ACCOUNTING INFORMATION SYSTEMS

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Gelinas | Dull | Wheeler | Hill

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Accounting Information Systems

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We dedicate this eleventh edition
to our spouses, Roxanne, Susan, Kay, and
Manson with grateful appreciation for their
patience and support throughout this project.

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PREFACE

Welcome to the beginning of a journey through the dynamic field of accounting information systems. We are very pleased that you have chosen to become another member of our international community of students, accounting professionals, and educators who make this book an integral part of their library as a text and reference tool. We are committed to making the journey through this challenging, exciting, and sometimes complex topic as straightforward and pleasant as possible. These challenging topics are approached in a conversational and relaxed tone, rather than pretentious, technical language. At the same time, the text fully explores the integrated nature of the topic with its foundations in information technology, business processes, strategic management, security, and internal control. Thank you for the opportunity to serve as your guide on this journey. To get started, let's discuss two key ideas that inspire the story in the text. First, the accountant is defined as an information management and business measurement professional. Second, information systems consist of integral parts working together to enable the organization to progress and move forward. These two philosophies are briefly described before addressing the most frequently asked questions (FAQs) by users of this book.

Accountant as an Information Management and Business Measurement Professional

There is no doubt that the long-standing image of the accountant as a nonsocial, conservative, green eye shaded employee who is tucked in the back room of an organization has been forever shattered. Today's accounting professional is relied on by owners and managers to perform fraud examinations, identify and monitor enterprise risks (events that may cause an entity to fail to achieve its objectives); assure the reliability of information systems used to gather, store, and disseminate key information for decision making; and possess the essential general business knowledge, coupled with business process measurement and assessment skills, needed to evaluate the state of the business enterprise and its supporting operations. In a post-Enron/post-WorldCom era, a primary focus of organizations is on governance (both organizational and information technology (IT)) and enterprise risk management (ERM). The accounting professional (as external auditor, forensic accountant, internal auditor, corporate accountant, or manager) is increasingly expected to take the leadership role in enhancing organizational governance and identifying and mitigating enterprise risks.

Accordingly, the accounting professional must arrive on the job equipped with a solid understanding of (1) key information qualities, (2) technologies that drive the information systems, (3) business processes that allow an organization to operate effectively and efficiently, (4) common documentation tools used to describe and assess business processes, and (5) internal control concepts that can be applied to mitigate risks for the organization and the IT systems. Each of these fundamental knowledge requirements is addressed throughout this book.

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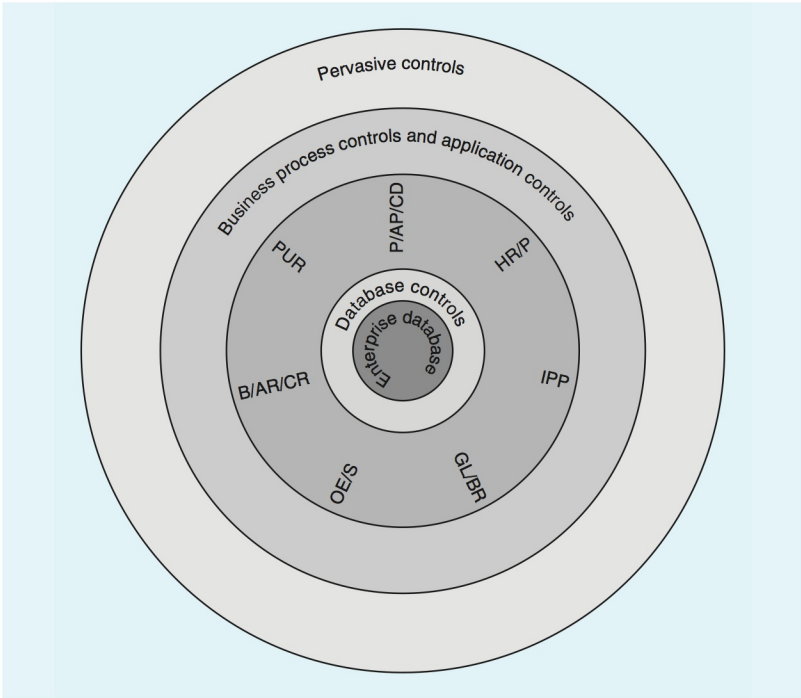
Information Systems: Integrated Elements Moving the Organization Forward

In today's IT-centric world, organizations clearly can neither operate nor survive—much less thrive—without information systems. The quality of the information systems and the reliability of the information available through such systems support the effectiveness of decision making within the organization. Without good information, managers cannot make sound decisions. It is imperative that all pieces of the information system be in sync and operating effectively if the enterprise as a whole is to operate effectively and efficiently and move forward in a positive direction. **Figure P.1** shows the integrated nature of information systems components. These elements must be sound across all dimensions for the organization to safely, yet quickly, move forward. Any weakness in these elements puts successful outcomes at risk. The enterprise depends on safe and secure information systems that allow the organization to move forward in a controlled, yet competitive, manner.

Following are the five integral components of the information system:

- *An enterprise database* stores data related to an enterprise's activities and resources. This includes views of the database for each business process that supports effective decision making and allows the processes to operate effectively.
- *Database controls* that safeguard data in an enterprise database from illicit access, destruction, and corruption.

FIGURE P.1 Information Systems-Integrated Elements



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- *Business processes* (e.g., OE/S, B/AR/CR) that reflect the core activities undertaken by an organization in achieving its business objectives. These processes include such activities as selling goods or services, collecting payment, purchasing materials or inventory, paying for those items, hiring and retaining a quality set of employees, and producing goods or services for sale. All of the processes both use and generate data that is stored in the enterprise database.
- *Business process controls and application controls* are the procedures put in place within each business process to identify specific business risks, prevent identified risks from disrupting operations or corrupting data, detect failures that get past preventive measures, and correct detected errors and irregularities that slip past the control boundary.
- *Pervasive controls* represent the overall organizational governance structure and related control procedures that are designed to create a regulated organization that can face the challenges of the external business environment, keep the enterprise on track and moving forward in a controlled manner, as well as outperforming its competitors.

Each of these components is explored in detail throughout the book. After completing the study of the concepts presented in this text, you should have a strong grounding in the critical knowledge necessary to help an organization create and manage effective information systems that minimize related enterprise risks.

Frequently Asked Questions (FAQs)

When examining a book and considering how to best acquire the information in which you are particularly interested, several questions may arise. In the FAQ section of the preface, we will answer the questions most frequently asked by previous readers of this book. Hopefully, the answers to your most pressing questions can be found in the following paragraphs.

FAQ #1: What Are the Core Themes of This Book?

The book's focus is on providing the skills necessary for a foundation in enterprise risk management (ERM)—particularly as these risks pertain to business processes and their information systems components. Fundamental to an ERM orientation, from an information systems perspective, are the underlying enterprise systems, e-business systems, and controls for monitoring the operation of these systems. The emphasis on these core themes is apparent even by reviewing the table of contents. Chapters 2 and 3 immediately focus on enterprise systems and e-business in the introductory section of the text. Controls are the focus of Chapters 7, 8, and 9. More importantly, however, these themes are carried throughout the remainder of the text in the integrative fashion for which the previous nine editions have been written. Icons are included in the margins throughout the book to help emphasize the coverage of these core themes in their integrated state and to facilitate absorption of the material by the reader. Given the critical nature of these three themes, the following paragraphs provide brief explanations for each.

Enterprise Systems Enterprise systems integrate the business process functionality and information from all of an organization's functional areas, such as marketing and sales, cash receipts, purchasing, cash disbursements, human resources, production and logistics, and business reporting (including financial reporting). They enable the coordinated operation of these functions and provide a central information resource for the

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organization. The concept of enterprise systems can be realized in various ways. For instance, an organization might develop its own separate business process systems and tie them together in an integrated manner. Or an organization could purchase an enterprise system from a vendor. Such externally acquired systems are commonly called enterprise resource planning (ERP) systems—software packages that can be the core systems necessary to support enterprise systems. A number of ERP systems are commercially available, with SAP® and Oracle® dominating the large- and medium-sized enterprise markets. The Microsoft® Dynamics™ line of products is a major player in the small- and medium-sized enterprise markets. Many organizations use a combination of ERP systems, externally purchased subsystems, and internally developed subsystems to create an overall enterprise system that best fits their needs.

E-Business E-business (electronic business) is the application of electronic networks (including the Internet) to exchange information and link business processes among organizations and individuals. These processes include interaction between back-office (i.e., internal) processes, such as distribution, manufacturing, and accounting, and front-office (i.e., external) processes, such as those that connect an organization to its customers and suppliers. Traditionally, e-business has been driven in business-to-business (B2B) environments through electronic data interchange (EDI). The most familiar form of e-business is the business-to-consumer (B2C) model where interactions are largely driven by browser-based applications on the Internet (for example, accessing amazon.com through the company's web-site). This communication medium has spilled over into the B2B arena, replacing EDI in some cases, while also providing opportunities for new B2B interaction in this rapidly changing environment.

Controls Internal control is a process—effected by an entity's board of directors, management, and other personnel—designed to provide reasonable assurance regarding the achievement of objectives in the following categories: effectiveness and efficiency of operations, reliability of reporting, and compliance with applicable laws and regulations. A strong system of internal controls is required for effective ERM, and is of great interest to top management, auditors, and external stakeholders.

FAQ #2: How Does This Book Present Accounting Information Systems?

This book is organized into six parts. The following paragraphs discuss briefly each of the components of this book.

Part 1: Understanding Information Systems consists of three chapters. Chapter 1 provides an overview of basic information systems concepts and explores the critical characteristics of information that must be considered in systems design and evaluation. Chapter 2 introduces the concept of enterprise systems and the key role that these systems play in the successful and timely operation of contemporary enterprises. Chapter 3 addresses the extended enterprise environment, the e-business relationships that an organization forms when linking its organization with the individuals or other organizations that represent their customers and vendors, as well as other stakeholders.

Part 2: Organizing and Managing Information includes three chapters. Chapter 4 provides the basic tools necessary for diagrammatically documenting organizational data flows (data flow diagrams—DFDs) and business processes (systems flowcharts). This chapter is divided into sections focusing first on reading documentation and then on creating documentation to meet the varied needs of our readers. Chapter 5 provides a more comprehensive exploration of data storage methods, the role of

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databases in data management, and the various business intelligence tools that are available for making sense out of the vast enterprise databases to enhance strategic decision making. Chapter 5 also includes sections on reading and understanding entity relationship (E-R) diagrams (used to model database structures). Chapter 6 takes a deeper look at modeling information systems and considers the Resources-Events-Agents (REA) method, creating E-R diagrams, mapping these diagrams to relational databases, and using SQL to manipulate and retrieve data from relational databases.

Part 3: Enterprise Risk Management consists of three chapters exploring the various dimensions of organizational governance and associated effective internal control systems. Chapter 7 contains an overview of internal control frameworks, including the new framework *Enterprise Risk Management—Integrated Framework*; general organizational governance guidelines; and the changes effected by the Sarbanes-Oxley Act of 2002. Chapter 8 begins with a discussion of pervasive controls that apply to both manual and IT environments. This is followed by sections designed around COBIT, an internationally recognized framework for IT control that focuses on the controls that address risks emanating from information systems and can put an enterprise in a condition of acute risk if not properly monitored and controlled. Chapter 9 focuses on the control procedures applicable to minimize such risks and presents a methodology for comprehensively evaluating the risks and controls within a defined business process. This framework is subsequently demonstrated and applied across the business processes presented in Chapters 10 through 14.

Part 4: Business Processes examines the various processes that are necessary for an enterprise to successfully operate. These six chapters focus on applications supported by ERP system implementations (including exhibits of screens from SAP® and Microsoft Dynamics GP® software), the key controls for maintaining successful business processes, and the application of the methodology for evaluating risks and controls within a given business process. The order-to-cash (revenue) flows are captured in Chapter 10 and 11. The purchase-to-pay (expense) flows are captured in Chapter 12 and 13. We round out coverage of the core business processes with Chapter 14, "The Human Resources (HR) Management and Payroll Processes," and Chapter 15, "Integrated Production Processes (IPP)."

Part 5: Reporting includes Chapter 16, which deals with the reporting process, in which information from core business processes is developed into financial reports for internal and external usage. This chapter includes basics, such as information flows related to the process, as well current technologies, such as ERPs and XBRL.

Part 6: Acquiring an AIS consists of Chapter 17, which provides an overview of the selection of accounting information systems, including the choices related to the buy-versus-build decision. With extensive use of off-the-shelf software, including ERP software that can be configured to fit the business needs of an enterprise, Chapter 17 provides information that should be considered when selecting the appropriate software. The chapter also provides information to help interpret the proper use of internal and external sources. The chapter includes topics such as AIS acquisitions from third parties and the systems development life cycle (analysis, selection and design, implementation, and operation phases).

FAQ #3: Where Can I Find Information About the Sarbanes-Oxley (SOX) Act of 2002, Especially SOX Section 404?

To help you find information regarding the Sarbanes-Oxley Act of 2002, we have added SOX icons in the margins where the topic is covered. Chapter 1 provides an overview of Sections 404 and 409 of SOX, including the overall implications for the

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accountant as an information management and business measurement professional. Chapter 4 discusses preparing documentation of business processes, a first step in a SOX 404 review. Chapter 7 includes an in depth discussion of several SOX Sections related to organizational governance, IT governance, and ERM. Chapters 7 through 9 describe the requirements of SOX 404 and PCAOB Auditing Standard No. 5 regarding the "effectiveness of design of internal controls" (leaving the "effectiveness of operations of internal controls" for the auditing courses and texts). Chapters 7 through 14 also introduce and use the control matrix, a tool used by systems designers and auditors to assess the effectiveness of control design and by auditors to design tests for effectiveness of operations of internal control. Finally, Chapter 16 discusses the effect on internal control reporting and financial reporting with respect to the requirements in SOX Sections 302, 401, 404, and 409.

FAQ #4: How Can This Book Be Adapted to Meet a User's Desired Content Coverage?

Learning from an enterprise risk management (ERM) approach,[1] a user should focus on three key components of the text: (1) documentation tools for diagramming and analyzing business processes, (2) ERM and component internal control concepts, and (3) core business processes enabling enterprises to successfully complete order-to-cash (revenue) and purchase-to-pay (expenditure) activities. An ERM focus also necessitates the consideration of enterprise systems and e-business concepts. But, given that these are fundamental threads running throughout the text, they should be covered with any approach. Coverage of ancillary topics related to database management systems and other key business processes is recommended (e.g., human resources management and payroll processes, integrated production processes, and the general ledger and business reporting process). Depending on a user's interests, exploring relational databases in detail or covering only the foundations of the systems development process may be necessary. Recommendations and options are depicted in **Figure P.2** to assist in the decision process.

Learning from a database or REA approach, a user would want to focus on two key components of the text: (1) documentation and modeling skills for relational databases and (2) core business processes that must be integrated in enterprise-level databases. Additionally, the user would want to confer with appropriate external support specifically focused on REA modeling techniques if extended coverage is desired. A database approach can be used with the text without these additional materials if REA models are not necessarily a preference. Again, a database approach also would necessitate the consideration of enterprise systems concepts, which are fundamental threads running throughout the text. A database approach may focus on only a limited core set of chapters combined with an outside database software text or may be supplemented with other key AIS topics, additional business processes, corporate governance, and IT controls. Our recommendations and options are depicted in Figure P.2 to assist in the decision process.

Learning from a systems development approach, a user would want to focus on three key components of the text: (1) documentation tools for diagramming and analyzing business processes, (2) structured systems analysis and design (Chapter 17), and (3) core business processes enabling enterprises to successfully complete order-to-cash (revenue) and purchase-to-pay (expenditure) activities. A systems development

[1]This approach also might be called the *business process approach*, *the accounting applications approach*, or *the accounting cycles approach*.

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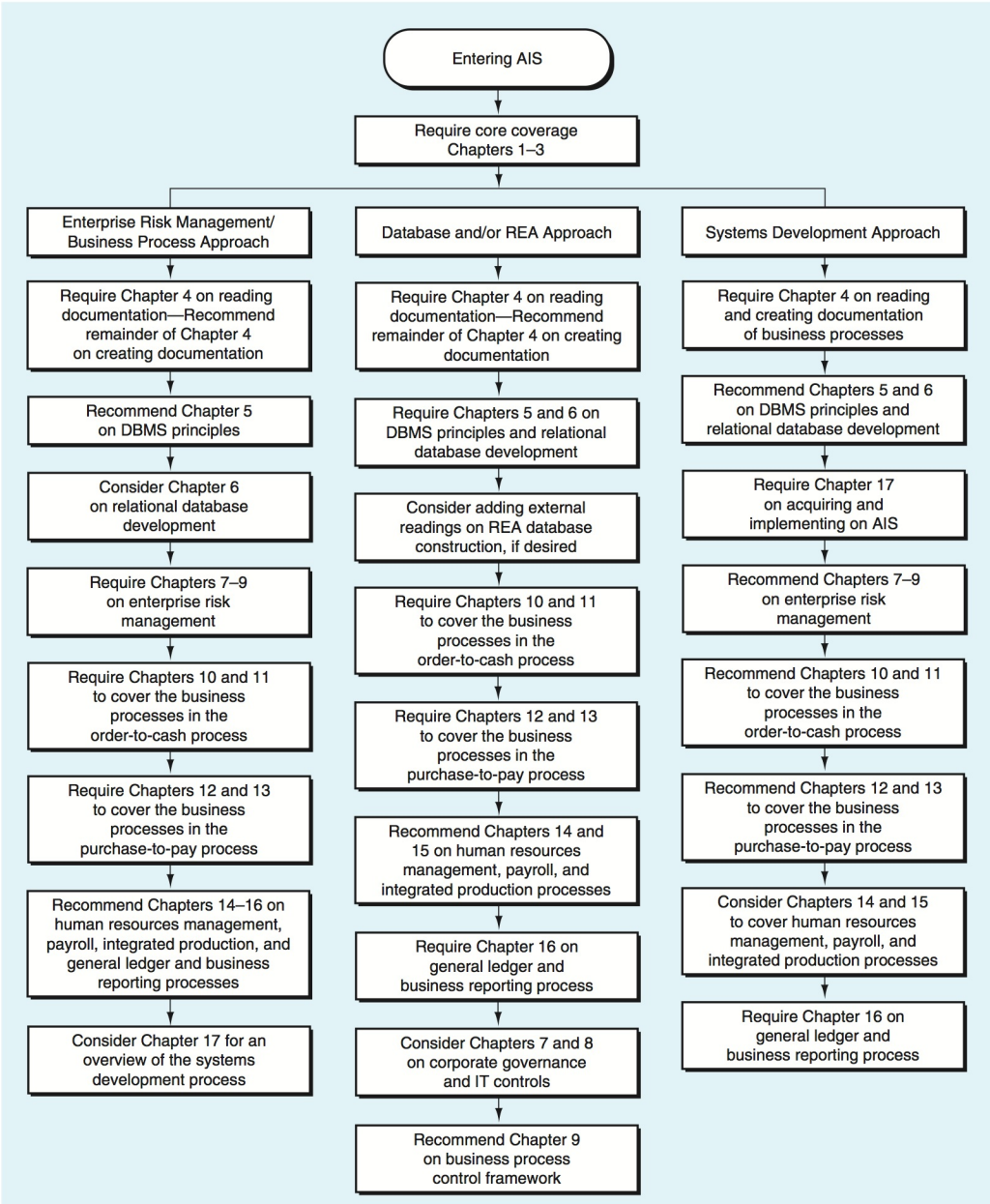
FIGURE P.2 Selecting Chapters to Meet Selected Pedagogical Objectives



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approach also necessitates the consideration of enterprise systems—a fundamental thread running throughout the text. Coverage is recommended of ancillary topics related to database management systems, ERM, and general ledger and business reporting. Depending on a user's interests, it may be necessary to explore relational databases in detail and to cover human resources management and payroll and integrated production processes. Recommendations and options for this approach are also depicted in Figure P.2.

FAQ #5: Does the Book Fit the Core Competencies Guidelines of the AICPA Vision Project?

Several professional bodies across the globe have undertaken projects to better understand how the environment of professional accounting is changing and how these changes impact the required competencies for skilled professionals. Although responding to all of the reports around the globe is not possible in this preface, we will briefly review how the text facilitates the preparation of new professionals based on the results of one such report—the American Institute of Certified Public Accountants (AICPA) CPA Vision Project. Let's take a look at how this book supports the knowledge prerequisites for attaining each of the AICPA CPA Vision Project's five identified core competencies:

- *Communication and Leadership Skills:* Development of communication and leadership comes largely through practice. The study of AIS provides great opportunities for students to participate in written and oral presentations about the analysis of problems. Throughout the text, a host of documentation tools are covered and applied, including flowcharts, data flow diagrams, narratives, entity-relationship diagrams, and control matrices. Chapter 17 describes a variety of reports used in the systems analysis and design process. Mastery of these tools can facilitate effective synthesis and communication of complex information in an easily explained form.
- *Strategic and Critical Thinking Skills:* The documentation tools noted under the communication section further enhance a student's ability to link data, knowledge, and insight related to information technology, internal control, and business processes to solve complex problems. Numerous short and long cases along with concise problems are presented throughout the book to provide ample opportunity to practice the critical and strategic skills necessary to relate to business environments.
- *Focus on the Customer, Client, and Market:* The early segments of the book are oriented toward assembling a set of foundational skills related to documentation, systems environments, enterprise systems, e-business, and internal control assessment.

  The later chapters bring all the information together to analyze the business processes of an entity. This analysis integrates the information for management decision making; the aggregation and processing of information, key controls, and business process objectives allows a student to better understand the full scope of an organization's business processes, not just the accounting aspects. This prepares students for entering different business environments, analyzing business activities, and identifying areas for strategic improvement.
- *Interpretation of Converging Information:* As noted under the prior competency statement on customers, clients, and markets, the core chapters of this text address the integration of financial and nonfinancial information to solve problems. Consideration of nonfinancial information is usually the weakest point for accounting graduates, and the strategies used in the text should help counteract this weakness.

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- *Technologically Adept:* Throughout the text, emerging technologies that are reshaping the business environment are described and demonstrated within the context of a business process. The focus on emerging technologies helps the student to understand how new technologies can be used to improve business efficiency and effectiveness and to leverage competitive advantage.

FAQ #6: How Does the Text Help Prepare Students for the U.S. CPA Exam?

In the United States, the CPA Examination is of interest for those about to enter the accounting profession. Recent changes in the exam have not significantly affected this book because the philosophy has long been consistent with the exam's evolving content. Students need to have a broad understanding of the business environment, how information is used by business decision makers, and the organizational control structures that should be in place to minimize risk to the enterprise. Thus, this book continues to be an excellent source for helping students prepare for the testing methods and exam content. The exam testing methods require the use of certain software tools but also use a host of case studies, called "simulations," to provide information that must be critically examined and synthesized. The extensive use of small and large cases in this book should help students prepare for these simulation problems. The book's approach emphasizes several skills being tested by the current exam (as well as recently announced changes to the exam): communication, research, analysis, judgments, and comprehension.

As for content on the exam, this book is also well positioned to help. The auditing and attestation section of the exam requires examinees to have an understanding of enterprise-level controls and the technology-based environments in which auditing is conducted. This book emphasizes enterprise systems, e-business, database environments, control frameworks, IT controls, and business process environments—all of which will be helpful in the exam environment. Technology concepts are even more critical in preparing for the business environment and concepts portion of the exam. That section of the exam not only includes technology but also covers business structure (an item addressed within the context of each business process in the text), measurement (i.e., managerial), and general business environments and concepts. As to this latter section, the detailed business process chapters (Chapters 10 through 16) describe the overall business context and how information flows from the transaction side through to be used by key management decision makers. This presentation should aid in understanding how contemporary organizations operate. The focus in the book on enterprise systems and e-business should further aid in preparing for exam coverage of state-of-the-art technologically enabled business environments.

FAQ #7: Does the Book Provide a Foundation for ISACA's CISA Exam?

Another question that frequently arises is whether the foundation-level skills for the Information Systems Audit and Control Association's (ISACA) Certified Information Systems Auditor (CISA) Exam are covered. Foundation-level skills are also commonly required for several other global accounting organizations' certification processes for IT specialization.

Let's take a brief look at the six content areas covered by the CISA Exam (as of the June 2016 exam):

- *Domain 1—The Process of Auditing Information Systems (21% of the exam):* Chapters 7 through 9 provide the foundation for understanding how to assess the

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risks that must be considered in contemporary risk-based audit approaches. Chapters 7 through 14 describe control objectives and controls related to information systems.

- *Domain 2—Governance and Management of IT (16%):* Chapters 7 and 8 introduce organizational and IT governance frameworks and discuss related issues such as IT organizational structures, IT strategy, and risk management. Chapters 7 and 8 also give extensive coverage to the COSO, ERM, and COBIT control frameworks.
- *Domain 3—Information Systems Acquisition, Development and Implementation (18%):* Chapters 8 and 17 describe best practices for project governance and systems development, including requirements analysis, systems acquisition, and change controls. Chapters 9 through 14 give extensive coverage to control objectives and techniques for IT systems applications/business processes. Finally, Chapters 2 and 3 describe enterprise architectures for data, applications, and technology, including enterprise systems, Web services, and Web-based applications. These are further discussed in the context of specific business processes in Chapters 10 through 14.
- *Domain 4—Information Systems Operations, Maintenance and Service Management (20%):* Chapters 2 and 3 introduce IT infrastructures and discuss how these can support organization objectives. These issues are further discussed in the context of specific business processes in Chapters 10 through 14. Chapter 8 introduces best practices for the management of IT operations. Chapters 5 and 6 describe database management systems. Chapter 17 considers the delivery and maintenance of systems.
- *Domain 5—Protection of Information Assets (25%):* Chapters 7 through 9 focus on the control structures that should be in place at the environmental, physical, and logical levels to provide both pervasive and specific controls over IT systems. These controls include logical and physical access to IT assets, encryption and public-key cryptography, and environmental protection.

Instructors may also assign end-of-chapter questions and problems that are targeted to specific content areas of the CISA exam.

Instructional Supplements

This book includes the following supplemental materials to assist the instructor:[2]

- The *Test Bank* presents a variety of questions, including true/false, multiple-choice, completion, problems, and essays. The *Test Bank* can be found on the text Web site at www.cengagebrain.com.
- The *Solutions Manual* (available on the text Web site), provides answers to Discussion Questions, Short Problems, and Problems in the text's end-of-chapter material. *Note to Instructors:* The *Solutions Manual* provides instructors with ways to tailor how problems are assigned and how solutions are provided to students, for a more engaging learning experience. For example, instructors can provide a partially completed control matrix, asking students to complete the problem based on their studies. Alternatively, based on a completed flowchart, students can analyze the system to recommend improvements or generate a control matrix. PowerPoint slides (available on the text Web site) cover all major concepts and key terms and are presented in an appealing way designed to hold the student's interest and effectively communicate lecture material.

[2]Many text adopters use these materials for graded assignments and exams. In consideration of these adopters, we ask that you not post any of these materials to an open Web site.

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- The Bentley Term Project, (available on the text Web site) is an updated version of a term project that has been used for more than 25 years with this text at Bentley University. The term project is designed to incorporate the concepts taught in the text into a comprehensive, cohesive project. The learning objectives of the project are to help the student examine an actual business process, document the process, analyze process controls, and recommend changes to improve operational and information process effectiveness.

Student Supplements

This book includes the following supplemental materials to assist students:

- A student Web site is available for the 11th edition of *Accounting Information Systems* which houses ample study resources that are free to students. Visit www.cengagebrain.com to access the Web site. Here you will have access to all student resources, including chapter-by-chapter quizzes, flashcards, crossword puzzles and a list of key terms.
- Many chapters of the text include Microsoft Access®, Excel®, and new Microsoft Visio® exercises, enabling students to develop greater database and spreadsheet software skills. These exercises can be found in the Short Problems or Problems at the end of each chapter and are identified with Access, Excel, and Visio icons.

Accessing CengageBrain

- Use your browser to go to www.cengagebrain.com.
- The first time you go to the site, you will need to register. It's free. Click on "Sign Up" in the top right corner of the page and fill out the registration information. (After you have signed in once, whenever you return to CengageBrain, you will enter the user name and password you have chosen and you will be taken directly to the companion site for your book.)
- Once you have registered and logged in for the first time, go to the Search bar and enter the author or ISBN for your textbook. When the title of your text appears, click on it and you will be taken to the companion site. NOTE: If you are currently using more than one Cengage textbook, the same user name and password will give you access to all the companion sites for your Cengage titles. After you have entered the information for each title, all the titles you are using will appear listed in the pull-down menu after you log in.

New to this Edition

- Continued revisions to simplify and clarify wording to make the book more appealing to today's students' reading and study styles.
- Updated many of the chapter introducing vignettes, as well as technology applications and other examples.
- In Chapter 4 we simplified and expanded the figure that demonstrated common flowcharting routines to include all flowchart symbols.
- Chapter 5 has a new section on Dashboards and their use in Big Data analytics. Chapter 7 has been updated to include COSO's 2013 Internal Control-Integrated Framework including its seventeen principles of control components.

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- Chapter 8 includes a significant revision of material to accommodate move to COBIT 5. We also reorganized IT material around job positions to increase the consistency with other chapters.
- In Chapters 12, 13, and 14 we added Microsoft Excel problems that are internal control oriented. The problems use computational skills and sorting, as well as functions such as vlookup(), and if(). Pivot tables are also included.
- Updated and revised Chapter 15's reporting of the drivers of manufacturing competiveness in a global market.
- Chapter 16 now includes a short discussion of big data, analytics, and reporting with technical tools such as Tableau.

Acknowledgements

In closing, we must acknowledge that the pronoun "we" as used in this text extends far beyond the four authors. Over the years, there have been countless adopters, reviewers, students, and colleagues who have provided us with comments and suggestions that have cumulatively made a positive impact on this edition. We are most grateful to all of them for their dedication to the field of AIS and this text.

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Richard B. Dull
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Accounting Education: An International Journal, *Issues in Accounting Education*, *Journal of Accountancy*, *CPA Journal*, and *Personal Financial Planning*. He has made frequent conference and continuing education presentations in local, national, and international venues on topics including continuous auditing and assurance, accounting information systems, and accounting education. Since 2013, he has taught a graduate forensic/fraud accounting course for Reykjavik University in Iceland. Professor Dull is a member of the American Accounting Association, American Institute of CPAs, Association of Certified Fraud Examiners, AIS Educator Association and ISACA. His professional activities have included serving on the AICPA's Assurance Services Executive Committee and serving as the President of the AAA's Artificial Intelligence/Emerging Technologies and Accounting Information Systems sections. He has served the AICPA as a member of BEC Subcommittee, and has served as an Editor for *Journal of Information Systems*, an *Associate Editor for Accounting Education: an International Journal*, and is currently an Editorial Advisor for the *Journal of Accountancy*. Professor Dull was a recipient of a Fulbright Award in 2008, spending a semester lecturing and researching in Croatia. In addition to his work, he enjoys spending time with his family and church, as well as traveling and woodworking.

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Mary Callahan Hill, Ph.D., is a Professor at Kennesaw State University, Kennesaw, Georgia. She received his B.B.A. (English Literature) from the University of California, Los Angeles, her M.B.A. from The University of Southern California, and his Ph.D. (Accounting Systems) from The University of Georgia. After receiving her

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M.B.A., Professor Hill began her professional career at Exxon Chemical in Katy, Texas where she developed her interest in accounting information systems. Pursuing that interest, she obtained her next position as a consultant for Deloitte, Haskins & Sells a national accounting firm where she implemented accounting information systems for a variety of clients. She was a founding partner/owner of Strategic Consulting in Norcross Georgia where she worked implementing accounting systems until choosing to pursue a career in academia. Her experience supports her teaching and research interest in accounting information systems, internal control, data analytics, and technology in accounting education. Professor Hill has developed and taught the following Accounting Information Systems courses: Undergraduate Accounting Information Systems, Graduate Accounting Information Systems, Undergraduate Accounting Analytics, Risk Analysis and Control, Transaction Processing and Control, Graduate Accounting Analytics, and Graduate Advanced Systems Applications. Professor Hill has been published in academic and practitioner journals, including the *Journal of Information Systems*, *Auditing: A Journal of Theory and Practice*, *Issues in Accounting Education*, *Advances in Accounting Behavioral Research*, *Advances in Accounting Education*, *Academy of Educational Leadership Journal*, *the CPA Journal*, and *Internal Auditing*. She has made numerous local, regional, and national conference presentations on various IS, educational and business decision-making topics. Professor Hill has been a member of the American Accounting Association, American Institute of CPAs, and the AIS Educator Association. Professor Hill served the AIS Educator Association as a board member and was president of the association in 2007. In her spare time, Professor Hill plays competitive tennis and duplicate bridge, enjoys reading, biking and walking.

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