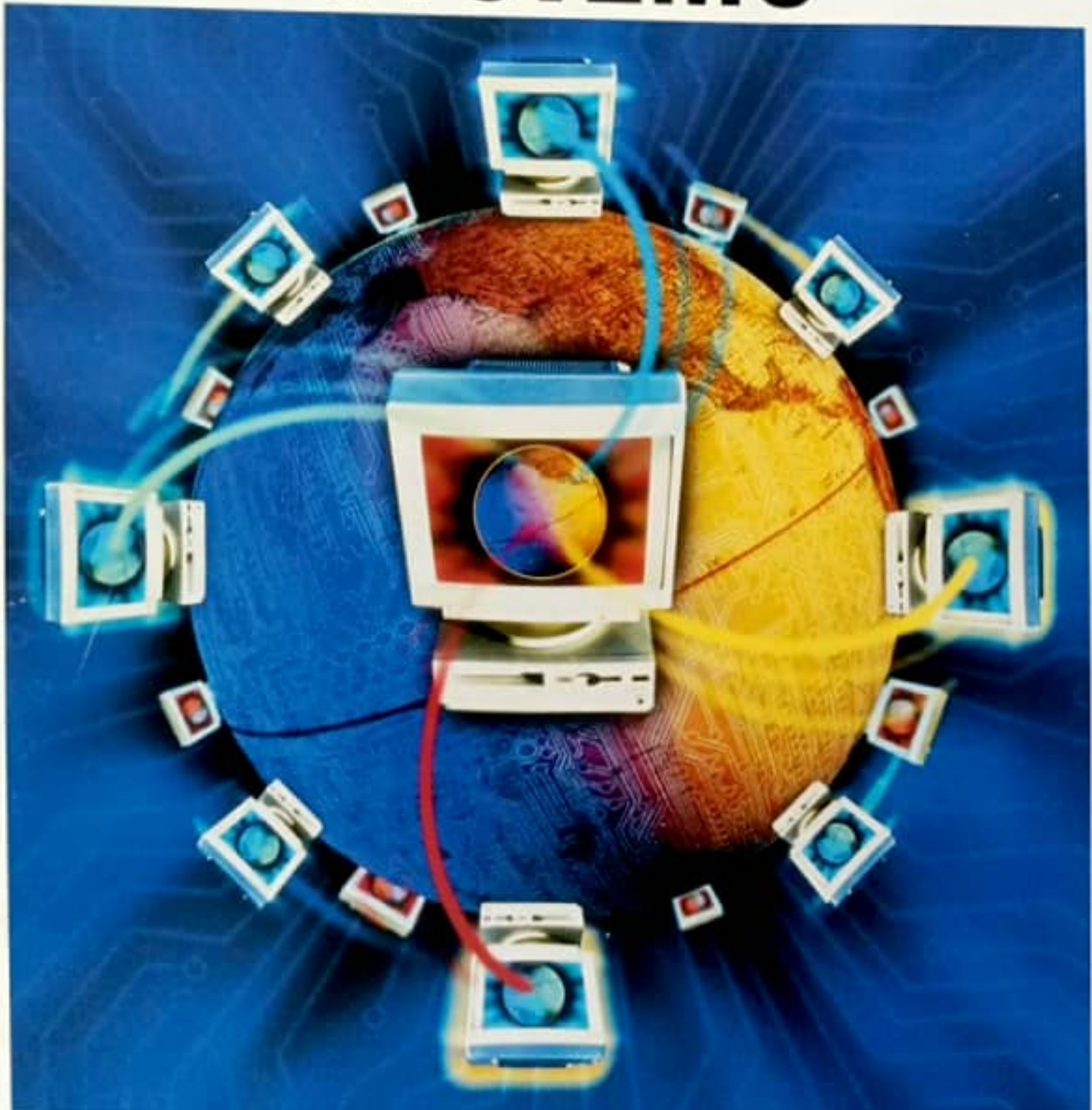
# MANAGEMENT

MANAGING THE DIGITAL FIRM

# INFORMATION SYSTEMS

Kenneth C. Laudon

Jane P. Laudon



[www.prenhall.com/laudon](http://www.prenhall.com/laudon)

INTERNATIONAL  
EDITION

# BRIEF CONTENTS

<b>PART ONE</b>	<b>ORGANIZATIONS, MANAGEMENT, AND THE NETWORKED ENTERPRISE 1</b>
Chapter 1	Managing the Digital Firm 2
Chapter 2	Information Systems in the Enterprise 36
Chapter 3	Information Systems, Organizations, Management, and Strategy 66
Chapter 4	The Digital Firm: Electronic Commerce and Electronic Business 102
<b>PART I PROJECT</b>	Analyzing Business Processes for an Enterprise System 138
<b>PART TWO</b>	<b>INFORMATION TECHNOLOGY INFRASTRUCTURE 139</b>
Chapter 5	Managing Hardware Assets 140
Chapter 6	Managing Software Assets 170
Chapter 7	Managing Data Resources 204
Chapter 8	Telecommunications and Networks 234
Chapter 9	The Internet and the New Information Technology Infrastructure 262
<b>PART II PROJECT</b>	Creating a New Internet Business 298
<b>PART THREE</b>	<b>BUILDING INFORMATION SYSTEMS IN THE DIGITAL FIRM 301</b>
Chapter 10	Redesigning the Organization with Information Systems 302
Chapter 11	Understanding the Business Value of Systems and Managing Change 336
<b>PART III PROJECT</b>	Redesigning Business Processes for Healthlite Yogurt Company 366
<b>PART FOUR</b>	<b>MANAGEMENT AND ORGANIZATIONAL SUPPORT SYSTEMS FOR THE DIGITAL FIRM 369</b>
Chapter 12	Managing Knowledge: Knowledge Work and Artificial Intelligence 370
Chapter 13	Enhancing Management Decision Making 402
<b>PART IV PROJECT</b>	Designing an Enterprise Information Portal 430
<b>PART FIVE</b>	<b>MANAGING INFORMATION SYSTEMS IN THE DIGITAL FIRM 431</b>
Chapter 14	Information Systems Security and Control 432
Chapter 15	Ethical and Social Impact of Information Systems 466
Chapter 16	Managing International Information Systems 498
<b>PART V PROJECT</b>	Assessing the Total Cost of Ownership (TCO) of a Web Site 522
	<b>INTERNATIONAL CASE STUDIES 525</b>
	<b>REFERENCES R 1</b>
	<b>INDEXES I 1</b>
	<b>PHOTO AND SCREEN-SHOT CREDITS P 1</b>

# CONTENTS

<b>PART ONE</b>	<b>ORGANIZATIONS, MANAGEMENT, AND THE NETWORKED ENTERPRISE</b>	<b>1</b>
<b>CHAPTER 1</b>	<b>MANAGING THE DIGITAL FIRM</b>	<b>2</b>
	<i>1.1 Why Information Systems?</i>	<i>4</i>
	The Competitive Business Environment and the Emerging Digital Firm, 4 • What Is an Information System?, 7 • <b>Window on Organizations:</b> Cisco Systems: A Digital Firm in the Making, 7 • <b>Window on Technology:</b> UPS Competes Globally with Information Technology, 10 • A Business Perspective on Information Systems, 11	
	<i>1.2 Contemporary Approaches to Information Systems</i>	<i>14</i>
	Technical Approach, 14 • Behavioral Approach, 15 • Approach of This Text: Sociotechnical Systems, 15	
	<i>1.3 Toward the Digital Firm: The New Role of Information Systems in Organizations</i>	<i>16</i>
	The Widening Scope of Information Systems, 16 • The Network Revolution and the Internet, 17 • <b>Window on Management:</b> Yukon Netpreneurs, 19 • New Options for Organizational Design: The Digital Firm and the Networked Enterprise, 20 • The Digital Firm: Electronic Commerce and Electronic Business, 23	
	<i>1.4 Learning to Use Information Systems: New Opportunities with Technology</i>	<i>25</i>
	The Challenge of Information Systems: Key Management Issues, 25 • <b>Management Decision Problem:</b> Planning a New Internet Business, 27 • Integrating Text with Technology: New Opportunities for Learning, 29 • <b>Application Software Exercises:</b> Web Browser and Spreadsheet Exercise: Investing in Electronic Retailing, 30	
	<i>Management Wrap-Up</i> 31 • <i>Summary</i> 31 • <i>Key Terms</i> 32 • <i>Review Questions</i> 32 • <i>Group Project</i> 33 • <i>Tools for Interactive Learning</i> 33 • <i>Case Study: Can GE Remake Itself as a Digital Firm?</i> 33	
<b>CHAPTER 2</b>	<b>INFORMATION SYSTEMS IN THE ENTERPRISE</b>	<b>36</b>
	<i>2.1 Key System Applications in the Organization</i>	<i>38</i>
	Different Kinds of Systems, 38 • Six Major Types of Systems, 40 • Relationship of Systems to One Another, 45	
	<i>2.2 Systems from a Functional Perspective</i>	<i>46</i>
	Sales and Marketing Systems, 46 • Manufacturing and Production Systems, 47 • <b>Window on Management:</b> How Southstream Seafoods Lands the Big Customers, 48 • Finance and Accounting Systems, 49 • Human Resources Systems, 50 •	
	<i>2.3 Integrating Functions and Business Processes: Enterprise Systems and Industrial Networks</i>	<i>50</i>
	Business Processes and Information Systems, 50 • Customer Relationship Management and Supply Chain Management, 52 • Enterprise Systems, 54 • <b>Window on Organizations:</b> Supply Chain Management Keeps Inventory Fresh at HP, 55 • Benefits	

and Challenges of Enterprise Systems, 57 • **Management Decision Problem:** Analyzing Enterprise Process Integration, 57 • Extended Enterprises and Industrial Networks, 59 • Application Software Exercise: Database Exercise: Tracking Reservations at Monroe's Midnight Inn, 60

*Management Wrap-Up* 61 • *Summary* 61 • *Key Terms* 62 • *Review Questions* 63 • *Group Project* 63 • *Tools for Interactive Learning* 63 • *Case Study: Owens-Corning's Enterprise System Struggle* 64

### CHAPTER 3 INFORMATION SYSTEMS, ORGANIZATIONS, MANAGEMENT, AND STRATEGY 66

3.1 *Organizations and Information Systems* 68  
What Is an Organization?, 69 • Common Features of Organizations, 70 • Unique Features of Organizations, 72

3.2 *The Changing Role of Information Systems in Organizations* 74  
Information Technology Infrastructure and Information Technology Services, 74 • **Window on Organizations:** E-commerce, Japanese Style, 74 • How Information Systems Affect Organizations, 75 • The Internet and Organizations, 78 • Implications for the Design and Understanding of Information Systems, 79

3.3 *Managers, Decision Making, and Information Systems* 79  
The Role of Managers in Organizations, 79 • Managers and Decision Making, 81 • Implications for System Design, 85

3.4 *Information Systems and Business Strategy* 85  
What Is a Strategic Information System?, 85 • Business-level Strategy and the Value Chain Model, 86 • **Window on Technology:** NextCard Direct Markets with the Internet, 88 • **Management Decision Problem:** Analyzing Customer Acquisition Costs, 90 • Firm-level Strategy and Information Technology, 92 • Industry-level Strategy and Information Systems: Competitive Forces and Network Economics, 93 • Using Systems for Competitive Advantage: Management Issues, 95 • **Application Software Exercise:** Spreadsheet Exercise: Determining Monthly Loan Payments for Roberto's Place, 96

*Management Wrap-Up* 97 • *Summary* 97 • *Key Terms* 98 • *Review Questions* 98 • *Group Project* 99 • *Tools for Interactive Learning* 99 • *Case Study: Rand McNally Maps Out a Trip to a Digital Future* 99

### CHAPTER 4 THE DIGITAL FIRM: ELECTRONIC COMMERCE AND ELECTRONIC BUSINESS 102

4.1 *Electronic Commerce, Electronic Business, and the Emerging Digital Firm* 104

Internet Technology and the Digital Firm, 105 • New Business Models and Value Propositions, 106

4.2 *Electronic Commerce* 110

Categories of Electronic Commerce, 110 • Customer-Centered Retailing, 111 • **Management Decision Problem:** Measuring the Effectiveness of Web Advertising, 112 • Business-to-Business Electronic Commerce: New Efficiencies and Relationships, 115 • Electronic Commerce Payment Systems, 119 • **Window on Organizations:** Can Covisint Succeed as an Auto Industry Exchange?, 119

4.3 *Electronic Business and the Digital Firm* 122

How Intranets Support Electronic Business, 122 • Intranets and Group Collaboration, 123 • Intranet Applications for Electronic Business, 123 • **Window on Technology:** Self-service Intranets for Human Resources, 126 • Coordination and Supply Chain Management, 127

#### 4.4 Management Challenges and Opportunities 129

Unproven Business Models, 129 • Business Process Change Requirements, 129 • **Window on Management:** Controlling Channel Conflict, 130 • Legal Issues, 131 • Security and Privacy, 131 • **Application Software Exercises:** Spreadsheet and Electronic Presentation Software Exercise: Analyzing Web Marketing Campaigns, 132

*Management Wrap-Up* 132 • *Summary* 133 • *Key Terms* 134 • *Review Questions* 134 • *Group Project* 134 • *Tools for Interactive Learning* 135 • *Case Study: Bon.com: Poster Child for Dot.com Failure?* 135

### PART I PROJECT

## ANALYZING BUSINESS PROCESSES FOR AN ENTERPRISE SYSTEM 138

### PART TWO

## INFORMATION TECHNOLOGY INFRASTRUCTURE 139

### CHAPTER 5 MANAGING HARDWARE ASSETS 140

#### 5.1 Computer Hardware and Information Technology Infrastructure 142

The Computer System, 142 • How Computers Represent Data, 143 • The CPU and Primary Storage, 144 • Microprocessors and Processing Power, 146 • Multiple Processors and Parallel Processing, 148

#### 5.2 Storage, Input, and Output Technology 148

Secondary Storage Technology, 149 • Input and Output Devices, 151 • **Window on Management:** Storage Service Providers: Data Storage Becomes a Utility, 152 • Interactive Multimedia, 154

#### 5.3 Categories of Computers and Computer Systems 156

Categories of Computers, 156 • Computer Networks and Client/Server Computing, 157 • Network Computers, 158 • Peer-to-Peer Computing, 159

#### 5.4 Managing Hardware Assets 160

Hardware Technology Requirements for Electronic Commerce and the Digital Firm, 160 • **Window on Technology:** Creating Virtual Massively Parallel Computers Via Peer-to-Peer Computing, 160 • Hardware Acquisition and the Total Cost of Ownership (TCO) of Technology Assets, 162 • **Management Decision Problem:** Hardware Capacity Planning for Electronic Commerce, 162 • Monitoring Technology Trends, 163 • **Application Software Exercises:** Spreadsheet Exercise: Identifying Hardware Requirements, 164

*Management Wrap-Up* 164 • *Summary* 165 • *Key Terms* 166 • *Review Questions* 166 • *Group Project* 167 • *Tools for Interactive Learning* 167 • *Case Study: Managing Technology Assets Pays Off for American Home Products* 167

### CHAPTER 6 MANAGING SOFTWARE ASSETS 170

#### 6.1 What Is Software? 172

Software Programs, 172 • Major Types of Software, 173

#### 6.2 System Software 173

Functions of the Operating System, 173 • Multiprogramming, Virtual Storage, Time Sharing, and Multiprocessing, 174 • Language Translation and Utility Software, 176 • Graphical User Interfaces, 176 • PC Operating Systems, 176 • **Window on Organizations:** Why Linux?, 179

### 6.3 *Application Software* 180

Programming Languages, 180 • Fourth-Generation Languages and PC Software Tools, 181 • Software for Enterprise Integration: Enterprise Software and Middleware, 187

### 6.4 *Contemporary Tools for Software Development* 189

Object-oriented Programming, 189 • Java, 191 • Hypertext Markup Language (HTML) and XML, 192 • **Window on Technology:** Building Business Webs with XML, 193

### 6.5 *Managing Software Assets* 194

Rent or Build Decisions: Using Application Service Providers, 194 • Software Maintenance, 195 • Selecting Software for the Organization, 196 • **Management Decision Problem:** Evaluating an Application Service Provider, 196 • **Application Software Exercise:** Web Page Development Tool Exercise: Developing a Web Page, 197

*Management Wrap-Up* 198 • *Summary* 199 • *Key Terms* 200 • *Review Questions* 200 • *Group Project* 200 • *Tools for Interactive Learning* 201 • *Case Study: Sunburst Hotels International Turns to an Application Service Provider* 201

## CHAPTER 7 **MANAGING DATA RESOURCES** 204

### 7.1 *Organizing Data in a Traditional File Environment* 206

File Organization Terms and Concepts, 207 • Problems with the Traditional File Environment, 208

### 7.2 *The Database Approach to Data Management* 209

Database Management Systems, 209 • Types of Databases, 212 • Querying Databases: Elements of SQL, 215

### 7.3 *Creating a Database Environment* 217

Designing Databases, 217 • Distributing Databases, 218 • Management Requirements for Database Systems, 219

### 7.4 *Database Trends* 220

Multidimensional Data Analysis, 220 • Data Warehouses and Data Mining, 220 • **Management Decision Problem:** Creating Company-Wide Data Standards, 223 • Databases and the Web, 224 • **Window on Organizations:** Managing Customer Data for ABN AMRO Bank, 224 • **Window on Technology:** Linking Legacy Databases Through the Internet, 227 • **Application Software Exercise:** Database Exercise: Building a Relational Database at Sylvester's Bike Shop, 228

*Management Wrap-Up* 228 • *Summary* 229 • *Key Terms* 229 • *Review Questions* 230 • *Group Project* 230 • *Tools for Interactive Learning* 230 • *Case Study: Ford and Firestone's Tire Recall: The Costliest Information Gap in History* 231

## CHAPTER 8 **TELECOMMUNICATIONS AND NETWORKS** 234

### 8.1 *The Telecommunications Revolution* 236

The Marriage of Computers and Communications, 236 • The Information Superhighway, 237

### 8.2 *Components and Functions of a Telecommunications System* 237

Telecommunications System Components, 237 • Functions of Telecommunications Systems, 238 • Types of Signals: Analog and Digital, 238 • Communications Channels, 239 • **Window on Organizations:** Safeway U.K. Automates Home Grocery Shopping, 243 • Communications Processors and Software, 244

### 8.3 *Communications Networks* 245

Network Topologies, 245 • Private Branch Exchanges, Local Area Networks (LANs), and Wide Area Networks (WANs), 246 • **Window on Technology:** Avis Fuels Efficiency with a Wireless LAN, 247 • Network Services and Broadband Technologies, 249 • Network Convergence, 251

### 8.4 *Electronic Commerce and Electronic Business Technologies* 251

**Management Decision Problem:** Choosing an Internet Connection Service, 251 • Electronic Mail and Groupware, 252 • Voice Mail and Fax, 252 • Teleconferencing, Dataconferencing, and Videoconferencing, 252 • Digital Information Services and Distance Learning, 253 • Electronic Data Interchange, 254 • **Application Software Exercise:** Web Browser Exercise: Surfing for Information on the Web, 256

*Management Wrap-Up* 256 • *Summary* 257 • *Key Terms* 258 • *Review Questions* 258 • *Group Project* 258 • *Tools for Interactive Learning* 258 • *Case Study: Monitoring Employees on Networks: Unethical or Good Business?* 259

## CHAPTER 9 THE INTERNET AND THE NEW INFORMATION TECHNOLOGY INFRASTRUCTURE 262

### 9.1 *The New Information Technology (IT) Infrastructure for the Digital Firm* 264

Enterprise Networking and Internetworking, 264 • Standards and Connectivity for Digital Integration, 266

### 9.2 *The Internet: Information Technology Infrastructure for the Digital Firm* 267

What Is the Internet?, 267 • Internet Technology and Services, 268 • Next Generation Internet: Broadband and Internet2, 272

### 9.3 *The World Wide Web* 273

Searching for Information on the Web, 274 • Intranets and Extranets, 276 • The Wireless Web, 277 • **Window on Organizations:** It's Becoming a Wireless World, 279 • Organizational Benefits of Internet and Web Technology, 280 • **Window on Technology:** M-Commerce Inspires a New Wave of Net Startups, 281 • **Management Decision Problem:** Reducing Agency Costs, 283

### 9.4 *Support Technology for Electronic Commerce and Electronic Business* 284

Web Servers and Electronic Commerce Servers, 284 • Customer Tracking and Personalization Tools, 285 • Web Content Management Tools, 287 • Web Performance Monitoring Tools, 287 • Web Hosting Services, 287

### 9.5 *Management Issues and Decisions* 288

The Challenge of Managing the New Information Technology Infrastructure, 288 • Some Solutions, 290 • **Application Software Exercise:** Spreadsheet, Web Browser, and Presentation Software Exercise: Researching Web Site Development Companies at Jewel of the Web, 291

*Management Wrap-Up* 292 • *Summary* 292 • *Key Terms* 293 • *Review Questions* 293 • *Group Project* 294 • *Tools for Interactive Learning* 294 • *Case Study: General Motors Drives down the Information Highway* 294

## PART II PROJECT

### CREATING A NEW INTERNET BUSINESS 298

## PART THREE BUILDING INFORMATION SYSTEMS IN THE DIGITAL FIRM 301

### CHAPTER 10 REDESIGNING THE ORGANIZATION WITH INFORMATION SYSTEMS 302

#### 10.1 *Systems as Planned Organizational Change* 305

Linking Information Systems to the Business Plan, 305 • Establishing Organizational Information Requirements, 305 • Systems Development and Organizational Change, 309

#### 10.2 *Business Process Reengineering and Total Quality Management (TQM)* 311

Business Process Reengineering, 311 • **Window on Technology:** Cemex Becomes a Digital Firm, 311 • Steps in Effective Reengineering, 312 • Process Improvement and Total Quality Management, 314

#### 10.3 *Overview of Systems Development* 316

Systems Analysis, 316 • Systems Design, 317 • Completing the Systems Development Process, 319

#### 10.4 *Alternative System-building Approaches* 320

Traditional Systems Lifecycle, 321 • Prototyping, 322 • Application Software Packages, 323 • **Management Decision Problem:** Pricing a Software Package, 324 • End-user Development, 325 • Outsourcing, 326 • Object-oriented Software Development and Rapid Application Development (RAD), 327 • **Window on Management:** An E-commerce Site Overnight, 327 • Application Development for the Digital Firm, 329 • **Application Software Exercise:** Web Browser and Presentation Software Exercise: Comparing Security Features at Friend-in-Need Foundation, 330

*Management Wrap-Up* 331 • *Summary* 331 • *Key Terms* 332 • *Review Questions* 333 • *Group Project* 333 • *Tools for Interactive Learning* 333 • *Case Study: Under Construction: A New System for Toromont Industries* 334

### CHAPTER 11 UNDERSTANDING THE BUSINESS VALUE OF SYSTEMS AND MANAGING CHANGE 336

#### 11.1 *Understanding the Business Value of Information Systems* 338

Traditional Capital Budgeting Models, 339 • Case Example: Primrose, Mendelson, and Hansen, 340 • Strategic Considerations, 345 • **Management Decision Problem:** Evaluating ERP Systems with a Scoring Model, 347

#### 11.2 *The Importance of Change Management in Information System Success and Failure* 348

Information System Problem Areas, 348 • **Window on Organizations:** Web Sites Strive for Usability, 349 • Change Management and the Concept of Implementation, 350 • Causes of Implementation Success and Failure, 350 • Change Management Challenges for Enterprise Systems and Business Process Reengineering (BPR), 354 • System Implications of Mergers and Acquisitions, 355

#### 11.3 *Managing Implementation* 355

Controlling Risk Factors, 355 • **Window on Management:** Managing the TransCanada Megamerger, 356 • Designing for the Organization, 359 • "Fourth-Generation" Project Management, 360 • **Application Software Exercise:** Spreadsheet Exercise: Capital Budgeting at Sparkling Clean, 361



*Management Wrap-Up* 361 • *Summary* 362 • *Key Terms* 362 • *Review Questions* 362 • *Group Project* 363 • *Tools for Interactive Learning* 363 • *Case Study: Hershey's Enterprise System Creates Halloween Tricks* 363

**PART III  
PROJECT**

**REDESIGNING BUSINESS PROCESSES FOR HEALTHLITE  
YOGURT COMPANY 366**

**PART FOUR**

**MANAGEMENT AND ORGANIZATIONAL SUPPORT  
SYSTEMS FOR THE DIGITAL FIRM 369**

**CHAPTER 12**

**MANAGING KNOWLEDGE: KNOWLEDGE WORK AND  
ARTIFICIAL INTELLIGENCE 370**

*12.1 Knowledge Management in the Organization* 372

Systems and Infrastructure for Knowledge Management, 373 • Knowledge Work and Productivity, 374

*12.2 Information and Knowledge Work Systems* 375

Distributing Knowledge: Office and Document Management Systems, 375 • Creating Knowledge: Knowledge Work Systems, 378 • Sharing Knowledge: Group Collaboration Systems and Enterprise Knowledge Environments, 380

*12.3 Artificial Intelligence* 383

What Is Artificial Intelligence?, 383 • Why Business Is Interested in Artificial Intelligence, 384 • **Window on Organizations:** Virtual Collaboration on the Internet, 384 • Capturing Knowledge: Expert Systems, 385 • **Management Decision Problem:** Measuring Productivity From a Knowledge Intranet, 386 • Organizational Intelligence: Case-based Reasoning, 390

*12.4 Other Intelligent Techniques* 391

Neural Networks, 392 • Fuzzy Logic, 393 • **Window on Technology:** Neural Nets Help Systems Management and Scotland Yard, 394 • Genetic Algorithms, 395 • Intelligent Agents, 396 • **Application Software Exercise:** Expert System Software Exercise: Building Expert System Support for Retirement Planning, 397

*Management Wrap-Up* 398 • *Summary* 398 • *Key Terms* 399 • *Review Questions* 399 • *Group Project* 400 • *Tools for Interactive Learning* 400 • *Case Study: Hill & Knowlton Looks for a New Knowledge Management System* 400

**CHAPTER 13**

**ENHANCING MANAGEMENT DECISION MAKING 402**

*13.1 Decision-Support Systems (DSS)* 404

MIS and DSS, 405 • Types of Decision-Support Systems, 405 • Components of DSS, 407 • DSS Applications and the Digital Firm, 408 • **Management Decision Problem:** Making a Capital Budgeting Decision, 409 • **Window on Technology:** Optimizing the Supply Chain at IBM, 411 • **Window on Organizations:** Royal Bank Banks on a Data-driven DSS, 412 • Web-based Customer Decision-support Systems, 414

*13.2 Group Decision-support Systems (GDSS)* 414

What Is a GDSS?, 415 • Characteristics of GDSS, 416 • GDSS Software Tools, 416 • How GDSS Can Enhance Group Decision Making, 418

*13.3 Executive Support in the Enterprise* 420  
 The Role of Executive Support Systems in the Organization, 420 • Benefits of Executive Support Systems, 421 • Executive Support Systems and the Digital Firm, 421 • Application Software Exercise: Spreadsheet Exercise: Breakeven Analysis at Stanley's Cookware, 425  
*Management Wrap-Up* 425 • *Summary* 426 • *Key Terms* 426 • *Review Questions* 426 • *Group Project* 427 • *Tools for Interactive Learning* 427 • *Case Study: Merck-Medco Finds the Right Prescription to Combat Dot.com Fever* 427

**PART IV  
PROJECT**

**DESIGNING AN ENTERPRISE INFORMATION PORTAL 430**

**PART FIVE** **MANAGING INFORMATION SYSTEMS IN THE DIGITAL FIRM 431**

**CHAPTER 14** **INFORMATION SYSTEMS SECURITY AND CONTROL 432**

*14.1 System Vulnerability and Abuse* 434  
 Why Systems Are Vulnerable, 434 • Concerns for System Builders and Users, 437 • **Window on Organizations:** Internet Hackers: Why Won't They Stop?, 437 • System Quality Problems: Software and Data, 438

*14.2 Creating a Control Environment* 441  
 General Controls and Application Controls, 441 • Protecting the Digital Firm, 444 • Developing a Control Structure: Costs and Benefits, 448 • The Role of Auditing in the Control Process, 450

*14.3 Ensuring System Quality* 451  
 Software Quality Assurance Methodologies and Tools, 451 • **Management Decision Problem:** Analyzing Security Vulnerabilities, 451 • **Window on Technology:** Stress Testing Web Sites, 458 • Data Quality Audits and Data Cleansing, 459 • **Application Software Exercise:** Spreadsheet Exercise: Performing a Security Risk Assessment, 459  
*Management Wrap-Up* 460 • *Summary* 460 • *Key Terms* 461 • *Review Questions* 461 • *Group Project* 462 • *Tools for Interactive Learning* 462 • *Case Study: Did the FAA Fly Off Course?* 462

**CHAPTER 15** **ETHICAL AND SOCIAL IMPACT OF INFORMATION SYSTEMS 466**

*15.1 Understanding Ethical and Social Issues Related to Systems* 468  
 A Model for Thinking About Ethical, Social, and Political Issues, 468 • Five Moral Dimensions of the Information Age, 469 • Key Technology Trends That Raise Ethical Issues, 470

*15.2 Ethics in an Information Society* 471  
 Basic Concepts: Responsibility, Accountability, and Liability, 471 • Ethical Analysis, 472 • Candidate Ethical Principles, 472 • Professional Codes of Conduct, 473 • Some Real-World Ethical Dilemmas, 473

*15.3 The Moral Dimensions of Information Systems* 474  
 Information Rights: Privacy and Freedom in an Information Society, 474 • **Management Decision Problem:** What to Do About Employee Web Usage, 474 • Property Rights: Intellectual Property, 479 • **Window on Technology:** Napster and Gnutella Rock the Entertainment Industry, 481 • Accountability, Liability, and Control, 483 • System Quality: Data Quality and System Errors, 485 • Quality of Life: Equity, Access, Boundaries, 486 • **Window on Management:** Managing RSI, 491 •

Management Actions: A Corporate Code of Ethics, 492 • **Application Software Exercise:** Case Tool Exercise: Diagramming Processing Activities at Mickey's Burger House, 493

*Management Wrap-Up* 494 • *Summary* 494 • *Key Terms* 495 • *Review Questions* 495 • *Group Project* 495 • *Tools for Interactive Learning* 495 • *Case Study: Web Site Privacy: How Much Should We Worry?* 496

## CHAPTER 16 MANAGING INTERNATIONAL INFORMATION SYSTEMS 498

### 16.1 The Growth of International Information Systems 500

Developing the International Information Systems Architecture, 501 • The Global Environment: Business Drivers and Challenges, 501 • State of the Art, 504

### 16.2 Organizing International Information Systems 505

Global Strategies and Business Organization, 505 • Global Systems to Fit the Strategy, 506 • Reorganizing the Business, 506

### 16.3 Managing Global Systems 507

A Typical Scenario: Disorganization on a Global Scale, 507 • Strategy: Divide, Conquer, Appease, 508 • Implementation Tactics: Cooptation, 510 • The Management Solution, 510

### 16.4 Technology Issues and Opportunities for Global Value Chains 511

Main Technical Issues, 511 • **Window on Organizations:** E-globalization Pitfalls, 515 • New Technical Opportunities and the Internet, 516 • **Window on Technology:** Lucent's Enterprise System Speeds Its Global Supply Chain, 516 • **Management Decision Problem:** Planning a Global Web Site, 517 • **Application Software Exercise:** Database and Web-page Development Tool Exercise: Building a Job Database and Web Page at KTP Consulting, 518

*Management Wrap-Up* 518 • *Summary* 518 • *Key Terms* 519 • *Review Questions* 519 • *Group Project* 519 • *Tools for Interactive Learning* 520 • *Case Study: Chase.com's Quest for a Global Web Presence* 520

## PART V PROJECT

### ASSESSING THE TOTAL COST OF OWNERSHIP (TCO) OF A WEB SITE 522

#### INTERNATIONAL CASE STUDIES 525

*Case Study 1: Ginormous Life Insurance Company*  
Len Fertuck: University of Toronto (Canada)

*Case Study 2: From Analysis to Evaluation—The Example of Cuparla*  
Gerhard Schwabe, University of Koblenz–Landau (Germany)

*Case Study 3: Citibank Asia Pacific: Managing Information Technology Consolidation, Change and New Challenges*  
Christina Soh and Neo Boon Siong, Information Management Research Center (IMARC), Nanyang Business School, Nanyang Technological University (Singapore)

*Case Study 4: Enerline Restorations, Inc.: Stay with an ASP?*  
Scott Schneberger and Jane Movold, University of Western Ontario (Canada)

#### REFERENCES R 1

#### INDEXES I 1

#### PHOTO AND SCREEN-SHOT CREDITS P 1