

Project Management

The Managerial Process

Eighth Edition

Erik W. Larson

Clifford F. Gray

Oregon State University

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PROJECT MANAGEMENT: THE MANAGERIAL PROCESS, EIGHTH EDITION

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This book is printed on acid-free paper.

1 2 3 4 5 6 7 8 9 LWI 24 23 22 21 20 19

ISBN 978-1-260-23886-0 (bound edition)

MHID 1-260-23886-5 (bound edition)

ISBN 978-1-260-73615-1 (loose-leaf edition)

MHID 1-260-73615-6 (loose-leaf edition)

Portfolio Manager: *Noelle Bathurst*

Product Developer Manager: *Michele Janicek*

Executive Marketing Manager: *Harper Christopher*

Lead Content Project Manager: *Sandy Wille*

Senior Content Project Manager: *Angela Norris*

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Design: *Egzon Shaqiri*

Content Licensing Specialist: *Beth Cray*

Cover Image: *Gina Pricope/Getty Images*

Compositor: *SPi Global*

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Library of Congress Cataloging-in-Publication Data

Names: Gray, Clifford F., author. | Larson, Erik W., 1952- author.

Title: Project management : the managerial process / Erik W. Larson, Clifford F. Gray, Oregon State University.

Description: Eighth edition. | New York, NY : McGraw-Hill Education, [2021]

| Clifford F. Gray appears as the first named author in earlier editions. | Includes bibliographical references and index. | Summary:

“Our motivation in writing this text continues to be to provide a realistic, socio-technical view of project management. In the past, textbooks on project management focused almost exclusively on the tools and processes used to manage projects and not the human dimension”– Provided by publisher.

Identifiers: LCCN 2019028390 (print) | LCCN 2019028391 (ebook) |

ISBN 9781260238860 (paperback) | ISBN 1260238865 (paperback) |

ISBN 9781260242379 (ebook)

Subjects: LCSH: Project management. | Time management. | Risk management.

Classification: LCC HD69.P75 G72 2021 (print) | LCC HD69.P75 (ebook) |

DDC 658.4/04–dc23

LC record available at <https://lcn.loc.gov/2019028390>

LC ebook record available at <https://lcn.loc.gov/2019028391>

The Internet addresses listed in the text were accurate at the time of publication. The inclusion of a website does not indicate an endorsement by the authors or McGraw-Hill Education, and McGraw-Hill Education does not guarantee the accuracy of the information presented at these sites.

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“Man’s mind, once stretched by a new idea, never regains its original dimensions.”

Oliver Wendell Holmes, Jr.

To my family, who have always encircled me with love and encouragement—my parents (Samuel and Charlotte), my wife (Mary), my sons and their wives (Kevin and Dawn, Robert and Sally), and their children (Ryan, Carly, Connor and Lauren).

C.F.G.

“The reasonable man adapts himself to the world; the unreasonable one persists in trying to adapt the world to himself. Therefore all progress depends on the unreasonable man.” Bernard Shaw, Man and Superman

To Ann, whose love and support have brought out the best in me. To our girls Mary, Rachel, and Tor-Tor for the joy and pride they give me. And to our grandkids, Mr. B, Livvy, Jasper Jones!, Baby Ya Ya, Juniper Berry, and Callie, whose future depends upon effective project management. Finally, to my muse, Neil—walk on!

E.W.L

Preface

Our motivation in writing this text continues to be to provide a realistic, socio-technical view of project management. In the past, textbooks on project management focused almost exclusively on the tools and processes used to manage projects and not the human dimension. This baffled us, since people, not tools, complete projects! While we firmly believe that mastering tools and processes is essential to successful project management, we also believe that the effectiveness of these tools and methods is shaped and determined by the prevailing culture of the organization and interpersonal dynamics of the people involved. Thus, we try to provide a holistic view that focuses on both the technical and social dimensions and how they interact to determine the fate of projects.

Audience

This text is written for a wide audience. It covers concepts and skills that are used by managers to propose, plan, secure resources, budget, and lead project teams to successful completions of their projects. The text should prove useful to students and prospective project managers in helping them understand why organizations have developed a formal project management process to gain a competitive advantage. Readers will find the concepts and techniques discussed in enough detail to be immediately useful in new-project situations. Practicing project managers will find the text to be a valuable guide and reference when dealing with typical problems that arise in the course of a project. Managers will also find the text useful in understanding the role of projects in the missions of their organizations. Analysts will find the text useful in helping to explain the data needed for project implementation as well as the operations of inherited or purchased software.

Members of the Project Management Institute will find the text is well structured to meet the needs of those wishing to prepare for PMP (Project Management Professional) or CAPM (Certified Associate in Project Management) certification exams. The text has in-depth coverage of the most critical topics found in PMI's *Project Management Body of Knowledge* (PMBOK). People at all levels in the organization assigned to work on projects will find the text useful not only in providing them with a rationale for the use of project management processes but also because of the insights they will gain into how to enhance their contributions to project success.

Our emphasis is not only on how the management process works but also, and more importantly, on *why* it works. The concepts, principles, and techniques are universally applicable. That is, the text does not specialize by industry type or project scope. Instead, the text is written for the individual who will be required to manage a variety of projects in a variety of organizational settings. In the case of some small projects, a few of the steps of the techniques can be omitted, but the conceptual framework applies to all organizations in which projects are important to survival. The approach can be used in pure project organizations such as construction, research organizations, and engineering consultancy firms. At the same time, this approach will benefit organizations that carry out many small projects while the daily effort of delivering products or services continues.

Content

In this and other editions we continue to try to resist the forces that engender scope creep and focus only on essential tools and concepts that are being used in the real world. We have been guided by feedback from reviewers, practitioners, teachers, and students. Some changes are minor and incremental, designed to clarify and reduce confusion. Other changes are significant. They represent new developments in the field or better ways of teaching project management principles. Below are major changes to the eighth edition.

- All material has been reviewed and revised based on the latest edition of *Project Management Body of Knowledge* (PMBOK), Sixth Edition, 2017.
- Discussion questions for most Snapshots from Practice are now at the end of each chapter.
- Many of the Snapshots from Practice have been expanded to more fully cover the examples.
- Agile Project Management is introduced in Chapter 1 and discussed when appropriate in subsequent chapters, with Chapter 15 providing a more complete coverage of the methodology.
- A new set of exercises have been developed for Chapter 5.
- New student exercises and cases have been added to chapters.
- The Snapshot from Practice boxes feature a number of new examples of project management in action.
- The Instructor's Manual contains a listing of current YouTube videos that correspond to key concepts and Snapshots from Practice.

Overall the text addresses the major questions and challenges the authors have encountered over their 60 combined years of teaching project management and consulting with practicing project managers in domestic and foreign environments. These questions include the following: How should projects be prioritized? What factors contribute to project failure or success? How do project managers orchestrate the complex network of relationships involving vendors, subcontractors, project team members, senior management, functional managers, and customers that affect project success? What project management system can be set up to gain some measure of control? How are projects managed when the customers are not sure what they want? How do project managers work with people from foreign cultures?

Project managers must deal with all these concerns to be effective. All of these issues and problems represent linkages to a socio-technical project management perspective. The chapter content of the text has been placed within an overall framework that integrates these topics in a holistic manner. Cases and snapshots are included from the experiences of practicing managers. The future for project managers is exciting. Careers will be built on successfully managing projects.

Student Learning Aids

Student resources include study outlines, online quizzes, PowerPoint slides, videos, Microsoft Project Video Tutorials, and web links. These can be found in Connect.

Acknowledgments

We would like to thank Scott Bailey for building the end-of-chapter exercises for Connect; Pinyarat Sirisomboonsuk for revising the PowerPoint slides; Ronny Richardson for updating the Instructor's Manual; Angelo Serra for updating the Test Bank; and Pinyarat Sirisomboonsuk for providing new Snapshot from Practice questions.

Next, it is important to note that the text includes contributions from numerous students, colleagues, friends, and managers gleaned from professional conversations. We want them to know we sincerely appreciate their counsel and suggestions. Almost every exercise, case, and example in the text is drawn from a real-world project. Special thanks to managers who graciously shared their current project as ideas for exercises, subjects for cases, and examples for the text. John A. Drexler, Jim Moran, John Sloan, Pat Taylor, and John Wold, whose work is printed, are gratefully acknowledged. Special gratitude is due Robert Breitbarth of Interact Management, who shared invaluable insights on prioritizing projects. University students and managers deserve special accolades for identifying problems with earlier drafts of the text and exercises.

We are indebted to the reviewers of past editions who shared our commitment to elevating the instruction of project management. We thank you for your many thoughtful suggestions and for making our book better. Of course, we accept responsibility for the final version of the text.

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Edward Pascal, University of Ottawa	Larry R. White, Eastern Illinois University
James H. Patterson, Indiana University	Ronald W. Witzel, Keller Graduate School of Management
Steve Peng, California State University–East Bay	G. Peter Zhang, Georgia State University

In addition, we would like to thank our colleagues in the College of Business at Oregon State University for their support and help in completing this project. In particular, we recognize Lacey McNeely, Prem Mathew, and Jeewon Chou for their helpful advice and suggestions. We also wish to thank the many students who helped us at different stages of this project, most notably Neil Young, Saajan Patel, Katherine Knox, Dat Nguyen, and David Dempsey. Mary Gray deserves special credit for editing and working under tight deadlines on earlier editions. Special thanks go to Pinyarat (“Minkster”) Sirisomboonsuk for her help in preparing the last five editions.

Finally, we want to extend our thanks to all the people at McGraw-Hill Education for their efforts and support. First, we would like to thank Noelle Bathurst and Sarah Wood, for providing editorial direction, guidance, and management of the book’s development for the eighth edition. And we would also like to thank Sandy Wille, Sandy Ludovissy, Egzon Shaqiri, Beth Cray, and Angela Norris for managing the final production, design, supplement, and media phases of the eighth edition.

Erik W. Larson

Clifford F. Gray

Guided Tour

Established Learning Objectives

Learning objectives are listed both at the beginning of each chapter and are called out as marginal elements throughout the narrative in each chapter.

2.1 Why Project Managers Need to Understand Strategy

LO 2-1

Explain why it is important for project managers to understand their organization's strategy.

Project management historically has been preoccupied solely with the planning and execution of projects. Strategy was considered to be under the purview of senior management. This is old-school thinking. New-school thinking recognizes that project management is at the apex of strategy and operations. Shenhar speaks to this issue when he states, "It is time to expand the traditional role of the project manager from an operational to a more strategic perspective. In the modern evolving organization, project managers will be focused on business aspects, and their role will expand from getting the job done to achieving the business results and winning in the marketplace."¹

There are two main reasons project managers need to understand their organization's mission and strategy. The first reason is so they can make appropriate decisions and adjustments. For example, how a project manager would respond to a suggestion to modify the design of a product to enhance performance will vary depending upon whether his company strives to be a product leader through innovation or to achieve operational excellence through low-cost solutions. Similarly, how a project manager would respond to delays may vary depending upon strategy.

End-of-Chapter Content

Both static and algorithmic end-of-chapter content, including Review Questions and Exercises, are assignable in Connect.

SmartBook

The SmartBook has been updated with new highlights and probes for optimal student learning.

Snapshots

The Snapshot from Practice boxes have been updated to include a number of new examples of project management in action. New discussion questions based on the Snapshots have been added to the end-of-chapter material and are assignable in Connect.

New and Updated Cases

Included at the end of each chapter are between one and five cases that demonstrate key ideas from the text and help students understand how project management comes into play in the real world. Cases have been reviewed and updated across the eighth edition.

Instructor and Student Resources

Instructors and students can access all of the supplementary resources for the eighth edition within Connect or directly at www.mhhe.com/larson8e.

2 Organization Strategy and Project Selection

LEARNING OBJECTIVES

After reading this chapter you should be able to:

- 2-1 Explain why it is important for project managers to understand their organization's strategy.
- 2-2 Identify the significant role projects contribute to the strategic direction of the organization.
- 2-3 Understand the need for a project priority system.
- 2-4 Distinguish among three kinds of projects.
- 2-5 Describe how the phase gate model applies to project management.
- 2-6 Apply financial and nonfinancial criteria to assess the value of projects.
- 2-7 Understand how multi-criteria models can be used to select projects.
- 2-8 Apply an objective priority system to project selection.

OUTLINE

- 2.1 Why Project Managers Need to Understand Strategy
 - 2.2 The Strategic Management Process: An Overview
 - 2.3 The Need for a Project Priority System
 - 2.4 Project Classification
 - 2.5 Phase Gate Model
 - 2.6 Selection Criteria
 - 2.7 Applying a Selection Model
 - 2.8 Managing the Portfolio System
- Summary

SNAPSHOT FROM PRACTICE 3.4

Google-y*



On entering the 24-hour Googleplex located in Mountain View, California, you feel that you are walking through a new-age college campus rather than the corporate office of a billion-dollar

business. The interconnected low-rise buildings with colorful, glass-encased offices feature upscale trappings—free gourmet meals three times a day, free use of an outdoor wave pool, indoor gym and large child care facility, private shuttle bus service to and from San Francisco and other residential areas—that are the envy of workers across the Bay area. These perks and others reflect Google's culture of keeping people happy and thinking in unconventional ways.

The importance of corporate culture is no more evident than in the fact that the head of Human Resources, Stacy Savides Sullivan, also has the title of chief culture officer. Her task is to try to preserve the innovative culture of a start-up as Google quickly evolves into a mammoth international corporation. Sullivan characterizes



Jade/Blend Images

Because Google co-founder Sergey Brin once estimated that it took seven minutes to walk across the Google campus. Everybody stands to make sure no one gets too comfortable and no time is wasted during the rapid-fire update. As one manager noted, "The whole concept of the stand-up is to talk through what everyone's doing, so if someone is working on what you're working on, you

Note to Student

You will find the content of this text highly practical, relevant, and current. The concepts discussed are relatively simple and intuitive. As you study each chapter we suggest you try to grasp not only how things work but also why things work. You are encouraged to use the text as a handbook as you move through the three levels of competency:

I know.

I can do.

I can adapt to new situations.

The field of project management is growing in importance and at an exponential rate. It is nearly impossible to imagine a future management career that does not include management of projects. Resumes of managers will soon be primarily a description of their participation in and contributions to projects.

Good luck on your journey through the text and on your future projects.

Chapter-by-Chapter Revisions for the Eighth Edition

Chapter 1: Modern Project Management

- New Snapshot: Project Management in Action 2019.
- New Snapshot: *London Calling: Seattle Seahawks versus Oakland Raiders*.
- New case: *A Day in the Life—2019*.
- New section on Agile Project Management.

Chapter 2: Organization Strategy and Project Selection

- Chapter text refined and streamlined.
- New section describing the phase gate model for selecting projects.

Chapter 3: Organization: Structure and Culture

- New section on project management offices (PMOs).
- New Snapshot: *2018 PMO of the Year*.

Chapter 4: Defining the Project

- Consistent with PMBOK 6th edition, the scope checklist includes product scope description, justification/business case, and acceptance criteria.
- Discussion of scope creep expanded.
- New case: *Celebration of Color 5K*.

Chapter 5: Estimating Project Times and Costs

- Snapshot from Practice on reducing estimating errors incorporated in the text.
- Snapshot from Practice: *London 2012 Olympics* expanded.
- A new set of six exercises.

Chapter 6: Developing a Project Schedule

- Chapter 6 retitled *Developing a Project Schedule* to better reflect content.
- New case: *Ventura Baseball Stadium*.

Chapter 7: Managing Risk

- New Snapshot: *Terminal Five—London Heathrow Airport*.
- Consistent with PMBOK 6e, “escalate” added to risk and opportunity responses and “budget” reserves replaced by “contingency” reserves.

Chapter 8 Scheduling Resources and Costs

- Two new exercises.
- New case: *Tham Luang Cave Rescue*.

Chapter 9: Reducing Project Duration

- Snapshot 9.1: *Smartphone Wars* updated.
- New case: *Ventura Baseball Stadium (B)*.

Chapter 10: Being an Effective Project Manager

- Effective Communicator has replaced Skillful Politician as one of the 8 traits associated with being an effective project manager.
- Research Highlight 10.1: *Give and Take* expanded.

Chapter 11: Managing Project Teams

- A new review question and exercises added.

Chapter 12: Outsourcing: Managing Interorganizational Relations

- Snapshot 12.4: *U.S. Department of Defense Value Engineering Awards* updated.
- New exercise added.

Chapter 13 Progress and Performance Measurement and Evaluation

- Expanded discussion of the need for earned value management.
- New case: *Ventura Stadium Status Report*.

Chapter 14: Project Closure

- New case: *Halo for Heroes II*.

Chapter 15: Agile Project Management

- Chapter revised to include discussions of Extreme programming, Kanban, and hybrid models.
- New Snapshot: *League of Legends*.
- New case: *Graham Nash*.

Chapter 16: International Projects

- Snapshots from Practice: *The Filming of Apocalypse Now* and *River of Doubt* expanded.
- New case: *Mr. Wui Goes to America*.

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