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IT 项目管理

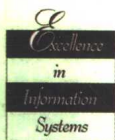
(英文版·第2版)

COURSE
TECHNOLOGY
THOMSON LEARNING

SECOND EDITION

Information Technology Project Management

Kathy Schwalbe



(美) Kathy Schwalbe 著



机械工业出版社
China Machine Press

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出版者的话

文艺复兴以降，源远流长的科学精神和逐步形成的学术规范，使西方国家在自然科学的各个领域取得了垄断性的优势；也正是这样的传统，使美国在信息技术发展的六十多年间名家辈出、独领风骚。在商业化的进程中，美国的产业界与教育界越来越紧密地结合，计算机学科中的许多泰山北斗同时身处科研和教学的最前线，由此而产生的经典科学著作，不仅擘划了研究的范畴，还揭开了学术的源变，既遵循学术规范，又自有学者个性，其价值并不会因年月的流逝而减退。

近年，在全球信息化大潮的推动下，我国的计算机产业发展迅猛，对专业人才的需求日益迫切。这对计算机教育界和出版界都既是机遇，也是挑战；而专业教材的建设在教育战略上显得举足轻重。在我国信息技术发展时间较短、从业人员较少的现状下，美国等发达国家在其计算机科学发展的几十年间积淀的经典教材仍有许多值得借鉴之处。因此，引进一批国外优秀计算机教材将对我国计算机教育事业的发展起积极的推动作用，也是与世界接轨、建设真正的世界一流大学的必由之路。

机械工业出版社华章图文信息有限公司较早意识到“出版要为教育服务”。自1998年始，华章公司就将工作重点放在了遴选、移译国外优秀教材上。经过几年的不懈努力，我们与Prentice Hall, Addison-Wesley, McGraw-Hill, Morgan Kaufmann等世界著名出版公司建立了良好的合作关系，从它们现有的数百种教材中甄选出Tanenbaum, Stroustrup, Kernighan, Jim Gray等大师名家的一批经典作品，以“计算机科学丛书”为总称出版，供读者学习、研究及度藏。大理石纹理的封面，也正体现了这套丛书的品位和格调。

“计算机科学丛书”的出版工作得到了国内外学者的鼎力襄助，国内的专家不仅提供了中肯的选题指导，还不辞劳苦地担任了翻译和审校的工作；而原书的作者也相当关注其作品在中国的传播，有的还专诚为其书的中译本作序。迄今，“计算机科学丛书”已经出版了近百个品种，这些书籍在读者中树立了良好的口碑，并被许多高校采用为正式教材和参考书籍，为进一步推广与发展打下了坚实的基础。

随着学科建设的初步完善和教材改革的逐渐深化，教育界对国外计算机教材的需求和应用都步入一个新的阶段。为此，华章公司将加大引进教材的力度，在“华章教育”的总规划之下出版三个系列的计算机教材：针对本科生的核心课程，剔抉外版菁华而成“国外经典教材”系列；对影印版的教材，则单独开辟出“经典原版书库”；定位在高级教程和专业参考的“计算机科学丛书”还将保持原来的风格，继续出版新的品种。为了保证这三套丛书的权威性，同时也为了更好地为学校和老师服务，华章公司聘请了中国科学院、北京大学、清华大学、国防科技大学、复旦大学、上海交通大学、南京大学、浙江大学、中国科技大学、哈尔滨工业大学、西安交通大学、中国人民大学、北京航空航天大学、北京邮电大学、中山大学、解放军理工大学、郑州大学、湖北工学院、中国国家信息安全测评认证中心等国内重点大学和科研机构在计算机的各个领域的著名学者组成“专家指导委员会”，为我们提供选题意见和出版监督。

“经典原版书库”是响应教育部提出的使用原版国外教材的号召，为国内高校的计算机教学度身订造的。在广泛地征求并听取丛书的“专家指导委员会”的意见后，我们最终选定了这30多

种篇幅内容适度、讲解鞭辟入里的教材，其中的大部分已经被M.I.T.、Stanford、U.C. Berkley、C.M.U.等世界名牌大学采用。丛书不仅涵盖了程序设计、数据结构、操作系统、计算机体系结构、数据库、编译原理、软件工程、图形学、通信与网络、离散数学等国内大学计算机专业普遍开设的核心课程，而且各具特色——有的出自语言设计者之手、有的历三十年而不衰、有的已被全世界的几百所高校采用。在这些圆熟通博的名师大作的指引之下，读者必将在计算机科学的宫殿中由登堂而入室。

权威的作者、经典的教材、一流的译者、严格的审校、精细的编辑，这些因素使我们的图书有了质量的保证，但我们的目标是尽善尽美，而反馈的意见正是我们达到这一终极目标的重要帮助。教材的出版只是我们的后续服务的起点。华章公司欢迎老师和读者对我们的工作提出建议或给予指正，我们的联系方式如下：

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Preface

The future of many organizations depends on their ability to harness the power of information technology, and good project managers are in high demand. Colleges are responding to this need by establishing courses in project management and making them part of the information technology or management curriculum. Corporations are investing in continuing education to help develop information technology project managers and effective project teams. This book provides a much-needed framework for teaching courses in information technology project management. The first edition of this book was extremely well received by people in academia and the workplace. The second edition builds on the strong points of the first edition and adds even more important information and features.

It's impossible to read a newspaper, magazine, or Web page without hearing about the impact of information technology on our society. Information is traveling faster and being shared by more individuals than ever before. Now you can do your banking or order your groceries on the World Wide Web; companies have linked their many systems together to help them fill orders on time and better serve their customers; and software companies are coming out with new products every day to help us streamline our work and get better results. Technology is changing almost everything about the way we live and work today. When this technology works well, it is almost invisible. But did it ever occur to you to ask, "Who makes these complex technologies and systems happen?"

Because you're reading this book, you must have an interest in the "behind-the-scenes" aspects of technology. If I've done my job correctly, as you read you'll begin to see the many innovations we are currently experiencing as the result of hundreds of successful information technology projects. In this book you'll read about projects that went well, like Northwest Airlines ResNet reservation system, Bank Of America's interstate banking project, Lucent Technology's fiber optic cable project, and Kodak's Advantix Advanced Photo System project. Of course, not all projects are successful; factors such as time, money, and unrealistic expectations, among many others, can sabotage a promising effort if it is not properly managed. In this book, you'll also learn from the mistakes people made on many projects that were not successful. I have written this book in an effort to educate you, tomorrow's information technology project managers, about what will help to make a project succeed—and what can make it fail.

Although project management has been an established field for many years, managing information technology projects requires ideas and information that go beyond standard project management. For example, many information technology projects fail because of a lack of user input, incomplete and changing requirements, and a lack of executive support. This book includes sugges-

tions on dealing with these issues. New technologies can also aid in managing information technology projects, and examples of using software to assist in project management are included throughout the text.

Information Technology Project Management, Second Edition, is still the only textbook to apply all nine project management knowledge areas—project integration, scope, time, cost, quality, human resource, communications, risk, and procurement management—and all five process groups—initiating, planning, executing, controlling, and closing—to information technology projects. This text builds on the PMBOK Guide 2000, an American National Standard, to provide a solid framework and context for managing information technology projects. It also includes an appendix, *A Guide to Microsoft Project 2000*, and a 120-day trial version of Microsoft Project 2000 software. A second appendix provides advice on earning and maintaining Project Management Professional (PMP) certification from the Project Management Institute (PMI) as well as information on other certification programs, such as CompTIA's IT Project+ certification.

Information Technology Project Management, Second Edition, was written to provide practical lessons in project management for students and practitioners alike. By weaving together theory and practice, this text presents an understandable, integrated view of the many concepts, skills, tools, and techniques involved in information technology project management. The comprehensive design of the text provides a strong foundation for students and practitioners in information technology project management.

NEW TO THE SECOND EDITION

Building on the success of the first edition, *Information Technology Project Management, Second Edition*, introduces a uniquely effective combination of features. The main changes made to the second edition include the following:

- This edition reflects information from the PMBOK Guide 2000. The PMBOK Guide 2000 is a key document in the project management profession and is ANSI approved. Several major changes were made from the PMBOK Guide 1996 version, especially in the project risk management knowledge area. Other changes include new terminology for earned value management and new and revised definitions for several other project management terms. For example, the PMBOK Guide 2000 now includes a brief definition of critical chain scheduling. *Information Technology Project Management, Second Edition*, helps you understand critical chain scheduling by providing several pages and figures explaining this important new concept and examples of how companies use this technique to improve productivity.

- Microsoft Project 2000 examples are used throughout the text, and Appendix A provides an excellent guide for using this popular project management software tool. Students can work through the appendix using their own 120-day copy of the software and really learn how to use Project 2000 effectively. The example project used in Appendix A has been simplified, and there are more screen shots and subheadings to help students learn how to use this powerful software.
- Minicases are now included at the end of chapters. Students learn best when they can apply what they are learning. These new minicases provide great examples of how various project management concepts, tools, and techniques can be applied to real-world problems. Several minicases involve use of Project 2000, Excel, web authoring tools, and other software to improve students' hands-on skills.
- Updated examples are provided throughout the text. You'll notice several new examples in the second edition to reflect recent events in managing real information technology projects. Several of the What Went Right and What Went Wrong examples have been updated, and many new suggested readings have been added to keep you up-to-date. Results of new studies are also included throughout the text.
- User feedback is incorporated. Based on student and faculty feedback on the first edition of this text, you'll see several changes, mostly additions, to help clarify information. For example, Chapter 1, *Introduction to Project Management*, includes a new section describing recent developments in project management software products. Chapter 2, *The Project Management Context and Processes*, includes a new section on developing an information technology project management methodology. Chapter 4, *Project Scope Management*, provides even more suggestions for creating a good WBS. Chapter 9, *Project Communications Management*, includes a new table describing how different types of media are suited to different communication needs as well as additional suggestions for managing conflict.

APPROACH

Many people have been practicing some form of project management with little or no formal study in this area. New books and articles are being written each year as we discover more about the field of project management, and project management software continues to advance. Because the project management field and the technology industry are changing rapidly, you cannot assume that what worked twenty years ago is still the best approach today. This text provides up-to-date information on how good project management and effective use of project management software can help you manage information technology projects. Three distinct features of this book include its relationship to the Project Management Body of Knowledge, its bundling with

Microsoft Project 2000, and its value in preparing for Project Management Professional and other certification exams.

Based on the PMBOK Guide 2000

The Project Management Institute created the Guide to the Project Management Body of Knowledge (the PMBOK Guide¹) as a framework and starting point for understanding project management. It includes an introduction to project management, brief descriptions of all nine project management knowledge areas, and a glossary of terms. The PMBOK Guide is, however, just that, a guide. This text uses the PMBOK Guide 2000 as a foundation. It goes beyond the Guide by providing more details, highlighting additional topics, and providing a real-world context for project management. *Information Technology Project Management, Second Edition*, explains project management specifically as it applies to managing information technology projects in the 21st century. It includes several unique features to bring to its readers the excitement of this dynamic field (for more information on features, see the section entitled “Pedagogical Features,” below).

Bundled with Microsoft Project 2000

Software has advanced tremendously in recent years, and it is important for project managers and their teams to use software to assist them in managing information technology projects. Each copy of *Information Technology Project Management, Second Edition*, includes a 120-day trial version of the leading project management software on the market—Microsoft Project 2000. Examples using Project 2000 and other software tools are provided throughout the text. Several chapters include sections describing how software can enhance project management. Appendix A, *A Guide to Microsoft Project 2000*, explains how to use this powerful software to help in project scope, time, cost, human resource, and communications management.

Resource for PMP and Other Certification Exams

Professional certification is an important factor in recognizing and ensuring quality in a profession. PMI provides certification as a Project Management Professional (PMP), and this text is an excellent resource for studying for the certification exam. This text will also help you pass other certification exams,

¹ The Project Management Body of Knowledge (PMBOK Guide) is a key document in the project management profession. Excerpts of the 2000 edition are available free of charge from the Project Management Institute’s Web site, www.pmi.org

such as PMI's Certificate of Added Qualification (CAQ) in systems development and CompTIA's IT+ Project+ exam. Having experience working on projects does not mean you can easily pass the PMP or other certification exams.

I like to tell my students a story about taking a driver's license test after moving to Minnesota. I had been driving very safely and without accidents for over sixteen years, so I thought I could just walk in and take the test. I was impressed by the sophisticated computer system used to administer the test. The questions were displayed on a large touch-screen monitor, often along with an image or video to illustrate different traffic signs or driving situations. I became concerned when I found I had no idea how to answer several questions, and I was perplexed when the test seemed to stop and a message displayed saying, "Please see the person at the service counter." This was a polite way of saying I had failed the test! After controlling my embarrassment, I picked up one of the Minnesota driving test brochures, studied it for an hour or two that night, and successfully passed the test the next day.

The point of this story is that it is important to study information from the organization that creates the test and not be over-confident that your experience is enough. Because this text is based on PMI's PMBOK Guide, it provides a valuable reference for studying for PMP certification. Appendix B provides specific advice on PMP and other certification exams. Although the current PMP exam tests for all types of project management, PMI is also currently working on an extension to the exam specifically for information technology professionals. *Information Technology Project Management, Second Edition*, is an excellent resource for PMI's new exams for IT project managers.

ORGANIZATION AND CONTENT

Information Technology Project Management, Second Edition, is organized into three main sections to provide a framework for project management, a detailed description of each project management knowledge area, and an application of the project management process groups to a successful information technology project. The first two chapters form a first section that provides an introduction to the project management framework and sets the stage for the remaining chapters. Chapter 1 introduces the critical need for better project management in the information technology field. It provides an overview of the field of project management, including definitions of fundamental terms, the relationship between project management and other disciplines, a brief history of the field and how it has changed, and an introduction to the project management profession, including information on careers, certification, ethics, and project management software. Chapter 2 provides a context for project management. It focuses on the need to understand how projects fit into an entire organizational system and applies common project management terms to concepts used

in the information technology field. Chapter 2 also introduces the project management process groups—initiating, planning, executing, controlling, and closing. It briefly describes these processes and how they differ from product process groups and provides a matrix relating the process groups to the knowledge areas. A new section in this chapter describes how to develop an information technology project management methodology based on the PMBOK Guide and unique organizational needs.

Chapters 3 through 11 form a second section of the book that describes each of the project management knowledge areas—project integration, scope, time, cost, quality, human resource, communications, risk, and procurement management—in the context of information technology projects. An entire chapter is dedicated to each knowledge area. Each knowledge area chapter includes sections that map to their major processes as described in the PMBOK Guide 2000. For example, the chapter on project integration management includes sections on project plan development, project plan execution, and integrated change control. Additional sections highlight other important concepts related to each knowledge area. Each chapter also includes detailed examples of key project management tools and techniques as applied to information technology projects. For example, the chapter on project scope management includes samples of a project charter, net present value analysis, and work breakdown structures for several information technology projects.

Chapters 12 through 16 form a third section that documents a highly successful information technology project from start to finish. These chapters apply the project management process groups—initiating, planning, executing, controlling, and closing—to a real information technology project. Northwest Airlines' ResNet projects in the mid-1990s and early 2000s resulted in a new reservation system and increased profits for the company. In its first year of operation, ResNet saved Northwest Airlines over \$15 million, and savings were over \$33 million in the second year. The new reservation system allowed the company to effectively manage a fourfold growth in revenues in a five-year period. Techniques discussed in earlier chapters (project justification, work breakdown structures, Gantt charts, cost estimates, status reports, audit reports, and so on) are illustrated using Northwest's real project documents. This running case, based on a real, large-scale information technology project, will give you a better understanding of how many of the topics covered in earlier chapters are used in the real world. Several faculty reviewers of this text commented that this section went far beyond other texts by turning a spotlight on an actual major project for an extended period of time and from many standpoints.

PEDAGOGICAL FEATURES

Several pedagogical features are included in this text to enhance presentation of the materials so that readers can more easily understand the concepts and apply them. Throughout the book, emphasis is placed on applying concepts to up-to-date, real-world information technology project management.

Learning Objectives, Chapter Summaries, Discussion Questions, and Exercises

Learning Objectives, Chapter Summaries, Discussion Questions, and Exercises are designed to function as integrated study tools. Learning Objectives reflect what readers should be able to accomplish after completing each chapter. Chapter Summaries highlight key concepts readers should master. The Discussion Questions help guide critical thinking about those key concepts. Exercises provide opportunities to practice important techniques.

Chapter-Opening Case and Case Wrap Up

To set the stage, each chapter begins with a case related to the materials in that chapter. These scenarios (most based on the author's experiences) spark student interest and introduce important concepts in a real-world context. As project management concepts and techniques are discussed, they are applied to the opening case and other similar scenarios. Each chapter then closes the case—with some ending successfully and some, realistically, failing—to further illustrate the real world of project management.

What Went Right and What Went Wrong

Failures, as much as successes, can be valuable learning experiences. Each chapter of the text includes one or more examples of real information technology projects that went right as well as examples of projects that went wrong. These examples further illustrate the importance of mastering key concepts in each chapter.

Minicases

Minicases, a new feature in the second edition, provide more challenging assignments to help you apply some of the concepts, tools, and techniques discussed in each chapter. Each minicase has two parts based on the same business scenario. Instructors can assign minicases for homework or use them as in-class exercises to help students apply what they are learning.

Suggested Readings

Every chapter ends with a list of suggested readings, annotated by the author, that offer opportunities for further research. Several exercises require readers to review these readings or research related topics. The World Wide Web is widely referenced throughout the text as a research tool, and many of the Suggested Readings can be found on the Web.

Key Terms

The fields of information technology and project management both include many unique terms that are key to creating a workable language when the two fields are combined. Key terms are displayed in bold face and are defined the first time they appear. Definitions of key terms are provided in alphabetical order at the end of each chapter and in a glossary at the end of the book.

Application Software

Learning becomes much more dynamic with hands-on practice using the top project management software tool in the industry, Microsoft Project 2000, as well as other tools, such as spreadsheet software and Internet browsers. Each chapter offers you many opportunities to get hands-on and build new software skills. This text is written from the point of view that reading about something only gets you so far; in order to understand project management, you have to do it for yourself. In addition to the exercises and minicases found at the end of each chapter, several challenging projects are provided at the end of Appendix A, *A Guide to Using Microsoft Project 2000*.

SUPPLEMENTS

When this text is used in an academic setting, an Instructor's Resource Kit accompanies it. The CD-ROM-based kit includes an Instructor's Manual with Solutions, PowerPoint-based Course Presenter, and Course Test Manager, Course Technology's cutting-edge Windows-based testing software. The Instructor's Manual includes sample syllabi, discussion topics, essay topics, and solutions to all of the end-of-chapter material in the text. Course Presenter is a presentation tool developed in Microsoft PowerPoint that utilizes all of the art from the text to generate impressive screen shows for use in your lectures. Course Test Manager includes up to 100 questions per chapter, and allows you to create printed and online pretests, practice tests, and actual examinations.

ACKNOWLEDGEMENTS

I never would have taken on this project—writing this book, the first or second edition—without the help of many people. I would like to thank the staff at Course Technology for their dedication and hard work in helping me produce this book and in doing such an excellent job of marketing it. Jennifer Locke was a great project manager and editor in coordinating all of the people involved in producing this book. I owe tremendous gratitude to Marilyn Freedman, my development editor for both the first and second edition. It was valuable having someone read every word that I wrote and offer helpful suggestions on how to make the book even better. I learned a lot about collaborative writing from Marilyn. Daphne Barbas did an excellent job as the production editor. It's amazing how many little details are involved in writing a good book, and Daphne and the other editors and artists supporting Course Technology did a great job in producing a high quality text.

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As always, I am eager to receive your feedback on this book. Please send all feedback to Course Technology at mis@course.com. My editors will make sure it gets to me!

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