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Project Manager's KnowledgeBase

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Contents

INTRODUCTION & ORGANIZATION

Learning the best practices in project management and passing the PMI® certification exams requires that you learn techniques and tools at four levels:

1. Process groups are the sequence in which we complete projects, chronologically:
    a. Initiating process group
    b. Planning process group
    c. Executing process group
    d. Monitoring and controlling process group
    e. Closing process group
2. Project Management Knowledge Areas are the grouping of related techniques and tools that have related purposes and occur through the project lifecycle:
    a. Integration
    b. Scope management
    c. Time management
    d. Cost management
    e. Quality management
    f. Procurement management
    g. Human resource management
    h. Communication management
    i. Risk management
    j. Ethics and social responsibility
3. Project management processes are specific subdivisions of the Knowledge Areas into discrete actions like **"Create WBS"** and **"Plan Risk Responses."** There are 42 of these processes and we will always print them in quotes and in bold as above.
4. Process Elements are the specific results or outputs of the project management processes like WBS, scope statement and Request for proposals and the techniques or tools used to produce them like Decomposition, Monte Carlo simulation, and resource leveling. We will always underline these process elements.

This textbook is organized to make your learning take as little time as possible so we will present information in the sequence you will follow to do a project (process groups) but also keep the Knowledge Areas together so you can learn the sequence of processes in a Knowledge Area like risk management. This requires that some processes be represented twice.

To avoid having a book that was over 1,000 pages, we have created a Digital Knowledgebase on our PMI® exam prep web site. There you can drill down for more information and study the knowledge in different ways to suit your learning style.

a) Visual learners will find very large diagrams of the processes and process elements with videos explaining them all.
b) Flow chart learners will find charts of every process group, Knowledge Area and process
c) "Show me an example" learners will see hundreds of samples of Gantt charts, human resource plans, scope statements, Monte Carlo simulations, Earned Value reports, etc.

I trust you will find the book of great value in passing the PMI certification exams and in your career as a professional project manager.

As always I need to express my thanks to those who help make each edition of this book a success. "Mustang Sally" Mitsch, CAPM, has once again nit-picked my work to near perfection. Leslie, "the FIST" Schiefelbein, PMP, has edited the bejesus out my every word and thought. Together they have not missed a single one of my misteaks.

Best Regards,

Dick Billows, PMP, GCA

FOUNDATIONS OF PROJECT MANAGEMENT

In this first section of the book, we'll move through the lifecycle of a project covering all the key ideas. We'll begin by reviewing some of the key ideas that we'll use in all the Knowledge Areas that follow. We also want to accomplish three other things

1. Get a big picture view of the processes we will study in much greater detail later
2. Understand some of the best practice ideas that permeate all the details
3. Begin to learn the language of project management which is most likely different than the words you use doing project management.

This chapter is not an exhaustive explanation of the big picture, that's why several hundred pages follow this chapter.

What is a Project?

Projects are very different from the other components of the modern organization. Projects are temporary endeavors regardless of their size or scope. All projects have a special purpose and a specific end point and that differentiates a project from operations that go on continuously. Projects reach their end in three ways:

a) The project's planned outcome is met
b) The project's outcome will never be met and the organization terminates it
c) The original need for the project no longer exists and the organization terminates the project.

A second characteristic of a project is that it creates a unique deliverable, which may be a product, service or some other result. No two projects are alike. For example, we might be constructing a chain of fast food hamburger restaurants that will serve identical food. But the fact that we will be working with different team members, in varying locations and for different owners makes each of these projects unique.

A third characteristic of a project is that the project management team plans it iteratively; they plan it allowing interaction between the components. For example, a project manager might produce a draft of a schedule and then go to work on the project budget. To optimize the budget, the PM may need to change the schedule and modify the risk management plan. PMI® calls this progressive elaboration of the plan. Project managers are constantly working, checking and revising their plans.

Project Management: The Cast, the Roles and the Script

Project management is not the efforts of an individual. There is a cast of people that can include one or more project managers and associate project managers who, along with executives and professionals, make up the project management team. As well, projects have sponsors whose role includes initiating the project, defining it and securing organizational approval to expend resources on it. The project management team works with the other members of the project team who do the project's work. Both interact with project stakeholders who are people affected by the project including; executives, managers, employees, and even vendors.

Together these people write the script for the project, setting objectives, identifying project requirements and then converting those requirements into a verifiable scope and a project management plan that they then execute. Throughout the project's life,

the project management team works with the project team and stakeholders to deliver the project's objective and its products.

Effective project management requires experience in managing projects as well as a wide range of learned skills and techniques. In addition to the PM's skills and experience, an equally important determinant of project success is the organization's processes for project management and the availability of data and information from previous projects including lessons learned documentation about these previous projects.

One Size Does Not Fit All

Project managers know the best practices and design each project's management plan with a suitable mix of techniques for that project. One set of techniques does not "fit" all projects. The PM designs the project management process using expert judgment as well as understanding of each project's unique characteristics. Then the PM decides the extent to which he/she will apply the PMBOK® processes to achieve the desired project results. For example, all projects should have some degree of risk management. So, the PM determines if risk management warrants a few hours or a month's worth of work. As well, the PM needs to decide whether the assessment of risk should be strictly qualitative and fast or if he/she should use more sophisticated quantitative techniques to assess probabilities and the impact of a risk event. In making these judgments, the PM is obviously guided by the organization's policies and the sponsor's preferences.

Trade-offs

Project management also requires a PM to manage the tradeoffs between what's called the triple constraint (even though there are six dimensions) of cost, time, scope, quality, resources and risk. The triple constraint is like a tug-of-war. If the sponsor changes any one of the dimensions, it will affect at least one of the other five constraints. For example, if we decrease the scope of the project we may also decrease the project's cost, duration and resources. Increasing the quality dimension can increase duration and cost. On larger more sophisticated projects, the PM may analyze tradeoffs with sophisticated financial or mathematical tools. The PM conducts tradeoff analysis on smaller projects too but much more informally.

Professionalism and Social Responsibility

The PMBOK® includes one paragraph on professionalism; however, it is a major topic on the PMP® certification exam and to a lesser extent on the CAPM® exam. The project manager and project management team have an ethical responsibility to all stakeholders to conduct themselves according the tenets of the profession. There is a more detailed description of professionalism, social responsibility and ethics in the last chapter of this book. But the big picture view is that PMI® has developed a rigorous set of standards for project managers' conduct with tough enforcement standards.

Portfolios, Programs, Phases & Sub-projects

There are many ways to combine or subdivide projects. As we think about the project landscape in an organization, the dividing line is more than a little blurry. Organizations use programs to combine the management of a number of projects that have a common purpose. For example, an organization may have a program to

improve their quality of service. The program may involve individual quality improvement projects in the billing, customer service and sales departments to improve customers' experience.

Project portfolios are a bundle of programs and projects, however, they do not necessarily have a common purpose. Instead, an executive may take responsibility for a portfolio of information systems projects or construction projects that affect many different parts of the organization but which all use the same resources.

Finally, within these programs and portfolios, an organization may choose to subdivide a project into sub-projects. The sub-projects may be specific components of the larger effort that the organization contracts out to other organizations. For example, on a customer service project, the performing organization may contract with an outside organization to survey their customers or complete test marketing.

Organizations that want greater control over a project may choose to divide it into phases or sub-phases. Each phase or sub-phase produces a deliverable that management examines and formally accepts before the next phase begins. This level of control over the project allows management to track the project and its progress to ensure it is delivering what it should.

Not all organizations follow this rigid step-by-step approach. If time is of the essence, some organizations will start work on the next phase of the project prior to formal acceptance of the prior phase's deliverable. This approach creates a higher level of risk but it can save time. For instance, a software firm may start work on testing a piece of software before receiving final signoff on the coding. If the coding has any bugs that require re-work, the testing will need to start over, wasting time and money. However, if there are no bugs, the firm has actually saved time by fast tracking the testing and not waiting for formal acceptance of the coding.

Best Practices & the Real World

To pass the PMI® certification exams you need to understand the way of managing projects in a very idealistic world compared to the way most organizations do projects and the way most PMs do their work. In fact, the most important thing to learn in preparing for the exam is PMI®'s definition of the right way to manage projects. That correct way includes not just using the techniques and tools but also adopting the attitudes about solving problems that may not be possible in your organization. Learning that PMI® attitude is the key to answering the scenario questions where you must decide the right thing to do. You must answer each question according to how PMI® says we should do things, not how you do them in your organization. You may disagree with PMI®'s way but if you want their certification, you must learn it.

Project Roles

Let's expand on the brief descriptions of the project roles introduced earlier. PMI® defines a number of roles for people working on projects. The decision making, range of action and participation in the project management process is different for each role.

Stakeholders

The broadest role is that of project stakeholder and this category includes all the others. A stakeholder is any individual or organization that the project will affect,

positively or negatively. Stakeholders should be involved in the Initiating, Planning, Executing, Monitoring & Controlling and Closing functions of the project. This is another area where the PMI® world probably differs from yours. Many PMs try to minimize the number of people involved in project planning, thinking that will let them better control the project scope. Unfortunately, the opposite happens. Stakeholders excluded from planning always seem to spring up and add features or new requirements right at the end of the project. Those late changes often cost hundreds of times what the same requirement would have cost if added during the planning phase. Therefore, PMI® encourages project managers to actively search for stakeholders early in the project and it is a best practice. Project stakeholders can include:

A. performing organization
B. sponsor
C. senior management
D. functional management
E. project team members
F. project management team members
G. project manager
H. project management office (PMO)
I. customers
J. users
K. vendors
L. suppliers
M. consultants

We also include employees not directly related to the project but who, due to their standing within the organization, have the ability to exert influence over the project.

The PMI® way of doing things requires project managers to reach out, identify and bring into the project decision-making processes a very broad cross section of stakeholders. The stakeholders should be involved in the definition of the project scope, the major deliverables and many of the decisions made in later processes.

As noted above, many project managers try to keep the number of people that are involved in the project planning as small as possible. They also try to insulate the project team and its planning process from outside influences and avoid conflicting opinions. However, the PMI® view is very different. It clearly identifies the need to engage stakeholders in initiation and planning because that is the only way that we can uncover all the requirements of the project.

Project Sponsors

In the PMI® world, the project sponsor or initiator is responsible for providing funding for the project and issuing the project charter. On internal projects (those done within the performing organization), the project sponsor also creates the statement of work (SOW) for the project and guides the project through the organization's approval process. That approval requires that the sponsor detail the benefits the project will deliver and justify the costs of the project, often in a business case. When the sponsor secures organizational approval, that executive issues the project charter appointing the project manager and defining, among other things, the criteria for success. On consulting or client projects, the statement of work comes from the client or customer, possibly with an RFP (Request for Proposal) or contract.

The charter gives the PM organizational approval to use resources. This is another area where the PMBOK® process probably differs from your experience. You may see sponsors who just dump a problem or opportunity into a PM's lap and then walk away after naming a completion date. PMI® is correct in stating that is the wrong way to do things.

Project Team Members

In the PMI® world, team members do the work of the project and many project team members actively participate in detailing the project plan and completing their work packages. They may also be involved in risk management, procurement and quality, for example. Team members may also be a part of the project management team and become involved in activities ranging from integration to change control.

Project Manager

It is the project manager's and project management team's responsibility to integrate all of these roles and ensure that they mesh, allowing successful completion of the project. The project manager's role calls on a wide range of skills, including interpersonal, leadership and general management skills in addition to knowing project management techniques. Those project management skills are:

A. Leadership
B. Communication
C. Negotiation
D. Resolution of problems
E. Influencing the organization
F. Purchasing
G. Contracting
H. Accounting and finance
I. Information technology
J. Marketing
K. Sales
L. Manufacturing and distribution
M. Commercial law, local laws and legal traditions
N. Human Resources
O. Safety regulations
P. Supply chain management

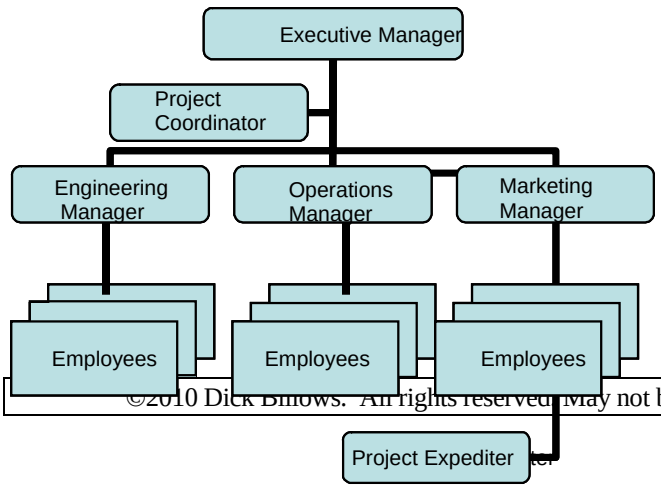
As you work through this book, you will notice many other ways in which the PMI® world varies from the way in which your organization manages projects. Most organizations do not follow all the rules of the PMBOK®. In order to pass the PMI® certification exams, you will need to remember to answer each question according to the PMI® world rather than your own experience.

Project Management Team

With all that work to do, the project manager often invites stakeholders, team members, functional managers and executives to assist in the management of the project. Participation like this not only spreads the work but also increase buy-in and support. The project management team can work on scope, risk, schedule, budget, procurement, quality, human recourse and communications, to name a few.

Organizational Context

Projects occur within organizations and their structures, processes and cultures affect projects and their teams. The organizational form influences how projects begin, how decisions are made, how resources are shared, how line managers perceive project managers and the overall rate of project success. Both in practice and for the certification exams, you need to understand the different organization types. More than half your exam questions will be scenario questions and what kind of organization the PM is "in" often determines the correct course of action on an issue.



Functional Organizations

Functional organizations have their structures designed around technical

specialties like marketing, sales, manufacturing, facilities, customer service, engineering and accounting. These organizations are the most frequently encountered type and the barriers between these functional "silos" make it tough on project managers. Getting a project done that crosses functional lines often requires begging and whining for resources. In functional organizations project managers have little or no authority and must "borrow" people from functional departments. That requires that the PM negotiate for resources with the functional managers.

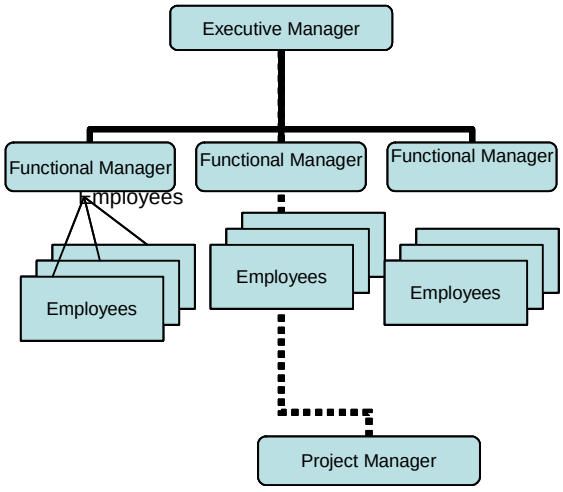
These extra steps are necessary because functional organizations operate with a strong chain of command philosophy that each employee should report to one boss. This means that an employee communicates with their boss, who communicates with the boss's boss, all the way up the chain of command. The lines of communication usually follow the chain of command and are simple, but also quite rigid. Functional managers want to retain all of the formal authority over their employees and must often be convinced to loan them to a project. People loaned to a project often feel that the project is a distraction from their "real job" where they get raises and promotions.

In these organizations, turf wars and lack of cooperation between functional departments make communication difficult. In these organizations, decision makers often choose to perform projects within one functional unit because reaching out to borrow resources and communicate across functional lines is so difficult.

Functional organizations try to improve their project performance by adding two other roles to the structure. Project expediters may assist functional managers in coordinating projects. However, these project expediters have no decision-making authority and focus mainly on communication, following up on tasks and deliveries of equipment. Functional organizations may also employ project coordinators, who usually are in staff positions reporting to senior management. They often have some decision-making authority but do not have the responsibilities of project managers in the areas of making assignments, analyzing change requests and reporting status.

Matrix Organizations

Another organizational form is the matrix organization, which comes in three varieties (weak, balanced, strong). There are still departments for functions like accounting and marketing but these departments share resources across department lines routinely. The difference between the three types is the amount of power and influence of project managers versus functional managers. But in all three types people are more accepting of sharing departmental resources with projects. In all three matrix types, employees work for more than one boss. However, the degree of sharing affects a project manager's level of authority, power and influence.



The weak matrix organization is quite similar to a

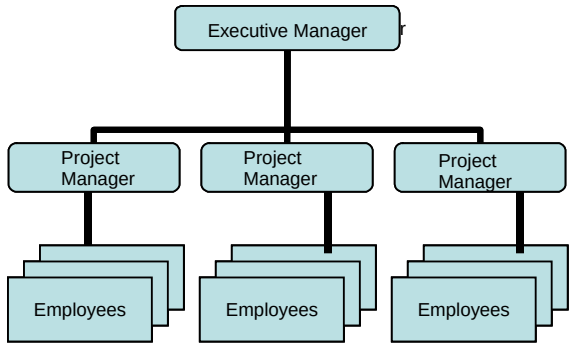
functional organization with the project manager having a bit more power and influence but still being weaker than the functional manager. Borrowing resources can be a bit easier than in a functional organization. However, a project manager's authority is very limited in comparison to the functional managers. Therefore, the PM must still plead and beg for resources and hope that the project sponsor has enough clout to secure resources for the project.

In a balanced matrix, the project manager and functional managers have relatively equal power and authority and the negotiation for borrowing resources is on even terms. Because the power is even, the level of conflict is at a peak and communications are at their most difficult. That may seem odd until you remember that people are unlikely to have conflict with a person who has a great deal more power than they do.

In a strong matrix, the project manager has more power than the functional managers and has a much easier time acquiring resources and managing the project budget. All three types of matrix organizations have more complex communication processes and more conflict than the functional organization.

Projectized Organizations

The projectized organization transforms the project manager from a flunky begging for resources to a person managing a project that the organization treats as if it were a department. In the projectized organization, the project and its manager have their own dedicated employees and a budget. They have the same status as all the functional departments. The project manager is the organizational superior of the people working on the project team and does their performance reviews, develops their professional skills and manages their daily work assignments.



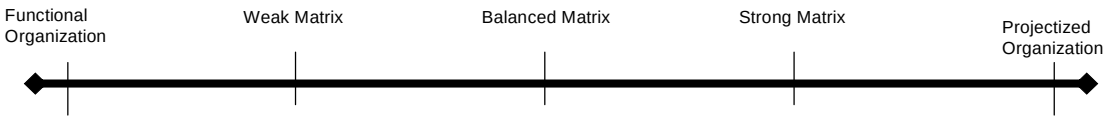
The projectized organizational form is desirable from a project management point of view because the PM has almost full authority over the resources with full availability. However, projectized organizations have certain disadvantages. First, projectized organizations may hinder employees' development in their technical specialties because they don't associate regularly with people possessing the same specialized skills. Second, when the project is completed, the project organization disappears and it is not unusual for team members to have some uncertainty about their next assignment. This can adversely affect morale and performance.

Organizations carve out projectized sub-units for long-term projects that require considerable employee development such as learning a new technology. We see the projectized organization form in professional firms (like accounting, consulting and engineering) and in technical departments that primarily do projects, such as information systems departments.

To summarize what we have covered, think of the project manager's power and influence as a continuum. On the left hand extreme, there is the functional organization where the PM's power and influence is zero. As we move across the

continuum into matrix organizations, the PM's power grows and grows until it peaks in the projectized organization.

FIGURE 1 ORGANIZATIONAL CONTINUUM



Composite Organization - A Mix of All Three

Few organizations are purely functional, matrix or projectized. The larger the organization, the greater the chance that the organization has sub-divisions that are organized by different types, this is called a composite organization. For example, in a large organization the manufacturing division might follow strict functional lines with production, engineering and inventory control departments staffed with specialists. On the other hand, for research and development the organization might use a more fluid matrix structure to facilitate the sharing of skills on projects and new products. To go even further, for an upcoming new product, the organization might assemble the project team as a separate department to ensure that needed resources are available from several functional areas, with the projectized organization disbanding when the project is done. This product department would have its own budget and dedicated team.

Project Management Office - PMO

Organizations, regardless of their form, may utilize a project management office (PMO) to facilitate the projects that are taking place. Different organizations use different names for the PMO; it may be called the project office, program office or program management office. We can have PMOs in functional or matrix organizations but we see them regularly in projectized and strong matrix organizations. They are less likely in weak matrix and functional organizations. For example, a consulting firm has a real need to coordinate project activities because almost all employees work on multiple projects and new client projects may start each week. That combination creates the need to closely track projects and to set priorities for resource allocation.

The PMO serves several other important functions and there are several styles of PMOs. Some distribute project information and may provide software and training for project managers and team members. Other project offices integrate the project information, enforce a common project methodology and help executives make priority and resource allocation decisions. In still others, the organization's project managers work in the PMO and are assigned to manage projects by the PMO. In organizations with even stronger PMOs, they may assist the management committee in approving or rejecting proposed projects.

Project & Product Lifecycles

The PMBOK® talks about a number of different lifecycles. Products like a new cell phone have a product lifecycle that may start with research and development, move to testing, manufacturing, marketing and then end with product replacement. Each of those phases in the product lifecycle may require a project. The organization may have a project lifecycle it uses to build manufacturing facilities as required by the third

phase of the product lifecycle above. That project lifecycle may start with design, followed by land acquisition, construction, and assembly line start-up. Organizations may have one lifecycle that they apply to all projects. Alternatively, an organization may have several lifecycles and it may allow the project manager and team to select the most appropriate. While lifecycles can vary widely, all lifecycles cover:

1. The work that needs to be completed
2. Each phase's deliverable and approval criteria
3. The people involved.

There are also several features common to most project lifecycles. Most lifecycles require the fewest team members and resources at the beginning and end of the lifecycle. Project costs also follow the same bell-curve because the project is most costly in the middle of the project lifecycle. Risk is highest at the beginning of the lifecycle and decreases throughout the project phases. Stakeholder influence over the project requirements is also greatest at the beginning of the lifecycle and decreases through the phases. However, the cost of adding requirements rises as we move through the lifecycle.

The Domains of Project Management

As we mentioned above, a project manager selects the appropriate project management processes and techniques for each project from an inventory of best practices. Those best practices are organized into 5 process groups, 10 Knowledge Areas and 42 processes.

5 Process Groups

The project lifecycle is broken into 5 process groups:

1. Initiating has 2 processes and gets things started by the sponsor securing project authorization from the organization.
2. Planning has 20 processes and is the busiest process group because we make all the decisions about how we're going to do things on this project.

Then when the project plan is approved, we launch the project and have two process groups that happen at the same time:

3. Executing has 8 processes and it is here that we do the work of the project, consume most of the resources and produce the deliverables.
4. Monitoring & Controlling has 10 processes and here we ensure that execution is going according to plan and correct things if it is not.

When the deliverables have all been produced we bring the project to an end.

5. Closing has 2 processes and it is where we put the data away for use on future projects and assess how we did in lessons learned.

Knowledge Areas

Those 42 processes in project management can also be organized into 9 Knowledge Areas (10 if we include Professionalism, as we will).

1) Integration Knowledge Area has 6 processes and the common purpose of tying together everything else that happens. As you might expect, there is at least one of its processes in each process group:
   a) **"Develop Project Charter"** (Initiating Process Group)
   b) **"Develop Project Management Plan"** (Planning Process Group)
   c) **"Direct and Manage Project Execution"** (Executing Process Group)
   d) **"Monitor and Control Project Work"** (Monitoring & Controlling Process Group)
   e) **"Perform Integrated Change Control"** (Monitoring & Controlling Process Group)
   f) **"Close Project or Phase"** (Closing Process Group)
2) Scope Knowledge Area has 5 processes with the purpose of defining what result the project should produce and then watching to ensure it does produce that result
   a) **"Collect Requirements"** (Planning Process Group)
   b) **"Define Scope"** (Planning Process Group)
   c) **"Create WBS"** (Planning Process Group)
   d) **"Verify Scope"** (Monitoring & Controlling Process Group)
   e) **"Control Scope"** (Monitoring & Controlling Process Group)
3) Time Knowledge Area has 6 processes with the purpose of defining and then tracking the schedule for delivering the project's scope
   a) **"Define Activities"** (Planning Process Group)
   b) **"Sequence Activities"** (Planning Process Group)
   c) **"Estimate Activity Resources"** (Planning Process Group)
   d) **"Estimate Activity Durations"** (Planning Process Group)
   e) **"Develop Schedule"** (Planning Process Group)
   f) **"Control Schedule"** (Monitoring & Controlling Process Group)
4) Cost Knowledge Area has 3 processes with the purpose of establishing a budget for delivering the project's scope and then tracking actual costs and comparing them to the budget
   a) **"Estimate Costs"** (Planning Process Group)
   b) **"Determine Budget"** (Planning Process Group)
   c) **"Control Costs"** (Monitoring & Controlling Process Group)
5) Quality Knowledge Area has 3 processes that share the purpose of establishing the criteria and specifications that the project's deliverables must meet and then tracking actual performance and improving the process of producing those deliverables
   a) **"Plan Quality"** (Planning Process Group)
   b) **"Perform Quality Assurance"** (Executing Process Group)
   c) **"Perform Quality Control"** (Monitoring & Controlling Process Group)

6) Human Resources Knowledge Area has 4 processes for identifying, managing and developing the members of the project team
   a) **"Develop Human Resource Plan"** (Planning Process Group)
   b) **"Acquire Project Team"** (Executing Process Group)
   c) **"Develop Project Team"** (Executing Process Group)
   d) **"Manage Project Team"** (Executing Process Group)
7) Communications Knowledge Area has 5 processes with the purpose of identifying the stakeholders, identifying their information needs as well as the information required by executives and the project team and then meeting those needs
   a) **"Identify Stakeholders"** (Initiating Process Group)
   b) **"Plan Communications"** (Planning Process Group)
   c) **"Distribute Information"** (Executing Process Group)
   d) **"Manage Stakeholder Expectations"** (Executing Process Group)
   e) **"Report Performance"** (Monitoring & Controlling Process Group)
8) Risk Knowledge Area has 6 processes with the purpose of identifying the uncertainties or risks the project faces (things that could hurt and, as importantly, things that might help) and managing these risks to the project's betterment
   a) **"Plan Risk Management"** (Planning Process Group)
   b) **"Identify Risks"** (Planning Process Group)
   c) **"Perform Qualitative Risk Analysis"** (Planning Process Group)
   d) **"Perform Quantitative Risk Analysis"** (Planning Process Group)
   e) **"Plan Risk Responses"** (Planning Process Group)
   f) **"Monitor and Control Risks"**(Monitoring & Controlling Process Group)
9) Procurement Knowledge Area has 4 processes with the purpose of securing the items the project needs to buy and making sure they are delivered as promised in the contracts
   a) **"Plan Procurements"** (Planning Process Group)
   b) **"Conduct Procurements"** (Executing Process Group)
   c) **"Administer Procurements"** (Monitoring & Controlling Process Group)
   d) **"Close Procurements"** (Closing Process Group)
10) Professionalism & Social Responsibility – The PMBOK® does not cover this topic but we treat it as the 10th Knowledge Area because it is important on the exams (up to 14% of the PMP® exam questions). This area covers the ethical standards that project managers must meet.

What the Heck are EEF and OPA?

Every project is impacted by the internal and external environment the organization faces and its culture, management processes, policies and ways of doing business. These are called enterprise environmental factors (EEF).

Projects can, and should, draw on the organization's collective project wisdom, lessons learned from project successes and failures and the data from previous projects. Unfortunately, in most organizations this information, called organizational process assets (OPA), is not archived or available so project managers must reinvent the wheel for each project and make the same mistakes again and again. The idea of archiving data and reusing content from previous projects may well be the most important best practice. Let's discuss EEF and OPA a bit more because we will not repeat these ideas in the future discussion of every process.

Enterprise Environmental Factors (EEF)

As a short hand in the book, we refer to these Enterprise Environmental Factors as EEF and they are an input to many of the PMI® processes. The EEF includes the organization's personnel systems for doing business like the compensation system, accounting system and its information systems. It also includes all the organizational policies such as the rules for hiring and evaluating employee performance. The industry in which the performing organization operates may also impose regulations and rules on the organization and its projects. We draw on these factors and operate within the limitations they impose. The EEF also include external factors like governmental regulations and marketplace conditions.

Organizational Process Assets (OPA)

The Organizational Process Assets include a wide range of things that let us avoid "reinventing the wheel" for each project. We want to use templates, forms and data from previous projects because it saves time and lets us learn from the successes and mistakes made on previous projects. One of the traits of organizations that are consistently successful with projects is that they have consistent processes and save the data from every project they do. The OPA lets project managers who are estimating duration look up the data on how long a certain kind of task took on earlier projects. It can save a project team from having to decompose their whole work breakdown structure because they can use all or part of the WBS created by previous project teams or their lessons learned. OPA can save time and improve results on every process in the project lifecycle.

With that background, let's dive into the scenarios that will teach you all the tools and techniques that represent the best practices in project management.

Project Management Scenarios

The best way to pass the PMI® certification exams and to master skills that will make you a better project manager is to see the processes, tools and techniques applied in context; that is, see the techniques used in real project situations. Let's begin by meeting three PMP®s and learn about the three projects they will manage through the rest of this book.

Chris Pimbock slowed down as he spotted the long line of passengers waiting to have their baggage checked at Honolulu International Airport. It'd been a great vacation and now he was ready to head back to Royster Industries, a small manufacturing company, and take on his next project challenge for his boss. The boss named the project the Trouble Report Improvement Project with the acronym, TRIP. A woman joined the line behind Chris and inadvertently slid her carry-on bag into the back of his heel. She smiled at Chris in apology and flipped open her Pocket PC.

Just then Chris's cell phone chimed and he flipped open the phone and answered.

It was his boss, Tom Stearns who said, "I hope you had a good vacation, Chris, because the Marketing people are making all kinds of noise about the trouble report problems and I'm going to need you to hit the ground running on the TRIP project as soon as you get back."

Chris answered, "Yes sir, the TRIP project is number one on my priority list. I plan to get started first thing Monday morning."

Chris dug his clipboard from his carry-on to give Tom a couple of facts and then hung up. Chris was surprised to see the woman behind him looking at him with an odd expression.

She closed her Pocket PC and said with a smile, "Pardon me but I couldn't help overhearing your phone conversation and it sounds like you're a project manager just like I am. In fact, it sounds like we're both managing a project called TRIP."

"I'm Chris Pimbock and that is a little weird," Chris said and smiled back. "It's my first major project, I just got my PMP®, and frankly this TRIP project is the first one my company has ever done with a trained project manager. We're pretty small, only a couple hundred people, so this should be a real adventure."

Terrie Evans introduced herself and said, "I've been a PMP® for a few years now but I'll never forget my first project. Let's just say I learned a lot. But this is so strange, both of us managing a project with the acronym TRIP."

The man behind Terry, dressed in an elegant pinstripe suit, bit the cap on his Monte Blanc fountain pen and said, "Sorry to eavesdrop, but what's even more strange is that there are three project managers standing in line and all managing projects call TRIP."

Terrie laughed. She and Chris both introduced themselves to Preston McCarthy, PMP®, and owner of a consulting firm whose clients were Fortune 100 multinational companies. Preston said, "We all have an ethical duty to preserve the confidentiality of our clients and the organizations for which we work. My TRIP project is about trouble reports in a multinational company with tens of thousands of employees. It's the biggest project and client my firm has ever handled so I'll have a lot on my plate first thing Monday morning. The stakes for the project are huge so we'll be applying some very sophisticated techniques because the stakes justify that kind of sophistication. We also have some significant language and cultural barriers as well as the usual turf battles between functional units. I'm going to be one busy project manager for the next year. "

Terrie said, "Well our company's smaller than that, just a few thousand employees, but you haven't seen turf battles until you see the ones between our functional units. The VPs are like feudal lords and ladies; jealously guarding their people and decision-making prerogatives. I'm going to have my hands full because my organization has never done a project involving multiple functional units, at least not successfully. Success is pretty important to our business so I'm going to be focusing on very accurate estimating of costs and budgets and the usual change control processes. But communications and

managing stakeholder expectations are getting most of my emphasis. Our project management plan is not going to include the kind of sophisticated project techniques I imagine you'll be using, Preston."

Preston laughed, "Don't get me wrong; communications requirements and stakeholder expectations are going to be number one for me, like they always are. How about you, Chris; how have you tailored your project management plan?"

Chris laughed, "Well we're a lot less sophisticated and the project is pretty much taking place within our department. So I'm going to be focusing on getting the boss and our stakeholders used to doing any type of project management. What I'm going to be hearing is 'why can't you start today and finish in a month?' I'm going to have to fight and claw and have very good arguments about why we should be doing any project management processes rather than just getting to work quickly."

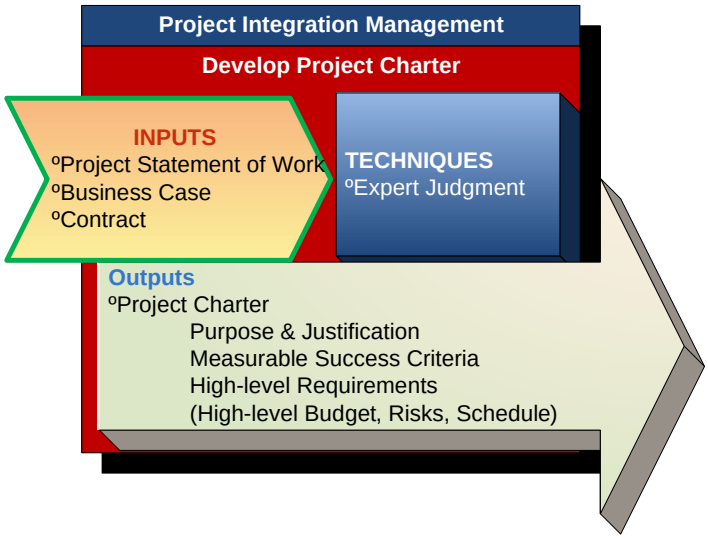
Preston chuckled and said, "Been there, done that. Frankly, not to minimize the challenges that Terrie and I face, but getting an organization started doing things the right way may be the most difficult of all."

Suddenly the line began to move and the three project managers wished each other well and headed home to face three very different project challenges.

Authors note: We will begin by studying chartering a project because that is where all projects should begin and many other processes need the charter to get started. We will not study the rest of Integration until the end of the book when you will look at this process again.

"Develop Project Charter"

"Develop Project Charter" is part of the Initiating process group. It's where the sponsor secures the organization's formal authorization for a project. The charter document details the measureable results the project will produce and also identifies and appoints the project manager. The sponsor signs and issues the charter but the project manager may write it to document the basis for the organization's approval.



What We Produce in this Process

a. We produce the project charter which is based on the project's statement of work (SOW). The charter document formally authorizes the project. The sponsor, an executive with sufficient authority to appoint the project manager and give that PM authority over project resources, issues the project charter.

How We Produce It

a. We first secure organizational approval with a business case based on the sponsor's statement of work (SOW). The sponsor guides the project through the organization's project selection process, demonstrating that the project meets the financial, cost/benefit and strategic criteria for approval.
b. We use the organization's project management methodology (if one exists) as well as the project management information system (PMIS)

What We Need to Produce It

a. **"Develop Project Charter"** can't start until the sponsor produces the Statement of Work (SOW).
b. Enterprise Environmental Factors (EEF) provide information on the organization's strategy and performance issues
c. Organizational Process Assets (OPA) which are procedures, templates and guidelines for chartering projects.
d. Last, we may have a contract which replaces the SOW for projects done for a client organization. If a client organization requests the project, a contract with the customer provides the key information needed to develop the charter.

3 Scenarios of **"Develop Project Charter"**

All projects should follow project initiating processes although far less than half of the projects performed in most organizations actually complete initiation correctly. Note

the key role of the sponsor, not the project manager (PM), in these major steps in project charter development:

A. Sponsor issues the Statement of Work (SOW).

B. Sponsor guides the project through the approval process, perhaps using a business case.

C. Sponsor secures authorization from the organization to proceed with the project, having met the organization's project selection criteria.

D. Sponsor appoints PM and secures authority for the project manager to use people and other resources.

This process is where most people encounter a major disconnect between the ideal PMBOK® world and their project management experience. Unfortunately, in only a very few organizations does the project sponsor come to the project manager with a completed statement of work. What project managers usually receive is a due date and a list of the activities an executive wants done with a vague reference to the problem or the business opportunity the project is tackling.

Another major difference you've probably noticed is the fact that the sponsor/initiator is directly involved in developing and issuing the project charter. According to the PMBOK®, the sponsor has the responsibility to create the SOW, gather the resources, secure PM authority and ultimately gain approval for the project. According to the PMBOK®, the organization must authorize a project; the sponsor can't just tell the PM to start work. Both the sponsor's involvement and the formal project authorization may be drastically different from what you're used to seeing but that's how the PMBOK® says project charter development should take place and it is the right way to do things.

With that foundation let's begin with Project #1, our in-department project.

In-department Scenario: **"Develop Project Charter"**

Situation:

1. *Chris Pimbock, the project manager, works for Royster Corporation in the Customer Service department managed by Tom Sterns, who directs 15 employees including Chris.*
2. *The Sales people triggered the project because customers were complaining about service response time. Tom Sterns responded by initiating the Trouble Report Improvement Project (TRIP).*

Tom Sterns looked up and waved for Chris to come into his office. Chris slid into a seat, held his pen over his clipboard and said, "What's up boss?"

Tom answered, "I'd like you to start work immediately on a rush project. The Sales department is screaming about how slow we are on resolving customers' trouble reports. The Sales people are hearing all kinds of complaints. I want you to find some device that will let us notify our people 24 hours a day that a trouble report has come in. We'll also need to have access to the company website to get details of a customer's product and problem history. Don't spend more than $5,000 for everything and I need this in 45 days max." Tom nodded and turned away from Chris to work on the papers on his desk.

Remembering the best practices in project management, Chris knew that this was not the right way to initiate a project. So Chris said to Tom, "If this project is really important to our department, we've got to do it correctly."

Tom nodded saying, "Right, that's why I want you to get started quickly so we don't have more complaints. OK, you can take a little time and lay out a good plan and I'll be happy to look at it."

As Tom picked up a paper from his desk Chris said, "Actually we need to start with a statement of work. That's where you, as the sponsor, describe what you want the project to produce and what business need it should address."

Tom replied, "I want to improve customer satisfaction because the customers are unhappy."

Chris said, "Okay, I know from what you said that the business need is that our customers are complaining and our strategic plan calls for improved customer satisfaction. But exactly what should the project do?"

Tom looked at Chris quizzically and said, "Improve the speed of resolving complaints."

"How much faster should it be?"

Tom sighed, "As fast as we can."

Chris responded, "Let me ask again; exactly how fast should we resolve a customer's trouble report…30 minutes?

Tom shrugged signaling that he didn't know, "Can't we just start?"

Chris said, "Before I can start I need to know the criteria the project has to meet to be a success. That's the key element in the statement of work."

"I'll need to think about that. Can we go on?"

Chris replied, "Certainly. From the SOW you will develop and issue the project charter. That document will detail the business need, the product/service you want, give me authority to manage the team and lay out the constraints we have to operate within. Let's discuss constraints. You said the budget is $5,000 and the duration is 45 days, but that's all you mentioned. Is there any limit to how many people I can use? Or how much of their time I can use?"

Tom leaned back, thought and then said, "Well, I don't want this project to interfere with the QGB-39 project that Karen and Mike are working on, or the development of our new procedures which will take all of Elsie and Jim's time. Both of those projects are corporate mandates so they have to come first."

"So I can't use any of those four people on this project, can I?"

"No, I guess not," Tom replied.

"We should send those constraints out with the charter and also information on how much of other people's time I can use. Is that 45 days a hard number?"

Tom replied, "I would like to be finished as soon as we can. But I see now that you're not going to be able to use as many people as I thought and you are going to have to spend extra time on purchasing to stay within that $5,000 budget limit. So let's say 3-4 months."

Chris continued, “Okay but all those constraints will change depending on the project success criteria. So let’s get back to that; it’s the key.”

Tom said, “Well, the Sales people say our department is slow and causing too many complaints, so I want faster resolution of customer trouble reports than we are delivering now.”

Chris smiled and asked again, "How much faster?"

Tom thought for a moment and then said, "If we could resolve 90% of them in 20 minutes that would be fantastic."

Chris thought about the assumptions that had to hold true for a result like that and then asked, “Turnaround times are always affected by volume. Are we assuming that the volume of trouble reports will stay the same?”

Tom thought for a minute and then said, “Well, let’s assume no more than a 10% increase over the next year.”

Chris stood and said, "Great, I think that covers everything we need in the charter. I’ll send you a draft to review.”

Tom replied, “This project’s going to be easier with measureable success criteria, isn’t it.”

Chris nodded and headed for his office to draft the charter, remembering that the key issue was the measureable success criteria.

FIGURE 2 PROJECT CHARTER

TO: TRIP Project team and stakeholders
FR: The department manager
RE; TRIP charter

Project Title: Trouble Report Improvement Project
Business Issue: We will undertake this project in order to get the response to our customer’s trouble reports below twenty minutes for 90% of the reports that come in to us twenty- four hours a day, seven days a week. These levels of service will more than double the quality of our service in comparison to the nearest competitor in our industry.
Project Manager: Chris Pimbock
Authority: Chris will have the authority to directly assign work to the team members assigned to this project. In addition, Chris will participate in the yearly review for any team member who spends more than 200 hours or 10% of their working hours on this project. The participation of all team members must be approved by the team member’s boss before any assignment or negotiation of the assignment may take place.
Product of the Project: This project will enable us to answer 90% of our customer’s trouble reports within twenty minutes, twenty-four hours a day, seven days a week.
Constraints:

1. All employees in the department can spend up to 8 hours a week on project work except Karen, Mike, Elsie and Jim.
2. The purchases on this project will not exceed $5,000
3. The project will be completed within 3-4 months

Assumptions:

1. Turnover in the department will not increase
2. The volume of trouble tickets will not increase more than 10%

Multi-department Scenario: **“Develop Project Charter”**

Situation:

1. *McLaughlin Electronic Enterprises is experiencing a large volume of complaints from customers about their response time on customer trouble reports. 15*

