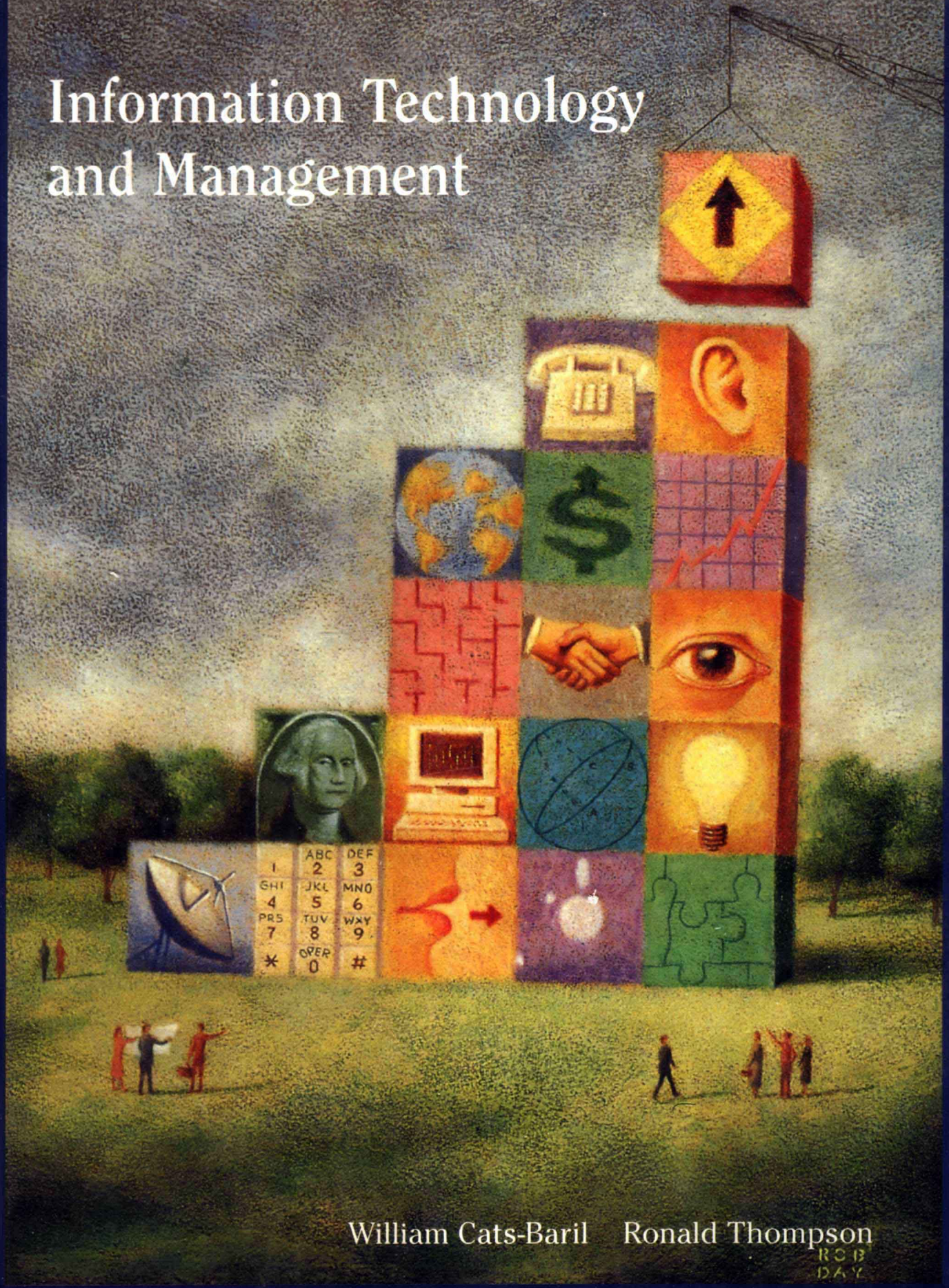
# Information Technology and Management




William Cats-Baril  Ronald Thompson

# Information Technology and Management

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**IRWIN**

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To the four cardinal points of my emotional compass: Amanda, Deva, Lucette, and Dédé.
Thank you for being such magnificent people. I love you.
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To Jen, my inspiration; to Betty, for always being there;
and to the memory of Alan.
RLT

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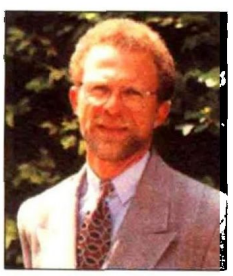

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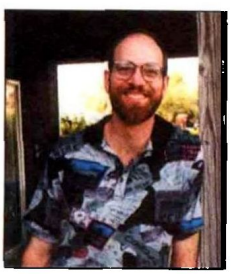

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# Preface

The authors of this textbook were given the opportunity—and challenge—of developing a meaningful first course in information systems that would address the unique needs of business students. After teaching the course for the first time, we found that our biggest hurdle was locating appropriate teaching material; none of the textbooks, articles, or cases we previewed or used seemed to work as well as we wished. This book grew out of our efforts to develop lecture notes, cases, and assignments that would help us achieve the following goals:

1. Provide a meaningful introduction to organizations and how they function and to the current philosophies on how to manage them.
2. Provide a clear understanding of the role of information technology in managing organizations, both now and in the future.
3. Facilitate the learning of concepts, frameworks, and approaches to apply information technology to managerial challenges that are technology independent.
4. Present the material in an interesting, informative, and useful format for the intended audience.

We believe that this first edition of *Information Technology and Management* is a new approach to the study of information systems. It is not just an introduction to information technology—it is an introduction to business processes and how information technology can make these processes more effective. The book covers the traditional topics of information technology, information system components, and information systems development. But it goes beyond this traditional coverage, showing first how businesses function and then how information systems enable businesses to function more effectively. Our goal is for the student to gain not only an understanding of information systems, but also an understanding of the role of information systems in helping organizations achieve greater effectiveness.

The conceptual backbone of the book is the notion that organizational responsiveness is the key to strategic success. Organizations need to respond quickly—or at least adapt more quickly than their competition—to changes in customer expectations, technology, supplier relations, and so forth if they are to remain viable entities. We define organizational responsiveness in terms of being

constantly aware of customers' preferences and the availability of inputs and in terms of ensuring the flexibility and efficiency of the transformation process. We argue that organizational responsiveness in today's world is virtually impossible without information technology.

Every chapter of the book is brought back to this notion of responsiveness. For example, Chapter 4, "Organizational Communication," includes a discussion of how an information overload for managers slows down the responsiveness of organizations. Chapter 5, "Information Systems Concepts," includes a discussion of how to build an effective information technology architecture to deliver the least amount of information necessary to support managers and workers in their jobs, by minimizing overload and distortion. The logic is the following: If you want an organization to react quickly to changes in the environment, then managers cannot afford to sift through tons of irrelevant data, nor can they be constantly checking the credibility of the data, nor can they afford to be confused as to how and to whom to transmit information.

In the same vein, Chapter 6 "Information Technology," addresses the components of a computer system from the point of view of increasing responsiveness to the environment. Input devices are presented as tools to providing better service to customers (e.g., faster transactions, fewer errors) or providing greater control over inventories (e.g., point-of-sale scanners, electronic linkages to suppliers). Input devices are also discussed as the first line of defense against garbage (as in "garbage in, garbage out") coming into the system and, therefore, are presented as playing a critical role in keeping the organization responsive to its environment by ensuring the integrity of incoming information.

## THE TARGET MARKET

The market for this book is the introductory information systems course for business students. Under the proposed ACM/DPMA curriculum for information systems, this course is taught after (or concurrently with) any computing skills course or labs. At four-year colleges and universities, this course is found at the undergraduate level in schools of business, often during the first or second year. It is normally required of all business students and is designed to introduce information systems in a business context.

This course is also found in MBA programs, where it is often required of incoming graduate students who do not have the equivalent undergraduate preparation. It may also be required of students concentrating in business computer information systems, in which case it is designed to provide a foundation for more specialized courses. At two-year colleges, this course may be required of students planning to transfer to business programs at four-year schools.

One of the major complaints from faculty teaching this type of course is that other books that have targeted this market have not provided adequate background for the student. These books usually focus on technology, explaining in detail how the hardware and software operate and describing how information systems support specific business functions. However, these textbooks do not explain the purpose, activities, and interplay of these business functions. Many competing books do not relate the management trends in the workplace (such as cross-functional teams and activities becoming the norm) to the need for a new approach to developing information systems.

This book overcomes the limitations of existing texts by concentrating first on organizations and their functions. Information systems are introduced only after discussing the dynamics of organizational performance, decision making, and communication. By then the student understands the crucial importance of information processing to organizational performance.

The book takes the view that the design of an information system starts with the definition of clearly specified goals and includes the collection of data (broadly defined to include data, images, and sound) from a variety of internal and external sources, the transformation of the data to generate output that is *acceptable* and *useful* to the users, and the communication network needed to distribute that output to the appropriate receivers. The concept of user acceptance is at the center of information systems design; the idea is to provide information that is *necessary* (i.e., accurate, timely, relevant) and *sufficient* (i.e., to avoid overload) to support effective decision making within the organization.

This perspective on information systems design is carried throughout the book; all information systems need to be justified in terms of accomplishing a goal. An information system does not just work with the organization's systems but is integrated with external information systems that exist locally, nationally, and internationally. The interorganizational and international perspectives are given significant emphasis throughout the book.

An emphasis on end-user involvement in information systems is also carried from the beginning. Chapter 1, "Introduction to Information Technology and Management," sets the context for the book and provides examples of companies in which end-users from different organizational levels (from line workers to senior managers) use information systems to improve organizational responsiveness. Module I, "Managerial Challenges," discusses many situations in which individuals can improve their communications and decision making skills through the use of information systems. Module II, "Information Systems Development," covers computer hardware and software topics that are of direct relevance to end users. Module III, "Applications and Management of I/S," emphasizes the role of end users in developing their own applications and in the development and management of organizational information systems. Module IV, "Information Technology and Society," addresses many implications of the application of technology, such as the Internet, to individual lives.

The book examines information systems in all types of organizations. Systems found in small and large businesses are discussed, those for businesses that operate locally and globally are described, and systems for nonprofit businesses and government agencies are explained. The objective is to present a wide range of information system examples.

Although the coverage is broad, this book does not attempt to cover the entire "waterfront" of management information system (MIS) issues in detail. Instead, it focuses on providing the student with an understanding of business processes and how information technology can help make those processes more efficient and effective. Although many issues surrounding information systems are introduced, only those considered important for the target audience are discussed and examined at length. We recognize, however, that needs vary substantially among different educational institutions. For that reason we have included an appendix (Appendix A) on data modeling and a second appendix (Appendix B) on systems development techniques.

## PEDAGOGICAL FEATURES

Our package is not just a textbook. It is an integrated set of tools designed to support our teaching philosophies. The content of the book reflects what we consider to be the crucial issues that students need to understand to realize the importance of information processing to all organizations. The variety of pedagogic tools is designed to support the most effective ways to help students to *learn* rather than memorize. These tools and features include the following.

*Chapter objectives* begin each chapter and provide a quick overview of what the student should gain from reading the chapter.

*The body of the chapter* is written with a blend of theory and application. Rather than listing all possible theories addressing a specific topic, one or two prevalent theories are provided and discussed at an appropriate level of detail. For more important or complex concepts, relevant examples are used.

*Business Briefs* are short articles and stories obtained from a variety of sources that illustrate the concepts discussed in the chapter. These real-world applications are interspersed throughout the text, located near the corresponding course material.

*Art and photographs* have been carefully prepared and selected to support and enhance the text material. The photographs, figures, tables, charts, and other visual aids are designed specifically to facilitate understanding.

*Organizational responsiveness, competitive strategy,* and *ethical and international* examples are included throughout most of the chapters. These short examples illustrate managerial issues related to these important topics.

*Connective Cases* are used to illustrate the application of the material presented in the chapter. Analysis of the cases for the first four chapters only is provided, allowing students to compare their analysis to the solution suggested by the authors. The analysis for the Connective Cases in Chapters 5–13 is included in the Instructor's Manual, as this provides instructors with more cases to select for student assignments.

*End-of-chapter aids* include a brief chapter summary, a list of relevant concepts and terms, review questions, discussion questions, group assignments, application (hands-on) assignments, and a case assignment. The objective is to provide a variety of material to suit the needs of most instructors. Files (spreadsheets, databases, etc.) for the application assignments are available via the Internet on the book's home page.

*Chapter references* provide additional resources for those readers who wish to pursue a specific topic in more detail.

*End-of-module cases* involve cases that are longer and more complex than those offered at the end of the chapters. The end-of-module cases provide an excellent opportunity to review and reinforce material presented in the chapters of a given module. The module cases for Modules I, II, and III are three installments from the same company. Dakin Farm is a real organization in the gourmet food-by-catalog business, and the installments describe actual situations and decisions faced by its president. The module case for Module IV describes the development and implementation of the first large videotex system in the world, the French Minitel system. The Minitel case illustrates the pervasiveness of information technology applications in society and provides an interesting comparison to the Internet.

*Theme icons* represent the major themes in the book. The icons are introduced in Chapter 1. From then on, the Business Briefs and many cases have been "stamped" with the icons of the themes that they illustrate.

A *glossary of terms* for the entire text is included at the end of the book. The glossary provides brief, working definitions of the key concepts and terms used throughout the text.

*Additional cases* are supplied in the *Instructor's Resource Manual* and contain some short and other longer, more complex cases. The short cases are particularly suited for take-home assignments or exams, and the longer ones may be suitable for more advanced students (including upper-class undergraduates or MBA students).

The real-world cases present actual business situations taken from articles published in professional publications, published cases, and cases specifically developed by the authors. There are also a number of short fictitious cases that are based on real organizations but contain situations that are an amalgamation of events from multiple firms. Questions following each case ask the student to analyze the situation using the concepts presented in the chapter.

## INSTRUCTIONAL SUPPORT

Recognizing the need for a variety of teaching preferences and approaches, we have put together a package of support materials that accommodates a broad spectrum of pedagogies. The *Irwin Advantage and Effective Series* application lab manuals can be packaged with this text for those instructors wishing to have more of a hands-on emphasis.

The *Instructor's Resource Manual*, prepared in collaboration with the authors, contains an introduction with alternative course syllabi. The material for each chapter includes an outline, a suggested teaching approach, and answers to questions posed in the chapter. In addition, the manual contains additional short cases, with questions and solutions, that can be used for take-home assignments or examinations. The *Instructor's Manual* is also provided electronically, so the instructor may modify material to match his or her needs.

An additional feature of the *Instructor's Resource Manual* is the inclusion of teaching notes for the cases. These notes provide suggestions on how to lead the case discussions, as well as some "inside" information for the instructor. Where relevant, the Instructor's Manual also includes "B" cases, which describe "what happened" and possibly lead to another decision situation. These cases are suitable for copying and distributing to the students following a discussion of the "A" case in class.

*PowerPoint presentations* have been prepared for each of the chapters. These can be used to generate overhead transparencies, or to provide the basis for classroom PowerPoint presentations. The presentations may also be modified by the instructor.

*Video Case Installments* are useful supplements to the written cases included in the text. The video installments are designed to augment the cases by presenting short clips related to the case material.

The videos were created concurrently with the written cases and are related *directly* to the case material. They bring the company and key players into the classroom and make the material much more salient for the students.

In addition to these two book-specific videos, the *Irwin Information Systems Video Library* contains 12 videos, each approximately 10–12 minutes long, on various I/S concepts like multimedia, business process reengineering, and client-server computing.

The *Test Bank*, prepared by Richard Herschel, of the University of North Carolina at Greensboro, of true/false, multiple-choice, and short answer questions is also provided, both in written form and on diskette.

The *WWW home page* contains updates to cases and Business Briefs, along with related topics and links to other sites of interest. The page is updated on a regular basis.

*Author support* is an area where we believe in practicing what we preach. If you have questions, comments, or suggestions as you consider adopting this package or as you use it in your teaching, we encourage you to contact us. Our electronic mail addresses are listed in the *Instructor's Manual;* send us a note, and we will respond as quickly as possible. We will incorporate suggested improvements and customize teaching materials as much as possible to meet your specific needs. Our goal is to continually improve this product, implementing advancements in theory, practice, content, and delivery as quickly and effectively as possible.

We look forward to hearing from you, and hope that you find this material as useful as we have.

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Finally, this book was written during a time of deep personal and professional transitions for me (WCB). At times, I felt like I was writing the book while shooting through white-water rapids. Through all the turbulence some individuals gave me stability and hope. This book could have never been finished without them. My gratitude for their support and love is deep and everlasting. Thank you Max Baril, Robby Barnett and Susan Mandler, Paul Davidoff, Santiago and Hebe Gutierrez, Silvia Llorens, and Chad Munger.

**Willy Cats-Baril**

**Ron Thompson**

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