Project Management Road Trip[®]

For the Project Management Professional[®]

Your Key to PMP Certification and Understanding the PMBOK® Fourth Edition

Alex Sherrer, PMP www.PMRoadTrip.com *Project Management Road Trip for the Project Management Professional: Your Key to PMP Certification and Understanding the PMBOK Fourth Edition*

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CHAPTER 2: PROJECT MANAGEMENT



This chapter first discusses what project management is about and the benefits it provides, and it next focuses on two distinct areas:

- The project manager's role, responsibilities and necessary skill sets.
- The organization's influence on project management and the project manager's role.



- □ Coercive power
- Economic value added
- \Box Expert power
- □ Formal power
- □ Functional organization
- \Box Future value
- □ Governance
- □ Internal rate of return
- □ Interpersonal skills

- Keywords
- □ Legitimate power
- □ Linear programming
- □ Management skills
- □ Matrix organization
- □ Methodology
- \Box Net present value
- □ Opportunity cost
- □ Payback period
- □ Project management office

- \Box Present value
- □ Project management
- □ Projectized organization
- □ Referent power
- □ Regulations
- □ Reward power
- □ ROI
- \Box Standards

2.1 Project management overview

Projects are investments of time and money, not only by the organizations but also by everyone involved in the project. Project management coordinates those investments to ensure they meet the business objectives on schedule and within budget. The PMBOK defines project management as the application of knowledge, skills, tools, and techniques to project activities to meet project requirements¹. The PMBOK lays out a framework that can be utilized for any type of project regardless of its industry, scope, or unique organizational needs.

Successful project management requires a mixture of art and science. The science involves the mechanics and hard skills, like those we'll be learning from the PMBOK. The art of project management involves leadership talents, people skills, and political acumen from the project manager. As we progress through our study of the PMBOK, we're going to discover just how broad the topic of project management is, and that it's really a combination of many different disciplines covering both hard and soft skills.

A true project "artist" knows which elements of science to use and when, but also demonstrates artistry in their leadership, stakeholder interactions, business awareness, building and confidence and trust.²

Iaian Parker, Project Management: Art or Science?



Effective communication is the first benefit project management provides, which leads to smoother running projects.

Since projects are performed by people, miscommunication is inevitable, and we can be sure that any project will have its share of misunderstandings involving responsibilities, priorities, scope, schedule, budget, quality, requirements, risks, constraints, and deliverables. At a minimum, poor communication

Leadership that doesn't incorporate clear communication and shared vision can cause costly time delays. Successful project management combines effective communication with shared vision and industry expertise.²

David Hightower, Houston Business Journal

provides

leads to stakeholders and the project team becoming frustrated, which wastes time and energy; at its worst, miscommunication can derail a project through cost and schedule overruns, moral problems, and a loss of organizational and customer support for the project. The project management processes in the PMBOK are constructed to maximize effective communication throughout the project, thereby increasing their success rate.

Good communication is itself a broad topic that we'll cover more in chapter ten, but in the project management context, it's generally about:

- soliciting needs and expectations from stakeholders
- exploring alternatives with the stakeholders and project team
- developing and relaying clear project objectives, milestones, statements of work, and plans for quality and risk
- communicating project status, performance, and forecasts
- managing issues and changes.

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Adaptability is the second benefit that project management provides by allowing to effectively respond to projects organizational, marketplace, customer, and changes. There's often a project misconception that formalized project management restricts change when in fact it embraces positive changes and only unnecessary changes. The restricts PMBOK framework has feedback loops built into every process that provides adaptability and allows changes to flow to every affected part of the project.

While the projects in some industries can still be managed by specifications defined up front in detail, most call for another approach. "Business projects today roll out in a different environment," Smith-Daniels says. Project stakeholders and customers have increased expectations ... As a result, while a team may be able to define rough value targets and specifications at the outset, if the team attempts to define the project outcomes in detail at the outset they will often find themselves wedded to a project concept that doesn't meet the true requirements.⁴

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Dwight Smith-Daniels, "High Impact Project Management", W.P. Carey School of Business Executive Education

2.2 Project manager's role

Since effective communication is one of the benefits that project management provides, it'll be no

As information technology becomes more and more enmeshed in every aspect of global business, we increasingly hear about the need for ... teams to gain a better understanding of the needs of business executives and to understand how best to communicate with them. This poses a major challenge. As more and more project managers gain a place at the table with business executives, [communication] skills become increasingly critical. ⁵ surprise for us that a project manager's first priority is communication. It's commonly estimated that a project manager spends 90 percent of his or her time performing some type of communication. But communication is only the tip of the iceberg because a project manager's role is becoming increasingly complex and varied. The project manager is the only one with the most holistic view of the project,

Patricia Davis-Moffet, PMBoulevard.com

and so project managers often have to fulfill many unnamed roles, including:

- the visionary
- relationship manager with the customer, stakeholders, organizational management, and the project team
- leader, mentor, and coach
- change agent
- project public relations manager
- facilitator
- marketing manager

- arbitrator
- negotiator
- business manager
- accountant
- entrepreneur
- liaison
- clarifier
- gatekeeper
- coordinator

Project manager's responsibilities



The PMBOK establishes core responsibilities for the both project team and project manager, though the project manager is ultimately responsible for seeing that these are carried out. They are identifying requirements, establishing objectives, balancing project constraints, developing the project plan, and maintaining professional ethics.

Identifying requirements: The project manager must make sure that the needs and requirements have been identified and validated with the stakeholders. Not every stakeholder will be able to explicitly outline what his or her requirements will be, so it is the project manager's job is to ensure that nothing is overlooked, everyone has been heard, and that the requirements have been correctly interpreted and will lead to the desired objectives.

Establishing and communicating clear and achievable results: The project manager must make sure

that all goals, objectives, and deliverables are clearly articulated, understood by all, and that the results can be achieved. It does no good to have goals that are vague, can't be measured, are misunderstood, or that are unrealistic. An objective framed as "increase call center response times" not specific. A measurable and clearer goal would be "technical support personnel will achieve a 90% first-call resolution rate within six months while maintaining or exceeding a 98% caller satisfaction rate as determined by post-call surveys."

The reason most people never reach their goals is that they don't define them, or ever seriously consider them as believable or achievable. Winners can tell you where they are going, what they plan to do along the way, and who will be sharing the adventure with them.⁶

Denis Waitley, motivational speaker and author

Visitask, a project management training company, suggests using the acronym POWER to make sure that goals are properly formed and stated ⁷:

Pinpointed: The goal should be focused, clear, and understood by everyone.

Owned: The goal should have elements that everyone can buy into.

Well-defined: The goal should be framed in a way that can be measured.

Energizing: The goal should generate excitement and fulfillment for those working towards it.

Resource Framed: The goal should include what resources (time, money, personnel) that'll be required to achieve it.

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SMART is another common acronym for developing solid goals:

Specific: The objective needs to be clear, and answer the questions of who, what, where, when, which, and why.

Measurable: The success criteria of the goal need to be explicit as does its time frame.

Attainable: Complex goals may need to be broken down into manageable components.

Realistic: Goals have to be realistic within the time constraints.

Tangible: Goals should have elements that people can relate to and internalize. People with an ownership stake in goals are more motivated to achieve them.

Balancing the competing demands for quality, scope, time, and cost: Project constraints restrict options. How much time, money, or work that can be accomplished affects the quality of the deliverable

(how it will be received by the customer). Scope, time, and cost are often referred to as the triple constraint. Since the project manager is the one who has the best overall picture of the project, he or she must make sure that there is a reasonable balance between project constraints and project objectives. For example, each stakeholder requirement increases the scope, time, and money the project will need, and may make the project extend beyond hard deadline dates. Likewise, if cost is a limiting factor, the

As the project manager, it's your job to educate your sponsor and other key stakeholders regarding the triple constraint concept [scope, time, and cost] and to manage them effectively. Anyone can understand the triple constraint concept; however, managing the triple constraint successfully is the hard part.⁸

Denise DeCarlo, PMP, The Triple Constraint – Friend or Foe?

scope may have to be trimmed while not impacting the quality of the deliverable.

Tailoring the specifications, plans, and approaches to fit the different concerns and expectations of the stakeholders: In collaboration with the project team, the project manager must determine which project management processes are necessary to meet the project objectives, and to what level of rigor the processes will be applied. The project manager is responsible for facilitating the identification of alternate approaches to reach the project objectives, as well as negotiating, making compromises, and resolving conflicts over objectives and deliverables with stakeholders.

Adhering to the PMP Code of Ethics: Project Management Professionals[®](PMPs) and members of PMI must adhere to its ethical code. A project manager must be truthful, keep his or her word, and maintain the highest integrity. Without trust, a project manager will get nowhere with the project team and will not have a professional relationship with stakeholders. One of the most important things a project leader must remember is that his or her actions, and not words, set the modus operandi for the team. Good leadership demands commitment to, and demonstration of, ethical practices. Creating standards for ethical behavior for oneself and living by these standards, as well as rewarding those who exemplify these practices, are responsibilities of project leaders... In other words the leader "walks the talk" and in the process earns trust.⁹

Timothy Barry, Top 10 Qualities of a Project Manager

Ethical and professional responsibilities



Ethics involves the understanding, resolving, and justifying moral values, issues, and judgments. In addition to ethical practices that may be required of us for professional civic professional disciplines. or organizations, industries, or trade groups, a member of PMI or a Project Management Professional[®] is required by the Project Management Institute to abide by its Code of Ethics. found at http://www.pmi.org/PDF/ap pmicodeofethics.pdf.

For the PMP exam, we'll need to be able to apply the Code of Ethics to moral dilemmas, many of which, just as in real life, may have no easy answers. As project managers, we should always take the moral and ethical high ground regardless of what the impact may be on us personally.

Ensuring integrity and professionalism

Ensuring integrity includes honesty, honoring commitments, keeping confidential information under wraps, avoiding real or perceived conflicts of interest, treating people and resources respectfully and fairly, maintaining objectivity, and not accepting inappropriate compensation or gifts for our project management work. Our words and actions should always be governed by the highest moral principles. This can often mean difficult choices, including disagreeing with senior management. Even if the choice looks like it would benefit the project, if it's not open, honest, and direct then it's the wrong choice for us to make.



Adapted from PMI Today, December 2007

Our ethical responsibilities are:

- Not compromising our integrity through real or perceived conflicts of interest
- Keeping confidential information under wrap and fully abiding with confidentiality agreements
- Providing honest and accurate information to stakeholders, customers, the project team and management

- Not accepting inappropriate gifts or compensation for our project management work
- Dealing with people in a respectful and direct manner
- Reporting to PMI unethical behavior of PMI members or PMPs, as well as responding promptly and honestly to inquiries from PMI investigating unethical behavior
- Honoring commitments, deadlines, and promises we've made
- Maintaining a proper motive behind our actions and decisions; not letting our personal gain influence our actions and decisions

We must always abide by the laws of the governments where work is being performed and by the policies of the performing organization. International situations present additional challenges because we must

also respect cultural differences, so this means that when we're presented with something not normally done in our home country, we must first determine whether it's only a cultural difference or if it's in fact unethical or illegal. If it's a custom of the country where work is being performed, but it is not considered unethical and isn't illegal

Fundamental to all customer relationships is a foundation of integrity, ethics, and trust. Integrity implies honesty, morals, values, fairness, adherence to the facts, and sincerity. This characteristic is what anyone in the organization and the customer (internal/external) expect and deserve to receive.¹⁰

Bruce T. Barkley & James H. Saylor, *Customer-Driven Project Management*

within that country then we should respect the cultural difference.

Contributing to the project management knowledge base

In whatever avenues are open to us, we must stay engaged in and further the project management profession. It could be writing a newsletter article, providing group or one-on-one training to others, performing a speech, giving a presentation, or participating electronic community forums about project management topics.

Enhancing individual competence and applying professional knowledge

We're expected to continually grow our project management skills, professional abilities, and the skills required of our industry through PMI chapter meetings, seminars, webinars, self-directed learning, or continuing educational opportunities. Project management encompasses such a wide range of topics that there will never be shortages of skills we can brush up on.

Balancing stakeholder interests

Maintaining effective stakeholder relationships can be one of the most difficult activities in project management because their interests are often conflicting with each other and with the constraints the project must operate within. And some stakeholders wield greater power than others. It's our responsibility to first accurately identify all stakeholders, secondly to understand them and their motives, and thirdly to objectively balance their interests. We balance their interests by being respectful of differences among them, treating them with equal respect, and being fair, open, and honest with them. If despite all efforts a conflict between stakeholders cannot be resolved then our best choice is to resolve the conflict in favor the customer.

Interacting with team and stakeholders and respecting differences

Being respectful and mindful of cultural differences is of prime importance. One of the overriding concerns here is that we don't succumb to ethnocentrism –believing one's own culture is better than another's culture. This also involves different cultural variations on work ethics that must be respected. While no one is asking that slackers be tolerated, different people place different values upon work, and we should be extremely careful that we not try to force our own personal work ethics upon others.



Project manager's skills and characteristics

Project manager's skills and characteristics

1	Knowledge
I	Performance
1	Personal

Knowing the PMBOK is not enough to be a good project manager. Project managers will need to develop and continually improve their knowledge, performance, and personal effectiveness in several key areas.

PMBOK knowledge

The PMBOK describes knowledge specific to the project management discipline. We must understand the best practices and terminology contained in the PMBOK and how the process groups, knowledge areas, and project management processes interact.

Starting in the next chapter, we'll begin looking at the PMBOK tools, processes, and techniques in great detail. But before we do, it's worth a few moments of our time to discuss the philosophy behind the PMBOK. The PMBOK is a collection of best practices and a lexicon that gives the project team a standard terminology and a set of processes that can be applied to individual projects to increase the chances of success. The PMBOK processes are *generally* accepted as best practices for project management across all projects and all industry groups.

The PMBOK is not intended to be all inclusive. On many topics it provides only an overview of the elements required for successful project management, but it doesn't tell us specifically how the processes, tools, and techniques should be implemented. There are many topics, such as quality, that are discussed only broadly. Topics not covered in detail should not be considered unimportant. Many of these topics are applicable beyond the project management context and can differ from industry to industry, and there's a wealth of information readily available in other disciplines that we as project managers should delve into. We should know that we will encounter questions on the PMP exam whose answers are not solely found in the PMBOK.

The PMBOK processes are applicable to all projects and all industries, but the level of detail applicable to any given project will vary. It is up to the project manager and the project team as to which processes are applicable for a particular project. Depending upon the project, we're going to find that some of the PMBOK processes do not require a great level of detail or are not applicable to a particular situation. A decision to skip or scale back a process should be deliberate and based on experience. An alternative to skipping a process might be to perform it only at a high level. By approaching a process this way, we might find that we've overlooked something that warrants greater detail, and if we don't find anything then at least we've validated our decision. There are also numerous processes whose outputs serve as inputs to subsequent processes, so entirely skipping a process can have negative repercussions to later steps.

One of the most surprising things for people who've taken the PMP examination is that experience alone didn't prepare them for the exam material. So for the PMP exam, we should approach the processes as they are laid out in the PMBOK and assume that every process is required and not be tempted to skip over a topic without having a full and solid understanding of the process.

Application knowledge

Application area knowledge is expertise in specific disciplines that may not be required for all projects. It includes industry expertise, such as financial services, construction, retail, insurance, medical, manufacturing, and so on. Application area knowledge is also technical expertise, specialized management expertise, or functional expertise, such as accounting, manufacturing, or transportation/logistics.

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These are most often outside the project manager's control, but it's important for us to be aware of these and how they'll impact our approach, planning, and execution of the project. Many of these items will also be identified as constraints during the planning processes since they'll restrict what options are available to the project.

Cultural and Social:

The culture and social environment of the people involved needs to be understood. This includes the economic, demographic, educational, ethnic, religious, and any other important characteristics of the stakeholders. All of these factors can have a bearing on how the project is approached, what alternatives are available for consideration, the work schedule, the risks involved, the depth of the communication needs, and what stakeholder issues might need managed.

International and Political:

The customs and regional laws where work is being performed or where the project will have impacts need to be known. If applicable to the project this would include local or regional laws and political climate. Time zone differences and holidays have been mentioned previously, but other factors could be the communication and travel logistics, work schedules, and technical infrastructure.

Physical Environment:

If the project will have an impact on the physical surroundings, the project manager and team members will need to know about the local ecology, geography, and environmental concerns. This is especially true if the project is likely to encounter stakeholder opposition or will face environmental regulatory concerns.



General business skills are critical for project managers because without them a project manager has virtually no chance of success in leading a project.

2

Standards and regulations:

The project manager must be able to differentiate between standards and regulations especially for the industries and disciplines involved in any project. A **regulation** is a government-imposed requirement, usually backed up by legal ramifications or other punitive measures for failure to comply, while a **standard** is a practice that is commonly recognized within an industry and issued by an entity, such as a trade group.

Other general management skills that are likely to be needed are:

- Accounting procedures and financial management: General financial analysis, economics, accounting procedures, general ledger, and bookkeeping
- Commercial and contract law: Laws that establish the framework for business-to-business transactions
- Health and safety practices: Any applicable industry-specific policies, best practices, or regulations relating to personnel or environmental health and safety
- Information technology: Computers, business and industry-specific software, information management, communications technology
- Logistics and supply chain: Inventory, warehousing, transportation, and shipping
- Manufacturing: Industry-specific manufacturing and production processes

Organization is the ability to manage time, people and processes in such a way that everything is done in the best order, by the best qualified worker, in the most efficient time frame.¹¹

C.S. Clarke, Ph.D., The 10 Top Skills for Success in Business or Career

- Marketing and sales: Advertising, selling, customer relationship management
- Organizational policies and theories: General business best practices and organizational management processes
- Personnel administration: Applicable labor laws, compensation policies and procedures, disciplinary action procedures, performance reviews, motivational techniques
- Purchasing and procurement: General purchasing procedures, statements of work, bid and evaluation procedures, purchasing contracts
- Strategic, tactical, and operational planning: Short- and long-term planning skills, program and portfolio management

Interpersonal skills



Project managers need strong interpersonal skills to be effective. Just as project management is a mixture of art and science, so are these interpersonal skills: leading, communicating, negotiating, problemsolving, and influencing.

Leading:

A good leader does far more than just directing people in the tasks that need done. *Leading* is fundamentally about good interpersonal relationships and interaction. A good leader is optimistic, persistent, builds relationships, motivates, encourages, inspires, empathizes, generates trust and loyalty, and fosters creativity and participation from the project team.

[Project managers] have to lead by example. A project manager has to be in the trenches helping the team to get the work done... One of the things that has made me successful is that this is how I manage: I am a resource for the team members. My job as a project manager is to make their jobs as smooth as possible. Not only do I manage the project, but I also attempt to do everything I can to support the people on the project team. When you do that, people will do everything they can to support you...¹²

2

Tom Robinette, Director of Infrastructure, Paragon Consulting Service

Communicating:

Since so much of a project manager's time is

involved in a broad range of communications, excellent written and verbal communication skills are extremely important. And since communication is not limited to simply conveying information to others but also correctly interpreting what's needed, project managers must have great listening skills.

Negotiating:

Conflict is both necessary and required. We often associate conflict negatively, but healthy conflict involves consideration of other's opinions and viewpoints and a respectful discussion between all parties. The project manager will often have to facilitate these discussions and serve as an arbitrator, so we must

Negotiators are detectives. They ask probing questions and then shut up. The other negotiator will tell you everything you need to know - all you have to do is listen. Many conflicts can be resolved easily if we learn how to listen. The catch is that listening is the forgotten art. We are so busy making sure that people hear what we have to say that we forget to listen.¹³

Ed Brodow, motivational speaker, Ten Tips for Successful Negotiating

also have good negotiating skills. Project managers will usually have to negotiate with functional or resource managers for team assignments and prioritization and will also play a central role between stakeholders and the project team, so being able to negotiate conflicts over objectives, details, schedules, and budget between

stakeholders is important.

Problem-Solving:

If communication is the first priority of a project manager, then problem-solving may very well be his or her second. We must have great problem-solving capabilities, including correctly identifying a problem and its root cause, finding alternatives, and decision making. Problem solving, systems thinking, critical thinking, and creativity go hand in hand. We improve our problem-solving by looking at the whole picture, being open-minded, questioning our assumptions, and being logical and objective in our thinking.

Influencing:

We also have to be able to exert influence. This not only includes motivating others to get tasks completed, but can involve influencing the decision-making process within the organization, stakeholders, and the project team. Influencing is not manipulation --it is instead persuasion by presenting logical, rational, and objective facts and arguments. It's always in the project manager's best interest to be ahead of the decision making process, anticipating problems or issues and influencing the direction taken. A project manager should be proactive not reactionary.



Bases of power

In order for us to fulfill our responsibilities as project managers, we'll need some level of authority and power. There are different bases upon which our power can reside, and it's helpful at this point of our discussion to understand where power can be derived from. These five bases of interpersonal power were proposed in 1959 by French sociologists French and Raven¹⁴.

Legitimate: Also known as formal and normative, this type of power comes from an internalized belief that through another's position, title, or hierarchy, that person has a superior level of power. But even though people may comply based on their beliefs in legitimate power, they may not feel a sense of commitment in doing so. There are times that formal power is needed, but it's not always the best source of power to rely on in all situations with one exception. We'll talk more about the project charter in chapter four, but it's the document that formalizes the project and

Most everyone tends to associate power with the dark side of human nature and with being autocratic and dictatorial. [But] think about power as the energy we use in our daily lives. It comes to us as wind, mechanical, solar, nuclear, electrical, combustion, steam, hydraulic, animal, and good old muscle power. Throughout the ages we have used these different forms of power to make things that are stationary move in the direction we want them to move...Simply put, power is the capacity to influence the thought and behavior of other people. Just as there are many forms of energy used in our daily lives, there are several forms, sources or bases of power you can draw upon to influence the motivation, behavior and thoughts of others.¹⁵

Frank Petrock, Ph.D., Leadership & The Bases of Power - Part I

names the project manager. The premise behind the charter is that it legitimizes and formalizes the authority of the project manager, and as we'll see in chapter four, a project manager without a charter is someone without any real authority.

- **Expert:** As its name implies, expert power comes from one's expertise, knowledge, talents, skills, or experience. Expert and reward bases of power gain stronger long-term respect from the team.
- **Reward:** This refers to the ability to bestow upon others some form of desired reward, whether it's additional pay, bonuses, gifts, promotions, or wider responsibilities. Reward, along with expert power, is one of the preferred bases of power because it can be a strong motivator. However, when used too often or too rigidly, people may strive too hard for the rewards which can lead to quality issues or unethical means to meet the quotas.
- **Coercive:** Coercive power comes from the ability to apply negative influences onto others, like reprimands, demotions, terminations, or other punishments. Though there are times that this form of power is needed for short-term compliance, it is the least effective because over time it will lead to resentment and become less effective.
- **Referent:** Referent power comes from one's charisma, celebrity or hero status, and his or her ability to develop loyalty to him or her from others. Managers with referent power often lead by example, and their employees respect and try to emulate their manager's behavior. Referent power at its root is based on trust, and this may take a considerable amount of time to develop, so it may not be practical in short-term projects.

2.3 Organizational influences on the project manager's role



Factors external to the project itself affect the project manager's role, control, and level of authority. And these structures can impact how the resources are allocated to a project and what decision-making authority the project team has. Regardless of the organization or situation, the project manager's professional obligations remain the same.

The **culture** of the performing organization and other groups or companies involved will affect both the project manager and the project, so it's important to know and understand the cultures involved. Organizational or corporate culture is the collection of values, beliefs, assumptions, and behavior that a group holds. Every group has a culture, and its influence can range from weak to strong, and there can even be group subcultures within the same organization.



But culture is not easy to identify because many of its elements are invisible and unspoken, nor is culture easy to change. An important work by Edgar Schein, an expert in this subject, theorizes that organizational culture is made up of outer levels that are fairly visible and easy to identify, working inward to core layers that are values and fundamental assumptions, which an outsider to the organization would not see right away.¹⁶ It is the inner layers that are the true culture of the organization.

Among many other things, culture thus affects an organization's comfort with risk, innovation, change, its strategy, its unofficial reporting structure and power relationships, loyalty, and work ethics. All of these factors can have unexpected repercussions on a project if the

project manager and team aren't aware of them and don't adjust their project approach accordingly and properly manage cultural effects.

Organizational structures



The hierarchical structure of the performing organization directly impacts the project team and the level of authority a project manager has. We need to understand this effect and utilize our interpersonal and leadership skills to successfully manage a project in whatever organizational structure is present.

One of the first steps newly assigned project managers should take is to determine how much authority he or she has within the organization for managing the project. The perfect opportunity to address this

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question is with the sponsor while establishing the project charter. Once determined, the project manager needs to develop a strategy for fulfilling his or her responsibilities as project manager with that authority. Organizational reporting structures can be categorized into three basic types: **functional**, **projectized**, and **matrix**, along with one special type called **composite**.

Functional

This structure is based on departmental, specialty, or business lines, such as accounting, marketing, sales, customer service, information systems, and so on. This is the most common organizational structure, and it's where each person reports to one superior and functional managers are in charge of personnel.

Being organized along functional lines has its benefits. From a business and human resources standpoint, it's usually the most cost-effective and the easiest to manage. Functional managers are responsible for their lines of business and employees, and their direct reports receive feedback and performance criteria directly from their supervisor or manager, so employees have a solid sense of belonging and loyalty to their business unit.

But there are drawbacks to a functional organization. They can lean toward bureaucracy as



decisions must be made and approved through subsequently higher levels of management. Employees may also become "siloed," or focused primarily on their functional unit and not on enterprise-level issues. In projects involving team members across different departments, getting resources allocated can be difficult for the project manager because project team members will rarely be devoted full-time to a project. And since the project manager is focused on the priorities of the project and the functional manager is focused on the needs of his or her functional unit, it can be difficult to reconcile the two competing objectives. The project manager is also likely to face difficulties in motivating performance since the personnel are most loyal to the functional manager, not the project manager.

The most important drawback for us to keep in mind is that *project managers have the least amount of authority and least amount of control in a functional organization*. Project managers in a functional organization are often referred to as project leader, project coordinator, project administrator, or project expeditor.

Project managers have the same responsibilities and professional expectations in a functional organization, so these drawbacks do not imply that functional organizations cannot successfully manage projects. But rather that the project manager is more likely to have to rely heavily on his or her interpersonal skills and on power bases other than formal to negotiate for resources and priorities, address risk, quality, and procurement issues, and work harder to motivate the project team members.

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Functional Organization

Executives

Projectized

Projectized organizations are the opposite of a functional structure. A projectized reporting structure is centrally based around projects, so reporting structures fluctuate based on those projects. Projectized organizations derive their revenue from providing services to others, so common projectized organizations include accounting, architectural, construction, engineering, and other professional services firms, but they aren't necessarily limited to these examples. Members of a projectized organization report

to a project manager and there's likely a **project management office** which will serve as a resource manager and will itself have full- or part-time support staff.

Projectized organizations will still usually have some management structure and staff based on business units or departments, but these are usually operational in nature and provide only support services to the business or to the project organization.

From a project manager's perspective, he or she has the most authority and full control over resources in a projectized organization.



2



Projectized structures also lead to greater productivity among the project team since they are not likely to be distracted by other priorities or non-project events, and project communication is strongest in a projectized structure. But projectized organizations also present management challenges. Since team members will report to several different project managers over the course of time, it can be difficult to provide overall performance feedback, and because of the temporary nature of projects, the project manager must work hard to develop loyalty and trust among the team. And since these organizations generally have a strong project culture, it can be difficult for employees to feel part of the larger enterprise organization.

Matrix

Matrix organizations are a mix between functional and projectized organization, and they may range from a weak to a balanced to a strong matrix. Matrix organizations are still vertically arranged by departments, business units, or expertise. But they have an additional alignment by projects, products, or similar classification that stretches beyond the vertical alignment. This second alignment can either be horizontal (usually seen in a weak matrix structure) or vertically (usually seen in a strong matrix structure).

In a **weak matrix** structure, the project manager has very little authority, particularly in performance and personnel issues involving the project team because team members still report to their functional manager first and to the project manager second. This situation closely resembles what a project manager faces in a functional organization, and he or she is most likely serving as project coordinators. The project manager faces the same obstacles in a weak matrix as in a functional organization, so resource availability, prioritization, loyalty, and performance are likely obstacles.

In a strong matrix, the project managers have a much greater authority over the project team, and team members report first to the project manager and secondly to the functional manager. But the functional manager is still responsible for the human resource administration of his or her direct reports. The project manager may also have full- or parttime support staff available. For many project managers, this could be considered the best structure because it enables him or her to have a high



level of control over the project team but not have to get bogged down in personnel administration.

A **balanced matrix** is somewhere between a weak and strong matrix, and there are no definite indicators as to what constitutes a balanced matrix because there are many possible combinations an organization could make. But the overriding goal of a balanced matrix is to provide the project managers with sufficient authority to successfully manage projects while leaving the functional manager and its structure in place for all of the benefits it provides.

A matrix structure, whether weak, balanced, or strong, provides better managerial benefits than does a functional structure. First, the

project manager has a greater amount of authority and control over project decisions. Second, matrix structures are usually more conducive to information flow among the team, and third, the project staff has

The matrix allows companies to leverage vast resources while staying small and task-oriented. The matrix encourages innovation and fast action...Conversely, the matrix can be complex and unpredictable. It violates the traditional principles of authority, tending to breed ambiguity and conflict.1

Thomas Sy and Laura Sue D'Annunzio, Challenges and Strategies of Matrix Organizations

more of a chance toward developing into a true team than they would in a functional structure.

But as is often the case with hybridized solutions, a matrix structure inherits the deficiencies of both functional and projectized structures. The most important drawback is that rules, ownership, and accountability can be ambiguous not only among project team members but also between project managers and functional managers.

Matrix Organization

CHAPTER 2: PROJECT MANAGEMENT

Composite

A composite structure is not a permanent shift in the organizational structure, but only a temporary shift for a particular project. For example, a functional organization may choose to structure a mission critical project as if it were projectized, giving the project manager full control of the project and the resources necessary to accomplish it.



2

	Functional	Matrix		Projectized	
		Weak	Balanced	Strong	
Project Manager control and level of authority	None to low	Low Low to moderate		Moderate to high	High to total
Personnel availability for project work	Dow Low to moderate Low to moderate Moderate to high		Moderate to high	High to total	
Resources are controlled by	Functional manager	Functional manager	1. Functional manager2. Project manager2. Project manager2. Functional manager		Project manager
Budget is controlled by	Functional manager	Functional manager	1. Functional manager 2. Project Manager	manager Ianager Project manager Project ma	
Primary decision Functional managers Functional managers 1. F makers		1. Functional managers 2. Project manager	1. Project manager 2. Functional managers	Project manager	
Role of project manager isPart-timePart-timeFull-time		Full-time	Full-time	Full-time	
Is "Project Manager" a titled role?	Project nager" a titled No Rarely Often		Yes	Yes	
Employees reside in	Functional departments	Functional departments	1. Functional departments 2. Project teams	1. Project teams 2. Functional departments	Project teams

General Characteristics of Organizational Structures

	Functional	Matrix	Projectized
PROS	Reporting structures are easily understood.	Gives employees greater chances to enhance skill sets into other areas.	Project manager has the most control over entire project, including budget and personnel decisions.
	Loyalty is strong to functional manager and department unit.	Improves awareness of enterprise- level processes.	Very productive as project team members are usually solely focused on project-level tasks.
	Usually the most cost-effective organizational structure.	Information flows easier through matrix teams.	Team is most likely to be buffered from external distractions and priorities.
	Employees are highly specialized in their respective areas.	Functional manager is normally in charge of Human Resources/personnel administration, which can free project manager from these tasks.	Long-term growth and professional development can be difficult to foster since team members move from project to project.
			Strong project communication channels.
CONS	Can be difficult for employees to see beyond their own departments.	Reporting structures can be difficult to understand.	Can be difficult to develop loyalty among employees to project team or project manager.
	Decisions can tend toward bureaucracy as they must be made by functional managers.	Reporting structures can lead to conflict and ambiguity.	Not a viable alternative for most businesses.
	Project manager has little authority.	Performance of individuals can be more difficult to ascertain.	Can lead to weak enterprise-level commitment from employees.
	Organizational structure is inflexible.	Increases administrative efforts and costs.	
	Not generally customer-focused.	Can make middle management less aware of activities because they may not be directly involved in project decisions.	
	At the project level, a lack of ownership and accountability can lead to problems since neither functional managers nor project managers are in "control" of project.		
	Power struggles between teams, project managers, and functional managers are likely.		

Pros and Cons of Organizational Structures



Whether in name or function, some organizations have a **project management office** (PMO) that provides leadership, oversight, or coordination of projects and resources. PMOs may have a direct role along with the project manager in deciding exactly how particular projects are to be managed. PMOs should always be considered as stakeholders of all projects unless it directs otherwise. PMOs will usually provide professional resources, such as procedures, policies, templates, software, tools, coaching, and mentoring to the project management team.

With or without a PMO, organizations usually have existing methodologies in place. A **methodology** is a disciplined and documented approach to a process, such as quality, continuous improvement, portfolio management, or project management. For example, a project management methodology would provide the specific steps, procedures, templates, reporting requirements, purchasing procedures, risk processes, and accounting rules for projects. Any organizational methodologies are likely to influence how the project is managed.

It will be up to us and the project management team to develop the governance approach for managing the project. **Governance** is simply a detailed description of exactly how the project will be managed and what methodologies will be followed --sometimes called a governance document. In addition to the organization's requirements for project management, any other departments, business units, or professional disciplines involved in the project may also have unique. For example, business analysts may have a methodology based on the BABOK® (Business Analysis Book of Knowledge). When other methodologies exist, the project management team needs to honor them as it develops its own procedures for how the project will be managed.

It's beyond the purpose of this book to go into specific methodologies, but a list of common project management and related methodologies we might encounter is included here for a quick reference.

Project Management Frameworks and Methodologies	Software Development/Build Methodologies
Method 123 [®]	Agile
PRINCE2/PRINCE	Crystal
PMBOK [®]	Extreme Programming (XP)
Rational Unified Process (RUP®)	Joint Application Development (JAD)
TenStep [®]	Lean Development (LD)
Unified Project Management Methodology (UPMM®)	Rapid Application Development (RAD)
	Scrum
	Waterfall (a.k.a. Traditional)
Enterprise Project Management Maturity Models	
PMI: Organizational Project Management Maturity Model (OPM3 [®])	Quality Management Frameworks and Methodologies
Harvard: Balanced Scorecard [®]	Lean
ESI International: ProjectFRAMEWORK	Six Sigma [®]
PM Solutions: Project Management Maturity Model (SM)	Total Quality Management

CHAPTER 2: PROJECT MANAGEMENT



Not all potential projects can be undertaken by an organization. There is a limit to the time, money, and resources an organization can devote to new endeavors, so potential projects must undergo some form of review before they're accepted into the organization.

Project selection methods generally occur outside of the project management framework and will usually involve some type of approval and review process from organizational management, a steering or selection committee, or a project management office. Some organizations may approach the selection process very formally while others are more ad-hoc, and the approval process may be different from project to project depending upon its characteristics.

If we consider that at this stage a project manager cannot yet have been named if a project doesn't yet exist within the organization, we might wonder why project selection methods are important for project managers to understand? The answer is two-fold; first, our opinions may be requested during the selection process; and second, it's not uncommon for a project to be informally initiated to determine its viability, and we may be called upon to provide various types of benefit and cost analysis.

Though there are always other factors involved, money is usually one of the most important. An organization has to determine if the money it invests into a project is worthwhile. Below are some of the most common mathematical approaches used to evaluate projects. For the PMP exam, it's important for us to know payback period, opportunity cost, and the basic ROI formula, and we'll need to know enough about all the methods to make comparative judgments between projects on the exam.

Payback period

The payback period tells us how long it will take to recoup the expense of the project, so a shorter payback period is better. It's often used in conjunction with other sophisticated formulas, but at its simplest, the payback period is calculated using the project costs plus any ongoing costs as a result of the project compared to any savings or increase in profits the project's product will provide.

For example, a project to replace an outmoded process is expected to cost \$80,000 and require \$10,000 a year to maintain. But it's expected to result in a \$50,000 annual savings. The payback period for this project will be two years.

	Costs	Savings	Net
Project	\$80,000	\$0	\$80,000
Year 1	\$10,000	(\$50,000)	\$40,000
Year 2	\$10,000	(\$50,000)	\$0

When calculating a payback period, keep in mind how long the project will take. In the above example, if the project required one year to be completed, the payback period would be three years instead of two.

2

Opportunity cost

Opportunity cost is the monetary value that is forgone when one action is chosen over another. For us, it simply reflects what money is "lost" by choosing one project over another, and it's the entire value of the opportunity not chosen. For example, if project A was valued at \$50,000 and project B was valued at \$80,000:

- Choosing project A results in a lost opportunity cost of \$80,000 (the entire value of project B)
- Choosing project B results in a lost opportunity cost of \$50,000 (the entire value of project A)

Constrained optimization methods

Constrained optimization methods are complex, mathematical models normally used on very large projects. You will not encounter any formulas on the PMP exam, but we will need to recognize the following terms as being part of constrained optimization methods in the project selection process:

- Linear/non-linear programming
- Integer programming
- Dynamic programming
- Multi-objective programming

Benefit/cost ratio formulas

Benefit/cost formulas are used by nearly every organization to assist in making project selection decisions. Below is an overview of common formulas.

Return on investment (ROI)

This is a straight-forward formula we should know that shows a return on investment. ROI is attractive for its simplicity, but it doesn't reflect the time value of money or profitability. A larger ROI is the better choice.

```
ROI = (Benefit - Cost)/Cost
```

Example: The ROI of a project that will cost \$100,000 but result in a \$250,000 benefit or increase in profits is 1.5.

ROI=(250,000-100,000)/100,000 ROI=150,000/100,000 ROI=1.5 Future value (FV)

We all know that \$1 today will not have the same purchasing power in the future, so the future value formula accounts for this time value of money. It uses the interest rate and the number of periods to calculate what the future value of money will be. A higher future value is preferred. Using future value, if the interest rate is 5 percent, \$1 today will be worth \$1.05 next year.

 $FV = Current Value \times (1 + I)^n$ where I is the interest rate and n is the number of periods.

Example: The future value of \$100,000 in two years at an average interest rate of 5% is \$110,250.

```
FV = 100,000 x (1 + .05)<sup>2</sup>
FV=100,000 x (1.05)<sup>2</sup>
FV=100,000 x 1.1025
FV=110,250
```

Present value (PV) and net present value (NPV)

If a project will return \$1 next year, what is that dollar worth in today's value? The present value formula is the inverse of the future value formula, and it converts future money to reflect what its present value is by using the interest rate.

 $PV = Future Value / (1 + I)^n$ where I is the interest rate.

Example: The present value of \$125,000 earned five years from now at an average interest rate of 7% is worth only \$89,123.38 today.

```
PV=125,000 / (1 + .07)<sup>5</sup>
PV=125,000 / (1.07)<sup>5</sup>
PV=125,000 / 1.40255
PV=89,123.38
```

Net Present Value (NPV): This formula also converts future monies to present values, but it's more precise because it takes into account money being received while the project is underway. It shows future cash flows discounted back to present value expressed as a percentage rate of return. As with present value, a higher net present value is a better choice. The formula is extremely complicated and isn't provided here.

Internal rate of return (IRR)

The IRR is the inverse of the net present value, and is based on the same formula. While NPV shows the cost of capital, IRR shows a break-even rate of return. IRR is not easy to compute or understand. A higher IRR is the preferred choice.

Economic value added (EVA)

Economic value added is an extension of net present value and can be used to measure the expected wealth a project will generate. A higher EVA is preferred. Its formula is: EVA = (Return on Capital - Cost of Capital) (Capital Invested in Project)

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Chapter summary

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. Project management helps the organization improve communication and adapt more efficiently to changes.

With the exception of providing project funding (which is done by the sponsor), the project manager is ultimately responsible for all areas of the project and has to often fulfill many different needs in order to ensure the project is successful. He or she is responsible for making sure all requirements have been identified and that objectives are clear and communicated. The project manager also must maintain an appropriate balance between quality, scope, time, and cost. The PM must also adapt the project specifications, plans, and approach to fit the different concerns and expectations of the stakeholders. Most importantly, the project manager must maintain high ethical standards for himself and the team

One theory holds that there are five bases of power: Legitimate, expert, reward, coercive, and referent. Legitimate comes from someone's title, position, or hierarchy; expert comes from one's expertise, knowledge, talents, skills, or experience. Reward is derived from one's ability to give another some kind of desired reward; coercive comes from the ability to apply a negative, punitive influence; and referent comes from a person's charisma.

An organization's culture and structure also impact the project and project manager. The three types of organizational structures are functional, matrix, and prioritized. The most common is the functional organization, which is grouped by departments, specialty, or business functional lines. A projectized organization is structured around projects, and a matrix is a mixture of functional and projectized structures. A project manager has the least amount of control in a functional organization and the most amount of control in a projectized. A composite structure is a temporary organizational reorganization specific to a particular project. For example, a functional organization may choose to have a projectized structure for a mission critical project.

The organization's culture is made of the fundamental assumptions, values, behaviors, and visible symbols (like slogans). It's important for a project manager to understand the culture of the customer and performing organization because of its influence on many areas within the project.

A member of PMI or a certified PMP agrees to follow five areas of ethical responsibility. These are:

- Ensuring integrity and professionalism;
- Contributing to the project management knowledge base;
- Enhancing individual competence and applying professional knowledge;
- Balancing stakeholder interests;
- Interacting professionally with the project team and stakeholders and respecting their differences.

Primary ethical responsibilities are honesty, directness, maintaining confidentiality, honoring commitments, avoiding real or perceived conflicts of interest, not accepting inappropriate gifts or compensation, respecting cultural differences, upholding laws, and making sure stakeholders are given opportunities to be heard.

Depending upon the project, the project manager and team may need to have application area knowledge, such as industry or functional expertise. Knowing the difference between a regulation and a standard is also important. A regulation is issued by a government body while a standard is a generally accepted practice issued by a non-government body, such as a trade group. Projects that will impact the physical environment raise the need for environmental awareness, especially if stakeholder opposition is expected.

Good general management skills are necessary for the project manager. General management skills include contracts, commercial law, personnel administration, sales, accounting, purchasing, strategic planning, manufacturing, distribution, and information technology. Project managers also need excellent interpersonal skills for leading, communicating, negotiation, problem-solving, and influencing. A good project manager is not reactionary but is proactive in his or her methods.

Project selection methods occur outside the project management framework, but a project manager still needs to know about them. A lost opportunity cost is the entire value of a project that is not chosen. The payback period identifies how long it'll take to recoup the cost of a project. Most organizations rely on several benefit/cost ratio formulas to aid in the project selection process. These are return on investment, future value, present value, net present value, and internal rate of return. At a minimum, a project manager should know that basic ROI is calculated using (Benefit - Cost)/Cost.

It is always up to the project manager and the project team to determine which processes are applicable for a particular project. Either scaling back a process or skipping it entirely should be a deliberate decision and not something to be done without understanding the potential consequences.

Exam summary

- □ Project management is the *application of knowledge, skills, tools, and techniques to project activities to meet project requirements.*
- □ The project manager spends most of his or her time engaged in or performing some type of communication.
- □ The project manager is responsible for:
 - Identifying requirements
 - Balancing the competing demands for quality, scope, time, and cost
 - Adapting the project specifications, plans, and approach to fit the different concerns and expectations of the stakeholders.
 - Adhering to the PMI Code of Ethics.
- \Box The five bases of power are:
 - o Legitimate
 - o Expert
 - o Reward
 - Coercive
 - o Referent
- □ Reward and expert are the preferred bases of power in most situations.
- □ There are three types of organizational structures: functional, matrix, and projectized. The project manager has the least amount of control in a functional organization while he or she has the most amount of control in a projectized organization.
- □ A composite structure is a temporary shift in the organizational structure for a particular project.
- □ The PMP has five areas of ethical responsibility:
 - Ensuring integrity and professionalism.
 - Contributing to the project management knowledge base.
 - Enhancing individual competence and applying professional knowledge.
 - Balancing stakeholder interests.
 - Interacting professionally with the project team and stakeholders and respecting their differences.
- □ The project manager must always maintain confidentiality.
- □ The project manager must always avoid real or perceived conflict of interest situations.
- □ The project manager must not accept inappropriate compensation or gifts for his or her services.
- □ The project manager must respect cultural differences that aren't unethical or illegal.
- □ If a conflict cannot be resolved between stakeholders, the project manager should resolve it in favor of the customer.

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- □ The core skills project managers and team members need to have are focused on knowledge, performance, and personal effectiveness: PMBOK/project management, application area knowledge, the project environment, general management skills, and interpersonal skills.
- □ Application area knowledge is specific expertise that may not be required for every project, such as industry-specific knowledge or functionally specific knowledge.
- □ A regulation is a requirement established by a government body.
- □ A standard is a commonly-recognized practice, usually issued by an entity such as a trade group.
- □ The project manager must have good general management skills, such as accounting, purchasing, sales, contracts, commercial law, personnel administration, health and safety practices, and information technology.
- □ A project manager needs to have good interpersonal skills: leading, communicating, negotiation, problem-solving, and influencing.
- □ The opportunity cost is the monetary value that is forgone when one project is chosen over another. It's the entire value of the opportunity not chosen.
- □ The payback period identifies how long it will take to recoup the expense of the project. A shorter payback period is preferred.
- □ Constrained optimization methods, like linear programming, are mathematical models used during the project selection process.
- □ Benefit/cost formulas, such as ROI, net present value, future value, and internal rate of return are used during the project selection process.
- □ When making project selection comparisons between the same measurements:
 - A higher ROI is preferred.
 - A higher future value is preferred.
 - A higher present or net present value is preferred.
 - A higher internal rate of return is preferred.
- □ A project management office (PMO) provides oversight, coaching, mentoring, and resources, like templates and procedures.
- □ It is always up to the project manager and project team to determine which of the PMBOK processes are applicable to a given project.