KIM HELDMAN, PMP, VANINA MANGANO, PMP,
AND BRETT FEDDERSEN, PMP

PMP®

Project Management Professional Exam

REVIEW GUIDE

Fourth Edition

Complements the *PMP Project Management Professional Exam Study Guide, Ninth Edition,* and the *PMP Project Management Professional Exam Deluxe Study Guide, Third Edition.*

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ALIGNS WITH *A GUIDE TO THE PROJECT MANAGEMENT BODY OF KNOWLEDGE—PMBOK® GUIDE—SIXTH EDITION.*

SYBEX
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PMP®

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Kim Heldman

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To BB, my forever love.
—Kim Heldman

To Roshoud, who inspires me with his imagination, creativity, and tenaciousness.
—Vanina Mangano

To April, Kayla, Marcus, and Adric, the light and joy of my life.
—Brett Feddersen

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A very big thanks goes to all of the instructors who use my books in their classrooms. I appreciate you choosing Sybex and my books to help your students master PMP® concepts. Thank you also to all of the readers who choose this book to help them study for the PMP® exam.

—Kim Heldman

To start, thank you to the team at Sybex who devoted a great deal of effort toward making this review guide come together successfully. It is incredible to see the amount of teamwork and effort that goes into the making and editing of a book. The process is certainly thorough, and there are many people not named here who were key to producing a solid product. Once again, thanks to all of you!

I'd like to thank Kim Heldman for the opportunity to work together once again on this book. Kim's warm, positive, and dynamic nature always makes her a pleasure to engage with. I'd also like to give a special, heartfelt thanks to Brett Feddersen. Brett worked tirelessly to produce a great product and always had the reader in mind. Not only was Brett's positive attitude and outlook contagious, but he made the process fun, collaborative, and memorable.

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—Vanina Mangano

I could not have asked for two better contributors to work with on a book than Vanina Mangano and Kim Heldman, and I want to thank them for the opportunity to join their team in collaborating on this book. Vanina's talent, experience, and drive are extraordinary, and she willingly shared her passion and knowledge with me. Her sense of humor and attention to detail helped make the process fun and helped us deliver a superior product to the reader. Kim Heldman is a superior mentor who freely shares her enthusiasm, knowledge, humility, and leadership, and her contributions are what makes this book great. She has consistently pushed me to believe in myself, helping me to grow into the best professional I can be. It has been an honor to work with this team and help others prepare to take the PMP® exam.

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—Brett Feddersen

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—The Authors

About the Authors

Kim Heldman, MBA, PMP® Kim is the senior manager of IT/CIO for the Regional Transportation District in Denver, Colorado. Kim directs IT resource planning, budgeting, project prioritization, and strategic and tactical planning. She directs and oversees IT design and development, enterprise resource planning systems, IT infrastructure, application development, cybersecurity, the IT program management office, intelligent transportation systems, and data center operations.

Kim oversees the IT portfolio for a range of projects, from projects that are small in scope and budget to multimillion-dollar, multiyear projects. She has over 25 years of experience in information technology project management. Kim has served in a senior leadership role for over 18 years and is regarded as a strategic visionary with an innate ability to collaborate with diverse groups and organizations, instill hope, improve morale, and lead her teams in achieving goals they never thought possible.

Kim is the author of the *PMP®: Project Management Professional Study Guide, Ninth Edition*. She is also the author of *CompTIA Project+, Second Edition*; *Project Management JumpStart, Third Edition*; and *Project Manager's Spotlight on Risk Management*. Kim has also published several articles.

Kim continues to write on project management best practices and leadership topics, and she speaks frequently at conferences and events. You can contact Kim at `Kim.Heldman@gmail.com`. She personally answers all her email.

Vanina Mangano Over the past decade, Vanina has specialized in working with and leading project, program, and portfolio management offices (PMOs) across various industries and companies, most recently at NBCUniversal and AMN Healthcare. Currently, Vanina leads a PMO at Microsoft Corporation.

As part of her contribution to the community, Vanina devotes time to furthering the project management profession through her volunteer work at the Project Management Institute®. Vanina recently served as the chair for *The Standard for Program Management, Fourth Edition*, and participates in activities that seek to harmonize the four foundational standards of the PMI®. She has also served as a core committee member for *A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Fifth Edition*, and has served as a subject matter expert on multiple PMI® Standards and Practice Guides.

Vanina holds a dual bachelor's degree from the University of California, Riverside, and holds the following credentials: Project Management Professional (PMP)®, PMI Risk Management Professional (PMI-RMP)®, PMI Scheduling Professional (PMI-SP)®, CompTIA Project+, and ITIL Foundation v3.

You may reach Vanina through LinkedIn: `https://www.linkedin.com/in/vaninam/`.

Brett Feddersen MPS, PMP® Brett is a career public servant with 25 years of experience in government, including the United States Marine Corps, the state of Colorado, the city of Boulder (Colorado), and the Regional Transportation District (RTD) in the Denver metro area. Brett has been a certified project manager since 2007 and has contributed to several books as a technical editor and technical proofreader. He is the author of the *CompTIA Project+ Practice Tests: Exam PK0-004*, and served as a coauthor for the *PMP Project Management Professional Exam Review Guide, Third Edition*. In addition to his commitment to the project management community, Brett is passionate about leadership and organizational excellence, and he has contributed to several cultural revolutions, helping government agencies become high-performing organizations.

Brett holds a bachelor's degree from Colorado Mesa University and a master's degree from the University of Denver. He holds the following credentials: Project Management Professional (PMP)®, Gamification, CompTIA Project+ , and ITIL Foundation v3.

You can reach Brett through LinkedIn: `https://www.linkedin.com/in/brettfeddersen`.

Contents

Introduction

Congratulations on your decision to pursue the Project Management Professional (PMP)® credential, one of the most widely recognized credentials within the project management industry. The PMP® credential is offered by the Project Management Institute (PMI®), a not-for-profit organization with thousands of members across the globe. PMI® has been a long-standing advocate and contributor to the project management industry and offers several credentials for those specializing in the field of project management.

This book is meant for anyone preparing to take the PMP® certification exam as well as individuals who are looking to gain a better understanding of *A Guide to the Project Management Body of Knowledge, Sixth Edition* (*PMBOK® Guide*). If you are studying for the Certified Associate in Project Management (CAPM)® exam, you may also find this book useful because the CAPM® exam tests your knowledge of the *PMBOK® Guide* contents.

This review guide has been formatted to work hand in hand with *PMP®: Project Management Professional Exam Study Guide, Ninth Edition*, from Sybex. The study guide provides a more comprehensive review of the concepts included on the exam along with real-world examples. This review guide will reinforce these concepts and provide you with further explanation and a handy reference guide to the project management processes within the *PMBOK® Guide*. You'll find references to the study guide throughout this book, guiding you to where you may find additional information as needed. With all of these great resources at your fingertips, learning and understanding the *PMBOK® Guide*, along with other project management concepts, has certainly become easier!

Book Structure

This book has been structured in a way that carefully follows the concepts of the *PMBOK® Guide*, allowing you to understand how a project is managed from beginning to end. For this reason, we will review the processes in the order of the process groups:

- Initiating
- Planning
- Executing
- Monitoring and Controlling
- Closing

We start by covering the project management framework and the *PMI® Code of Ethics and Professional Conduct* and then move to a comprehensive review of the process groups. You'll find that each chapter offers a concise overview of each project management process and concept as well as the process inputs, tools and techniques, and outputs. This structure allows you to go back and reference terms, definitions, and descriptions at a glance.

Overview of PMI® Credentials

PMI® offers several credentials within the field of project management, so whether you are an experienced professional or looking to enter the project management field for the first time, you'll find something to meet your needs. You may hold one or multiple credentials concurrently.

Over the years, PMI® has contributed to the project management body of knowledge by developing global standards used by thousands of project management professionals and organizations. In total, there are four foundational standards, 7 practice standards, and four practice guides, all grouped within the following categories:

- Projects
- Programs
- Profession
- Organizations
- People

Several credentials offered by PMI® are based on the *PMBOK® Guide*, which is part of the Projects category. As of the publication date of this book, PMI® offers eight credentials. Let's briefly go through them:

Project Management Professional (PMP)® You are most likely familiar with the PMP® credential—after all, you purchased this book! But did you know that the PMP® certification is the most widely and globally recognized project management certification? The PMP®, along with several other credentials, validates your experience and knowledge of project management. This makes obtaining a PMP® in itself a great achievement. The following requirements are necessary to apply for the PMP® exam:

Work Experience The following work experience must have been accrued over the past eight consecutive years:

- If you have a bachelor's degree or the global equivalent: three years (36 months) of nonoverlapping project management experience, totaling at least 4,500 hours
- If you have a high school diploma, associate's degree, or global equivalent: five years (60 months) of nonoverlapping project management experience, totaling at least 7,500 hours

Contact Hours *Contact hours* refers to the number of qualified formal educational hours obtained that relate to project management. A total of 35 contact hours is required and must be completed before you submit your application.

Certified Associate in Project Management (CAPM)® The CAPM® credential is ideal for someone looking to enter the project management industry. You may meet the requirements through work experience *or* through formal project management education. If you do not currently have project management experience, you may apply if you have accumulated the requisite number of formal contact hours:

Work Experience 1,500 hours of formal project management experience

Contact Hours 23 contact hours of formal project management education

Program Management Professional (PgMP)® The PgMP® credential is ideal for those who specialize in the area of program management or would like to highlight their experience of program management. A PMP® is not required to obtain this or any other credential. You must meet the following requirements to apply for the PgMP® exam:

Work Experience The following work experience must have been accrued over the past 15 consecutive years:

- If you have a bachelor's degree or global equivalent: four years of nonoverlapping project management experience, totaling at least 6,000 hours, *and* four years of nonoverlapping program management experience, totaling 6,000 hours
- If you have a high school diploma, associate's degree, or global equivalent: four years of nonoverlapping project management experience, totaling at least 6,000 hours, *and* seven years of nonoverlapping program management experience, totaling 10,500 hours

Portfolio Management Professional (PfMP)® The PfMP® is meant for those specializing in the area of portfolio management. It reflects several years of hands-on portfolio management experience, geared toward achieving strategic objectives. You must meet the following requirements to apply for the PfMP® exam:

Work Experience The following work experience must have been accrued over the past 15 consecutive years:

- If you have a bachelor's degree or global equivalent: 6,000 hours of portfolio management experience plus eight years (96 months) of professional business experience
- If you have a high school diploma, associate's degree, or global equivalent: 10,500 hours of portfolio management experience plus eight years (96 months) of professional business experience

PMI Risk Management Professional (PMI-RMP)® The PMI-RMP® credential is ideal for those who specialize in the area of risk management or would like to highlight their risk management experience. The following are the requirements to apply for the PMI-RMP® exam:

Work Experience The following work experience must have been accrued over the past five consecutive years:

- If you have a bachelor's degree or global equivalent: 3,000 hours of professional project risk management experience
- If you have a high school diploma, associate's degree, or global equivalent: 4,500 hours of professional project risk management experience

Contact Hours

- If you have a bachelor's degree or global equivalent: 30 contact hours in the area of risk management
- If you have a high school diploma, associate's degree, or global equivalent: 40 contact hours in the area of risk management

PMI Scheduling Professional (PMI-SP)® The PMI-SP® credential is ideal for those who specialize in the area of project scheduling, or who would like to highlight their project scheduling experience. You must meet the following requirements to apply for the PMI-SP® exam:

Work Experience The following work experience must have been accrued over the past five consecutive years:

- If you have a bachelor's degree or global equivalent: 3,500 hours of professional project scheduling experience
- If you have a high school diploma, associate's degree, or global equivalent: 5,000 hours of professional project scheduling experience

Contact Hours

- If you have a bachelor's degree or global equivalent: 30 contact hours in the area of project scheduling
- If you have a high school diploma, associate's degree, or global equivalent: 40 contact hours in the area of project scheduling

PMI Agile Certified Professional (PMI-ACP)® The PMI-ACP® credential is ideal for those who work with Agile teams or practices. The PMI-ACP® covers approaches such as Scrum, Kanban, Lean, Extreme Programming (XP), and Test-Driven Development (TDD). You must meet the following requirements to apply for the PMI-ACP® exam:

Work Experience The following work experience must have been accrued:

- 2,000 hours (12 months) working on project teams—accrued in the last five years
- 1,500 hours (8 months) working on project teams using Agile methodologies—achieved in the last three years

Contact Hours

- 21 hours of formal Agile training

PMI Professional in Business Analysis (PMI-PBA)® The PMI-PBA® credential is meant for those specializing in business analysis. This credential is ideal for those managing requirements or product development. You must meet the following requirements to apply for the PMI-PBA® exam:

Work Experience The following work experience must have been accrued over the past eight consecutive years:

- If you have a bachelor's degree or global equivalent: 4,500 hours of professional business analysis experience and 2,000 hours of general project experience
- If you have a high school diploma, associate's degree, or global equivalent: 7,500 hours of business analysis experience and 2,000 hours of general project experience

Contact Hours

- 35 hours of formal training in the area of business analysis practices

For the latest information regarding the PMI® credentials and other exam information, you can visit PMI®'s website at `www.PMI.org`.

How to Use This Book

We've included several learning tools in the book. These tools will help you retain vital exam content as well as prepare to sit for the actual exams.

Exam Essentials Each chapter includes a number of exam essentials. These are the key topics that you should take from the chapter in terms of areas on which you should focus when preparing for the exam.

Chapter Review Questions To test your knowledge as you progress through the book, there are review questions at the end of each chapter. As you finish each chapter, answer the review questions and then check your answers—the correct answers appear in the appendix, "Answers to Review Questions." You can go back to reread the section that deals with each question you got wrong to ensure that you answer correctly the next time you're tested on the material.

Interactive Online Learning Environment and Test Bank

The interactive online learning environment that accompanies *PMP® Project Management Professional Exam Review Guide, Fourth Edition*, provides a test bank with study tools to help you prepare for the certification exam—and increase your chances of passing it the first time! The test bank includes the following:

Sample Tests All the questions in this book are provided, including the chapter tests that include the review questions at the end of each chapter. In addition, there are two practice exams. Use these questions to test your knowledge of the study guide material. The online test bank runs on multiple devices.

Flashcards One set of questions is provided in digital flashcard format (a question followed by a single correct answer). You can use the flashcards to reinforce your learning and provide last-minute test prep before the exam.

Other Study Tools A glossary of key terms from this book and their definitions is available as a fully searchable PDF.

NOTE

Go to `http://www.wiley.com/go/sybextestprep` to register and gain access to this interactive online learning environment and test bank with study tools.

Day of the Exam

After you gain the necessary prerequisites to sit for the exam, the PMP® exam itself serves as the final measure to earning your certification. You are already well ahead of the game in preparing for the exam when you purchase this book. The preparation you put forth will help you show up on the day of the exam in a calm and confident state. Throughout the course of this book, you will find sections that offer tips on what to do on the day of the exam. While you are not allowed to take anything into the exam room, you are given scratch paper to work with during your exam. Before you begin the exam, you can use the tips in this book to help you jot down notes that will free your mind to focus fully on the questions. In the days leading up to the exam, we recommend that you practice creating your reference sheet by memorizing the mnemonics, formulas, and other information that you will need.

Clearly, standard test taking advice is relevant here, such as getting a good night's sleep, eating a good breakfast, and going through relaxation exercises before you are called into the exam room. In addition, consider the following items during the exam:

- Take the time to read through each question slowly and completely. Fully understanding what is being asked in the question can contribute greatly to getting the right answer.
- You will be given the ability to mark a question if you are unsure of your answer or are unable to come up with the answer. Take advantage of this feature so you can move on to the next question. At the end of the exam, you can come back and review your answers and take more time to answer questions that escaped your answer earlier in the process.
- You have four hours to complete an examination of 200 questions. Tell yourself that it is *more important to pass than it is to go home early*. If it will help, write that statement at the top of your reference scratch paper so you can remind yourself of this ideal. In a four-hour examination, it is possible to get fatigued and just want to be done with it. Make sure you keep your focus and energy on success.

NOTE

It's a good idea to use scratch paper given to you for use during your exam to jot down formulas and other information you memorized but may forget if you become mentally exhausted midway through the exam. Keep in mind that you cannot use your scratch paper until the exam time officially starts. Some test takers practice getting their thoughts down on their scratch paper quickly when the test begins so they can relax and focus on the test questions.

For more information from PMI® on preparing for the exam, be sure you check out `pmi.org` and search for "PMP Exam Guidance" for more valuable resources.

PMP® Exam Objectives

The PMP® exam tests your knowledge of the competencies highlighted in the exam objectives. The following are the official PMP® exam objectives, as specified by PMI®.

Initiating the Project

The following objectives make up the Initiating the Project performance domain and are covered in Chapter 2 of this book:

- Perform project assessment based upon available information, lessons learned from previous projects, and meetings with relevant stakeholders in order to support the evaluation of the feasibility of new products or services within the given assumptions and/or constraints.
- Identify key deliverables based on the business requirements in order to manage customer expectations and direct the achievement of project goals.
- Participate in the development of the project charter by compiling and analyzing gathered information in order to ensure that project stakeholders are in agreement on its elements.
- Identify high-level risks, assumptions, and constraints based on the current environment, organizational factors, historical data, and/or expert judgment, in order to propose an implementation strategy.
- Obtain project charter approval from the sponsor in order to formalize the authority assigned to the project manager and gain commitment and acceptance for the project.
- Perform stakeholder analysis using appropriate tools and techniques in order to align expectations and gain support for the project.
- Conduct benefit analysis with relevant stakeholders to validate project alignment with organizational strategy and expected business value.
- Inform stakeholders of the approved project charter to ensure common understanding of the key deliverables, milestones, and their roles and responsibilities.

Planning Project Scope and Schedule Management

The following objectives make up a part of the Planning the Project performance domain and are covered in Chapter 3 of this book:

- Review and assess detailed project requirements, constraints, and assumptions with stakeholders based on the project charter, lessons learned, and by using gathering techniques in order to establish detailed project deliverables.
- Develop a scope management plan based on the approved project scope and using scope management techniques, in order to define, maintain, and manage the scope of the project.
- Develop the project schedule based on the approved project deliverables and milestones, scope, and resource management plans in order to manage timely completion of the project.

Planning Project Cost and Quality Management

The following objectives make up a part of the Planning the Project performance domain covered in Chapter 4 of this book:

- Develop the cost management plan based upon the project scope, schedule, resources, approved project charter, and other information, using estimating techniques, in order to manage project costs.
- Develop the quality management plan and define the quality standards for the project and its products, based on the project scope, risks, and requirements in order to prevent the occurrence of defects and reduce the cost of quality.

Planning Project Resource, Communication, Procurement, Change and Risk Management

The following objectives make up a part of the Planning the Project performance domain covered in Chapter 5 of this book:

- Develop the human resource management plan by defining the roles and responsibilities of the project team members in order to create a project organizational structure and provide guidance regarding how resources will be assigned and managed.
- Develop the communications management plan based on the project organizational structure and stakeholder requirements in order to define and manage the flow of project information.
- Develop the procurement management plan based on the project scope, budget, and schedule in order to ensure that the required project resources will be available.
- Develop the change management plan by defining how changes will be addressed and controlled in order to track and manage change.
- Plan for risk management by developing a risk management plan; identifying, analyzing, and prioritizing project risk; creating the risk register; and defining risk response strategies in order to manage uncertainty and opportunity throughout the project life cycle.

Planning Stakeholder Engagement and Obtaining Project Plan Approval

The following objectives make up a part of the Planning performance domain covered in Chapter 6 of this book:

- Present the project management plan to the relevant stakeholders according to applicable policies and procedures in order to obtain approval to proceed with project execution.
- Conduct kick-off meeting, communicating the start of the project, key milestones, and other relevant information in order to inform and engage stakeholders and gain commitment.

- Develop the stakeholder engagement plan by analyzing needs, interests, and potential impact in order to effectively manage stakeholders' expectations and engage them in project decisions.

Executing the Project

The following objectives make up the Executing the Project performance domain and are covered in Chapter 7 of this book:

- Acquire and manage project resources by following the human resource and procurement management plans in order to meet project requirements.
- Manage task execution based on the project management plan by leading and developing the project team in order to achieve project deliverables.
- Implement the quality management plan using the appropriate tools and techniques in order to ensure that work is being performed in accordance with required quality standards.
- Implement approved changes according to the change management plan in order to meet project requirements.
- Implement approved actions and follow the risk management plan in order to minimize the impact of the risks and take advantage of opportunities on the project.
- Manage the flow of information by following the communications plan in order to keep stakeholders engaged and informed.
- Maintain stakeholder relationships by following the stakeholder management plan in order to receive continued support and manage expectations.

Monitoring and Controlling the Project

The following objectives make up the Monitoring and Controlling the Project performance domain and are covered in Chapter 8 of this book:

- Measure project performance using appropriate tools and techniques in order to identify and quantify any variances and corrective actions.
- Manage changes to the project by following the changed management plan in order to ensure that project goals remain aligned with business needs.
- Verify that project deliverables conform to the quality standards established in the quality management plan by using appropriate tools and techniques to meet project requirements and business needs.
- Monitor and assess risk by determining whether exposure has changed and evaluating the effectiveness of response strategies in order to manage the impact of risks and opportunities on the project.
- Review the issue log, update if necessary, and determine corrective actions by using appropriate tools and techniques in order to minimize the impact on the project.

- Capture, analyze, and manage lessons learned, using lessons learned management techniques in order to enable continuous improvement.
- Monitor procurement activities according to the procurement plan in order to verify compliance with project objectives.

Closing the Project

The following objectives make up the Closing the Project performance domain and are covered in Chapter 9 of this book:

- Obtain final acceptance of the project deliverables from relevant stakeholders in order to confirm that project scope and deliverables were achieved.
- Transfer the ownership of deliverables to the assigned stakeholders in accordance with the project plan in order to facilitate project closure.
- Obtain financial, legal, and administrative closure using generally accepted practices and policies in order to communicate formal project closure and ensure transfer of liability.
- Prepare and share the final project report according to the communications management plan in order to document and convey project performance and assist in project evaluation.
- Collate lessons learned that were documented throughout the project and conduct a comprehensive project review in order to update the organization's knowledge base.
- Archive project documents and materials using generally accepted practices in order to comply with statutory requirements and for potential use in future projects and audits.
- Obtain feedback from relevant stakeholders using appropriate tools and techniques and based on the stakeholder management plan in order to evaluate their satisfaction.

Chapter

1

Project Foundation

THE PMP® EXAM CONTENT FROM THE INITIATING THE PROJECT PERFORMANCE DOMAIN COVERED IN THIS CHAPTER INCLUDES THE FOLLOWING:

- ✓ **Be able to describe the difference between projects and operations.**
- ✓ **Be able to differentiate between project management, program management, portfolio management, and a project management office.**
- ✓ **Be able to list some of the skills every good project manager should possess.**
- ✓ **Be familiar with the components of the PMI Talent Triangle.**
- ✓ **Be able to define the role of the project manager.**
- ✓ **Be able to differentiate between the organizational structures and the project manager's authority in each.**
- ✓ **Be able to name the five project management process groups.**

Much of the focus and content of this book revolves heavily around the information contained in *A Guide to the Project Management Body of Knowledge, Sixth Edition (PMBOK® Guide)*, published by the Project Management Institute (PMI®). Because many exam questions will relate to the content of the *PMBOK® Guide*, it will be referenced throughout this book, and we'll elaborate further on those areas that appear on the test.

This chapter lays the foundation for building and managing a project. Understanding project management from a broad and high-level perspective is important and will prepare you to digest the rest of the information in this book. One of the concepts you will learn is that of progressive elaboration, which PMI® defines as an iterative process of increasing the level of detail in a project management plan as information and accurate estimates become available. In this context, we want to start with an overview of the general framework in which projects operate, and then we will get progressively more elaborate with defining what those steps entail.

Day of the Exam

This book provides targeted content to help you review and prepare to take the Project Management Professional (PMP)® certification exam (PMP® exam). Through the course of this book, we will be giving you tips on things you should do the day of the exam to help you achieve the greatest opportunity to pass and then join the worldwide network of certified project managers. Look for these tips throughout the book.

Defining a Project

Pop quiz: How do you tell the difference between a project and ongoing operations? Before delving into the aspects of project management, it's important to determine whether what you are dealing with is, in fact, a project. Projects are often confused with ongoing operations, and it's therefore important to understand how to define a project and know its characteristics.

Once you have determined that you are dealing with a project, all stakeholders will need to be identified. To be considered successful, a project must achieve its objectives and meet or exceed the expectations of the stakeholders.

NOTE

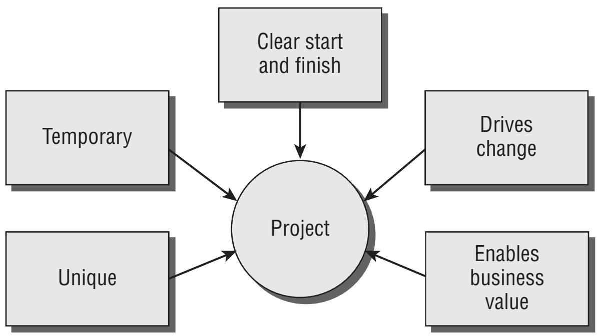
For more detailed information on projects and stakeholders, see Chapter 1, "What Is a Project?" in *PMP®: Project Management Professional Exam Study Guide, Ninth Edition* (Sybex, 2017).

Project Characteristics

According to the *PMBOK® Guide*, the characteristics of projects, as shown in Figure 1.1, are as follows:

- They are temporary in nature and have a definite start and finish.
- They produce a unique product, service, or result that didn't exist before.
- They often drive change within organizations.
- They typically enable the creation of business value.

FIGURE 1.1 Project



The unique deliverables from a project might include tangible products (a road or a building); well-defined and specific services, such as consulting or project management; and business functions that support the organization. Projects might also produce a result or an outcome, such as a document that details the findings of a research study. The purpose of a project is to achieve its goals and to conclude. Therefore, a project is considered complete when one of the following occurs:

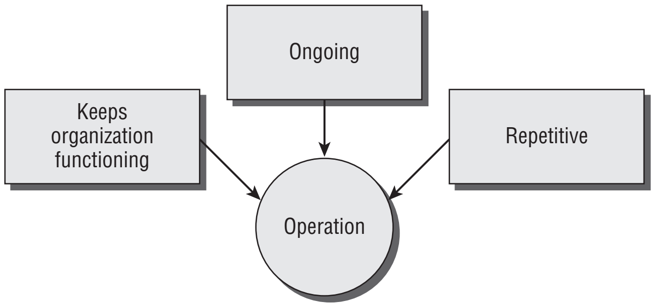
- The goals and objectives are accomplished to the satisfaction of the stakeholders.
- It has been determined that the goals and objectives cannot be accomplished or are no longer needed.
- The project is canceled due to lack of resources (i.e., funding, people, or physical resources) or for legal reasons.

After its completion, a project's product, service, or result may become part of an ongoing operation.

Operations

Operations are ongoing, are repetitive, and involve work that is continuous without an end date. Often, operations involve repeating the same processes and producing the same results. Figure 1.2 shows the characteristics of operations. The purpose of operations is to keep the organization functioning.

FIGURE 1.2 Operations



Unsure whether it is a project or an ongoing operation? Put it through the following test to make a determination:

- Is it unique?
- Does the work effort have a limited time frame?
- Is there a way to determine when the project is completed?
- Is there a way to determine stakeholder satisfaction?

If you answered yes to each question, then it is a project.

NOTE

Remember that the temporary nature of a project does not necessarily mean the duration of the project is short.

Progressive Elaboration

Progressive elaboration means the characteristics of the product, service, or result of the project are determined incrementally and are continually refined and worked out in detail as the project progresses. Product characteristics are typically broad-based at the beginning of the project and are iterated into more and more detail over time until they are complete and finalized.