Contemporary Project Management

Plan-Driven and Agile Approaches

Fifth Edition

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Organize | Lead | Plan | Perform

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Preface

While project managers today still use many techniques that have stood the test of several decades, they must also recognize the business need for a project, sort through multiple conflicting stakeholder demands, and know how to deal with a rapid change. Additionally, project managers manage a myriad of communication issues in traditional, global and virtual project teams, adapt modern approaches to quality improvement, tailor their project management approach to include methods and behaviors from Agile as and when necessary, and deal with many other issues that are more challenging than those in projects of the past.

Contemporary project management utilizes the tried-and-true project management techniques along with modern improvements such as the Microsoft® Project Professional 2016, both the sixth and seventh editions of the *Guide to the Project Management Body of Knowledge (PMBOK Guide),* and many approaches derived from adaptive (Agile) project management. Contemporary project management methodology also uses many tools and understandings that come from modern approaches to quality and communications, effective and proven team development strategies, expanded role definitions, contemporary leadership theories, human strengths, and other sources. Contemporary project management is scalable, using simple versions of important techniques on small projects and more involved versions on major and complex projects.

New to This Edition

- **Agile**. This book covers Agile practice extensively and currently. Each chapter includes one or more learning objectives specific to Agile projects and a section late in each chapter that covers what is different in the Agile method for the chapter topic. The Agile section starts with a table highlighting key chapter questions and how traditional and Agile project management address each. Then we introduce Agile terms and definitions (well over 100 in the book) and describe both the mindset and techniques of Agile for the chapter topics. Finally, we have a large, integrated Agile case that spans all fifteen chapters with information on how a real Agile project is managed, along with key questions for students. Suggestions for teaching and grading this case are provided in the instructor's manual. The coauthors have earned multiple Agile credentials, have published a book on Agile, and have served as scrum master on an Agile project.
- ***PMBOK Guide 6e* and *7e*.** PMI has introduced the new official standard for project management, *PMBOK Guide 7e*, which is expected to be used along with the previous edition; *PMBOK Guide 6e*, which has been the standard for several years. *PMBOK Guide 6e* is organized as a process approach to project management and is prescriptive in nature. A master flowchart that depicts the total of this is included in this book along with individual flowcharts for each chapter showing the processes, flows, and outputs that concern chapter topics. The recently released *PMBOK Guide 7e*, which has a completely different orientation, is also covered in every chapter of the book. We describe how its principles and domains impact each chapter.

- **PMP Exam Content 2021**. In 2021, PMI changed the PMP exam radically. Prior to this change, the exam was tied closely to the *PMBOK Guide*. Now there is an exam content outline that specifies thirty-five tasks that must be completed on projects, with questions on all thirty-five tasks. The questions are grouped into three areas: process (50%), people (42%), and business environment (8%). The process questions mostly come from *PMBOK 6e* while the others come primarily from *PMBOK 7e*. Further, the breakdown is 50% traditional, plan-driven project management and the other 50% is Agile or hybrid. A student needs to understand both versions of the *PMBOK Guide* and Agile practices to do well on the exam. We have all of those well covered in the book.
- **Tagged Questions**. We have included 150 PMP-style questions (10 per chapter) in the book. Each is tagged to a PMP exam content outline task. We also have an extensive test bank for instructors with questions tagged by PMP exam content outline task, Bloom's taxonomy, and chapter.
- **Relevant new expert examples**. We have included many new and updated examples at the beginning of each chapter to engage students, within each chapter to demonstrate specific concepts, and at the end of each chapter to demonstrate how organizations combine multiple specific ideas from the chapter in real-world settings. What makes many of these examples special is the people who contributed and created them have decades of project management experience, one or often more than one project management credential, and have authored one or more professional books on that particular aspect of project management. Most of the examples come from true experts. The chapter content was shared with these contributors in advance to ensure that examples would integrate seamlessly with the text.

Distinctive Features

- **Videos.** The authors have created twenty-three videos showing how to perform many of the project management techniques. Fifteen videos are for activities such as creating charters, and the remaining eight are for Microsoft Project. These videos appear only in the MindTap product.
- **Coverage of Microsoft Project prepares students to work with the most recent tools.** Discussion of Microsoft Project demonstrates how to automate the project management techniques addressed in each chapter. The authors introduce all concepts using a step-by-step presentation that's consistent with *PMBOK* work processes. Students learn additional MS Project functionality as they practice techniques such as identifying and overcoming resource overloads and crashing project schedules. Full-color screenshots and multiple videos make the content more realistic and easier to follow.
- **Student-oriented, measurable objectives guide learning.** Each chapter begins with core and Agile-specific learning outcomes. We include one set of glossary definitions that correspond with the *PMBOK Guide* and other PMI standards and guides, as well as a second set that corresponds with Agile practice. These help students who would like to prepare for earning a Project Management Professionals (PMP) or Certified Associate in Project Management (CAPM) credential.
- **Actual project as learning vehicle.** A section at the end of each chapter lists deliverables for students to create (in teams or individually) for a real project. These assignments have been refined over the last two decades while working with the local PMI® chapter, which provided a panel of PMP judges to evaluate projects from a practical point of view. Included in the instruction manual (IM) are extensive tools and suggestions

developed over the last twenty years for instructors, guiding them to help students learn in the best possible way—with real projects. Students are encouraged to keep clean copies of all deliverables so they can demonstrate their project skills in job interviews. A listing of these deliverables is included in Appendix D.

- **Blend of traditional and modern methods.** Proven methods developed over the past half-century are combined with exciting new methods, including Agile, that have emerged from both industry and research. This book covers the responsibilities of many individuals who can have an impact on projects both as they are practiced in traditional and Agile environments, so aspiring project managers can understand not only their own roles but also those of people with whom they need to interact and work with.
- **Chapter-specific example projects.** A variety of experienced project leaders from around the world have contributed examples to demonstrate many of the techniques and concepts throughout the book. These highly experienced and credentialed managers (many of whom have written professional books on their specific project niche) have worked closely with the authors to ensure that the examples demonstrate the ideas discussed in the chapter.
- **Integrated example projects.** We have two continuing case study projects that are included at the end of all fifteen chapters. One is for a traditional, plan-driven project and the other is for an Agile project. Both include information regarding the project that is relevant to each chapter and then pose questions for students to answer. Suggestions for instructors to teach and evaluate student answers are in the test bank. One of the authors serves as scrum master on the Agile project.

Organization of Topics

The book is divided into four major parts. Part 1, **Organizing Projects,** deals with getting a project officially approved.

- Chapter 1 introduces contemporary project management by first tracing the history of project management discipline and then discussing what makes a project different from an ongoing operation. Various frameworks that help understand projects—such as the *PMBOK 6e* and *7e Guides* and Agile—are introduced in this chapter, and the relevant information of both *PMBOK Guides* and Agile are shown in all remaining chapters. Finally the executive-, managerial-, and associate-level roles in both plan-driven and Agile projects are introduced.
- Chapter 2 discusses projects support role as an outgrowth of strategic planning, portfolio of projects is selection and prioritization, how a client company selects a contractor company to conduct a project, and how a contractor company secures project opportunities from client companies.
- Chapter 3 presents project charters in a step-by-step fashion. Short, charters help all key participants to develop a common understanding of key project issues and components at a high level with an intent to formally commit to the project. Charters have become nearly universal in initiating projects in recent years. Microsoft Project Professional is utilized to show milestone schedules within charters.

Part 2, **Leading Projects**, deals with understanding the project environment and roles and dealing effectively with team members and stakeholders.

- Chapter 4 centers around organizational capability issues of structure, life cycle, culture, and roles. The choices parent organizations make in each of these provide both opportunities and limitations to how projects can be planned and executed.

- Chapter 5 deals with leading and managing the project team. It includes acquiring and developing the project team, assessing both potential and actual performance of team members and the team as a whole, various types of power a project manager can use, how to deal productively with project conflict, and the importance of leadership role of project managers.
- Chapter 6 introduces methods for understanding and prioritizing various stakeholder demands and for building constructive relationships with stakeholders. Since many projects are less successful than they could be due to poor communications, detailed communication planning techniques are introduced for managing stakeholder expectations, along with suggestions for managing meetings, a crucial channel of communication.

Part 3, **Planning Projects**, deals with all aspects of project planning as defined in the *PMBOK 6e Guide* and *PMBOK 7e Guide*. It proceeds in the most logical order possible to maximize effectiveness and stress continuity so that each chapter builds on the previous ones, and students can appreciate the interplay between the various knowledge areas and processes.

- Chapter 7 helps students understand how to determine the amount of work the project entails. Specifically covered are methods for determining the scope of both the project work and outputs, the work breakdown structure (WBS) that is used to ensure nothing is left out, and how the WBS is portrayed using Microsoft Project Professional. We show how scope is gradually defined in Agile projects, as opposed to fully developed in plan-driven projects.
- Chapter 8 is the first scheduling chapter. It shows how to schedule project activities by identifying, sequencing, and estimating the duration of each activity. Then, critical path project schedules are developed and the methods are shown for dealing with uncertainty in time estimates, Gantt charts are introduced for easier communications, and Microsoft Project Professional is used to automate the schedule development and communications.
- Chapter 9 is the second scheduling chapter, dealing with resourcing projects and accelerating delivery if needed. Once the critical path schedule is determined, staff management plans are developed, project team composition issues are considered, resources are assigned to activities, and resource overloads are identified and handled. Schedule compression techniques of crashing and fast-tracking are demonstrated, and multiple alternative scheduling techniques including Agile are introduced. Resource scheduling is demonstrated with Microsoft Project Professional.
- Chapter 10 deals with project budgeting. Estimating cost, budgeting cost, and establishing cost controls are demonstrated. Microsoft Project Professional is used for developing both bottom-up and summary project budgets.
- Chapter 11 demonstrates project uncertainty planning. It includes risk management planning methods for identifying risks, establishing a risk register, qualitatively analyzing risks for probability and impact, quantitatively analyzing risks if needed, and deciding how to respond to each risk with contingency plans for major risks and awareness for minor risks.
- Chapter 12 starts by covering project quality planning. This includes explaining the development of modern quality concepts and how they distill into core project quality demands. Next, the chapter covers how to develop a project quality plan. It then ties all of the planning chapters together with discussions of a project kickoff meeting, a baselined project plan, and the ways Microsoft Project Professional can be used to establish and maintain the baseline.

Part 4, **Performing Projects,** discusses the various aspects that must be managed simultaneously while the project is being conducted.

- Chapter 13 deals with project procurement and partnering issues. Some of these issues, such as developing the procurement management plan, qualifying and selecting vendors, and determining the type of contract to use are planning issues, but for simplicity, they are covered in one chapter with sections on how to conduct and control procurements and to improve project partnerships.
- Chapter 14 is concerned with determining project results. This chapter starts with a balanced scorecard approach to controlling projects. Internal project issues covered include uncertainty, change, and communication. Quality is also covered, with an emphasis on achieving client satisfaction. Financial issues discussed are scope, cost, and schedule, including how to use Microsoft Project Professional for control.
- Chapter 15 deals with how to end a project—either early or on time. This includes validating to ensure all scope is complete, formally closing procurements and the project, knowledge management, and ensuring the project participants are rewarded and the clients have the support they need to realize intended benefits when using the project deliverables.

MindTap

MindTap is a complete digital solution for your project management course. It has enhancements that take students from learning basic concepts to actively engaging in critical thinking applications, while learning Project skills for their future careers.

The MindTap product for this book features videos from the authors that explain tricky concepts, videos that explain the finer points of what you can do with Project, and quizzes and homework assignments with detailed feedback so that students will have a better understanding of why an answer is right or wrong.

Instructor Resources

Additional instructor resources for this product are available online. Instructor assets include an Instructor's Manual, PowerPoint® slides, Solutions Answer Guide, and a test bank powered by Cognero®. Sign up or sign in at **www.cengage.com** to search for and access this product and its online resources.

Student Resources

Student resources for this product are available online. Student assets include Excel and Word Project templates, data sets for selected chapters, and instructions for how to get access to a trial version of Microsoft Online Professional Trial. (Note that while we are happy to provide instructions for accessing this trial, Microsoft controls that access and we are not responsible for it being removed in the future.) Sign up or sign in at **www.cengage.com** to search for and access this product and its online resources.

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- The Cincinnati and Louisville sections of the Center for Quality of Management
- Project Management Executive Forum
- Agile Cincinnati

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Kathryn (Kate) N. Wells, MEd., PMP, has over a decade of experience in project management education, having served as lead or co-author of five project management books. She has created project management training material that has been used around the world and has used her language abilities to translate (Spanish to English) project management training materials created abroad. Kate has spent most of her career in education, having taught high school, college (University of Cincinnati and Thomas More University), and adult students in a variety of settings. In addition to writing, Kate currently serves as a regional Project Manager for Pike Engineering. In this role, she creates and provides project management education throughout the Midwest region and is helping to start a PMO.

Part 1

Organizing Projects

Organize | Lead | Plan | Perform

Organizing for success in project management includes several basic frameworks for understanding projects and tools to select, prioritize, resource, and initiate projects. Basic frameworks described in Chapter 1 include how the work of project management can be categorized by knowledge areas and processes (*PMBOK® Guide 6e*), principles, and performance domains (*PMBOK Guide 7e*), how project success is determined, and how both plan-driven and adaptive approaches are frequently used. Chapter 2 describes how projects are investments meant to help achieve organizational goals. Tools are demonstrated to select, prioritize, and resource projects. Chapter 3 describes how charters are essential to initiating projects and then demonstrates how to construct each portion of a charter.

Chapter 1

Introduction to Project Management

Chapter Objectives

Core Objectives:

1-1 Define a project and project management in your own words, using characteristics that are common to most projects.

1-2 Describe major activities and deliverables at each project life cycle stage.

1-3 List and define twelve principles and the eight performance domains of the project management body of knowledge (*PMBOK 7e*).

1-4 Delineate measures of project success and failure, and reasons for both.

1-5 Identify project roles and distinguish key responsibilities for project team members.

Agile Objectives:

1-6 Define the twelve Agile principles and four Agile values from the Agile Manifesto.

1-7 Describe when and why Agile is sometimes a more useful approach.

1-8 Briefly define and describe "Be Agile" and "Do Agile."

1-9 Describe the four Agile metrics for success (viability and value, predictability, quality, and happiness) in each phase of the project.

All Canada Photos/Superstock

I have returned from a successful climb of Mount Aconcagua in Argentina; at 22,841 feet, it is the highest peak in the world outside of the Himalayas. While there, seven other climbers died; we not only survived, but our experience was so positive that we have partnered to climb together again.

During the three decades that I've been climbing mountains, I've also been managing projects. An element has emerged as essential for success in both of these activities: the element of discipline. By discipline, I am referring to doing what I already know needs to be done. Without this attribute, even the most knowledgeable and experienced will have difficulty avoiding failure.

The deaths on Aconcagua are an extreme example of the consequences associated with a lack of discipline. The unfortunate climbers, who knew that the predicted storms would produce very hazardous conditions, decided to attempt the summit instead of waiting. They did not have the discipline that we demonstrated to act on our earlier decision to curtail summit attempts after the agreed-to turn-around time or in severe weather.

PMBOK Guide 6e Coverage	
PMBOK Guide 6e	**Outputs**
1.2 Foundational Elements	Project Customer Trade-Off Matrix
2.4 Organizational Systems	Project Success Definition
3.3 The Project Manager's Sphere of Influence	
3.4 Project Manager Competencies	
3.5 Performing Integration	
Note: Refer to Appendix A to view the entire *PMBOK Guide 6e* flowchart.	

PMBOK Guide 7e

Delivery Principles:

- **Stewardship**
- **Team**
- **Stakeholders**
- **Value**
- **System**
- **Leadership**
- **Tailoring**
- **Quality**
- **Complexity**
- **Optimize risk**
- **Adaptability and resilience**
- **Enable change**

Performance Domains:

- **Stakeholder**
- **Team**
- **Development approach**
- **Planning**
- **Project work**
- **Delivery performance**
- **Measurement**
- **Uncertainty**

I've experienced similar circumstances in project management. Often I have found myself under pressure to cast aside or shortcut project management practices that I have come to rely on. For me, these practices have become the pillars of my own project management discipline. One of these pillars, planning, seems to be particularly susceptible to challenge. Managing projects at the Central Intelligence Agency for three decades, I adjusted to the annual cycle for obtaining funding. This cycle occasionally involved being given relatively short notice near the end of the year that funds unspent by some other department were up for grabs to whoever could quickly make a convincing business case. While some may interpret this as a circumstance requiring shortcutting the necessary amount of planning in order to capture some of the briefly available funds, I understood that my discipline required me to find a way to do the needed planning and to act quickly. I understood that to do otherwise would likely propel me toward becoming one of the two-thirds of the projects identified by the Standish Group in their 2021 Voice America report[1] as not successful. It is well known that the most successful project managers spend much more time planning than the vast majority of other project managers do. The approach that I took allowed me to maintain the discipline for my planning pillar. I preplanned a couple of projects and had them ready at the end of the year to be submitted should a momentary funding opportunity arise.

A key to success in project management, as well as in mountain climbing, is to identify the pillars that will be practiced with discipline. This book offers an excellent set of project management methods from which we can identify those pillars that we will decide to practice with the required levels of discipline. I believe that project management is about applying common sense with uncommon discipline.

—Michael O'Brochta, PMP, founder of Zozer Inc. and previously senior project manager at the Central Intelligence Agency

1.1 What Is a Project?

Frequently, a business is faced with making a change, such as improving an existing work process, constructing a building, installing a new computer system, merging with another company, moving to a new location, developing a new product or service, entering a new market, etc. These changes are driven by its strategic plan direction and objectives and are best planned and managed as projects.

Often, these changes are initiated due to operational necessity or to meet strategic goals, such as the following:

- Market demand
- Customer request
- Technological advance
- Legal requirements or regulatory compliance
- Replacement of obsolete equipment, technology, system, or physical facility
- Crisis situation
- Social need

So, what is a project?

A **project** is a unique, temporary effort that has a definite beginning and a definite ending with several related and/or interdependent tasks to create a product or service that adds business value and helps customers accomplish their desired goals.

The *PMBOK Guide* uses *temporary* to describe project work in terms of project duration. However, it does not mean that project duration is short; in fact, it can range from a few weeks to several years. *Temporary* also does not necessarily apply to the project deliverable or outcome, although project teams are certainly temporary.

A project requires an organized and planned effort with a level of detail that is progressively elaborated when more information is discovered. Project plans and goals become more specific after early work. Projects are subject to limitations of time and resources such as funding and people and they should follow a planned and organized approach with a defined beginning and end. The project output often is a collection of a primary deliverable along with supporting deliverables, such as a house as the primary deliverable and warranties and instructions for use as supporting deliverables.

Taking all these issues into consideration, a project can be defined as *a time-bound effort constrained by performance specifications, resources, and budget to create a unique product or service that adds value and meets desired outcomes*.

Each project typically has a unique combination of stakeholders. **Stakeholders** are people and groups who can impact the project or might be impacted by either the work or results of the project. Furthermore, projects require a group of people to work together, and they all must understand that completing the project will require focused effort in addition to their other assigned routine work. These people become members of the project team and usually represent diverse functions, skills, and disciplines.

Project management is the art and science of using knowledge, skills, tools, and techniques to meet stakeholder needs and expectations efficiently and effectively. This includes initiating, planning, executing, controlling, and closing the project. During these processes, trade-offs must be made among the following factors:

- Scope (size and features)
- Quality (acceptability of the results)
- Cost
- Schedule
- Resources
- Risks

When project managers successfully make these trade-offs, the project outcomes meet the agreed-upon requirements, are useful to the customers, and promote the organization. Project management includes both administrative and technical/managerial tasks for planning, documenting, and controlling work, as well as leadership tasks for visioning, motivating, and promoting work associates. *The underlying principle of project management discipline is to make effective and efficient use of all resources, and it is this principle that influences some of these trade-off decisions*. Project management models, methods, and artifacts can be applied and modified for all projects regardless of size or application.

1.2 History of Project Management

Projects of all sizes have been undertaken throughout history. Early construction projects included the ancient pyramids, medieval cathedrals, Indian cities, and Native American pueblos. Other early, large projects involved waging wars and building empires. In the development of the United States, projects included laying railroads, developing farms, and building cities. Many smaller projects consisted of building houses and starting businesses. Projects were conducted throughout most of the world's history, but there was very little documentation of processes, techniques, and procedures. Therefore, there is no evidence of systematic planning and control. It is known that some early projects were accomplished at great human and financial cost and that others took exceedingly long periods of time to complete. For example, the Panama Canal was started in 1881 and was not completed until 1914 because it faced many challenges.

Project management eventually emerged as a formal discipline. In the 1950s and 1960s, techniques for planning and controlling schedules and costs were developed, primarily on huge aerospace and construction projects. During this time, project management was primarily involved in determining project schedules based on understanding the order in which work activities had to be completed. Many large manufacturing, research and development, government, and construction projects used and refined management techniques. In the 1980s and 1990s, several software companies offered more effective and easier ways to plan and control project costs and schedules. Risk management techniques that were originally developed on complex projects are applied in a simplified form to less complex projects.

Rapid growth and changes in the information technology and telecommunications industries fueled massive growth in the use of project management in the 1990s and early 2000s. In the last few years, the major roles of project teams, communication, and leadership have been recognized as critical factors of project success. At the same time, systems and processes were developed for electronic documentation of the historical data of projects using information systems (IS) and knowledge management (KM) tools.

People who are engaged in a wide variety of industries, including banking, insurance, retailing, hospital administration, healthcare, many other service industries, government, and nonprofit organizations, are now turning to project management to plan and manage efforts in meeting their unique demands.

Further, in today's global economy, geographically dispersed virtual project teams are becoming the norm in many organizations. COVID-19 has accelerated this change. Managing a project is challenging in the current global economy due to the exponential growth of information technology and ever-increasing market demands that compel organizations to offer high-quality, affordable products and services quickly. Understanding the characteristics of global projects for improving global project performance is of critical importance.

The application of project management techniques and tools has grown quite rapidly and it is likely to continue. With increased international competition and a borderless

global economy, customers want their products and services developed and delivered better, faster, and cheaper. Because project management techniques are designed to manage scope, quality, cost, and schedule, they are ideally suited to this purpose.

Agile Throughout this book, we will present concepts and techniques that are unique to Agile projects. We will group these ideas and methods in one section near the end of each chapter. We will also use a table format to highlight differences between the traditional (plan-driven) and Agile approaches, such as in Exhibit 1.6.

However, many ideas that stem from Agile can be used to improve practices on plan-driven projects and are included in the text where the relevant topic is discussed.

1.3 How Can Project Work Be Described?

Project work can be described in the following ways:

- Projects are temporary and unique, while other work—commonly called operations—is more continuous.
- Project managers need certain "soft skills" and "hard skills" to be effective.
- Project managers frequently have more responsibility than authority.
- Managing a project requires identifying requirements; establishing clear and achievable objectives; balancing competing demands of quality, scope, cost, and time; and meeting customer expectations by making adjustments to all aspects of the project. The unique nature of a project often encompasses uncertainties and unknowns that present challenges to managing project work.
- Projects are managed with competing constraints of time, cost, scope, and quality
- Projects progress through predictable stages referred to as a life cycle.

1.3a Projects versus Operations

All work can be described as fitting into one of two types: projects or operations. Projects, as stated above, are temporary, and no two projects are completely identical. Some projects may be extremely different from any other work an organization has performed up to that time. Other projects may have both routine and unique aspects, like building a house; such projects can be termed *process-oriented*, and they are associated with fewer unknowns and uncertainties.

Operations, on the other hand, consist of the ongoing work necessary to ensure that an organization continues to function effectively. Operations managers can often use checklists to guide much of their work. However, project managers rarely have checklists that identify all the project management activities. Some work may be difficult to classify as totally project or totally operations; if project management methods and concepts help one to better plan and manage work, it does not really matter how the work is classified.

Both projects and operations are associated with processes. A **process** is described as a series of actions designed to bring about a consistent and similar result or service. A process is usually designed to improve productivity. Thus, processes are repetitive and produce consistent and similar results, whereas projects are unique: each project delivers results that are distinct from other projects. Nonetheless, one must remember that project management discipline includes various planning processes such as scope definition, scope management, risk management, communication management, and quality management.

1.3b Soft Skills and Hard Skills

To effectively manage and lead in a project environment, a person must develop both "soft" and "hard" skills. **Soft skills** include the ability to work in teams and with the teams,

interpersonal skills, communication, conflict resolution, negotiation, and leadership. **Hard skills** can include proficiency in planning and other project management techniques, risk analysis, quality assurance, and control, scheduling, budgeting, change control, and project execution. Soft and hard skills go hand in hand, and a project manager and the project team need to develop both, along with the judgment about when each is needed. A wise project manager may purposefully recruit an assistant who excels in his area of weakness. Training, experience, and mentoring can also be instrumental in developing necessary skills.

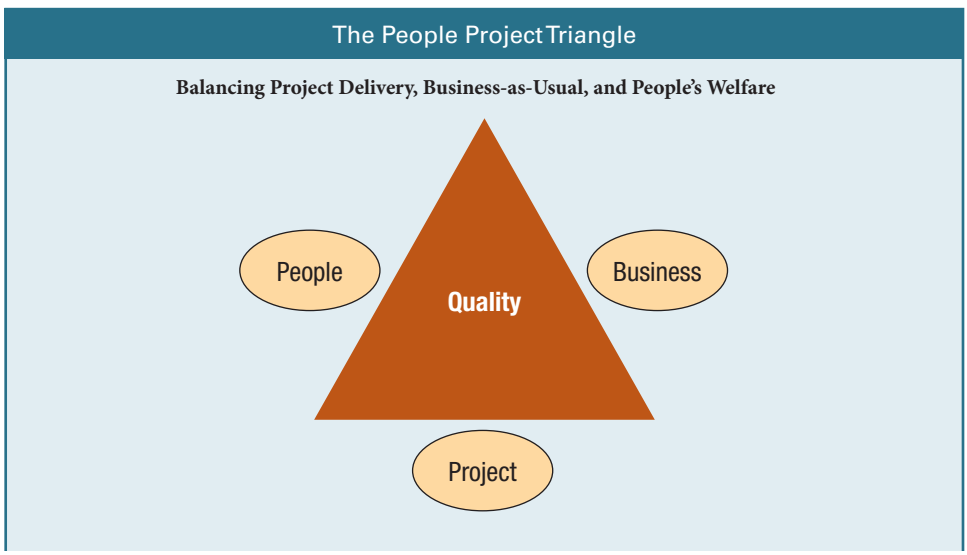
Soft skills such as interpersonal relations, conflict resolution, and communication are of critical importance in leading people. As such, of all the resources, managing human resources presents a major challenge. Managing and leading people are the most difficult aspects of managing a project and the project team. These challenges underline the importance of soft skills.

1.3c Authority and Responsibility

A project manager will frequently be held accountable for work that she cannot order people to perform and projects are most effectively managed with one person being assigned accountability. However, that person (project manager) often needs to negotiate with a **functional manager**, who is "someone with management authority over an organizational unit."[2] Project managers negotiate for workers to perform the project work in a timely fashion. Since the workers know their formal manager often has other tasks for them and will be their primary decision-maker, they are tempted to concentrate first on the work that will earn rewards. Hence, a project manager needs to develop strong communication and leadership skills to extract cooperation from functional managers and to persuade project team members to focus on the project when other work also beckons. Often, it is the project manager's responsibility that the work is performed, but at the same time, they have no formal authority over the project team members.

Project team members are often under significant stress to complete both their project work and their functional work, both with quality as shown in the People Project Triangle example in Exhibit 1.1.

Exhibit 1.1



A UK company was midway through a vital program to improve its payment processes. One project proved to be very troublesome. We reached the user acceptance test (UAT) phase, which required two weeks' work from the payment managers, whose deep knowledge was critical.

Unfortunately, the software delivered by the supplier was very poor, despite the quality control process. Additional unplanned tests were required and while testers understood the need, they were exasperated. It meant more time away from their day jobs and late delivery of the new module.

Their managers were even less impressed, and we lost a great deal of support from the business. The leaders failed to recognize that the workers assigned to the project were also working full-time on their normal duties, and could not do it all. As a result, the project quality, worker morale, and business needs all suffered.

Source: Stuart Copeland, Project Consultant, working in the UK with large corporates.
Andy Coaton, Consultant and Visiting Lecturer in Project Management at Royal Holloway, University of London

1.3d Project Life Cycle

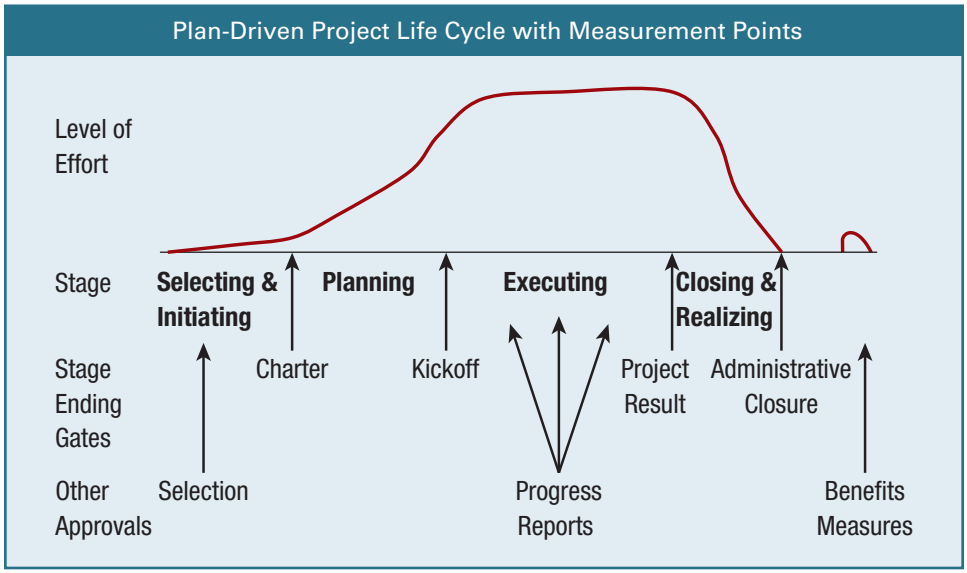
All projects go through predictable stages called a project life cycle. A **project life cycle** is "the series of phases that a project goes through from its initiation to its closure."[3] An organization demands that the work of the project is proceeding in a satisfactory manner, that the results are aligned with the project plan, and that they are likely to serve the customer's intended purpose. The customer is the person or organization that will use the project's product, service, or result. Customers can be internal or external to the organization.

Many different project life cycle models are used for projects executed in different types of organizations and industries. These variations will be explored in Chapter 4. In this book, we will use the following project phases:

- *Selecting and initiating*—starts when an idea for a project first emerges and the project is selected and planned at a high level and ends when key participants commit to it in broad terms.
- *Planning*—starts after the initial commitment, includes detailed planning, and ends when all key stakeholders accept the entire detailed plan.
- *Executing*—starts when the plan (or enough of it to proceed) is accepted and includes authorizing, executing, monitoring, and controlling the project work until the customer accepts the project deliverables.
- *Closing and realizing*—includes all activities after customer acceptance to ensure the project is completed, contracts are closed, lessons learned are documented, resources are reassigned, contributions are recognized, and benefits are realized.

The pace of work and the number of resources spent may vary considerably from one life cycle stage to another. Often, the *selecting* is performed periodically for all projects at a division or corporate level, and then *initiating* is rather quick—just enough to ensure that a project makes sense and key stakeholders will commit to it. The *planning* stage can become rather detailed and will require more work. The *execution* phase is when the majority of the project tasks are accomplished. *Closing* is a time when loose ends are tied up and the effort decreases significantly. *Realizing* benefits from the project occurs over time and may be measured months after project completion. It may be done by people other than those who performed the project. Often, some of these phases overlap with each other, depending on the project's complexity, the urgency of the deliverable, and ambiguity associated with the project scope. See Exhibit 1.2 for a plan-driven project life cycle.

Exhibit 1.2



Three other points should be made concerning the project life cycle. First, most companies with well-developed project management systems insist that a project must pass the approval of some kind to move from one stage to the next.[4] The approval to move from *selecting and initiating* to *planning,* for instance, is normally the approval of a charter. Second, in some industries, the project life cycle is highly formalized and very specific. For example, in the construction industry, the *executing* stage is often described as the stages of design and erection. Third, some organizations even have their own project life cycle model.

For clarity, this book will use the plan-driven model shown in Exhibit 1.2 when describing concepts, except when we discuss Agile with the adaptive or change-driven model. In addition to stage-ending approvals, frequently projects are measured at additional points such as selection, progress reporting, and benefits realization, as shown in Exhibit 1.2.

1.4 Understanding Projects

To better understand project management, we describe: the Project Management Institute (PMI); the *Project Management Body of Knowledge (PMBOK Guide);* methods of selecting and prioritizing projects, project goals, and constraints; project success and failure; use of Microsoft Project to help plan and measure projects; and various other ways to classify projects.

1.4a Project Management Institute

Project management has professional organizations, as do many other professions and industry groups. The biggest of these by far is PMI.

PMI was founded in 1969, grew at a modest pace until the early 1990s, and has grown quite rapidly since then. PMI has well over 600,000 members from 214 countries. PMI publishes and regularly updates over a dozen extensions, guides, and practice standards.