Lesson Objectives

This lesson covers the following topics that are foundational to preparing for the PMP exam questions and to getting the most out of the subsequent lessons in this course.

- **Core Project Management Concepts:** Review and clarify what projects are, what project management is, common functions associated with a project, and the role of the project manager.
- **Project Management Fundamentals:** Review the academic aspects of the project management domain, including process groups, knowledge areas, principles, performance domains, and project life cycle.
- **Project Environment:** Review the key aspects of the project environment and how they impact a project, including the system of value delivery, stakeholders, organizational structure, PMO types, and other internal and external factors.

This lesson reviews the key concepts, fundamentals, and terms that provide the foundation for the PMP exam questions and the foundation for the deeper dive we take throughout the rest of the course. Although the PMP Exam Content Outline does not address these topics specifically, you need to have a firm understanding of the material in this lesson to better understand the context the exam questions will address.

While some of the material in this lesson is covered in the "Standard for Project Management" section of the *PMBOK® Guide*, Seventh Edition, we want to review all the key Project Management 101 elements that will better prepare you for the exam.

2.1 Core Project Management Concepts

Exam Objectives

2. Process
   Establish project governance structure

Let's review the key core concepts of projects, project management, functions associated with a project, and the role of the project manager (PM). Clarity on these subjects and a better understanding of the project manager mindset expected from PMI will help you answer more questions correctly on the exam.

If you are like most people, you are "pretty sure" you know what projects are, and you "think" you know what project management is (and what a project manager does), but there's always a varying amount of uncertainty in those perceptions. So, let's start off by clarifying some key concepts.

Project management is simply the process of managing projects (and you thought this was going to be difficult). Although this definition is not particularly helpful, it does illustrate three key points:

- Project management is not "brain surgery." Yes, it covers a vast array of subjects, processes, skills, and tools, but the key fundamentals of project management are straightforward and are consistent across industries.
- To better understand project management, you need to understand what a project is. The nature of a project provides insights into the scope and challenges of project management.
- To better understand project management, you need to understand what is implied by the term *managing* and how this compares against traditional business management.

And before we delve into these three points, let's look at how PMI defines project management.

The PMI definition of *project management* is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. Project management refers to guiding the project work to deliver the intended *outcomes*. *Project teams* can achieve the outcomes using a broad range of approaches (e.g., predictive, hybrid, and adaptive).

What Is a Project Exactly?

Per PMI, a *project* is a temporary endeavor to produce a unique product, service, or result. The temporary nature of projects indicates a beginning and an end to the project work or a phase of project work. Projects can stand alone or be part of a program or portfolio.

In other words, a *project* is the work performed by an organization one time to produce a unique outcome. By *one time*, we mean the work has a definite beginning and a definite end, and by *unique*, we mean the work result is different in one or more ways from anything the organization has produced before. Examples of projects include the following:

- Building a new house
- Developing a new software application
- Performing an assessment of current manufacturing processes
- Improving an organizational business process
- Writing a book
- Relocating a company's technology infrastructure to a new location or to a cloud platform

- Merging two organizations
- Developing a new medical device

This definition is in contrast to the operations of an organization. The operational work is the ongoing, repetitive set of activities that sustain the organization. Examples of ongoing operations include the following:

- Processing customer orders
- Performing accounts receivable and accounts payable activities
- Executing daily manufacturing orders
- Performing recommended equipment maintenance procedures
- Conducting customer account maintenance

To further explain the nature of projects (and project management) and how they compare to the ongoing operations of an organization, please review the summary in Table 2-1.

Feature	Projects	Operations
Key Similarities	Planned, executed, and controlled Performed by people Resource constrained	Planned, executed, and controlled Performed by people Resource constrained
Purpose	Attain objectives	Sustain the organization
Time	Temporary Definite beginning and end points	Ongoing
Outcome	Unique product, service, or result	Repetitive product, service, or result
People	Dynamic, temporary teams formed to meet project needs Generally not aligned with organizational structure	Functional teams generally aligned with organizational structure
Authority of Manager	Varies by organizational structure Generally minimal, if any, direct line authority	Generally formal, direct line authority

Table 2-1: Comparing Projects and Operations

Note

The Project Management Institute (PMI) definition of *project* is a temporary endeavor to produce a unique product, service, or result. The temporary nature of projects indicates a beginning and an end to the project work or a phase of project work. Projects can stand alone or be part of a program or portfolio.

Comparing Projects and Products

To better clarify what projects are, another aspect to review is how projects compare to *products*. With the increasing focus and adoption by organizations on product management, there is often some confusion on how projects and products differ. We touch on this issue throughout the course, but to jump-start this understanding, please review the summary in Table 2-2.

Feature	Projects	Products
Relationship to Each Other	Creates a product Can be used to update or improve a product	Result of a project
Purpose	Attain objectives	Generate revenue for organization and value to customers on an ongoing basis
Focus	Executing the process to achieve objectives while managing constraints	Maximizing value of the product
Time	Temporary Definite beginning and end points	Ongoing until product is retired
Key Similarities	Delivering value to customer Quality focus Resource and budget constraints	Delivering value to customer Quality focus Resource and budget constraints
Teams	Dynamic, temporary teams formed to meet project needs	Functional permanent team members Initial project team members may become part of a permanent product team

Table 2-2: Comparing Projects and Products

Functions Associated with Projects

Before we get into managing projects and the role of the project manager, it is worth noting that PMI highlights a set of common functions associated with projects. The significant points from this list is that it takes a project team working efficiently and effectively together to deliver the value of a project and that the project manager is not the one who performs all of these functions. The project manager cannot do the work alone. This is not a new revelation. But this list is an acknowledgment from PMI that the team members responsible for key project functions will vary depending on the context of the project and the project approach exercised. Table 2-3 summarizes these project functions from the *PMBOK® Guide*, Seventh Edition, and provides examples of common project roles that fulfill the function.

#	Function	Common Activities	Role(s) That Typically Perform(s) Function
1	Provide Oversight and Coordination	Orchestrating work of the project Leading the planning, controlling, and monitoring activities Consulting with executives and business unit leaders to advance project objectives, improve project performance, and meet customer needs Benefits realization and sustainment Support programs and portfolios that the project is a part of	Project Manager
2	Present Objectives and Feedback	Provide perspectives, insights, and clear direction from customers and end users regarding requirements, outcomes, and expectations In adaptive and hybrid environments, the need for ongoing feedback is greater	Project Sponsor Project Manager Business Analyst Product Owner Business SMEs
3	Facilitate and Support	Encouraging team participation, collaboration, and a sense of shared responsibility for the work results Help team create consensus around solutions, make decisions, and resolve conflicts Coordinate meetings Support people through change Proactively address obstacles	Project Manager

4	Perform Work and Contribute Insights	Provide the knowledge, skills, and experience to generate the project deliverables and outcomes	Project Team SMEs Consultants
5	Apply Expertise	Provide the knowledge, vision, and expertise in a specific subject for the project Offer advice and support and contribute to the project team's learning process and work quality Can be internal or external to the organization Can be full or part time	Technical SMEs Consultants Team Leaders
6	Provide Business Direction and Insight	Guide and clarify the direction of the project and/or product outcome Prioritize requirements based on business value, dependencies, and risk Provide feedback to project team on next work increment, especially on hybrid and adaptive projects Solicit feedback from other stakeholders, customers, and project team to maximize value of product outcome	Product Owner Business Leads Business Analysts Project Manager Steering Committee
7	Provide Resources and Direction	Promote the project and communicate organization's vision, goals, and expectations to the project team and the broader stakeholder community Advocate for the project team by helping to secure decisions, resources, and authority that allows the project to progress Serve as liaison between senior management and project team and help to keep project aligned with business objectives, remove obstacles, resolve issues, and address risks outside the bounds of the project team's authority	Business Relationship Manager Program Manager Steering Committee Project Sponsor Account Executive
8	Maintain Governance	Approve and support recommendations made by project team Monitor project progress toward achieving targeted outcomes	Steering Committee PMO Project Sponsor

		Maintain linkages between project team and the strategic/business objectives which can change over time	

Table 2-3: Summary Description of *PMBOK® Guide*, Seventh Edition, Functions Associated with Projects

Managing Projects

What do we mean when we say "managing projects"?

- We mean applying both the science and the art of planning, organizing, implementing, leading, and guiding the work of a project to deliver the intended outcomes.
- We mean the process of defining a project, developing a plan, executing the plan, monitoring progress against the plan, overcoming obstacles, managing risks, and taking corrective actions.
- We mean the process of managing the competing demands and trade-offs between the desired results of the project (scope, performance, quality) and the natural constraints of the project (time and cost).
- We mean the process of leading a team that has never worked together before to accomplish something that has never been done before in a given amount of time with a limited amount of money.

> **Note**
>
> The PMI definition of *project management* is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. Project management refers to guiding the project work to deliver the intended outcomes. Project teams can achieve the outcomes using a broad range of approaches (e.g., predictive, hybrid, and adaptive).

Sounds like fun, doesn't it? We explain each of these key aspects of project management throughout the course, and we discuss many of the specific tasks and responsibilities performed by the project manager later in this lesson.

What Is the Value of Project Management?

As the organizational operating environment continues to become more global, more competitive, and more demanding, organizations must adapt. They must become more efficient and more productive; they must do more with less. They must continually innovate. They must respond rapidly to a fast-changing environment. *How can they do this? How can*

they do this in a strategic manner? How can they do this and still have the proper management controls? They can do this with effective project management. The strategic *value* points that effective project management can offer an organization include, but are not limited to, the following:

- Provide a controlled way to rapidly respond to changing market conditions and new strategic opportunities
- Maximize the innovative and creative capabilities of the organization by creating environments of focus and open communication
- Enable organizations to accomplish more with less cost
- Enable better leverage of both internal and external expertise
- Provide key information and visibility on project metrics to enable better decision-making management
- Increase the pace and level of stakeholder acceptance for any strategic change
- Reduce financial losses by "killing off" poor project investments early in their life cycles

> **Note**
>
> *Stakeholder* is the term used to describe individuals and organizations who are actively involved in the project or whose interests might be impacted by the execution or completion of the project.

In addition to providing apparent value to any organization, project management also offers tremendous value to each of us as individuals. At a personal level, the value of effective project management

- Ensures that your work is put to the best use for the organization and is properly recognized
- Provides a career path that offers unique, challenging opportunities on each new project
- Provides a career path that requires all your abilities and knowledge, including your management, business, people, and technical skills
- Provides a career path that is high in demand and, generally, offers an increase in income
- Provides a career path that prepares you for organizational leadership positions
- Provides a career path that is recognized more each year as excellent preparation for C-level executive positions as more of these positions are filled by individuals with project management experience
- Provides a career path that enables you to be on the front lines of strategic organizational initiatives and have major impact on the organization's future

Why Are Projects Challenging?

From what we've covered so far, from your own experiences, or from your reading trade publications, you likely have some appreciation for the difficulty of completing a successful project. Let's review the key reasons why projects are challenging to manage:

- **Uncharted Territory:** Each project is unique. The work to be done has likely never been done before by this group of people in this particular environment.
- **Multiple Expectations:** Each project has multiple stakeholders that each has their own needs and expectations for the project.
- **Communication Obstacles:** Due to natural organizational boundaries, communication channels, and team development stages, communication of project information must be proactively managed to ensure proper flow.
- **Balancing the Competing Demands:** Every project is defined to produce one or more deliverables (scope) within a defined time period (time) under an approved budget (cost) with a specified set of resources. In addition, the deliverables must achieve a certain performance level (quality) and meet the approval of the key stakeholders (expectations). Each of these factors can affect the others, as Figure 2-1 illustrates. For example, if additional functionality (scope, quality) is desired, the time and cost (resources needed) of the project will increase. This is a key focus of an effective project manager.

Note

The competing project demands are often referred to as the *triple constraint of project management*. Time and cost (or resources) are always two sides of the triangle. Depending on where you look, the third side is either scope, performance, or quality. In either case, it's the "output" of the project. Additionally, many recent variations of this model have included the additional demand of client expectations.

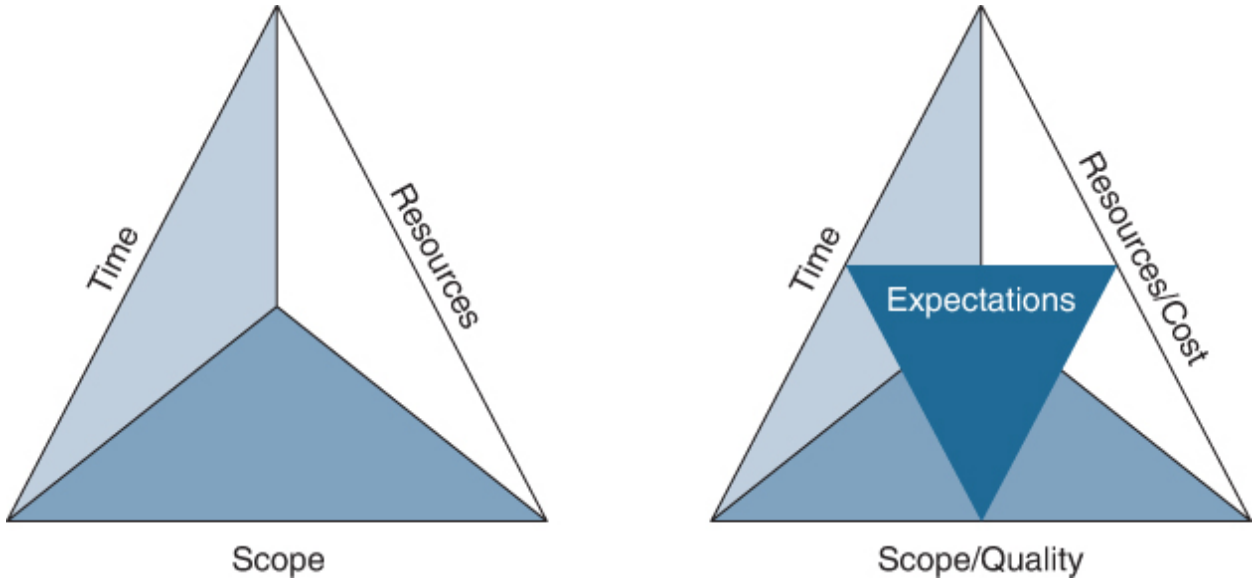

Figure 2-1: Competing Project Demands (Traditional Model on Left, Modern Model on Right), Summarizing the Relationships Between the Natural Competing Demands of Projects

To elaborate on the challenge of balancing the common project demands and constraints, this is one of the primary focuses of a project manager. Any change in any one of them will likely have an effect or impact on the others and the potential outcomes of the project. In addition, the project manager must communicate the importance of balancing these constraints in conjunction with stakeholder expectations and understand which aspects have the higher priority to them. The common project constraints include but are not limited to

- **Scope:** The work to be done on the project. Increasing the scope causes more work to be done and generally results in more cost and time needed and often more resources.
- **Quality:** The quality standards that the project must fulfill. Higher quality standards often require more work effort, which generally translates into more cost and time...and often more resources.
- **Schedule:** The calendar time required to complete the project. Changes here generally have an impact on the scope, quality, budget, resources, or risks.
- **Budget:** The cost required to accomplish the project's objectives. Changes here generally have an impact on the scope, schedule, or quality of the project.
- **Resources:** The resources that are needed to complete the work of the project. Each resource has an associated cost, along with the associated skill or quality level of the resource.
- **Risk:** The trade-off that comes with each decision made in the planning and execution of a project. The risk management decisions might have consequences that affect other constraints.
- **Cutting Edge:** Often, projects have a strategic, innovative focus. As a result, they often deal with new, leading-edge technologies. In these cases, the project has more risks, more unknowns, and is much more difficult to estimate accurately.

- **Organizational Impacts:** In addition to overcoming natural communication obstacles created by the project structure, the project manager must also manage overlaps in organizational approval and authority domains, contend with competing priorities for shared resources, deal with annual budget cycles that might not be aligned with the project's funding needs, and ensure that the project is aligned with the focus of the organization.
- **Collaboration:** Depending on the strategic level and scope of a project, the project team will consist of stakeholders across the organization from different functional areas that are likely not accustomed to working together. For project success, these different stakeholders must learn to work together and to understand the others' perspectives to make the best decisions for the project. Often, the project manager plays a key facilitating role in this collaboration process.
- **Estimating the Work:** Estimating project work is difficult, yet the time and cost dimensions of the project are built on these work effort estimates. Given the facts that the work of the project is often unique (never been done before at all, never been done with these tools, and never been done by these people), and most organizations do not maintain accurate historical records on previous projects (that might have similar work components), it is difficult to accurately estimate the effort for individual work items, not to mention the entire project as well as the challenges of needing to deliver a solution when the full requirements are undetermined. This challenge in particular is why agile management has grown in popularity and use throughout many organizations.

Knowledge Check

The Project Manager

The *project manager* has many activities to perform, challenges to overcome, and responsibilities to uphold over the life of a project. Depending on your individual experiences, your industry background, and the manner in which project management has been implemented in your organization, this full picture perspective may be quite enlightening to you.

To ensure that we have a common understanding of what a project manager does, let's review the different roles a project manager plays over the life of a project and discuss the prerequisite skills that you need to perform those roles. Most importantly, we accelerate your learning curve for the exam by sharing the characteristics of successful project managers and the common mistakes made by many others.

One Title, Many Roles

You've likely heard many of the analogies before to describe the role of project manager—the captain of the ship, the conductor of the orchestra, the coach of the team, the catalyst of the

engine, and so on. There's truth and insight in each of the analogies, but each can be incomplete as well. To gain better understanding of what a project manager does, let's briefly discuss each of the key roles played by the project manager. And to clarify, these are not terms you need to know for the PMP exam, but they are used here to clarify the role and mindset of the project manager.

- **Planner:** Ensures that the project is defined properly and completely for success, all stakeholders are engaged, work effort approach is determined, required resources are available when needed, and processes are in place to properly execute and control the project.
- **Organizer:** Using work breakdown, estimating, and scheduling techniques, determines the complete work effort for the project, the proper sequence of the work activities, when the work will be accomplished, who will do the work, and how much the work will cost.
- **Point Person:** Serves as the central point of contact for all oral and written project communications.
- **Quartermaster:** Ensures the project has the resources, materials, and facilities it needs when it needs it.
- **Facilitator:** Ensures that stakeholders and team members who come from different perspectives understand each other and work together to accomplish the project goals.
- **Persuader:** Gains agreement from the stakeholders on project definition, success criteria, and approach; manages stakeholder expectations throughout the project while managing the competing demands of time, cost, and quality; and gains agreement on resource decisions and issue resolution action steps.
- **Problem Solver:** Utilizes root-cause analysis process experience, prior project experience, and technical knowledge to resolve unforeseen technical issues and take any necessary corrective actions.
- **Umbrella:** Works to shield the project team from the politics and "noise" surrounding the project, so they can stay focused and productive.
- **Coach:** Determines and communicates the role each team member plays and the importance of that role to the project's success, finds ways to motivate each team member, looks for ways to improve the skills of each team member, and provides constructive and timely feedback on individual performances.
- **Bulldog:** Performs the follow-up to ensure that commitments are maintained, issues are resolved, and action items are completed.
- **Librarian:** Manages all information, communications, and documentation involved in the project.
- **Insurance Agent:** Continuously works to identify risks and develop responses to those risk events in advance.

- **Police Officer:** Consistently measures progress against the plan, develops corrective actions, and reviews the quality of both project processes and project deliverables.
- **Salesperson:** An extension of the persuader and coach roles, but this role is focused on "selling" the benefits of the project to the organization, serving as a change agent, and inspiring team members to meet project goals and overcome project challenges.

Key Skills of Project Managers

Although a broad range of skills is needed to effectively manage the people, process, and technical aspects of any project, it becomes clear there is a set of key skills that each project manager should have. Although these skill categories are not necessarily exclusive of each other, let's group them into five categories to streamline our review and discussion:

1. **Project Management Fundamentals:** The "science" part of project management, covered in this course, including office productivity suite (such as Microsoft Office, email, and so on), project management software, project collaboration tool, and work management tool skills.
2. **Business Management Skills:** Those skills that would be equally valuable to an operations or line-of-business manager, such as budgeting, finance, procurement, organizational dynamics, team development, performance management, coaching, and motivation.
3. **Technical Knowledge:** The knowledge gained from experience and competence in the focal area of the project. With it, you greatly increase your effectiveness as a project manager. You have more credibility, and you can ask better questions, validate the estimates and detail plans of team members, help solve technical issues, develop better solutions, and serve more of a leadership role. Note this does not mean the project manager is the technical expert. It just means this knowledge makes them more effective in working with the technical experts to accomplish the project objectives.
4. **Communication Skills:** Because communication is regarded as the most important project management skill by the Project Management Institute, I feel it is important to separate them out. Skills included in this category include all written communication skills (correspondence, emails, documents), oral communication skills, facilitation skills, presentation skills, and—the most valuable—active listening. *Active listening* can be defined as "really listening" and the ability to listen with focus, empathy, and the desire to connect with the speaker.

> **Tip**
>
> Active listening is one of the secret weapons of effective project managers, and we cover this in more detail in Lesson 10, "Project Communications."

5. **Leadership Skills:** This category overlaps with some of the others and focuses on the attitude and mindset required for project management. However, it also includes key skills such as interpersonal and general people relationship-building skills, adaptability, flexibility, people management, degree of customer orientation, analytical skills, problem-solving skills, and the ability to keep the big picture in mind.

> **Note**
>
> The specific combination of skills that are required for a project manager to be successful on a given project vary depending on the size and nature of the project. For example, as a general rule, on larger projects, technical knowledge is less important than competence in the other skill categories.

As of 2022, PMI combines these key skill sets into three groups in the PMI Talent Triangle, as shown in Figure 2-2.

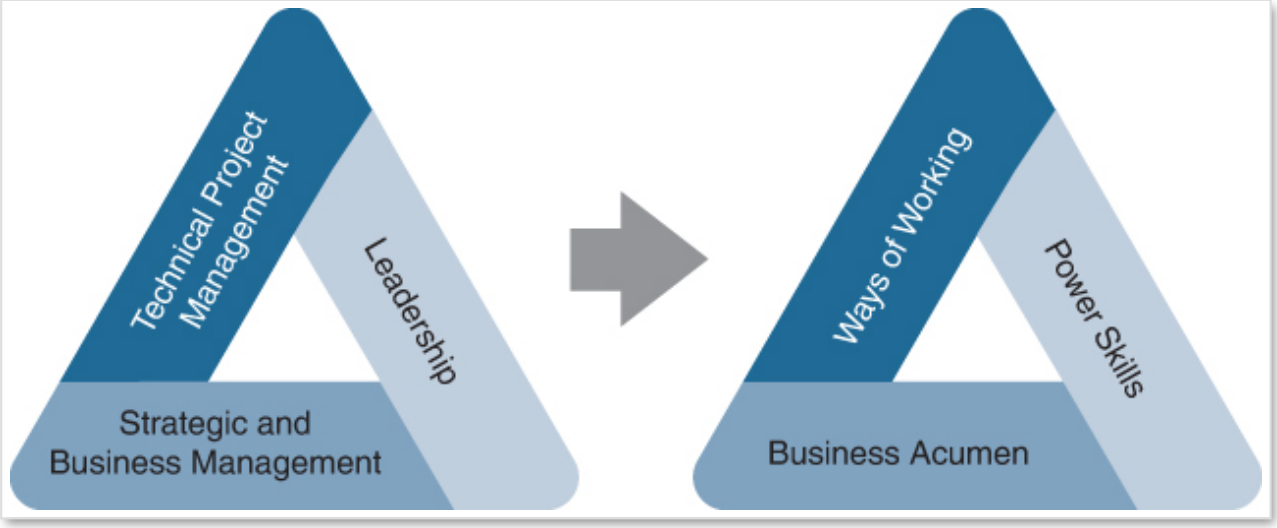

Figure 2-2: PMI Talent Triangle
(Used with Permission of Project Management Institute)

- **Ways of Working:** The knowledge, skills, and behaviors related to specific domains of project, program, and portfolio management. The technical aspects of performing one's role. This category was previously referred to as Technical Project Management.
- **Power Skills:** The knowledge, skills, and behaviors needed to guide, motivate, and direct a team to help an organization achieve its business goals. This category was previously referred to as Leadership.
- **Business Acumen:** The knowledge of and expertise in the industry and organization that enhances performance and better delivers business outcomes. This category was previously referred to as Strategic and Business Management.

I know, I know...after reading this, you are probably thinking either one or more of the following:

- “You must be kidding! I need to be good in all those areas to manage a project?”
- “Wait! I’ve been on projects before, and I’ve yet to see a project manager who could do all that.”
- “Wait, you must be kidding! If anyone was excellent in all those areas, they would be a C-level executive of our company.”

To help answer all these questions, please understand two important observations:

1. Many projects are not successful.
2. You do not need to get an “A” in all these categories to be successful as a project manager.

The key is that the project manager has the right mix of skills to meet the needs of the given project. In addition, a self-assessment against these skill categories enables you to leverage your strengths, compensate for your deficiencies, and focus your self-improvement program.

Qualities of Successful Project Managers

Given the many roles played by a project manager, the broad range of skills needed, and the inherent challenges in successfully delivering a project, we need to find ways to accelerate the learning process. Two key ways to accelerate this learning is to understand the qualities of successful project managers and to understand the common mistakes made by project managers.

Successful project managers do not share personality types, appearances, or sizes, but they do share four important features:

1. They focus on communication, collaboration, and engagement throughout the project.
2. They compensate for any skill deficiencies by staffing their teams accordingly.
3. They avoid the common mistakes described in the next section.
4. They bring a mindset and approach to project management that is best characterized by one or more of the following qualities:
    - **Take ownership:** Take responsibility and accountability for the project, lead by example, and bring energy and drive to the project. Without this attitude, all the skills and techniques in the world will only get you so far.
    - **Savvy:** Understand people and the dynamics of the organization; navigate tricky politics; have the ability to quickly read and diffuse emotionally charged situations; think fast; build relationships; leverage personal power for benefit of the project.
    - **Intensity with a smile:** Balance an assertive, resilient, tenacious, results-oriented focus with a style that makes people want to help; consistently follow up on everything and their resolutions without annoying everyone.
    - **Eye of the storm:** Demonstrate an ability to be the calm eye of the project hurricane; high tolerance for ambiguity; take the heat from key stakeholders (C-level executives,

business managers, and project team); exhibit a calm, confident aura when others are showing signs of issue or project stress.

- **Strong customer-service orientation:** Demonstrate the ability to see each stakeholder's perspective; are able to provide a voice for all key stakeholders (especially the sponsor) to the project team; have strong facilitation and collaboration skills; and have excellent active listening skills.
- **People focused:** Take a team-oriented approach; understand that methodology, process, and tools are important, but without quality people it's very difficult to complete a project successfully.
- **Always keep "eye on the ball":** Stay focused on the project goals and objectives. There are many ways to accomplish a given objective, which is especially important to remember when things don't go as planned.
- **Controlled passion:** Balance passion for completing the project objectives with a healthy detached perspective, which enables them to make better decisions, to continue to see all points of view, to better anticipate risks, and to better respond to project issues.
- **Healthy paranoia:** Balance a confident, positive outlook with a realism that assumes nothing, constantly questions, and verifies everything.
- **Context understanding:** Understand the context of the project—the priority that the project has among the organization's portfolio of projects and how it aligns with the overall goals of the organization.
- **Look for trouble:** Are constantly looking and listening for potential risks, issues, or obstacles; confront doubt head-on; deal with disgruntled users right away; understand that most of these situations are opportunities and can be resolved up front before they become full-scale crisis points.

15 Common Mistakes of Project Managers

Understanding the most common project management mistakes will help you focus your efforts and help you to avoid the same mistakes on your projects and avoid incorrect answers on the exam. The following are some of the most common mistakes made by project managers:

1. Not clearly understanding how or ensuring that the project is aligned with organizational objectives
2. Not properly managing stakeholder expectations throughout the project
3. Not gaining agreement and buy-in on project goals and success criteria from key stakeholders
4. Not developing a realistic schedule that includes all work efforts, task dependencies, bottom-up estimates, and assigned leveled resources

5. Not getting buy-in and acceptance on the project schedule
6. Not clearly deciding and communicating who is responsible for what
7. Not utilizing change control procedures to manage the scope of the project
8. Not communicating consistently and effectively with all key stakeholders
9. Not executing the project plan
10. Not tackling key risks early in the project
11. Not proactively identifying risks and developing contingency plans (responses) for those risks
12. Not obtaining the right resources with the right skills at the right time
13. Not aggressively pursuing issue resolution
14. Inadequately defining and managing requirements
15. Insufficiently managing and leading the project team

Project Manager vs. Scrum Master vs. Product Owner

To further clarify the role of the project manager, let's do a quick review on how the role differs on agile projects, and specifically how it differs from two prominent roles in the agile process: Scrum master and product owner. With the increasing adoption of agile project approaches, and the Scrum agile methodology, there is often some initial confusion about how a project manager fits in this environment because the Scrum methodology does not define a project manager role. And frankly, many organizations struggle to figure out how to leverage their existing project manager as they transition to agile and Scrum project approaches. As a result, it is this struggle that leads to confusion and uncertainty surrounding the project manager role on agile projects.

In summary, when you understand the roles of the Scrum master, the product owner, and the project manager, it's much easier to see the importance of each role and why they are all needed for a successful project.

As a reminder from Lesson 1, "The PMP Exam: How to Prepare and Pass," PMI uses the term *team facilitator* for the Scrum master role on pure agile projects and does not define a traditional PM role for a pure agile project. So this discussion technically applies to hybrid projects per PMI, and most real-world agile/adaptive projects are not pure in their implementation.

With that stated, let's briefly discuss each role to jumpstart this understanding:

- **Scrum Master:** A defined Scrum guide role that is focused on the core team and guiding them through the Scrum process. The Scrum master is a coach and a facilitator for both the development team and the product owner, and often the organization. They are focused on the work process, alleviating bottlenecks and continuously striving for process improvement. PMI calls this role team facilitator.

- **Product Owner:** A defined Scrum guide role that is focused on maximizing the value of the product being delivered. The product owner represents the customer and is responsible for defining the backlog items (e.g., requirements and features), setting priorities, and providing feedback to the core development team after each sprint (work increment)
- **Project Manager:** This role serves as overall leader and manager of the project itself. The project manager works with the Scrum master and product owner to ensure needs of the organization and business are being met. This role is responsible for delivering the project on time, in budget, and with the agreed-upon scope. In addition, the project manager handles building the team, securing the budget, developing and maintaining project schedules, delivering project communications, managing project issues and risks, and coordinating release deployments.

Seems fairly straightforward, right? So where does the confusion come into play? In my experience, the confusion stems from one, if not all, of these factors:

- Some of the traditional project manager functions are shared by the Scrum master, the product owner, and the core agile team.
- The Scrum master and/or product owner roles have not been properly staffed and/or individuals lack the requisite Scrum training.
- A single individual is serving a combination of these roles.

Now is it possible for a single person to serve a combination of these roles on hybrid projects? Sure, but it does run the risk of highly compromising the Scrum process. The most common scenario that can be successful is the project manager also serving as the Scrum master, but it does assume the project manager has the appropriate skills, training, and time to serve both roles properly. In general, the more aligned the organization is with the Scrum agile roles, and the more mature an organization becomes with successfully leveraging the Scrum approach, the clearer the differences and the importance of each of these roles become.

Knowledge Check

2.2 Project Management Fundamentals

Exam Objectives

2. Process
    Establish project governance structure

Okay, now that we have covered the core key concepts of projects, project management, and the project manager role, let's take a more academic look at the breadth of the project management domain. These are the fundamentals of project management that you need to understand for better success on the exam.

PMI had defined project management as a set of 5 process groups (see Table 2-4), 10 knowledge areas (see Table 2-5), and a matrix chart that mapped all the distinct processes to the process groups and knowledge areas in its first six editions of their standards. These references are taken from the PMI's *A Guide to the Project Management Body of Knowledge*, Sixth Edition (*PMBOK® Guide*, Sixth Edition).

However, with the latest edition, the *A Guide to the Project Management Body of Knowledge*, Seventh Edition (*PMBOK® Guide*, Seventh Edition), PMI made a significant update to respond to the changing landscape, to emphasize project value and outcomes, and to capture how successful practitioners were actually applying these processes and knowledge areas to deliver successful projects for their organizations. So although they are not part of the latest PMBOK, it does not change the fact these are basic fundamentals of project management that a competent practitioner needs to be familiar with and know when and how to apply.

#	Process Group	Description per *PMBOK® Guide*, Sixth Edition	Common Terms
1	Initiating	Those processes performed to define a new project or a new phase of an existing project by obtaining authorization to start the project or phase.	*preliminary planning* *kicking off*
2	Planning	Those processes required to establish the scope of the project or project phase, refine the objectives, and define the course of action required to attain the objectives that the project was undertaken to achieve.	*defining* *developing the plan* *setting the stage*
3	Executing	Those processes required to coordinate the people and resources needed to implement the plan for the project or project phase.	*making it happen* *getting it done* *coordinating*
4	Monitoring and Controlling	Those processes required to track, review, and regulate the progress and performance of the project or project phase; identify any areas in which changes to the plan are required; and initiate the corresponding changes.	*tracking progress* *keeping on course* *measuring actual versus planned performance*

5	Closing	Those processes performed to formally complete or close the project, phase, or contract.	*transition closeout*

Table 2-4: Description of Project Management Process Groups

Figure 2-3 summarizes the relationships among the project management process groups, based on *PMBOK® Guide*, Sixth Edition.

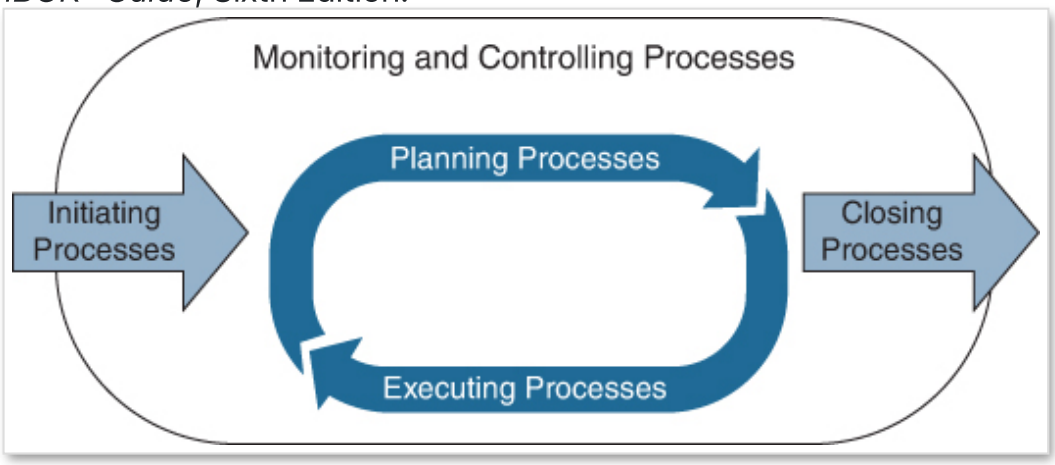

Figure 2-3: Project Management Process Relationships

#	Knowledge Area	Description per *PMBOK® Guide*, Sixth Edition	Common Deliverables
1	Project Integration Management	Processes and activities to identify, define, combine, unify, and coordinate the various processes and project management activities within the project management process groups.	Project Charter Project Management Plan Change Requests Work Results
2	Project Scope Management	Processes required to ensure that project includes all the work that is required and only the work that is required to complete the project successfully.	Scope Statement Work Breakdown Structure Formal Acceptance
3	Project Schedule Management	Processes required to ensure timely completion of the project.	Network Diagram Task Estimates Project Schedule

4	Project Cost Management	Processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so the project can be completed within the approved budget.	Cost Estimates Project Budget
5	Project Quality Management	Processes for incorporating the organization's quality policy regarding planning, managing, and controlling project and product quality requirements to meet stakeholders' expectations.	Quality Management Plan Checklists Quality Reviews
6	Project Resources Management	Processes required to make the most effective use of the people, equipment, supplies, raw materials, facilities, and so on involved with the project.	Resource Requirements Role and Responsibility Matrix Organization Chart Performance Evaluations
7	Project Communications Management	Processes required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and ultimate disposition of project information.	Communication Management Plan Status Reports Presentations Lessons Learned Knowledge Repositories
8	Project Risk Management	Processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project.	Risk Management Plan Risk Response Plan Risk Log
9	Project Procurement Management	Processes necessary to purchase or acquire products, services, or results needed from outside the project team.	Procurement Management Plan Statement of

			Work Proposals Contracts
10	Project Stakeholder Management	Processes required to identify the people, groups, or organizations that could impact or be impacted by the project, to analyze stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution.	Stakeholder Register Stakeholder Engagement Plan Project Schedule Issue Log Change Requests

Table 2-5: Project Management Knowledge Areas

> **Note**
>
> The *PMBOK® Guide*, Sixth Edition, was released in 2017. The *PMBOK® Guide*, Seventh Edition, was officially released in August 2021. PMI targets an update to the PMBOK every four years.

As mentioned in Lesson 1, the latest edition—*PMBOK® Guide*, Seventh Edition—provides a foundation that is designed to be tailored to best meet the needs of the organization and individual project. PMI now defines project management as a set of 12 principles (see Table 2-6) and 8 performance domains (see Table 2-7). The principles are interwoven into how PMI expects each performance domain to be executed, and we review them throughout the remainder of the course.

#	Category	Principle Label	Principle Statement
1	Stewardship	Be a diligent, respectful, and caring steward.	Stewards act responsibly to carry out activities with integrity, care, and trustworthiness while maintaining compliance with internal and external guidelines.
2	Team	Create a collaborative project team environment.	Project teams that work collaboratively can accomplish a shared objective more effectively and efficiently than individuals working on their own.

3	Stakeholders	Effectively engage with stakeholder.	Engage stakeholders proactively and to the degree needed to contribute to project success and customer satisfaction.
4	Value	Focus on value.	Continually evaluate and adjust project alignment to business objectives and intended benefits and value.
5	Systems Thinking	Recognize, evaluate, and respond to system interactions.	Recognize, evaluate, and respond to the dynamic circumstances within and surrounding the project in a holistic way to positively affect project performance.
6	Leadership	Demonstrate leadership behaviors.	Demonstrate and adapt leadership behaviors to support individual and team needs and to promote project success.
7	Tailoring	Tailor based on context.	Design the project approach based on the context, objectives, stakeholders, governance, and environment using “just enough” process to achieve the desired outcome while maximizing value, managing cost, and enhancing speed.
8	Quality	Build quality into processes and deliverables.	Maintain a focus on quality that produces deliverables that meet project objectives and align to the needs, uses, and acceptance requirements set by relevant stakeholders.
9	Complexity	Navigate complexity.	Continually evaluate and navigate project complexity so that approaches and plans enable the project teams to successfully navigate the project life cycle.
10	Risk	Optimize risk responses.	Continually evaluate exposure to risk to maximize positive impacts and minimize negative impacts to the project and its outcomes.
11	Adaptability and Resiliency	Embrace adaptability and resiliency.	Build adaptability and resiliency into the organization’s and project team’s approaches to help the project accommodate change,

			recover from setbacks, and advance the work of the project.
12	Change	Enable change to achieve the envisioned future state.	Prepare those impacted for the adoption and sustainment of new and different behaviors and processes required for the transition from the current state to the intended future state created by the project outcomes.

Table 2-6: Description of the *PMBOK® Guide*, Seventh Edition, Twelve Project Management Principles

> **Note**
>
> The PMBOK Principles of Project Management reflect the influence of the values and principles captured in the Agile Manifesto.

#	Performance Domain	Focus	Desired Outcomes
1	Stakeholders	Activities and functions associated with stakeholders.	Productive working relationship with stakeholders. Stakeholder agreement with project objectives.
2	Team	Activities and functions associated with the people responsible for producing project deliverables.	Shared ownership. High-performing team. Applicable leadership and interpersonal skills demonstrated by all team members.
3	Approach and Life Cycle	Activities and functions associated with the approach, cadence, and life cycle phases of the project.	Approaches consistent with project deliverables. Project life cycle that connects delivery of value from beginning to end of project. Project life cycle that facilitates delivery cadence and approach

			required to produce the deliverables.
4	Planning	Activities and functions associated with the initial, ongoing, and evolving organization and coordination necessary to deliver project deliverables and outcomes.	Project progresses in an organized, coordinated, and deliberate manner. A holistic approach to delivering project outcomes. Evolving information is elaborated to produce the deliverables and outcomes. Time spent planning is appropriate for situation. Planning information is sufficient to manage expectations. There is a process to adapt plans based on emerging and changing needs or conditions.
5	Project Work	Activities and functions associated with establishing project processes, managing physical resources, and fostering a learning environment.	Efficient and effective project performance. Processes appropriate for the project and environment. Appropriate communication with stakeholders. Efficient management of physical resources. Effective management of procurements. Improved team capability due to continuous learning and process improvement.
6	Delivery	Activities and functions associated with delivering targeted scope and quality.	Project contributes to business objectives. Project realizes intended outcomes. Project benefits are realized in the timeframe planned. Project team has clear understanding of requirements.

			Stakeholders satisfied with project deliverables.
7	Measurement	Activities and functions associated with assessing project performance and taking appropriate actions to maintain acceptable performance.	Reliable understanding of project status. Actionable data to facilitate decision-making. Timely and appropriate actions to keep project performance on track. Achieving targets and business value by making informed and timely decisions based on reliable forecasts and evaluations.
8	Uncertainty	Activities and functions associated with risk and uncertainty.	Awareness of the holistic environment in which the project occurs. Proactively exploring and responding to uncertainty. Awareness of the interdependence of all project variables. Capacity to anticipate threats and opportunities and understand the consequences. Project delivery with minimal impact from unforeseen events or conditions. Opportunities are realized to improve project performance and outcomes. Cost and schedule reserves are leveraged to maintain alignment with project objectives.

Table 2-7: Description of *PMBOK® Guide*, Seventh Edition, Eight Performance Domains of Project Management

> **Note**
>
> Project management is a broad field with great potential for specialized and in-depth study. There are entire courses and training classes focused solely on advanced analysis of individual process groups, knowledge areas, principles, and performance domains.

Again, depending on your experiences, you might not have realized that project management consisted of all these elements, and you might not actually perform all these activities as a project manager in your organization. However, it is important to understand how big your playing field is for this exam. This course will not completely educate you on each of these project fundamental areas—process groups, knowledge areas, principles and performance domains—but it will provide you with the guidance and insights on all these aspects to improve your effectiveness on the exam.

Project Life Cycle

Before we move on to review the key aspects of the project environment, let's touch on a few key fundamentals related to the project life cycle that you'll need to know for the exam. The *project life cycle* encompasses the entire process from the project inception to project close. The specific life cycle of any given project will vary depending on industry, organization, level of project risk, and nature of the project goals, and we dive into this topic in more detail in Lesson 3, "Development Approach and Life Cycle Performance."

At a high level, three different approaches to projects can impact the specific nature of the project life cycle, and we alluded to them in Lesson 1. They are predictive, hybrid, and adaptive. A predictive approach is the traditional, waterfall style that is used when requirements are fixed up front and detailed planning can be done with confidence from the start. An adaptive approach, commonly referred to as *agile*, is used when requirements are uncertain and/or subject to change. In this approach, work is broken down into short iterations with heavy customer interaction and feedback with the intent of generating viable products and flushing out prioritized requirements as soon as possible. In a hybrid approach, a project is leveraging elements of both predictive and adaptive. Hybrid projects typically use aspects of incremental and iterative approaches, and a wide range of implementations is possible. The key is to use the right approach for each targeted outcome within the project. As mentioned, we cover all of this in much more detail in Lesson 3.

With the different high-level approaches acknowledged, there are a few characteristics shared by nearly all projects, and you may see questions on the exam that check your understanding of them.

- **The level of uncertainty and risk is the highest at the beginning of a project:** As the project matures, more is learned about the project and the product it produces. This process is called *progressive elaboration*. As you learn more about the project, all plans and projections become more accurate, and the level of risk and uncertainty decrease. This is one of the reasons agile and hybrid approaches have grown in popularity and

acceptance, and why you will see early project phases include techniques like feasibility studies, prototypes, and proof of concepts to address this risk before significant investments are made.

- **Stakeholders assert the greatest influence on the outcome of a project at the beginning:** In general, after the project starts, the stakeholders' influence continually declines. Their influence to affect the project's outcome is at its lowest point at the end of the project. This is also another reason that agile and hybrid approaches are used more commonly now because, by design, they keep the stakeholder influence higher for a longer period of time.
- **Costs and activity vary throughout a project:** Costs and activity are both low at the beginning of a project, increase during the execution of project work, and tend to taper off to a low level as the project nears completion.
- **The earlier a change is identified, the cheaper it is:** The cost associated with any project changes are at that their lowest point at the project's beginning. No work has been done, so changing is easy. As more work is completed, the cost of any changes rises. With agile and hybrid approaches, which by nature anticipate changes, you are still attempting to identify the need for any significant changes as early as possible.

See Figure 2-4 for an illustration of these key project life cycle characteristics.

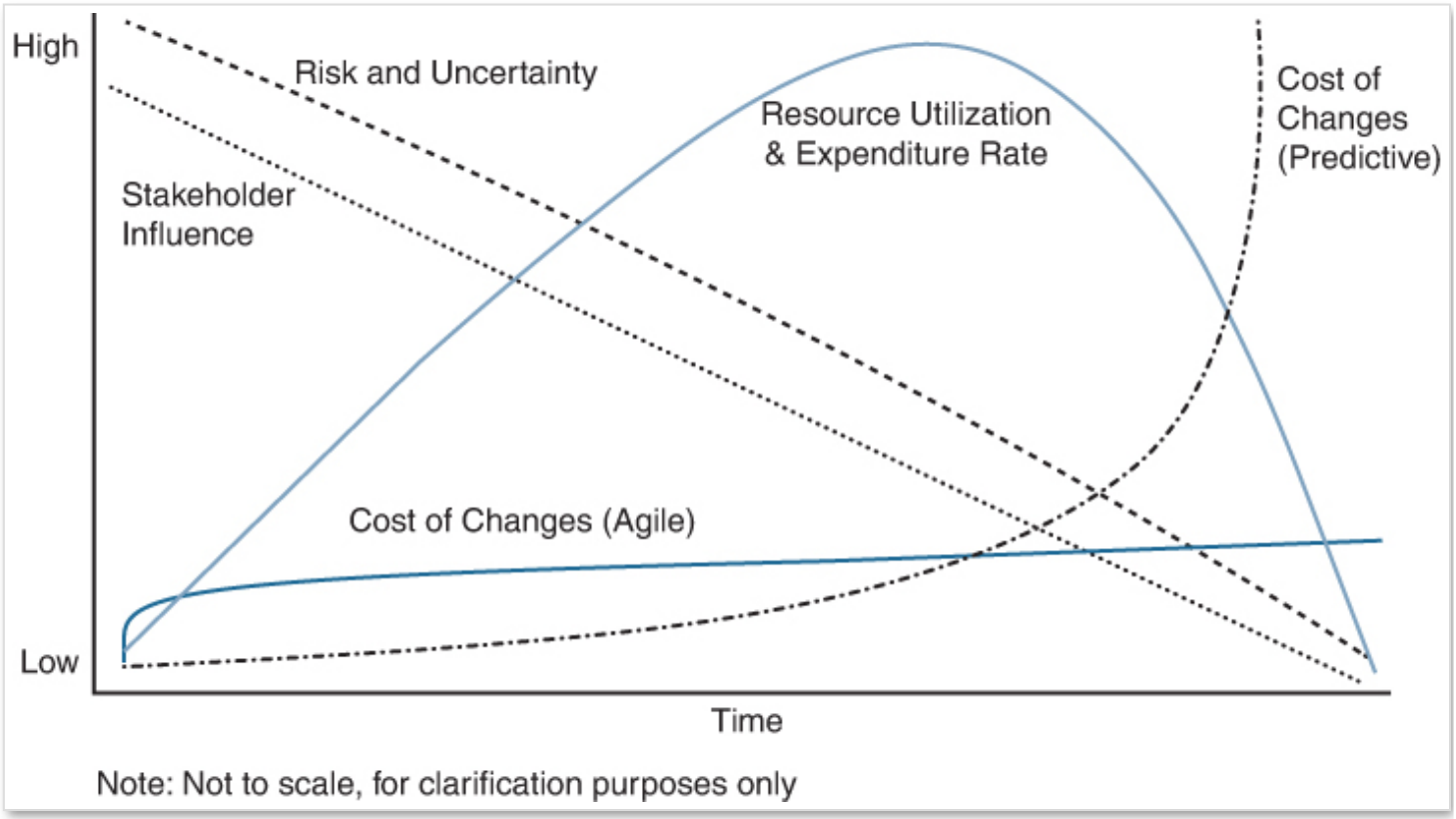

Figure 2-4: Project Life Cycle Characteristics

Knowledge Check

2.3 Project Environment

Exam Objectives

2. Process
    Establish project governance structure

Now that we've reviewed the key core concepts and project management academic fundamentals, let's discuss the environment that a project exists within, and the important aspects related to this that you'll need to know for the exam.

For starters, let's acknowledge the obvious: Projects do not exist within a vacuum. They operate within an organization for the purpose of creating value for stakeholders of that organization. Given that, there are going to be obvious influences on the project from both within the organization and external to the organization.

System for Value Delivery

Let's begin with a concept mentioned in Lesson 1: a System for Value Delivery. I would argue this concept is not really new from PMI; it was just spoken about differently in the past. PMI has always acknowledged most organizations have multiple projects in motion at any one time and that projects can operate standalone, as part of a program, or as part of a portfolio. And to clarify here, PMI defines a *program* to be a group of related projects and activities that are managed in a coordinated manner to obtain benefits not available from managing them individually. An example of a program would be a home construction company developing a new neighborhood. The neighborhood development is the program, and each home being built is its own project. In addition, PMI defines a *portfolio* to be a group of projects, programs, subsidiary programs, and operations managed together to achieve strategic objectives. Following our same home construction example, a portfolio would be all the new neighborhood developments the company has planned or underway for the next several years, and each neighborhood development is a program.

With the System for Value Delivery in the *PMBOK® Guide*, Seventh Edition, PMI is recommending that organizations should systematically ensure the strategic goals and objectives are focused on stakeholder value and that the management of organizational activities and resources, including operations, are aligned and focused on delivering these values. Specifically, PMI defines a System for Value Delivery as a collection of strategic business activities aimed at building, sustaining, and/or advancing an organization. Portfolios, programs, projects, products, and operations can all be part of an organization's System for Value Delivery.

As mentioned previously, PMI now has the proper priority in its guidance to practitioners that the focus is on the outcome and the value the project delivers. This is the ultimate measure of project success. And by *value*, PMI means the worth, importance, or usefulness of something.

Different stakeholders perceive value in different ways. Customers can define value as the ability to use specific features or functions of a product. Organizations can focus on business value as determined by financial metrics, such as return on investment (ROI) or customer acquisition metrics. There can also be societal value, which can include contributions to groups of people, communities, or the environment.

> **Note**
>
> PMI defines a *System for Value Delivery* as a collection of strategic business activities aimed at building, sustaining, and/or advancing an organization. Portfolios, programs, projects, products, and operations can all be part of an organization's System for Value Delivery.

While a System for Value Delivery involves both portfolio and program management disciplines, they are not part of the PMP exam. However, it is important to understand the different operating scenarios for a given project and where they fit in the organization delivery system. Figure 2-5 illustrates the three possibilities: standalone, part of a program, and part of a portfolio.

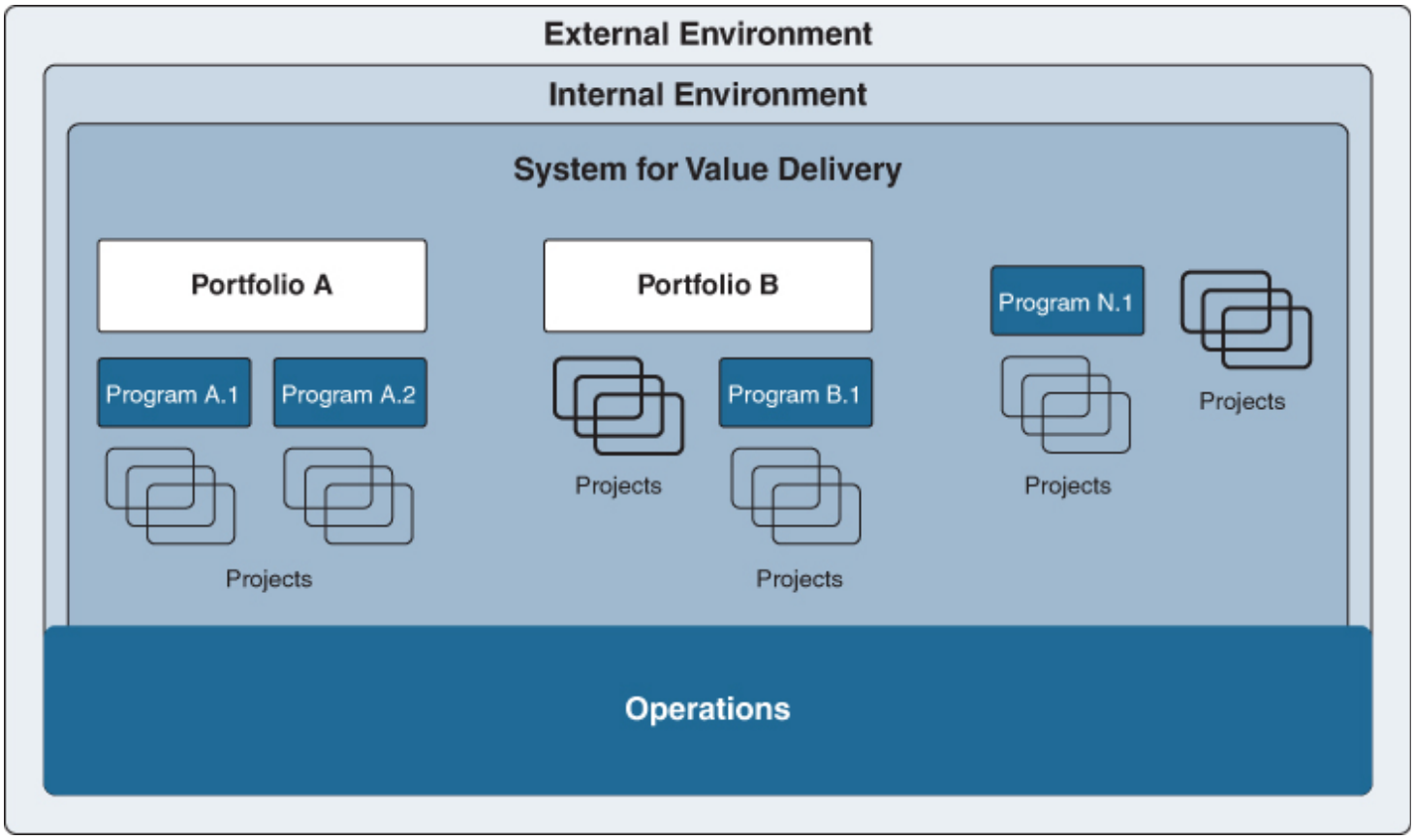

Figure 2-5: Example of System for Value Delivery

Stakeholders

As we mentioned in the previous section, projects exist to deliver value, and this value can be different for the various stakeholders impacted by the project. Although PMI now has an entire performance domain on stakeholder management, and we cover it in great detail in Lesson 5, "Stakeholder Engagement," as part of this lesson, we want to ensure there is baseline understanding of who the stakeholders are. In some work environments, there may be limited view on the stakeholder audience (it's not just the customers). In addition, your stakeholder audience can change and evolve as the project progresses through the life cycle. To help set this baseline, here's a list of typical stakeholders on a project:

- **Project Manager:** The person responsible for managing the project.
- **Customers:** The person or organization that purchases the work of the project. This can be the same as the project sponsor, but not always.
- **End User:** The person or organization that will receive and use the project's product or service.
- **Performing Organization:** The organization that performs the work of the project.
- **Project Team Members:** The members of the team who are directly involved in performing the work of the project.
- **Sponsor:** The person or organization that provides the authority and financial resources for the project.
- **Project Leadership Team (PMO, Steering Committee, Governing Bodies):** Project team members who are directly involved in managing or providing direction or governance to the project.
- **Suppliers:** The people or organizations that provide goods or services to the performing organization to help complete the work of the project.
- **Regulatory Bodies:** Public organizations or government agencies that are responsible for legally regulating aspects of a targeted activity. For projects, these regulatory bodies can require standards that must be adhered to for the project to complete successfully.
- **Operations:** The groups and activities within the organization needed to perform the functions of the organization on a daily basis.

Organizational Environment

As mentioned previously, projects operate within an organizational environment. The structure of the organization and project organizational maturity level of the organization will greatly impact how project managers will perform their responsibilities and what types of assets will be available to help them execute the project. Let's first look at the various organizational structures that exist and their impact on a project. The organizational structure impacts the relationship between operations and projects and, at a minimum, affects the following aspects of a project:

- The project manager's authority

- Resource availability
- Control of the project budget
- The project manager and administrative staff roles

Functional Organizational Structure

A *functional* organizational structure is a classical hierarchy in which each employee has a single superior. Employees are then organized by specialty, and work accomplished is generally specific to that specialty. Communication with other groups generally occurs by passing information requests up the hierarchy and over to the desired group or manager. Of all the organizational structures, this one tends to be the most difficult for the project manager because resources are not fully assigned to the projects, the project manager lacks authority to control work assignments and personnel, and usually has to work with multiple functional managers (FMs) to acquire resources. They are often more of a project expeditor in these environments.

Matrix Organizational Structure (Weak, Balanced, Strong)

A *matrix* organization is a hybrid organizational structure between functional and project-oriented organizational structures. Matrix organization types are further divided into weak, balanced, and strong matrix organizations. The difference among the three is the level of authority given to the project manager versus the functional manager to allocate and manage team personnel. A *weak* matrix gives more authority to the FM, whereas the *strong* matrix gives more power to the PM. As the name suggests, the *balanced* matrix balances power between the FM and the PM. In a *weak* matrix environment, the PM is more of a project coordinator.

Project-Oriented Organizational Structure

In a *project-oriented* organization, there is no defined hierarchy, and the work is project based. The PM has full authority to acquire resources, manage the project, and accomplish the goals and objectives of the project. This includes the ability to escalate problems and issues to the highest levels of the organization as necessary. This is the most idealistic working environment for a project manager, although the PM is also held fully responsible for the outcome of the project, whether positive or negative.

Table 2-8 summarizes the types of organizations, their project management attributes, and their advantages and disadvantages.

	Functional	Weak Matrix	Balanced Matrix	Strong Matrix	Project-oriented
Description	Traditional. The staff reports to functional managers.	The PM and FM share responsibility, with the FM having more authority.	The PM and FM share responsibility with each having equal authority.	The PM and FM share responsibility, with the PM having more authority.	Projects do not exist under functional departments. The PM generally has

					sole management authority.
Project Manager Role	Project Expeditor. Part time or limited.	Project Coordinator. Part time with increased involvement.	Project Manager. Full time.	Project Manager. Full time.	Project Manager. Full time.
Authority Level of Project Manager	Very low.	Low.	Low to moderate.	Moderate to high.	High.
Team Member Allocation	Part time.	Part time.	Part time.	Full time.	Full time.
Resource Availability	Very low.	Low.	Low to moderate.	Moderate to high.	High.
Advantages	The FM is held accountable for the staff and project.	The PM has some level of authority to manage the project.	The PM has increased authority to assign resources and manage the project.	The PM has further authority to assign resources and manage the project.	The PM has full authority to assign resources and manage the project.
Disadvantages	The PM has little or no authority.	Conflicts between the FM and PM can occur.	Confusion about who is actually responsible for what parts of the project may develop.	The FM may feel left out of the process unless the project manager keeps the FM informed.	The PM holds sole accountability.

Table 2-8: Summary of Organizational Structure Influences on Projects

Other Organizational Factors

In addition to the organizational structure, other organizational factors influence a project. Each factor can be favorable, unfavorable, or neutral. A project manager needs to take inventory of these factors, especially when planning a project. The common organizational factors that can influence a project include the following:

- **Process Assets:** The tools, methodologies, approaches, templates, frameworks, patterns, and other PMO resources that exist within the organization; part of the organizational process assets (OPAs).
- **Data Assets:** The databases, document libraries, historical metrics, and artifacts from previous projects; part of the organizational process assets.
- **Knowledge Assets:** The tacit knowledge existing within the project team members and other members of the organization.
- **Governance Systems and Documentation:** The organizational structures, systems, processes, policies, and procedures dictating how projects are established, managed, monitored, and controlled throughout the project life cycle; part of the organizational process assets.
- **Organizational Culture:** The vision, mission, values, cultural norms, leadership style, ethics, risk tolerance, and code of conduct that exist within the organization.
- **Security and Safety:** The policies and procedures pertaining to facility access, data protection, levels of confidentiality, and proprietary information.
- **Infrastructure:** The existing facilities, equipment, organizational and telecommunications channels, information technology hardware, software, and capacity within an organization.
- **Information Technology:** The software systems used to facilitate the work of the project, such as Project Management Information Systems (PMIS), scheduling software, team collaboration tools, configuration management systems, work authorization systems, and interfaces to existing systems.
- **Geographic Distribution of Facilities and Resources:** The physical locations of work facilities, team members, and shared systems.
- **Procurement Procedures:** The organization's approved suppliers and contractors, collaboration agreements, any constraints pertaining to procurement of resources, and expected timeline for procuring resources.
- **Employee Capabilities:** The general and specialized knowledge, skills, expertise, and competencies that exist within the organization's employees.

It is worth noting that PMI modified the way it covered the various internal and external factors within the project environment in the *PMBOK® Guide*, Seventh Edition, versus the way it had previously. In the *PMBOK® Guide*, Sixth Edition, the breakdown focused on organizational process assets (OPAs) and *enterprise environmental factors (EEFs)*. OPAs included the process, data, and governance procedure assets included in the previous list, and EEFs

included the other items in the previous list plus all the external factors covered later in this lesson.

> **Note**
>
> In the *PMBOK® Guide*, Sixth Edition, PMI categorized internal and external factors in the project environment as either organizational process assets (OPAs) or enterprise environmental factors (EEFs).
>
> OPAs include the process assets, data assets, and governance procedures mentioned earlier. EEFs include all external factors listed later in this lesson plus the other internal factors that are not part of OPA.

PMO

One aspect of the internal organizational environment that we want to highlight is the *Project Management Office (PMO)* because you are likely to see a question on the exam about it. Many organizations have found that project management is so effective that they maintain an organizational unit with the primary responsibility of managing projects and programs. The unit is commonly called the PMO. The PMO is responsible for coordinating projects and, in some cases, providing resources for managing projects. A PMO can make the project manager's job easier by maintaining project management standards and implementing policies and procedures that are common within the organization. A PMO can support project managers by

- Managing shared resources across all projects administered by the PMO
- Identifying and developing project management methodology, best practices, and standards
- Providing coaching, mentoring, training, and oversight
- Monitoring compliance with project management standards policies, procedures, and templates via project audits
- Developing and managing project policies, procedures, templates, and other shared documentation (organizational process assets)
- Coordinating communication across projects

There are three types of PMO structures, depending on the amount of influence and control the PMO has over projects:

- **Supportive:** The PMO supplies technical and administrative support and provides input to project managers, as needed. This type of PMO provides low control.
- **Controlling:** The PMO does not directly manage projects but does require compliance with organizational methodologies, frameworks, and tools. This type of PMO provides medium control.

- **Directive:** The PMO manages projects. This type of PMO provides a high level of control.

External Factors

In addition to the factors within an organization that can influence a project, factors external to the organization can also impact a project. As before, each factor can enhance, constrain, or be neutral to the project. Here are some common external factors to be aware of:

- **Market Conditions:** This group includes factors such as market competition, market share, brand recognitions, key seasonal sales periods, technology trends, and trademarks.
- **Social and Cultural Influences:** This group includes the political climate, customs, ethics, perceptions, traditions, public holidays, and events that are specific to the regions and cultures the project exists within.
- **Regulatory Environment:** This group includes national or regional level laws and regulations that impact data protection, security, business conduct, employment, licensing, or procurement.
- **Industry Standards:** This group includes applicable standards that impact the product features, quality, or workmanship. These standards also impact the production of the product and to the environment.
- **Physical Environment:** This group includes any factor impacting the working conditions, including the weather.
- **Financial Considerations:** This group includes currency exchange rates, interest rates, taxes, tariffs, and inflation.
- **Commercial Databases:** This group includes standard cost estimating and industry risk analysis databases.
- **Academic Research:** This group includes industry studies, publications, and benchmarking results.

Knowledge Check

2.4 Review All Key Topics

Review the most important topics in this lesson. Table 2-9 lists these key topics.

Key Topic Element	Description

Paragraph	Definition of project management
Paragraph	Definition of project
Table 2-1	Comparing Projects and Operations
Table 2-2	Comparing Projects and Products
Table 2-3	Summary Description of *PMBOK® Guide*, Seventh Edition, Functions Associated with Projects
Paragraph	Balancing competing project demands
Section	Key Skills of Project Managers
Table 2-4	Description of Project Management Process Groups
Table 2-6	Description of the *PMBOK® Guide*, Seventh Edition, Twelve Project Management Principles
Section	Project Life Cycle
Section	System for Value Delivery
Section	Stakeholders
Table 2-8	Summary of Organizational Structure Influences on Projects
Paragraph	OPA and EEF
Section	PMO

Table 2-9: Key Topics for Lesson 2

Glossary

enterprise environmental factors (EEFs)

Conditions, not under project team control, that influence, constrain, or direct the project.

organizational process assets (OPAs)

Plans, processes, policies, procedures, or knowledge bases specific to and used by the performing organization.

outcome

An end result or consequence of a process or project. It can include outputs, artifacts, benefits, and value delivered.

portfolio

A group of projects, programs, subsidiary programs, and operations managed together to achieve strategic objectives.

principles of project management

Foundational statements to guide the behavior of the people involved with a project.

product

A quantifiable component or result generated from the project.

program

A group of related projects and activities that are managed in a coordinated manner to obtain benefits not available from managing them individually.

project

A temporary endeavor to produce a unique product, service, or result.

project activity

The amount of time a project can be delayed without impacting an externally imposed deadline.

project life cycle

The series of phases that a project passes through from start to completion. It includes all the work for the project, not just the development approach.

project management

The application of knowledge, skills, tools, and techniques to project activities to meet project requirements.

project management knowledge areas

Identified areas of project management defined by knowledge requirements and described in terms of component processes, practices, inputs, outputs, tools, and techniques.

Project Management Office (PMO)

A management structure that standardizes the project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques.

project management process groups

Logical groupings of project management inputs, tools, techniques, and outputs. The groups are Initiating, Planning, Executing, Monitoring and Controlling, and Closing.

project management team

The members of the project team directly involved in project management activities.

project manager

The person assigned by the performing organization to lead the team that is responsible for accomplishing the project objectives.

project performance domains

Groups of related activities that are critical for the effective delivery of project outcomes.

project team

The set of individuals performing the work to achieve the objectives of the project.

stakeholder

An individual, group, or organization that may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project, program, or portfolio.

System for Value Delivery

A collection of strategic business activities aimed at building, sustaining, and/or advancing an organization. Portfolios, programs, projects, products, and operations can all be part of an organization’s system for value delivery.

value

The worth, importance, or usefulness of something. Different stakeholders perceive value in different ways.