Management Information Systems for the Information Age

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CUMMINGS

McCUBBREY

Management Information Systems

FOR THE INFORMATION AGE

FIFTH EDITION

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Homer and Marilyn. They have devoted their lives to helping children and in that devotion they have found happiness and joy. We can only hope to be so lucky.

Stephen Haag

To David:
You have brains in your head
You're as strong as a tree
Oh, the places you'll go
Oh, the things you will see
(Adapted from Dr. Seuss)

Maeve Cummings

To Jani: My wife and best friend. Your warmth and acceptance lights up my life. You're more fun to be with than anyone I've ever known. I am blessed, truly blessed.

Donald J. McCubbrey

PREFACE

The fifth edition of *Management Information Systems for the Information Age* provides you the ultimate in flexibility to tailor content to the exact needs of your MIS or IT course. The nine chapters and eleven Extended Learning Modules may be presented in logical sequence, or you may choose your own mix of technical topics and business/managerial topics.

The nine chapters form the core of material covering business and managerial topics, from strategic and competitive technology opportunities to the organization and management of information using databases and data warehouses. If you covered only the chapters and none of the modules, the focus of your course would be MIS from a business and managerial point of view.

The eleven Extended Learning Modules provide a technical glimpse into the world of IT, covering topics ranging from building a Web site, to computer crimes and forensics, to how to use Microsoft Access. If you chose only the modules and none of the chapters, the focus of your course would be on the technical and hands-on aspects of IT.

Each module follows its corresponding chapter, but chapters and modules may usefully be presented independently. For example, Module H on computer crime and forensics follows logically after Chapter 8 on protecting people and information. But you can cover Chapter 8 and omit Module H—that's completely up to you. On the other hand, you can omit Chapter 8 and cover Module H—you have flexibility to do what suits your needs.

You can easily select a course format that represents your own desired blend of topics. While you might not choose to cover the technologies of networks, for example, you might require your students to build a small database application. In that case, you would omit Module E (Network Basics) and spend more time on Module C (Designing Databases and Entity-Relationship Diagramming) and Module J (Implementing a Database with Microsoft Access).

On the facing page, we've provided a table of the chapters and the modules. As you put your course together and choose the chapters and/or modules you want to cover, we would offer the following:

- Cover any or all of the chapters as suits your purposes.
- Cover any or all of the modules as suits your purposes.
- If you choose a chapter, you do not have to cover its corresponding module.
- If you choose a module, you do not have to cover its corresponding chapter.
- You may cover the modules in any order you wish.

Please note that your students will find Modules E, F, G, J, and K on the CD that accompanies the textbook. In the book, we provide a two-page introduction to the modules. All your students have to do is go to the CD to read the full modules.

The unique organization of this text is aimed at giving you **complete flexibility** to design your course as you see fit.

THE CHAPTERS	THE EXTENDED LEARNING MODULES
CHAPTER 1	**Extended Learning Module A**
The Information Age in Which You Live	Computer Hardware and Software
CHAPTER 2	**Extended Learning Module B**
Major Business Initiatives	The World Wide Web and the Internet
CHAPTER 3	**Extended Learning Module C**
Databases and Data Warehouses	Designing Databases and Entity-Relationship Diagramming
CHAPTER 4	**Extended Learning Module D**
Decision Support and Artificial Intelligence	Decision Analysis with Spreadsheet Software
CHAPTER 5	**Extended Learning Module E***
Electronic Commerce	Network Basics
CHAPTER 6	**Extended Learning Module F***
Systems Development	Building a Web Page with HTML
CHAPTER 7	**Extended Learning Module G***
IT Infrastructures	Object-Oriented Technologies
CHAPTER 8	**Extended Learning Module H**
Protecting People and Information	Computer Crime and Forensics
CHAPTER 9	**Extended Learning Module I**
Emerging Trends and Technologies	Building an e-Portfolio
	Extended Learning Module J**
	Implementing a Database with Microsoft Access
	Extended Learning Module K*
	Careers in Business

*The complete text for modules E, F, G, J, and K are on the CD that accompanies this text.
**Extended Learning Module J is a bonus module that you would typically cover in conjunction with Chapter 3 (Databases and Data Warehouses) and/or Extended Learning Module C (Designing Databases and Entity-Relationship Diagramming).

- Management Focus—By focusing on the chapters, your class will take on a managerial approach to MIS.
- Technical Focus—If hands-on, technical skills are more important, focus your MIS course on the modules.

Organization—The Haag Advantage

The separation of content between the chapters and the Extended Learning Modules is very simple. We can sum it up by saying:

- The **chapters** address what you want your students **to know.**
- The **modules** address what you want your students **to be able to do.**

Together, both combine to provide a well-balanced repository of important information aimed at developing a prospective business professional equipped with both foundational knowledge and application experience, ready to take on today's highly competitive job market.

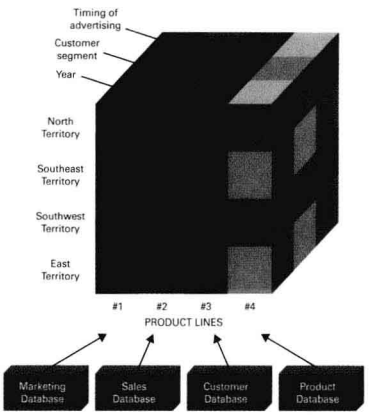
Each chapter and module contains full pedagogical support:

- Student Learning Outcomes
- On Your Own Projects
- Team Work Projects
- Summary
- Key Terms and Concepts
- Short-Answer Questions
- Assignments and Exercises

The **chapters** focus on the *business and managerial* applications of MIS and information technology.

Figure 3.8

A Multidimensional Data Warehouse with Information from Multiple Operational Databases



ligence, many organizations are building data warehouses and providing data-mining tools. A data warehouse is simply the next step (beyond databases) in the progression of building business intelligence. And data-mining tools are the tools you use to mine a data warehouse and extrapolate the business intelligence you need to make a decision, solve a problem, or capitalize on an opportunity to create a competitive advantage.

WHAT IS A DATA WAREHOUSE?

A ***data warehouse*** is a logical collection of information—gathered from many different operational databases—used to create business intelligence that supports business analysis activities and decision-making tasks (see Figure 3.8). Sounds simple enough on the surface, but data warehouses represent a fundamentally different way of thinking about organizing and managing information in an organization. Consider these key features of a data warehouse, detailed in the sections that follow.

DATA WAREHOUSES ARE MULTIDIMENSIONAL In the relational database model, information is represented in a series of two-dimensional files or tables. Not so in a data warehouse—most data warehouses are multidimensional, meaning that they contain layers of columns and rows. For this reason, most data warehouses are really *multidimensional databases*. The layers in a data warehouse represent information according to different dimensions. This multidimensional representation of information is referred to as a *hypercube*.

The **modules** focus on giving your students real *hands-on-knowledge* they can apply in both their personal and professional experiences.

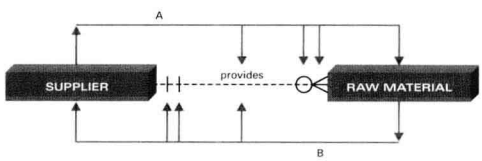


Figure C.3

Reading an Entity-Relationship (E-R) Diagram

Once you determine that a relationship does exist, you must then determine the numerical nature of the relationship, what we refer to as "minimum and maximum cardinality." To describe this, you use a | to denote a single relationship, a 0 to denote a zero or optional relationship, and/or a crow's foot (<) to denote a multiple relationship. By way of illustration, let's consider the portion of your E-R diagram in Figure C.3. To help you read the symbols and diagram, we've added blue lines and arrows. Following the line marked A, you would read the E-R diagram as:

"A *Supplier* may not provide any *Raw Material* (denoted with the 0) but may provide more than one *Raw Material* (denoted with the crow's foot)."

So, that part of the E-R diagram states that the logical relationship between *Supplier* and *Raw Material* is that a *Supplier* may provide no *Raw Material* currently in inventory but may provide more than one *Raw Material* currently in inventory. This is exactly what business rule 4 (on page 163) states.

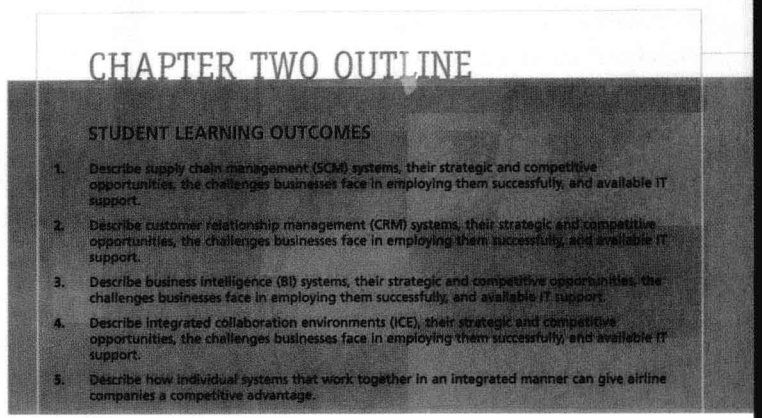
Following the blue line marked B, you would read the E-R diagram as:

Student Learning Outcomes and Summary

Student learning outcomes drive each chapter and module. We then summarize each chapter and module by revisiting the student learning outcomes. It's the old adage . . .

1. Tell them what you're going to tell them.
2. Tell them.
3. Tell them what you told them.

At the beginning of each chapter and module, you'll find a list of **Student Learning Outcomes,** providing your students with a road map of what they should learn and accomplish while reading a chapter or module.



Summary: Student Learning Outcomes Revisited

1. **Describe supply chain management (SCM) systems, their strategic and competitive opportunities, the challenges businesses face in employing them successfully, and available IT support.** A ***supply chain management (SCM) system*** is an IT system that supports supply chain management activities by automating the tracking of inventory and information among business processes and across companies. Supply chain management systems can increase revenues, reduce costs, and increase customer satisfaction. The biggest challenge to their successful implementation is the lack of effective communication between individual areas within a company. Two well-known providers of SCM software are i2 and Manugistics. Dell Computer gets well-deserved recognition as well as competitive advantage from its IT-enabled SCM system.
2. **Describe customer relationship management (CRM) systems, their strategic and competitive opportunities, the challenges businesses face in employing them successfully, and available IT support.** ***Customer relationship management (CRM) systems*** use information about customers to gain insights into their needs, wants, and behaviors in order to serve them better. CRM is not just software but also a business objective which encompasses many different aspects of a business including software, hardware, services, support, and strategic business goals. CRM systems provide competitive advantage by increasing revenues, by cutting costs, and by treating your customers in ways that encourage them to choose your company over the competition. CRM system installations fail for many reasons, but chief among them is that companies focus on the software and fail to pay enough attention to business processes and acceptance by people within the organization. There are many CRM applications available. The two most prominent ones are Siebel Systems and Salesforce.com.
3. **Describe business intelligence (BI) systems, their strategic and competitive opportunities, the challenges businesses face in employing them successfully, and available IT support.** ***Business intelligence (BI) systems*** are the IT applications and tools that support the business intelligence function within an organization. Their objective is to improve the timeliness and quality of the input for decision making. Higher quality managerial decision making is an important way companies gain an advantage over their competitors. The biggest challenge to the effective use of BI systems is that, in too many cases, knowledge workers do not know how to use them effectively. While the Web is used to support BI applications in some firms, specialized software is at the heart of BI, and there are many packages available. Brio Software Systems and Cognos are but two examples.
4. **Describe integrated collaboration environments (ICE), their strategic and competitive opportunities, the challenges businesses face in employing them successfully, and available IT support.** An ***integrated collaboration environment (ICE)*** is the environment in which virtual teams do their work. Virtual teams are teams whose members are located in varied geographic locations and whose work in ICEs is supported by specialized ICE software or by more basic collaboration systems. A ***collaboration system*** is software that is designed specifically to improve the performance of teams by supporting the sharing and flow of information. There are many varieties of collaboration systems including basic e-mail systems as well as ***workflow systems, document management systems, knowledge management systems,*** and ***social network systems.*** Companies can gain huge competitive advantages from collaboration systems through more effective coordination of the work of virtual teams and by fully utilizing available knowledge within their organizations. Knowledge management systems have been less successful than other forms of collaboration systems primarily because knowledge workers do not believe they add value to their work. ICE software combines

A **Summary** of these outcomes appears with the EOC elements per chapter/module, providing an invaluable tool for your students as they prepare to take an exam.

Case Studies

Opening Case

Each chapter begins with a one-page opening case study, highlighting how an organization has successfully implemented many of that chapter's concepts.

CLOSING CASE STUDY TWO

USING NEURAL NETWORKS TO CATEGORIZE PEOPLE

Would your banker give you an A, B, or C? What about your supermarket? You know you're being graded in your classes, but did you know that you're also being graded by businesses?

Special treatment for certain customers is not new. Airline customers who fly first class have always received preferential treatment, even when flights were cancelled or delayed. You won't find them napping on a stone floor with their backpacks as pillows. This makes business sense to the airlines, since these are the customers who are most profitable.

Although companies have always offered preferential treatment to their more profitable customers, the speed and capacity of computers today are making the

BANKS

The First Union Bank uses software that categorizes people into red, green, and yellow classes depending on the customer's history and value to the bank. Customers who are green might get better credit card rates than customers who are red and are judged to add less to the bank's bottom line.

Say you called the bank that issued you your credit card and said that you didn't want to pay the annual fee anymore. The bank could look at your credit card activity and decide whether it's more profitable to the bank to waive your fee rather than risk your not using the credit card anymore.

IES

ars using neural network determine which of their o bankrupt. Neural net- tterns, and if your profile have defaulted, you'll be

CHAPTER ONE

The Information Age in Which You Live

Changing the Face of Business

OPENING CASE STUDY
PAY-PER-TUNE GENERATION AND DISRUPTIVE TECHNOLOGIES ROCK THE RECORD INDUSTRY

In 1999, the record industry raked in $14.6 billion in revenue and was growing 6 percent annually. Then, Napster appeared on the scene and forever changed the record industry. Napster's innovative disruptive technology—file sharing via peer-to-peer technology—appealed to the growing "pay-per-tune" generation, seeking only a particular song instead of the entire album.

Of course, you probably know that the federal government eventually deemed Napster's activities illegal and put it out of business. But the pay-per-tune notion of purchasing music never went away. Apple's iTunes provides a catalog of over 400,000 songs, each of which can be purchased without buying the whole album. Paid down- d to reach tion? We believe not, along with many other people. As Dave Allison, owner of Times Beach Records, explains, "The entire industry has to redefine itself and change . . . We're all in this together, and we have to move forward together . . ." Indeed, the record industry must undergo dramatic transformation if it is to survive and thrive.

This story of the record industry isn't really about the disruptive technologies of the Internet, file-sharing peer-to-peer systems, and MP3 players. It is about the challenge of those technologies and the willingness of organizations—or, in this case, an industry—to embrace those disruptive technologies and determine how to use them instead to create a competitive advantage.

And that's the focus of our text. Although it will introduce you to a wide array of technology terms and concepts and teach you the technology, we want you to always keep in mind the challenge of how to apply technology to create a competitive advantage. In this first chapter, we

CLOSING CASE STUDY TWO

TOTING THE E-COMMERCE LINE WITH EBAGS

For a true e-commerce success story you don't have to look any further than eBags (www.ebags.com). While many pure-play e-commerce Web sites have fallen by the wayside, eBags is not only surviving, it is thriving. It is the world's leading online provider of bags and accessories for all lifestyles. With 180 brands and over 8,000 products, eBags has sold more than 2.5 million bags since its launch in March 1999. It carries a complete line of premium and popular brands, including Samsonite, JanSport, The North Face, Liz Claiborne, and Adidas. You can buy anything from backpacks and carry-ons to computer cases and handbags at extremely competitive prices from its Web site.

eBags has received several awards for excellence in online retailing, among them:

- Circle of Excellence Platinum Award, Bizrate.com
- Web Site of the Year, *Catalog Age Magazine* (for the second year in a row)
- Email Marketer of the Year, ClickZ.MessageMedia
- Marketer of the Year, Colorado AMA
- Rocky Mountain Portal Award
- Gold Peak Catalog, Colorado AMA
- Entrepreneur of the Year—Rocky Mountain Region, Ernst and Young
- E-Commerce Initiative Award of Merit, Colorado

A good part of the reason for eBags's success is its commitment to providing each customer with superior service, 24 hours a day, 365 days a year. eBags provides customers with the ability to contact customer service representatives for personal assistance by telephone or e-mail and also provides convenient, real-time UPS order tracking. According to Jon Nordmark, CEO of eBags.com, "From a customer perspective, we've spent a great deal of time developing pioneering ways to guide our shoppers to the bags and accessories that enhance their lifestyles through function and fashion."

Although you would never know it, this superior customer service is not provided by eBags employees. For the past several years, eBags has outsourced both the handling of phone orders and customer service calls to Finali Corporation (www.finali.com). "The call center is often the only human contact customers have with our brand," says eBags CEO Jon Nordmark. "By maintaining a call center staff that can think on its feet, Finali delivers real value to our customers and a measurable return on our call center investment."

Typically, the conversion rate of inbound customer calls to sales at the call center has been about 25 percent. But during the 2001 holiday season, special training and incentives for Finali call center reps servicing the eBags Web site helped raise that number to 44 percent. In addition, the average size of orders placed

Closing Cases

To help your students apply what they have just learned, you'll find two closing case studies at the end of each chapter. Each case has a set of questions that are great for class discussion.

Team Work and On Your Own Projects

There are now 72 Team Work and On Your Own projects spread throughout the text, in both the chapters and modules. Many of these can be used as break-out exercises, and just as many can be assigned as homework. In the Instructor's Manual, you'll find our discussions of and solutions to each of these projects.

ON YOUR OWN

A REQUEST FOR PROPOSAL AND THE SYSTEMS DEVELOPMENT LIFE CYCLE

If you review Figure 6.9 closely, you'll notice that an RFP looks very similar to the phases of the SDLC. In the table below, identify which phases of the SDLC correspond to each element of an RFP.

Elements of a Request for Proposal	Phase(s) of the SDLC
1. Organizational overview	
2. Problem statement	
3. Description of current system	
4. Description of proposed system	
5. Request for new system design	
6. Request for implementation plan	
7. Request for support plan	
8. Request for development time frame	
9. Request for statement of outsourcing costs	
10. How RFP returns will be scored	
11. Deadline for RFP returns	
12. Primary contact person	

On Your Own

Assign these to students for individual reflection and work.

TEAM WORK

WHAT'S THE BIG DEAL WITH FREQUENCIES?

A radio wave is an electromagnetic wave sent out by an antenna. Radio waves have different frequencies, and by tuning a radio receiver, a cell phone (which has a receiver), or a baby monitor (which also has a receiver) to a certain frequency you can pick up a specific signal. Frequencies are measured in KHz (kilohertz—thousands of cycles per second), MHz (megahertz—millions of cycles per second), and GHz (gigahertz—billions of cycles per second).

You may have heard that there is a fixed number of channels, and competition for control of those available is fierce. All wireless gizmos require a radio frequency to transmit and receive, so communications companies spend billions of dollars for the rights to the part of the spectrum that's for sale. Other parts are free (like the WiFi part) and still others are set aside for government agencies like the Department of Defense.

The figure below shows the part of the spectrum in common use for wireless information delivery all day, every day.

Here are some common frequency bands:

FM radio: 88 megahertz to 108 megahertz

AM radio: 535 kilohertz to 1.7 megahertz

Television stations: 174 to 220 megahertz for channels 7 through 13.

Place on the spectrum the following wireless services:

WiFi

GPS devices

Microwave ovens

Police radar guns

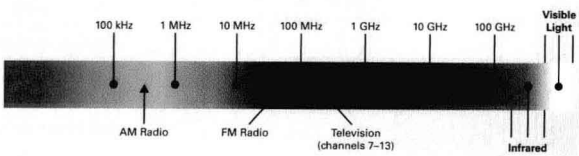
TV channels 2–6

Wildlife tracking collars

CB radio

Aviation navigation

Cordless phones



Team Work

These are designed for small groups of two to four. Many are great for in class assignments.

Electronic Commerce and Group Projects

Electronic Commerce

These projects are designed to impart to your students hands-on, technological experiences, many requiring Web exploration. You'll find an Electronic Commerce project at the end of each chapter. To support these projects, we've provided more than 1,000 links on the Web site for this text at www.mhhe.com/haag.

Group Projects

After the last module in the text, you'll find 20 Group Projects. These require your students to use technology to solve a problem or take advantage of an opportunity. A quick warning to instructors: Some of these take an entire weekend to solve. Be careful not to assign too many at one time.

Electronic COMMERCE

Searching Online Databases and Information Repositories

As you find sites on the Internet that provide information, many of them will do so in the form of a database—a searchable grouping of information that allows you to find specific information by entering key words and key phrases. These words and phrases are, in fact, some sort of key (similar to primary and foreign keys in relational databases) that are used as matching criteria in a field of the d

In this section, you'll explore a variety of inform Internet. To help you, we've included a number of database and information repositories. On the (www.mhhe.com/haag), we've provided direct li many, many more. These are a great starting point merce section.

FINANCIAL AID RESOURCES

On the Internet, you can find valuable databases t sources as you attend school. These resources c money you don't have to pay back—and standard of financial aid lenders, ranging from traditional ba ties wanting to give something back to society. Fin a financial aid database and answer the following q

A. Do you have to register as a user to access i
B. Do you have to pay a fee to access informat
C. Can you build a profile of yourself and use
D. Can you apply for aid while at the site or n that you need to complete and return?
E. By what sort of categories of aid can you se

CASE 16: STRATEGIC AND COMPETITIVE ADVANTAGE: ANALYZING OPERATING LEVERAGE

PONY ESPRESSO

Pony Espresso is a small business that sells specialty coffee drinks at office buildings. Each morning and afternoon, trucks arrive at offices' front entrances, and the office employees purchase various beverages with names such as Java du Jour and Café de Colombia. The business is profitable. But Pony Espresso offices are located to the north of town, where lease rates are less expensive, and the principal sales area is south of town. This means that the trucks must drive cross-town four times each day.

The cost of transportation to and from the sales area, plus the power demands of the trucks' coffee brewing equipment, is a significant portion of the variable costs. Pony Espresso could reduce the amount of driving—and, therefore, the variable costs—if it moves the offices much closer to the sales area.

Pony Espresso presently has fixed costs of $10,000 per month. The lease of a new office, closer to the sales area, would cost an additional $2,200 per month. This would increase the fixed costs to $12,200 per month.

Although the lease of new offices would increase the fixed costs, a careful estimate of the potential savings in gasoline and vehicle maintenance indicates that Pony Espresso could reduce the variable costs from $0.60 per unit to $0.35 per unit. Total sales are unlikely to increase as a result of the move, but the savings in variable costs should increase the annual profit.

You have been hired by Pony Espresso to assist in the cost analysis and new lease options to determine a growth in profit margin. You will also need to calculate a degree of operating leverage to better understand the company's profitability. Degree of operating leverage (DOL) will give the CEO of Pony Espresso, Darian Presley, a great deal of information for setting operating targets and planning profitability.

SOME PARTICULARS YOU SHOULD KNOW

1. Consider the information provided—especially look at the change in the variability of the profit from month to month. From November through January, when it is much more difficult to lure office workers out into the cold to purchase coffee, Pony Espresso barely breaks even. In fact, in December of 2003, the business lost money.
2. First, develop the cost analysis on the existing lease information using the monthly sales figures provided to you in the file PONYESPRESSO.xls. Second, develop the cost analysis from the new lease information provided above.
3. You need to calculate the variability that is reflected in the month-to-month standard deviation of earnings for the current cost structure and the projected cost structure.
4. Do not consider any association with downsizing such as overhead; simply focus on the information provided to you.
5. You will need to calculate the EBIT—earnings before interest and taxes.
6. Would the DOL and business risk increase or decrease if Pony Espresso moved its office? *Note:* Variability in profit levels, whether measured as EBIT, operating income, or net income, does not necessarily increase the level of business risk as the DOL increases.
7. File: PONYESPRESSO.xls (Excel file).

End-of-Chapter Elements

Short-Answer Questions

1. How will free Internet phone calls work?
2. What is a push technology environment?
3. How will push technologies support personalization?
4. Why may you someday rent personal productivity software from an ASP?
5. What is the concept of information supplier convergence?
6. What is the role of physiological interfaces?
7. What are the three steps in automatic speech recognition?
8. What is virtual reality?
9. What type of special input and ou does virtual reality make use of?
10. What are CAVEs?
11. What are some examples of biom applications?
12. How will biometrics aid in providing security and identification?
13. What is the function of a biochip?
14. What is the role of an implant chip?
15. How will digital cash someday work on the Internet?
16. What is a wearable computer?
17. How do multi-state CPUs differ from today's standard CPUs?
18. Why will holographic storage devices be able to store more information than today's

Assignments and E

1. **SELLING THE IDEA OF IMPLANT CHI** favor of using implant chips that c information. Your task is to put to students obtain implant chips. Wit
   A. The school-related information
   B. The nonschool-related informat
   C. The processes within your schoc
   D. The benefits your school would
   E. The benefits students would re
   Your presentation should be no m
2. **RESEARCHING WEARABLE COMPU** Xybernaut. Connect to its Web site

Discussion Questions

1. When selling antiques, you can usually obtain a higher price for those that have a provenance, which is information detailing the origin and history of the object. For example, property owned by Jacqueline Kennedy Onassis and Princess Diana sold for much more than face value. What kinds of products have value over and above a comparable product because of such information? What kind of information makes products valuable? Consider both tangible (resale value) and intangible value (sentimental appeal).
2. Personal checks that you use to buy merchandise have a standard format. Checks have very few different sizes, and almost no variation in format. Consider what would happen if everyone could create his or her own size, shape, and layout of personal check. What would the costs and benefits be to business and the consumer in terms of buying checks, exchanging them for merchandise, and bank check processing?
3. Consider society as a business that takes steps to protect itself from the harm of illegal acts. Discuss the mechanisms and costs that are involved. Examine ways in which our society would be different if no one ever broke a law. Are there ever benefits to our society when people break the law, for example, when they claim that the law itself is unethical or unjust?
4. Can you access all the IT systems at your college or university? What about payroll or grade information on yourself or others? What kinds of controls has your college or university implemented to prevent the misuse of information?
5. You know that you generally can't use a PC to formatted disk. What other instances of the lack of difficulty in accessing information have you experienced personally or heard of? For example, have you used different versions of MS PowerPoint or MS Access that won't work on all the PCs that you have access to?
6. Have you, or someone you know, experienced computer problems caused by a virus? What did the virus do? Where do you think you got it? How did you fix the problem? What was the cost to you in time, trouble, and stress?
7. What laws do you think the United States should pass to protect personal information? None? Laws such as the European Union has? Stricter laws than the EU? Why? Should some personal information be more protected than other information? Why or why not?
8. The issue of pirated software is one that the software industry fights on a daily basis. The major centers of software piracy are in places like Russia and China where salaries and

Assignments and Exercises

1. **AN EIP FOR YOUR COURSE** Enterprise information portals (EIPs) allow knowledge workers to access company information via a Web interface. You have been asked to create an EIP for this course. Answer the following questions in order to determine how the EIP should be developed.
   - What type of information would be contained on the EIP?
   - Who would have access to the EIP?
   - How long would information remain on the EIP?
   - What is the difference between a collaborative processing EIP and a decision processing EIP?
   - Which type of EIP would you implement and why?
2. **SPONSOR OF THE IT INFRASTRUCTURE** To build a solid IT infrastructure you must have executive sponsorship. Your current boss doesn't understand the importance of building a solid IT infrastructure. In fact, your boss doesn't even understand the term IT infrastructure. First, explain to your boss what an IT infrastructure is and why it is critical for any organization. Second, explain three primary components of an IT infrastructure.
3. **IT INFRASTRUCTURE COMPONENTS AND THE REAL WORLD** Throughout this chapter we discussed several IT infrastructure components including client/server, Web services, integrations, among others. Pick two of the components discussed in this chapter and try to find business examples of how companies are using these components in the real world. We also mentioned that there are thousands of additional components you can use to build an IT infrastructure. Research the Internet to see if you can find two additional IT infrastructure components that were not discussed in this chapter along with business examples of how businesses are using the components in the real world.
4. **CREATING THE IDEAL INFRASTRUCTURE** This chapter focused on many different IT infrastructure components. Choose three of the different components discussed in this chapter and explain how you could use them to improve the IT infrastructure at your school. Be sure to think of current requirements as well as future requirements for the IT infrastructure.

Each chapter and module contains complete pedagogical support in the form of:

- **Summary of Student Learning Outcomes** These mirror the chapter's or module's opener.
- **Two Closing Case Studies** Reinforcing important concepts with prominent examples from businesses and organizations (chapters only).
- **Key Terms and Concepts** With page numbers where discussions of them are found.
- **Assignments and Exercises** One full page of problems designed to give your students the chance to apply key concepts of the text.
- **Discussion Questions** Challenging questions aimed at promoting an atmosphere of critical thinking in your classroom (chapters only).

Changes for the Fifth Edition

The content changes for the fifth edition were driven by:

1. Instructor feedback on the fourth edition.
2. Changes that have occurred in the business world.
3. Advances that have occurred in the technology arena.
4. Changes made by our competitors.

As a group of authors and contributors working together, we carefully sifted through all the competitive scanning information we could gather to create a fifth edition that builds on the success of the fourth edition.

Throughout the text, you'll find new or updated opening and closing case studies, Industry Perspectives, Global Perspectives, Group Projects, and Team Work and On Your Own projects, as well as new or expanded coverage of such topics as ***business intelligence, customer relationship management, supply chain management, n-tier architectures, application service providers,*** and ***Web Services.***

We've provided all these content updates and new pedagogical features in a visually appealing, streamlined format.

Most important, we're pleased to have been able to respond to reviewer suggestions and provide the following:

- New *Extended Learning Module K* on careers in business and what IT skills your students need to learn to compete effectively in the job market.
- Updated *Chapter 2* on major business initiatives focusing on the role of IT in support of customer relationship management, supply chain management, business intelligence systems, and integrated collaboration environments.
- Updated *Extended Learning Module D* on decision support with spreadsheet software including 3-D pivot tables.
- Updated *Chapter 5* on electronic commerce focusing on fundamental differences in Business to Business and Business to Consumer electronic commerce.
- Updated *Chapter 7* on IT infrastructures.
- Updated *Chapter 9* on emerging trends and technologies.
- Updated *Extended Learning Module I* on building an e-portfolio.
- Enhanced *Extended Learning Module J* on using Microsoft Access to implement a database including building input forms and making changes to reports.

The Support Package

We realize that no text is complete without a well-rounded and value-added support package. Our support package is designed to ease your teaching burden by providing you with a Web site full of valuable information, a test bank with more than 2,000 questions and easy-to-use test generating software, an Instructor's Manual that walks you through each chapter and module and provides value-added teaching notes and suggestions, and PowerPoint presentations.

Supplements:

- Online Learning Center
- Instructor's Manual
- Test Bank
- PowerPoint Presentations
- Student CD
- MISource CD
- Classroom Performance System
- Problem Solving Video Vignettes
- MBA MIS Cases
- Application Cases for MIS

ONLINE LEARNING CENTER AT WWW.MHHE.COM/HAAG

As in previous editions, the Web site for the fifth edition contains a wealth of valuable information and supplements for both the instructor and the student.

INSTRUCTOR'S MANUAL

The Instructor's Manual is provided to you in an effort to help you prepare for your class presentations. In its new format, you will find a separate box for each PowerPoint slide. In that box, you will find an overview of the slide and a list of key points to cover. This presentation enables you to prepare your class presentation by working solely with the Instructor's Manual because you also see the PowerPoint slide presentations. We've also provided embedded links within each Instructor's Manual document to the various in-text pedagogical elements including:

- **On Your Own and Team Work projects**—when to use them, how to grade them, how long they should take, etc.
- **The Global and Industry Perspectives boxes**—how to introduce them, key points to address, possible discussion questions to ask, etc.

At the beginning of each Instructor's Manual document you'll find other useful information including the appropriate author to contact if you have questions or comments, a list of the Group Projects that you can cover, and a list of any associated data files.

We've provided the Instructor's Manual files in Word format and placed them on both the Instructor's CD and the text's Web site.

TEST BANK

For each chapter and module, there are approximately 125 multiple-choice, true/false, and fill-in-the-blank questions aimed at challenging the minds of your students.

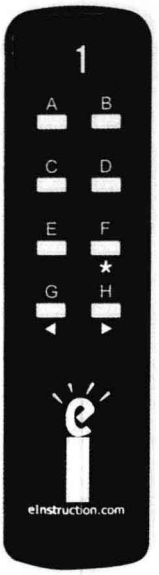
POWERPOINT PRESENTATIONS

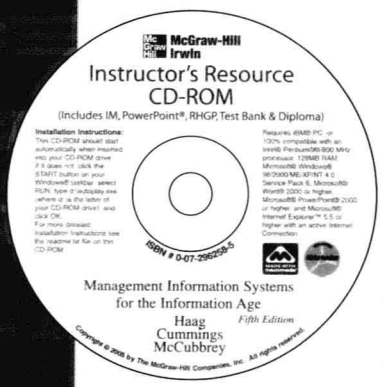
The PowerPoint presentations are ready for you to use in class. In preparing to use these, you simply work through the Instructor's Manual which includes thumbnails of each slide and important points to cover. Of course, we realize that you'll probably want to customize some of the presentations. So, we've made available to you most of the images and photos in the text. You can find these on your Instructor's CD as well as the text's Web site at www.mhhe.com/haag.

Empowered Instruction

Classroom Performance System

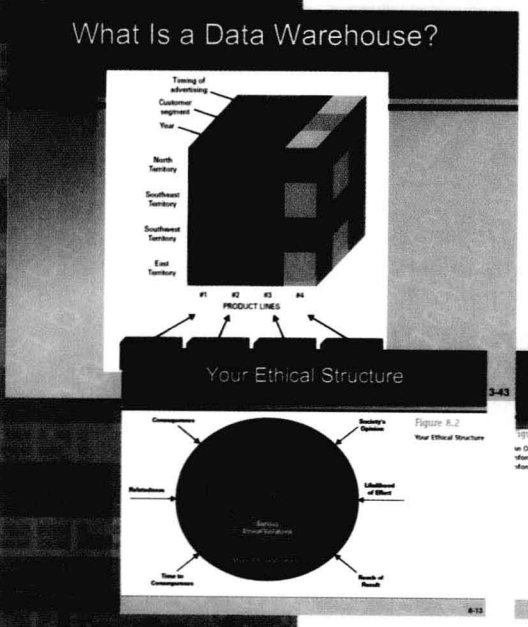
Engage students and assess real-time lecture retention with this simple yet powerful wireless application. You can even deliver tests that instantly grade themselves.





Instructor Resource CD

Everything you need on one CD: PowerPoint slides, Test Item File (in Word and Diploma format), Solutions to end-of-chapter exercises and real world case questions, and much more.



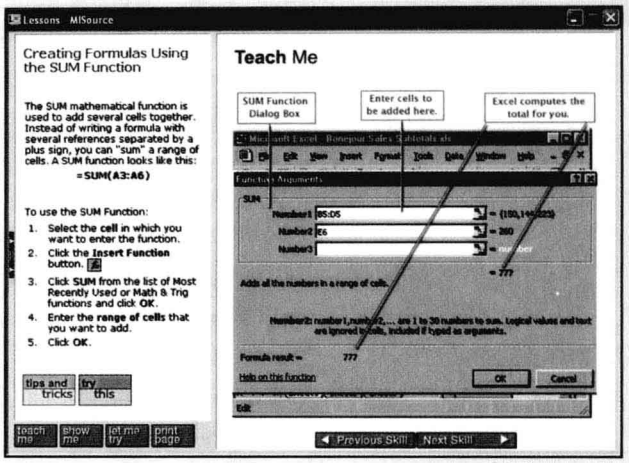
PowerPoint Presentation

Robust, detailed, and designed to keep students engaged.

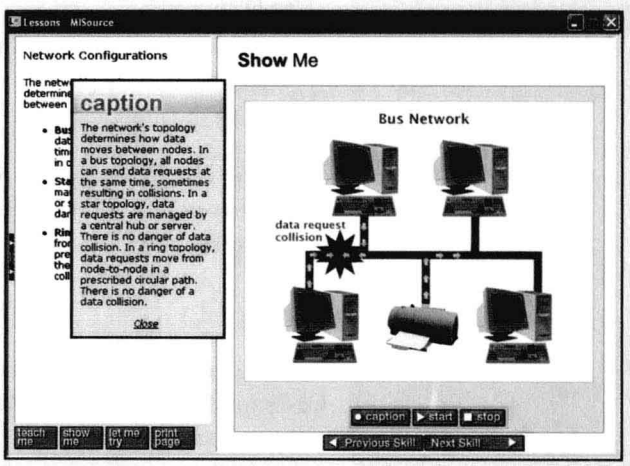
MISOURCE

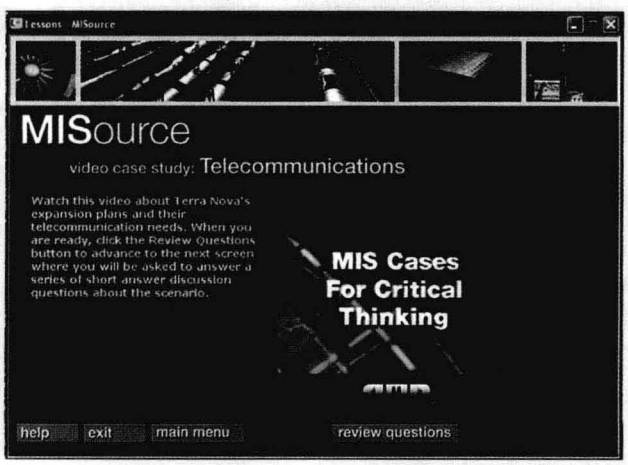
Software Skills & Computer Concepts

MISource provides animated tutorials and simulated practice of the core skills in Microsoft Excel, Access, and PowerPoint. MISource also animates 47 important computer concepts.



Spend less time reviewing software skills and computer literacy. Each text includes a copy of MISource.





MIS Practice and Principles

MISource includes three video vignettes about the problems and opportunities facing a growing beverage company. Use the questions that follow each vignette as homework assignments or for discussion. Animated presentations of data mining, online transaction processing, and the systems development life cycle give students more perspective.

PROBLEM SOLVING VIDEO VIGNETTES

Three separate segments show how a growing beverage company comes to terms with problems and opportunities that can be addressed with database systems, telecommunications technology, and system development. Use the questions that follow each segment to inspire discussion or test students' critical thinking skills.

POWERWEB

PowerWeb is dynamic and easy to use. It automatically finds and delivers newly published supplemented MIS-specific content. PowerWeb is the first online supplement to offer your students access to

- Course-specific current articles refereed by content experts
- Course-specific real-time news
- Weekly course updates
- Interactive exercises and assessment tools
- Student study tips
- Web research tips and exercises
- Refereed and updated research links
- Daily news
- Access to the Northernlight.com Special Collection™ of journals and articles

MBA MIS CASES

Developed by Richard Perle of Loyola Marymount University, these 14 comprehensive cases allow you to add MBA-level analysis to your course. Visit our Web site to review a sample case.

APPLICATION CASES FOR MIS

Looking for a more substantial hands-on component? The Fifth Edition of Application Cases in MIS (ISBN 0072933631) by James Morgan is the proven answer.

ONLINE LEARNING CENTER

Visit www.mhhe.com/haag for additional instructor and student resources.

ONLINE COURSES

Content for the Fifth Edition is available in WebCT, Blackboard, and PageOut formats to accommodate virtually any online delivery platform.

EXTENDED LEARNING MODULE CD-ROM

This text is packaged with a student CD (0072962593) that contains five Extended Learning Modules (E, F, G, J, and K). There is a two-page introduction to each module in the book itself. All your students have to do is go to the CD to read the full module.