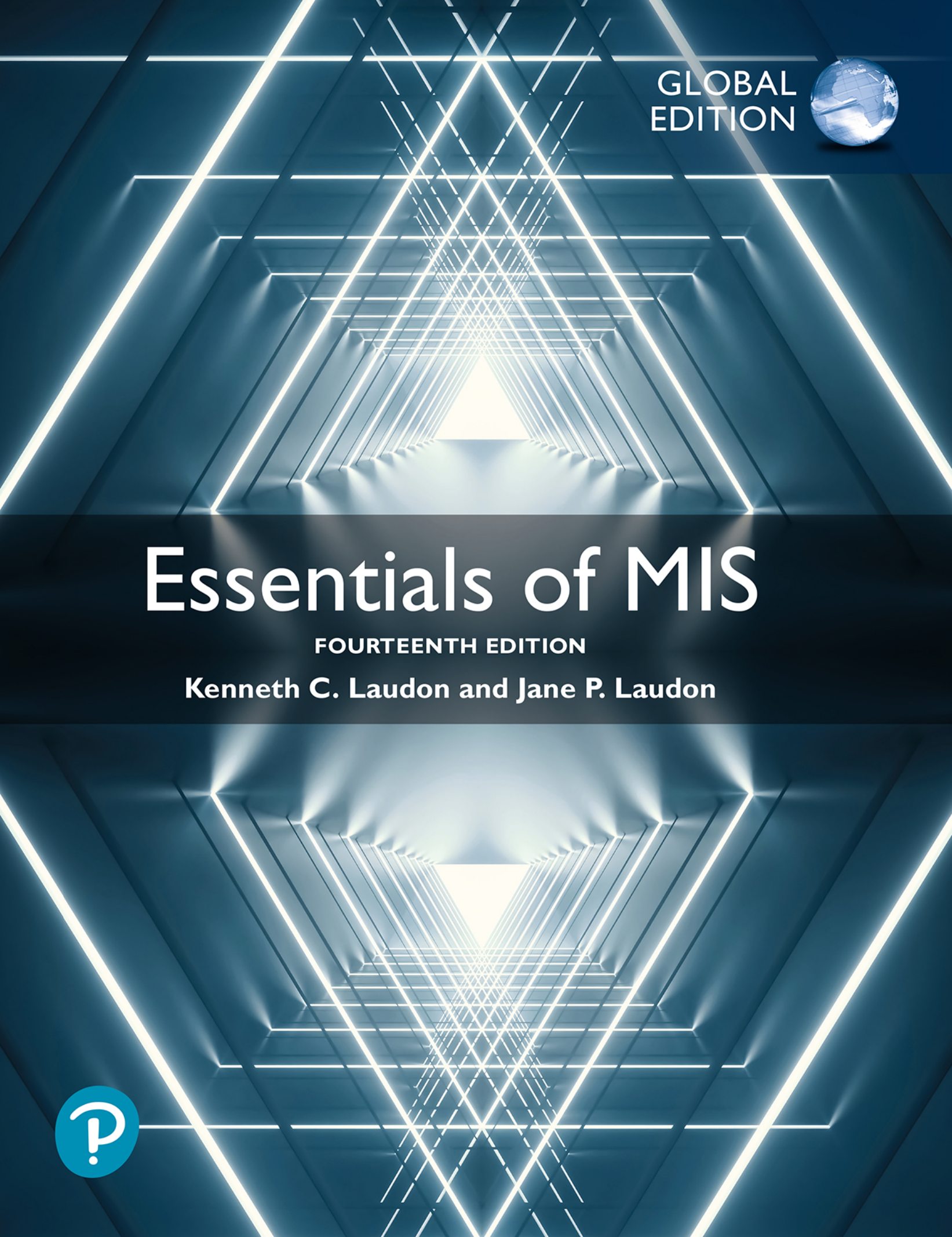

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FOURTEENTH EDITION

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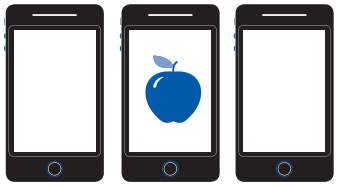

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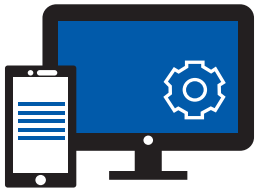

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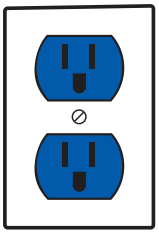

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Integrating Business with Technology

By completing the projects in this text, students will be able to demonstrate business knowledge, application software proficiency, and Internet skills. These projects can be used by instructors as learning assessment tools and by students as demonstrations of business, software, and problem-solving skills to future employers. Here are some of the skills and competencies students using this text will be able to demonstrate:

Business Application skills: Use of both business and software skills in real-world business applications. Demonstrates both business knowledge and proficiency in spreadsheet, database, and Web page/blog creation tools.

Internet skills: Ability to use Internet tools to access information, conduct research, or perform online calculations and analysis.

Analytical, writing and presentation skills: Ability to research a specific topic, analyze a problem, think creatively, suggest a solution, and prepare a clear written or oral presentation of the solution, working either individually or with others in a group.

*** Dirt Bikes Running Case in MyLabMIS**

Business Application Skills

Business Skills	Software Skills	Chapter
Finance and Accounting		
Financial statement analysis	Spreadsheet charts	Chapter 2*
	Spreadsheet formulas	Chapter 10
	Spreadsheet downloading and formatting	
Pricing hardware and software	Spreadsheet formulas	Chapter 5
Technology rent vs. buy decision	Spreadsheet formulas	Chapter 5*
Total Cost of Ownership (TCO) Analysis		
Analyzing telecommunications services and costs	Spreadsheet formulas	Chapter 7
Risk assessment	Spreadsheet charts and formulas	Chapter 8
Human Resources		
Employee training and skills tracking	Database design	Chapter 12*
	Database querying and reporting	
Manufacturing and Production		
Analyzing supplier performance and pricing	Spreadsheet date functions	Chapter 2
	Data filtering	
	Database functions	
Inventory management	Importing data into a database	Chapter 6
	Database querying and reporting	
Bill of materials cost sensitivity analysis	Spreadsheet data tables	Chapter 11*
	Spreadsheet formulas	
Sales and Marketing		
Sales trend analysis	Database querying and reporting	Chapter 1
Customer reservation system	Database querying and reporting	Chapter 3
Customer sales analysis	Database design	
Marketing decisions	Spreadsheet pivot tables	Chapter 11
Customer profiling	Database design	Chapter 6*
	Database querying and reporting	

Customer service analysis	Database design Database querying and reporting	Chapter 9
Sales lead and customer analysis	Database design Database querying and reporting	Chapter 12
Blog creation and design	Blog creation tool	Chapter 4

Internet Skills

Using online software tools for job hunting and career development	Chapter 1
Using online interactive mapping software to plan efficient transportation routes	Chapter 2
Researching product information Evaluating Web sites for auto sales	Chapter 3
Analyzing Web browser privacy protection	Chapter 4
Researching travel costs using online travel sites	Chapter 5
Searching online databases for products and services	Chapter 6
Using Web search engines for business research	Chapter 7
Researching and evaluating business outsourcing services	Chapter 8
Researching and evaluating supply chain management services	Chapter 9
Evaluating e-commerce hosting services	Chapter 10
Using shopping bots to compare product price, features, and availability	Chapter 11
Analyzing Web site design	Chapter 12

Analytical, Writing, and Presentation Skills*

Business Problem	Chapter
Management analysis of a business	Chapter 1
Value chain and competitive forces analysis Business strategy formulation	Chapter 3
Formulating a corporate privacy policy	Chapter 4
Employee productivity analysis	Chapter 7
Disaster recovery planning	Chapter 8
Locating and evaluating suppliers	Chapter 9
Developing an e-commerce strategy	Chapter 10

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Fourteenth Edition *Global Edition*

Essentials of Management Information Systems

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New York University

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Azimuth Information Systems

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Authorized adaptation from the United States edition, entitled Essentials of MIS, *14th Edition, ISBN 978-0-13-650081-0 by Kenneth C. Laudon and Jane P. Laudon, published by Pearson Education © 2021.*

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ISBN 10: 1-292-34263-3
ISBN 13: 978-1-292-34263-4
eBook ISBN 13: 978-1-292-34273-3

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library

eBook formatted by Integra Software Services Pvt. Ltd.

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Will AI Kill Jobs?
New Technology at UPS Clashes with Outdated Ways of Working

Chapter 2: Global E-business and Collaboration

Enterprise Social Networking Transforms Sharp Corporation into a More Innovative Connected Organization
Japan Embraces E-governance Tools for Tokyo 2020
Videoconferencing: Something for Everyone
Should Companies Embrace Social Business?

Chapter 3: Achieving Competitive Advantage with Information Systems

N26: A Bank Without Branches
Singapore as a Smart Nation
Strategic Information Systems at Hong Kong Disneyland
Offline, Online, and Back: The Evolution of the UK Grocery Market

Chapter 4: Ethical and Social Issues in Information Systems

Are Cars Becoming Big Brother on Wheels?
The Boeing 737 MAX Crashes: What Happened and Why?
How Harmful Are Smartphones?
Facebook Privacy: Your Life for Sale

Chapter 5: IT Infrastructure: Hardware and Software

American Airlines Heads for the Cloud
Open Source Innovation: The New Competitive Advantage
Look to the Cloud
What Should Firms Do About BYOD?

Chapter 6: Foundations of Business Intelligence: Databases and Information Management

Astro: Leveraging Data for Customer-driven Service
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Does Big Data Provide the Answer?

Chapter 7: Telecommunications, the Internet, and Wireless Technology

Tour de France Wins with Wireless Technology
Singapore Shuts Down 2G Network
Talking Cars Make for Better Road Safety
Google, Apple, and Facebook Battle for Your Internet Experience

Chapter 8: Securing Information Systems

The Electric Power Grid Becomes a Cyberwarfare Battleground
Meltdown and Spectre Haunt the World's Computers
Phishing for Money: Dangerous Emails
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Warehouse Management at Norauto: Conversational Commerce
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Chapter 11: Improving Decision Making and Managing Artificial Intelligence

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Chapter 12: Making the Business Case for Information Systems and Managing Projects

Angostura Builds a Mobile Sales System
Systems Development Is Different for Mobile Apps
Arup Moves Project Management to the Cloud
Maersk's TradeLens: Digitizing the Global Supply Chain

Preface

The Global Edition is written for business school students in Europe, the Middle East, South Africa, Australia, and the Pacific Asian region. Case studies and examples focus on how firms in these regions use information systems. We wrote this book for business school students who wanted an in-depth look at how today's business firms use information technologies and systems to achieve corporate objectives. Information systems are one of the major tools available to business managers for achieving operational excellence, developing new products and services, improving decision making, and achieving competitive advantage. Students will find here the most up-to-date and comprehensive overview of information systems used by business firms today. After reading this book, we expect students will be able to participate in, and even lead, management discussions of information systems for their firms.

When interviewing potential employees, business firms often look for new hires who know how to use information systems and technologies for achieving bottom-line business results. Regardless of whether you are an accounting, finance, management, operations management, marketing, or information systems major, the knowledge and information you find in this book will be valuable throughout your business career.

New To This Edition

Essentials of Management Information Systems, 14th Global edition has been thoroughly updated to cover the latest industry and technology changes that impact the course.

MYLAB MIS™

The MyLab MIS platform provides an interactive digital environment that supports the unique strengths of the content. The goal of *Essentials of Management Information Systems* is to provide students and instructors with an authoritative, up-to-date, interactive, and engaging introduction to the MIS field. The MyLab MIS edition extends these features to a digital platform that emphasizes videos, animations, interactive quizzes, and student comprehension of concepts, theories, and issues. The MyLab MIS environment reflects the new learning styles of students, which are more social, interactive, and usable on digital devices such as smartphones and tablets.

What's Included

- **Pearson eText** enhances learning—both in and out of the classroom. Students can take notes, highlight, and bookmark important content,
- **New Video Cases** collection – 28 video cases (two or more per chapter) and 10 additional instructional videos covering key concepts and experiences in the MIS world. The video cases are written by Ken Laudon and illustrate how real-world corporations and managers are using information technology and systems and are paired with a brief quiz. Video Cases are listed at the beginning of each chapter. (See page 23 for a list of Video Cases available).
- **MIS Decision Simulations** – interactive exercises allowing students to play the role of a manager and make business decisions.
- **Chapter Warm Ups, Chapter Quizzes** – objective-based quizzing to test knowledge.
- **Discussion Questions** – threaded discussion topics taken from the end of chapter.

- **Excel & Access Graded Projects** – live in the application auto-graded Grader projects provided inside MyLab MIS to support classes covering Office tools. In addition, Hands-On MIS Projects from the book are also available.
- **Running Case** on Dirt Bikes USA provides additional hands-on projects for each chapter.
- **Dynamic Study Modules** help students study chapter topics and the language of MIS on their own by continuously assessing their knowledge application and performance in real time. These are available as graded assignments prior to class, and are accessible on smartphones, tablets, and computers.
- **Learning Catalytics™** is a student response tool that helps you generate class discussion, customize your lecture, and promote peer-to-peer learning based on real-time analytics. Learning Catalytics uses students' devices to engage them in more interactive tasks.
- **Learning Tracks** – 53 Learning Tracks in MyLab MIS for additional coverage of selected topics. This edition includes new Learning Tracks for Structured Methodologies and Object-Oriented Development. (See page 22 for list of Learning Tracks available.)

ENHANCED EBOOK

Essentials of Management Information Systems is also available as a stand-alone eBook which extends the learning experience, anytime and anywhere: The Enhanced eBook includes integrated resources designed to aid learning and engagement, allowing students to read and interact with their textbook content, with regular opportunities for self-assessment. Students can also take notes, highlight, and bookmark important content.

Both the MyLab MIS and Enhanced eBook platforms provide an affordable, simple-to-use mobile reading experience that lets instructors and students extend learning beyond class time.

NEW AND UPDATED TOPICS

The 14th edition features all new opening, closing, and Interactive Session cases. The text, figures, tables, and cases have been updated through September 2019 with the latest sources from industry and MIS research. New topics and coverage include:

- **Updated and Expanded Coverage of Artificial Intelligence (AI):** Chapter 11 has been rewritten to include new expanded coverage of machine learning, "deep learning," natural language systems, computer vision systems, and robotics, reflecting the surging interest in business uses of AI and "intelligent" techniques.
- **Making the Business Case for Systems:** Chapter 12 has been rewritten to provide expanded coverage of techniques and decision making criteria for developing a business case for the acquisition and deployment of information systems and related technologies. The chapter shows how to evaluate and select systems projects and technologies that will deliver the greatest value to the firm.
- **Big Data and the Internet of Things:** In-depth coverage of big data, big data analytics, and the Internet of Things (IoT) in Chapters 1, 6, 7, and 11. Includes, analyzing IoT data streams, Hadoop, in-memory computing, nonrelational databases, data lakes, and analytic platforms.
- **Cloud Computing:** Updated and expanded coverage of cloud computing in Chapter 5 (IT infrastructure) with more detail on types of cloud services, private and public clouds, hybrid clouds, managing cloud services, and a new Interactive Session on using cloud services. Cloud computing also covered in Chapter 6 (databases in the cloud), Chapter 8 (cloud security), Chapter 9 (cloud-based CRM and ERP), Chapter 10 (e-commerce), and Chapter 12 (cloud-based systems development).

- **Social, Mobile, Local:** New content in Chapter 10 describing how social tools, mobile technology, and location-based services are transforming e-commerce.
- **Social Business:** Expanded coverage of social business, introduced in Chapter 2 and discussed throughout the text. Detailed discussions of enterprise (internal corporate) social networking as well as social networking in e-commerce.
- Supervised learning
- Unsupervised learning
- Edge computing
- 5G networks
- General Data Protection Regulation (GDPR)
- Mobile device management (MDM)
- Data governance
- Dark web

The Laudon text, MyLab MIS, and Enhanced eBook provide the most up-to-date and comprehensive overview of information systems used by business firms today. After reading this book, we expect students will be able to participate in, and even lead, management discussions of information systems for their firms and understand how to use information technology in their jobs to achieve bottom-line business results. Regardless of whether students are accounting, finance, management, operations management, marketing, or information systems majors, the knowledge and information in this book will be valuable throughout their business careers.

Solving Teaching and Learning Challenges

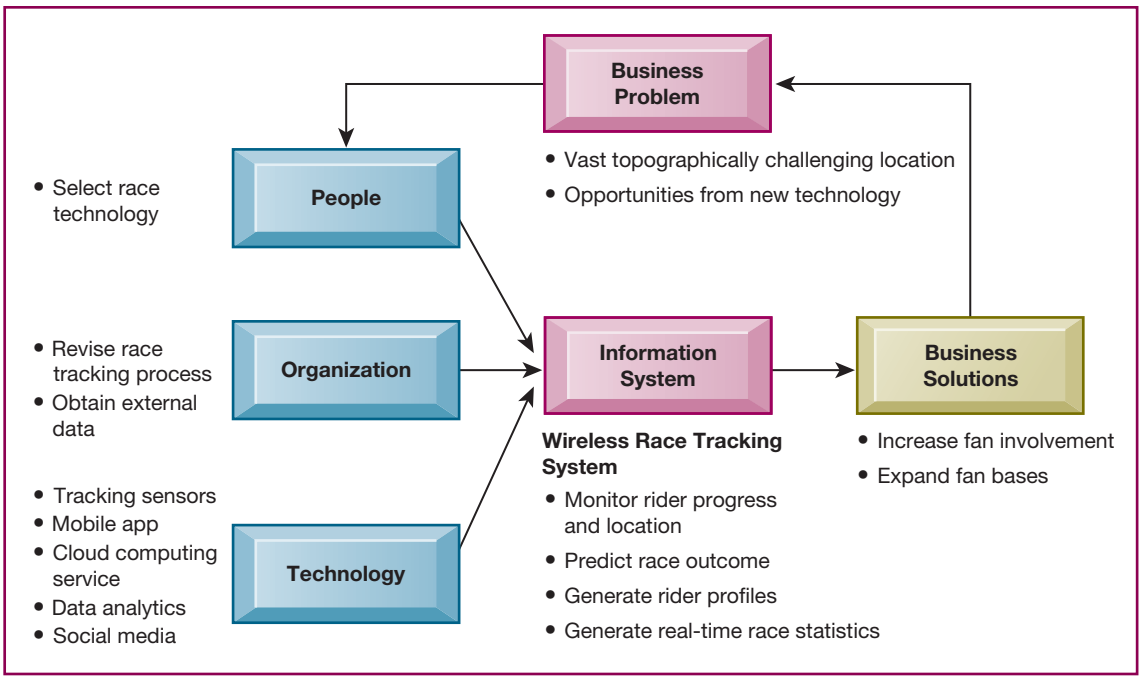
MyLab MIS is the teaching and learning platform that empowers you to reach every student. By combining trusted authors' content with digital tools and a flexible platform, MyLab MIS personalizes the learning experience and improves results for each student. And with MIS Decision-Making Sims and auto-graded Excel and Access Projects, students understand how MIS concepts will help them succeed in their future careers

The MyLab MIS and Enhanced eBook editions offer unique digital interactive features that hold student attention spans longer and make learning more effective, including 36 conceptual animations that walk students through key concepts in each chapter, 28 online video cases, and interactive quizzes. All of this is available anytime, anywhere, on any digital device. The result is a comprehensive learning environment that will heighten student engagement and learning in the MIS course.

The Laudon learning package is more current, real-world, and authoritative than competitors. Laudon *Essentials* 14e, MyLab MIS, and Enhanced eBook help students understand MIS concepts and issues through extensive use of real-world company examples, a wide variety of text and video cases based on real-world organizations, and numerous line art illustrations, interactive animations, and hands-on software projects.

The Laudons are known for their outstanding real-world case studies, which describe how well-known business firms are using IT to solve problems and achieve objectives. Students are often asked to analyze the business problem and propose alternative solutions. The Laudons also provide hands-on MIS software and management decision-making problems in each chapter that are based on real-world companies and business scenarios.

The Laudon text and learning package now has a very strong career focus, which incentivizes students to learn by showing exactly how each chapter will help them prepare for future jobs. In addition to Career Opportunities, MyLab MIS features Career Resources, including how to incorporate MIS knowledge into resumes, cover letters, and job interviews.



A diagram accompanying each chapter-opening case graphically illustrates how people, organization, and technology elements work together to create an information system solution to the business challenges discussed in the case.

THE CORE TEXT

The Core text provides an overview of fundamental MIS concepts using an integrated framework for describing and analyzing information systems. This framework shows information systems composed of people, organization, and technology elements and is reinforced in student projects and case studies. The Core text consists of 12 chapters with hands-on projects covering the most essential topics in MIS. An important part of the Core text is the Video Case Study and Instructional Video Package: 28 video case studies (two to three per chapter) plus 10 instructional videos that illustrate business uses of information systems, explain new technologies, and explore concepts. Videos are keyed to the topics of each chapter.

Chapter Organization

Each chapter contains the following elements:

- A Chapter Outline based on Learning Objectives
- Lists of all the Case Studies and Video Cases for each chapter
- A chapter-opening case describing a real-world organization to establish the theme and importance of the chapter
- A diagram analyzing the opening case in terms of the people, organization, and technology model used throughout the text
- Two Interactive Sessions with Case Study Questions
- A Career Opportunities section showing students how to use the text for job hunting and career preparation
- A Review Summary keyed to the Student Learning Objectives
- A list of Key Terms that students can use to review concepts
- Review questions for students to test their comprehension of chapter material
- Discussion questions raised by the broader themes of the chapter
- A series of Hands-on MIS Projects consisting of two Management Decision Problems, a hands-on application software project, and a project to develop Internet skills
- A Collaboration and Teamwork Project to develop teamwork and presentation skills with options for using open source collaboration tools

- A chapter-ending case study for students to apply chapter concepts
- Chapter references

Student Learning-Focused

Student Learning Objectives are organized around a set of study questions to focus student attention. Each chapter concludes with a Review Summary and Review Questions organized around these study questions, and each major chapter section is based on a Learning Objective.

KEY FEATURES

We have enhanced the text to make it more interactive, leading edge, and appealing to both students and instructors. The features and learning tools are described in the following sections.

Business-Driven with Real-World Business Cases and Examples

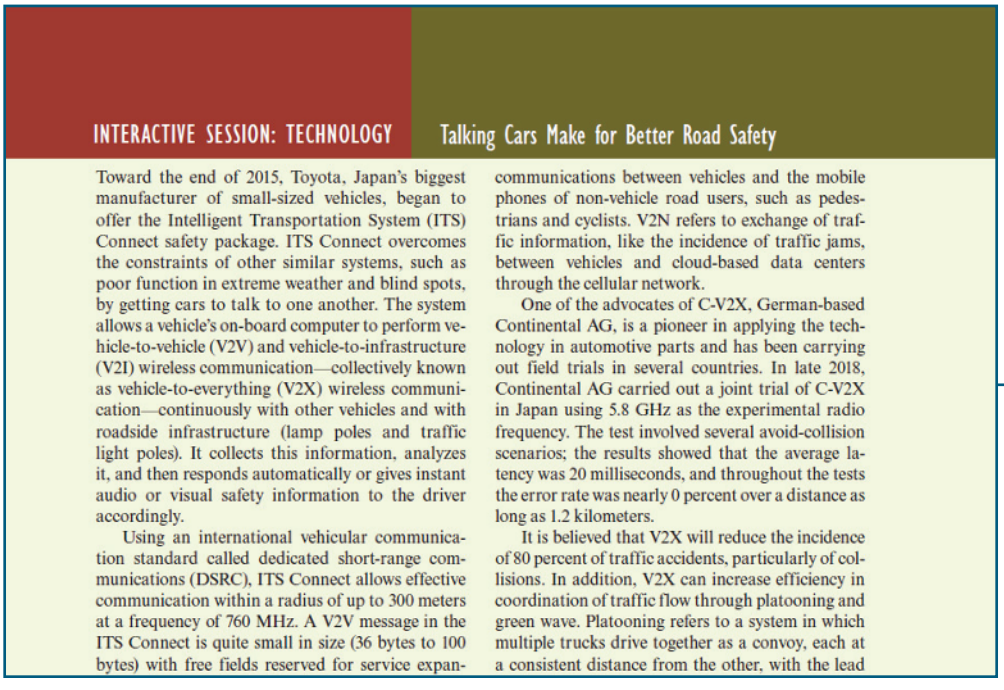
The text helps students see the direct connection between information systems and business performance. It describes the main business objectives driving the use of information systems and technologies in corporations all over the world: operational excellence, new products and services, customer and supplier intimacy, improved decision making, competitive advantage, and survival. In-text examples and case studies show students how specific companies use information systems to achieve these objectives.

We use current (2019) examples from business and public organizations throughout the text to illustrate the important concepts in each chapter. Most of the case studies describe companies or organizations that are familiar to students.

Hands-On Text Activities

Real-world business scenarios and data help students learn firsthand what MIS is all about. These projects heighten student involvement in this exciting subject.

- **Interactive Sessions:** Two short cases in each chapter have been redesigned as Interactive Sessions that can be used to stimulate student interest and active learning. Each case concludes with case study questions. The case study questions provide topics for discussion or written assignments.
- **Hands-On MIS Projects:** Every chapter concludes with a Hands-On MIS Projects section containing three types of projects: two Management Decision Problems;



INTERACTIVE SESSION: TECHNOLOGY

Talking Cars Make for Better Road Safety

Toward the end of 2015, Toyota, Japan's biggest manufacturer of small-sized vehicles, began to offer the Intelligent Transportation System (ITS) Connect safety package. ITS Connect overcomes the constraints of other similar systems, such as poor function in extreme weather and blind spots, by getting cars to talk to one another. The system allows a vehicle's on-board computer to perform vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) wireless communication—collectively known as vehicle-to-everything (V2X) wireless communication—continuously with other vehicles and with roadside infrastructure (lamp poles and traffic light poles). It collects this information, analyzes it, and then responds automatically or gives instant audio or visual safety information to the driver accordingly.

Using an international vehicular communication standard called dedicated short-range communications (DSRC), ITS Connect allows effective communication within a radius of up to 300 meters at a frequency of 760 MHz. A V2V message in the ITS Connect is quite small in size (36 bytes to 100 bytes) with free fields reserved for service expan-

communications between vehicles and the mobile phones of non-vehicle road users, such as pedestrians and cyclists. V2N refers to exchange of traffic information, like the incidence of traffic jams, between vehicles and cloud-based data centers through the cellular network.

One of the advocates of C-V2X, German-based Continental AG, is a pioneer in applying the technology in automotive parts and has been carrying out field trials in several countries. In late 2018, Continental AG carried out a joint trial of C-V2X in Japan using 5.8 GHz as the experimental radio frequency. The test involved several avoid-collision scenarios; the results showed that the average latency was 20 milliseconds, and throughout the tests the error rate was nearly 0 percent over a distance as long as 1.2 kilometers.

It is believed that V2X will reduce the incidence of 80 percent of traffic accidents, particularly of collisions. In addition, V2X can increase efficiency in coordination of traffic flow through platooning and green wave. Platooning refers to a system in which multiple trucks drive together as a convoy, each at a consistent distance from the other, with the lead

Each chapter contains two Interactive Sessions on People, Organizations, or Technology using real-world companies to illustrate chapter concepts and issues.

Case Study Questions encourage students to apply chapter concepts to real-world companies in class discussions, student presentations, or writing assignments.

CASE STUDY QUESTIONS

1. What are the pros and cons of the V2X technology?
2. What can be done to speed up the adoption of V2X technology among vehicle owners?
3. What other applications can you think of for the ITS Connect?

Case contributed by Joyce Chan, City University of Hong Kong

Students practice using software in real-world settings for achieving operational excellence and enhancing decision making.

Store & Region Sales Database

	Store N	Sales Regic	Item I	Item Descripti	Unit Pri	Units So	Week Ending	Click to Add
	1	South	2005	17" Monitor	$229.00	28	10/27/2018	
2	1	South	2005	17" Monitor	$229.00	30	11/24/2018	
3	1	South	2005	17" Monitor	$229.00	9	12/29/2018	
4	1	South	3006	101 Keyboard	$19.95	30	10/27/2018	
5	1	South	3006	101 Keyboard	$19.95	35	11/24/2018	
6	1	South	3006	101 Keyboard	$19.95	39	12/29/2018	
7	1	South	6050	PC Mouse	$8.95	28	10/27/2018	
8	1	South	6050	PC Mouse	$8.95	3	11/24/2018	
9	1	South	6050	PC Mouse	$8.95	38	12/29/2018	
10	1	South	8500	Desktop CPU	$849.95	25	10/27/2018	
11	1	South	8500	Desktop CPU	$849.95	27	11/24/2018	
12	1	South	8500	Desktop CPU	$849.95	33	12/29/2018	
13	2	South	2005	17" Monitor	$229.00	8	10/27/2018	
14	2	South	2005	17" Monitor	$229.00	8	11/24/2018	
15	2	South	2005	17" Monitor	$229.00	10	12/29/2018	
16	2	South	3006	101 Keyboard	$19.95	8	10/27/2018	
17	2	South	3006	101 Keyboard	$19.95	8	11/24/2018	
18	2	South	3006	101 Keyboard	$19.95	8	12/29/2018	
19	2	South	6050	PC Mouse	$8.95	9	10/27/2018	
20	2	South	6050	PC Mouse	$8.95	9	11/24/2018	
21	2	South	6050	PC Mouse	$8.95	8	12/29/2018	
22	2	South	8500	Desktop CPU	$849.95	18	10/27/2018	

Record: 1 of 96 No Filter Search

Each chapter features a project to develop Internet skills for accessing information, conducting research, and performing online calculations and analysis.

IMPROVING DECISION MAKING: USING WEB TOOLS TO CONFIGURE AND PRICE AN AUTOMOBILE

Software skills: Internet-based software
Business skills: Researching product information and pricing

3-11 In this exercise, you will use software at car-selling websites to find product information about a car of your choice and use that information to make an important purchase decision. You will also evaluate two of these sites as selling tools.

You are interested in purchasing a new Ford Escape (or some other car of your choice). Go to the website of CarsDirect and begin your investigation.

a hands-on application software exercise using Microsoft Excel, Access, or web page and blog creation tools; and a project that develops Internet business skills. Files for these projects are available in MyLab. As mentioned, the Dirt Bikes USA running case in MyLab MIS provides additional hands-on projects for each chapter.

- **Collaboration and Teamwork Projects.** Each chapter features a collaborative project that encourages students working in teams to use Google Drive, Google Docs, or other open source collaboration tools. The first team project in Chapter 1 asks students to build a collaborative Google site.

Developing Career Skills

For students to succeed in a rapidly changing job market, they should be aware of their career options and how to go about developing a variety of skills. With MyLab MIS and *Essentials of Management Information Systems*, we focus on these skills in the following ways.

CAREER OPPORTUNITIES AND RESOURCES

Every student who reads this text wants to know: How will this book help my career? Our new Career Opportunities feature shows how to use this text, MyLab MIS, and Enhanced eBook as tools for job-hunting and career-building. Job interviewers will typically ask about why you want the job, along with your ability to communicate, multitask, work in a team, show leadership, solve problems, and meet goals. These are general skills and behaviors you'll need to succeed in any job, and you should be prepared to provide examples from your course work and job experiences that demonstrate these skills. But there are also business knowledge and professional skills that employers will ask you about. Career Opportunities will show you how to use what you have learned in this text to demonstrate these skills.

The Career Opportunities section, identified by this icon is the last major section of each chapter under the heading "How will MIS help my career?". There you will find a description of an entry-level job for a recent college graduate based on a real-world job description from major online job sites related to the topics covered in that chapter. The name of the company offering the job and its location have been changed. Each chapter's job posting describes the required educational background and specific job skills, and suggests some of the business-related questions that might arise during the job interview. The authors provide tips for answering the questions and preparing for the interview. Career Opportunities also show where students can find out more information about the technical and business knowledge required for the job in this text and on the web and social media.

Below are the job descriptions used in this edition based on postings from both large and small businesses. A few of these jobs call for an MIS major, others for MIS course work, but many postings are not that specific. Some require some previous internship or job experience, but many are entry-level positions suitable for new college graduates, and some of these positions provide on-the-job training. However, all require knowledge of business information systems and applications and the ability to work in a digital environment.

Chapter	Career Opportunity Job Description
1. Business Information Systems in Your Career	Financial Client Support and Sales Assistant
2. Global E-business and Collaboration	Entry Level Sales Support Specialist
3. Achieving Competitive Advantage with Information Systems	Entry Level Business Development Representative
4. Ethical and Social Issues in Information Systems	Junior Privacy Analyst
5. IT Infrastructure: Hardware and Software	Entry Level IT Consultant
6. Foundations of Business Intelligence: Databases and Information Management	Global Data Services Sales and Marketing Assistant
7. Telecommunications, the Internet, and Wireless Technology	Automotive Digital Advisor
8. Securing Information Systems	Entry Level Identity Access and Management Support Specialist
9. Achieving Operational Excellence and Customer Intimacy: Enterprise Applications	Manufacturing Management Trainee
10. E-commerce: Digital Markets, Digital Goods	Junior E-Commerce Data Analyst
11. Improving Decision Making and Managing Artificial Intelligence	AI Technology Sales Assistant
12. Making the Business Case for Information Systems and Managing Projects	IT Project Management Assistant

Instructor Teaching Resources

Supplements available to instructors at www.pearsonglobaleditions.com	Features of the Supplement
Instructor's Manual	• Chapter-by-chapter summaries • Examples and activities not in the main book • Teaching outlines • Teaching tips • Solutions to all questions and problems in the book
Test Bank authored by Professor Kenneth Laudon, New York University	The authors have worked closely with skilled test item writers to ensure that higher-level cognitive skills are tested. Test bank multiple-choice questions include questions on content but also include many questions that require analysis, synthesis, and evaluation skills. **AACSB Assessment Guidelines** As a part of its accreditation activities, the AACSB has developed an Assurance of Learning Program designed to ensure that schools do in fact teach students what they promise. Schools are required to state a clear mission, develop a coherent business program, identify student learning objectives, and then prove that students do in fact achieve the objectives. We have attempted in this book to support AACSB efforts to encourage assessment-based education. The end papers of this edition identify student learning objectives and anticipated outcomes for our Hands-On MIS projects. The authors will provide custom advice on how to use this text in colleges with different missions and assessment needs. Please e-mail the authors or contact your local Pearson representative for contact information.
Computerized TestGen	TestGen allows instructors to: • Customize, save, and generate classroom tests • Edit, add, or delete questions from the Test Item Files • Analyze test results • Organize a database of tests and student results
PowerPoints authored by Professor Kenneth Laudon, New York University	The authors have prepared a comprehensive collection of 50 PowerPoint slides for each chapter to be used in your lectures. Many of these slides are the same as used by Ken Laudon in his MIS classes and executive education presentations. Each of the slides is annotated with teaching suggestions for asking students questions, developing in-class lists that illustrate key concepts, and recommending other firms as examples in addition to those provided in the text. The annotations are like an Instructor's Manual built into the slides and make it easier to teach the course effectively. PowerPoints meet accessibility standards for students with disabilities. Features include but are not limited to: • Keyboard and Screen Reader access • Alternative text for images • High color contrast between background and foreground colors

Students can use Career Opportunities to shape their resumes and career plans as well as to prepare for interviews. For instructors, Career Opportunities are potential projects for student research and in-class discussion.

In MyLab MIS we have provided additional Career Resources, including job-hunting guides and instructions on how to build a Digital Portfolio demonstrating the business knowledge, application software proficiency, and Internet skills acquired from using the text. The portfolio can be included in a resume or job application or used as a learning assessment tool for instructors.

Learning Tracks

There are 53 Learning Tracks in MyLab MIS available to instructors and students.

Chapter	Learning Tracks
Chapter 1: Business Information Systems in Your Career	How Much Does IT Matter? The Changing Business Environment for IT The Business Information Value Chain The Mobile Digital Platform Occupational and Career Outlook for Information Systems Majors 2014–2020
Chapter 2: Global E-business and Collaboration	Systems from a Functional Perspective IT Enables Collaboration and Teamwork Challenges of Using Business Information Systems Challenges of Knowledge Management Systems Organizing the Information Systems Function
Chapter 3: Achieving Competitive Advantage with Information Systems	Challenges of Using Information Systems for Competitive Advantage Primer on Business Process Design and Documentation Primer on Business Process Management
Chapter 4: Ethical and Social Issues in Information Systems	Developing a Corporate Code of Ethics for IT
Chapter 5: IT Infrastructure: Hardware and Software	How Computer Hardware and Software Work Service Level Agreements Cloud Computing The Open Source Software Initiative The Evolution of IT Infrastructure Technology Drivers of IT Infrastructure Fourth Generation Languages
Chapter 6: Foundations of Business Intelligence: Databases and Information Management	Database Design, Normalization, and Entity-Relationship Diagramming Introduction to SQL Hierarchical and Network Data Models
Chapter 7: Telecommunications, the Internet, and Wireless Technology	Broadband Network Services and Technologies Cellular System Generations Wireless Applications for Customer Relationship Management, Supply Chain Management, and Healthcare Introduction to Web 2.0 LAN Topologies
Chapter 8: Securing Information Systems	The Booming Job Market in IT Security The Sarbanes-Oxley Act Computer Forensics General and Application Controls for Information Systems Management Challenges of Security and Control Software Vulnerability and Reliability
Chapter 9: Achieving Operational Excellence and Customer Intimacy: Enterprise Applications	SAP Business Process Map Business Processes in Supply Chain Management and Supply Chain Metrics Best-Practice Business Processes in CRM Software
Chapter 10: E-commerce: Digital Markets, Digital Goods	E-commerce Challenges: The Story of Online Groceries Build an E-commerce Business Plan Hot New Careers in E-Commerce E-commerce Payment Systems Building an E-commerce Website
Chapter 11: Improving Decision Making and Managing Artificial Intelligence	Building and Using Pivot Tables The Expert Systems Inference Engine Case-Based Reasoning Fuzzy Logic
Chapter 12: Making the Business Case for Information Systems and Managing Projects	Capital Budgeting Methods for Information Systems Investments Enterprise Analysis (Business Systems Planning) and Critical Success Factors Information Technology Investments and Productivity Unified Modeling Language Structured Methodologies and Object-Oriented Development

Video Cases and Instructional Videos

Instructors can download step-by-step instructions for accessing the video cases from the Instructor Resources Center.

Chapter	Video
Chapter 1: Business Information Systems in Your Career	Business in the Cloud: Facebook, Google, and eBay Data Centers UPS Global Operations with the DIAD and Worldport Instructional Video: Tour IBM's Raleigh Data Center
Chapter 2: Global E-business and Collaboration	Vision X Grows with SAP Business One CEMEX: Becoming a Social Business Instructional Video: US Foodservice Grows Market with Oracle CRM on Demand
Chapter 3: Achieving Competitive Advantage with Information Systems	GE Becomes a Digital Firm: The Emerging Industrial Internet National Basketball Association: Competing on Global Delivery with Akamai OS Streaming
Chapter 4: Ethical and Social Issues in Information Systems	What Net Neutrality Means for You Facebook and Google Privacy: What Privacy? The United States vs. Terrorism: Data Mining for Terrorists and Innocents Instructional Video: Viktor Mayer Schönberger on the Right to Be Forgotten
Chapter 5: IT Infrastructure: Hardware and Software	Rockwell Automation Fuels the Oil and Gas Industry with the Internet of Things (IoT) ESPN.com: The Future of Sports Coverage in the Cloud Netflix: Building a Business in the Cloud
Chapter 6: Foundations of Business Intelligence: Databases and Information Management	Dubuque Uses Cloud Computing and Sensors to Build a Smarter City Brooks Brothers Closes in on Omnichannel Retail Maruti Suzuki Business Intelligence and Enterprise Databases
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Acknowledgments

The production of any book involves valued contributions from a number of persons. We would like to thank all of our editors for encouragement, insight, and strong support for many years. We thank our editors, Steven Jackson, Daniel Luiz, and Rosemary Iles for their role in managing the project.

Our special thanks go to our supplement authors for their work, including the following MyLab MIS content contributors: Roberta M. Roth, University of Northern Iowa; Gipsi Sera, Indiana University; Robert J. Mills, Utah State University; and John Hupp, Columbus State University. We are indebted to Erica Laudon for her contributions to Career Opportunities and to Megan Miller for her help during production. We remember Diana Rihm Craig for her help with database topics.

Special thanks to colleagues at the Stern School of Business at New York University; to Professor Werner Schenk, Simon School of Business, University of Rochester; to Professor Mark Gillenson, Fogelman College of Business and Economics, University of Memphis; to Robert Kostrubanic, Indiana-Purdue University Fort Wayne; to Professor Ethné Swartz, Department of Information Management and Business Analytics, Feliciano School of Business; to Professor Detlef Schoder of the University of Cologne; to Professor Walter Brenner of the University of St. Gallen; to Professor Lutz Kolbe of the University of Gottingen; and to Professor Donald Marchand of the International Institute for Management Development who provided additional suggestions for improvement. Thank you to Professor Ken Kraemer, University of California at Irvine, and Professor John King, University of Michigan, for more than a decade-long discussion of information systems and organizations. And a special remembrance and dedication to Professor Rob Kling, University of Indiana, for being our friend and colleague over so many years.

We also want to especially thank all our reviewers whose suggestions helped improve our texts. Reviewers for recent editions include:

Abdullah Albizri, *Montclair State University*
Robert M. Benavides, *Collin College*
Gordon Bloom, *Virginia Commonwealth University*
Brett Cabradillia, *Coastal Carolina Community College*
Qiyang Chen, *Montclair State University*
Amita Chin, *Virginia Commonwealth University*
Lynn Collen, *St. Cloud State University*
Reet Cronk, *Harding University*
Uldarico Rex Dumdum, *Marywood University*
Mahmoud Elhussini, *Montclair State University*
Sue Furnas, *Collin College*
Scott Hamerink, *Oakland University*
Dae Youp Kang, *University of Memphis*
Rajkumar Kempaiah, *College of Mount Saint Vincent*
Channa J. Kumarage, *Saint Cloud State University*
Weiqi Li, *University of Michigan-Flint*
Liu Liu, *Old Dominion University*
Susan Mahon, *Collin College*
Robert Morphew, *Texas Woman's University*
Jose Ng, *Montclair State University*
Richard Peterson, *Montclair State University*
Dr. Michael Raisinghani, *Texas Woman's University*
Ethne Swartz, *Montclair State University*

Global Edition Acknowledgements

For their work on the Global Edition, Pearson would like to thank:

Muhammad Shakaib Akram, *University of Essex*
Saadat Alhashmi, *University of Sharjah*
Bernard Bouwman, *Avans University of Applied Sciences*
Joyce Chan, *City University of Hong Kong*
Tommy Chan, *Northumbria University*
Zach Lee, *Durham University*
Imran Medi, *Asia Pacific University of Technology and Innovation*
Nash Milic, *American University of Sharjah*
Sahil Raj, *Punjabi University*
Mark Sallos, *University College London*
Bernd Schenk, *University of Liechtenstein*
Neerja Sethi, *Nanyang Technological University*
Vijay Sethi, *Nanyang Technological University*
Neerja Sethi, *Nanyang Technological University*
Upasana Singh, *University of KwaZulu-Natal*
John Sutherland
Yuen Yee Yen, *Multimedia University*

Essentials of Management Information Systems

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PART I

Chapter 1
Business Information Systems in Your Career

Chapter 2
Global E-business and Collaboration

Chapter 3
Achieving Competitive Advantage with Information Systems

Chapter 4
Ethical and Social Issues in Information Systems

Information Systems in the Digital Age

Part I introduces the major themes and the problem-solving approaches that are used throughout this book. While surveying the role of information systems in today's businesses, this part raises a series of major questions: What is an information system? Why are information systems so essential in businesses today? How can information systems help businesses become more competitive? What do I need to know about informationsystems to succeed in my business career? What ethical and social issues do widespread use of information systems raise?

CHAPTER

1

Business Information Systems in Your Career

LEARNING OBJECTIVES

After reading this chapter, you will be able to answer the following questions:

I-1 Why are information systems so essential for running and managing a business today?

I-2 What exactly is an information system? How does it work? What are its people, organizational, and technology components?

I-3 How will a four-step method for business problem solving help you solve information system–related problems?

I-4 What information systems skills and knowledge are essential for business careers?

I-5 How will MIS help my career?

CHAPTER CASES

- PCL Construction: The New Digital Firm
- UPS Competes Globally with Information Technology
- Will AI Kill Jobs?
- New Technology at UPS Clashes with Outdated Ways of Working

VIDEO CASES

- Business in the Cloud: Facebook, Google, and eBay Data Centers
- UPS Global Operations with the DIAD and Worldport

Instructional Video:

- Tour IBM's Raleigh Data Center

MyLab MIS

- Discussion questions: 1-5, 1-6, 1-7
- Hands-on MIS Projects: 1-8, 1-9, 1-10, 1-11

PCL CONSTRUCTION: THE NEW DIGITAL FIRM

Many people think the most widely used tool in a construction project is a hammer, but it is more likely a filing cabinet or fax machine. The construction industry has traditionally been paper-intensive and manual. A complex project such as a large building requires hundreds of architectural drawings and design documents, which can change daily. Costly delays because of difficulty locating and accessing documents and other project information could make or break a project. Now that's changing, and PCL Construction is at the forefront. Information technology has transformed the way this business works, and it is a prime example of the new digital firm.

PCL is a group of independent general contracting construction companies, with over 4,400 employees in the United States, Canada, and Australia. The organization is active in the commercial, institutional, multifamily residential, renewable energy, heavy industrial, historical restoration, and civil-construction sectors. PCL has corporate headquarters in Edmonton, Alberta, Canada and a United States head office in Denver, Colorado.

At a PCL job site, you'll now see employees using mobile devices, including smartphones, tablets, and laptops, to access important information from PCL systems or input data. Digital touch-screen kiosks throughout the job site and electronic plan rooms provide access to digitized, updated blueprints so team members don't have to waste time tracking down paper versions.

In the past, on-site trailers used to house large paper blueprints for a project. Each time a project team member wanted to view plans, that person had to visit a trailer. With up to 800 active construction projects running simultaneously, PCL had trouble keeping project documentation up to date. Information on paper forms to track small changes to project specifications or work requirements might not reach project decision makers until 30–40 days from the time it was recorded. By then, it was too late—decisions were made "from the gut" rather than based on facts.

PCL Construction plans are now in digital form, or the paper versions are scanned for digital storage. Digitized plans can be revised much more rapidly. By performing much of the design and planning work on the computer, PCL is able to identify and resolve conflicts and constructability issues early in the construction process to help keep projects ahead of schedule and within budget.

PCL implemented Project Document Controls (PDC) to facilitate collaboration among project team members. A secure project-based website provides real-time storage and management of information in a single shared accessible

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location. Construction contractors, subcontractors, consultants, suppliers, and clients can work from the same documents wherever they are. PCL uses its own proprietary project management system for budgeting, costing, forecasting, subcontractor tracking, production, and reporting. The project management system is linked to other PCL systems, including the People and Projects database, client management and accounting systems, and the BEST Estimating system. BEST Estimating is PCL's in-house estimating program for creating lump sum and unit price estimates and providing accurate resource and cost information.

PCL started moving its computing work to Microsoft Azure Cloud, which hosts the hardware and software for running some of PCL's applications in remote computing centers managed by Microsoft. Staff working on PCL projects can access information from cloud-based systems at any time and location using mobile devices as well as conventional desktop machines and an Internet connection. PCL saves 80 percent of the cost of backing up its corporate data by using the Azure platform. Azure Cloud also hosts a real-time analytics dashboard to monitor project performance in terms of quality, safety, schedule, and cost. The data are displayed visually as bar graphs or pie charts to construction field staff, project managers, and executives, and colors ranging from red to orange to green display performance ratings.

Sources: "Technology and Innovation," pcl.com, accessed February 9, 2019; "PCL: Capitalizing on the Cloud," itworldcanada.com, accessed February 9, 2019; Brian Jackson, "PCL Constructors Reach New Heights with Real-time Analytics Solution in the Cloud," *IT World Canada*, November 9, 2017.

PCL Construction's experience shows how essential information systems are today. PCL operates construction projects in numerous distributed locations in an industry that traditionally has been paper-intensive. Processing and accessing the large number of documents and other information required by construction projects was excessively costly and time-consuming, driving up costs. PCL used leading-edge information technology to digitize documents and streamline business processes for documenting, tracking, and analyzing projects. The information flows that drive PCL's business have become largely digital, making use of mobile tools and a cloud computing infrastructure. PCL Construction has become a leading example of a digital firm.

The chapter-opening diagram calls attention to important points raised by this case and this chapter. To reduce time and costs and improve customer service in a heavily paper-based industry, PCL management chose to use information technology to increase the precision and efficiency of key business activities for designing, costing, budgeting, and monitoring a construction project. These technologies include mobile devices (phones, tablets, laptops), touch screen kiosks, cloud computing services, the Internet, and software for creating models, managing documents, monitoring project progress, budgeting, estimating costs, and displaying key project performance indicators on a digital dashboard. The use of leading-edge digital technologies to drive business operations and management decisions is a key topic today in the MIS world and will be discussed throughout this text.

It is also important to note that deploying information technology has changed the way PCL Construction runs its business. To effectively use all of its new digital tools, PCL had to redesign jobs and procedures for gathering, inputting, and accessing information, for designing, budgeting, and calculating costs, and for monitoring project progress. These changes had to be carefully planned to make sure they enhanced efficiency, service, and profitability.

Here are some questions to think about: How did information technology change operations at PCL Construction? What was the role of mobile technology and cloud computing?