CHAPTER 1

AN OVERVIEW OF PROJECT MANAGEMENT

What's all the fuss about, anyway? Since the first edition of this book was published, in 1997, the Project Management Institute (PMI) has grown from a few thousand members to nearly 462,000 in 2015. For those of you who don't know, PMI is the professional organization for people who manage projects. You can get more information from the institute's website, *www.pmi.org*. In addition to providing a variety of member services, a major objective of PMI is to advance project management as a profession. To do so, it has established a certification process whereby qualifying individuals receive the Project Management Professional (PMP®) designation. To do so, such individuals must have work experience (approximately 5,000 hours) and pass an online exam that is based on the *Project Management Body of Knowledge* (*PMBOK® Guide*).

A professional association? Just for project management? Isn't project management just a variant on general management?

Yes and no. There are a lot of similarities, but there are enough differences to justify treating project management as a discipline separate from general management. For one thing, projects are more schedule-intensive than most of the activities that general managers handle. And the people in a project team often don't report directly to the project manager, whereas they do report to most general managers.

So just what is project management, and, for that matter, what is a project? PMI defines a project as "a temporary endeavor undertaken to create a unique product, service, or result" (*PMBOK® Guide*, PMI, 2013, p. 5). This means that a project is done only one time. If it is repetitive, it's not a project. A project should have definite starting and ending points (time), a budget (cost), a clearly defined scope—or magnitude—of work to be done, and specific performance requirements that must be met. I say "should" because seldom does a project conform to the desired definition. These constraints on a project, by the way, are referred to throughout this book as the PCTS (performance, cost, time, scope) targets.

PMI defines a project as "a temporary endeavor undertaken to produce a unique product, service, or result."

Dr. J. M. Juran, the late quality management guru, also defines a project as a problem scheduled for solution. I like this definition because it reminds me that every project is conducted to solve some kind of problem for a company. However, I must caution that the word "problem" typically has a negative meaning, and projects deal with both positive and negative kinds of problems. For example, developing a new product is a problem but a positive one, while an environmental cleanup project deals with a negative kind of problem.

"A project is a problem scheduled for solution."
—J. M. JURAN

Project Failures

Current studies indicate mixed results regarding project management success rates. The Standish Group's recent Chaos report, with a focus on software development projects, indicates a 29 percent success rate, with 52 percent challenged, and 19 percent failed. It should be noted that success factors have been "modernized" to

mean on time, on budget, and with a satisfactory result. The success rate is virtually unchanged from the 2011 report. Standish does emphasize that smaller projects have a much higher success rate than larger ones. Gartner, an IT research and advisory company, echoed these findings with recent reports that larger projects (those with budgets exceeding $1 million) have higher failure rates, hovering around 28 percent.

Most telling were the data recently reported by the Project Management Institute. PMI consistently measures the state of project, program, and portfolio management. Their 2015 "Pulse of the Profession" study reveals some positive trends but also indicates the percentage of projects meeting their goals has remained flat at 64 percent since 2012. To effect improvement, PMI suggests that organizations go back to fundamentals. The three basic areas cited are:

1. *Culture*. Work to create a project management mind-set.
2. *Talent*. Focus on talent management, continuous training, and formal knowledge transfer.
3. *Process*. Support project management through the establishment and adoption of standardized project practices and processes.

My own survey, based on 28 years of project management, best practice identification, project consulting, and training, reveals that the more things change, the more they stay the same. Not enough planning is being accomplished. Large or small, software, R&D, or administrative, successful projects rely on good *planning.* Too many project managers take a ready-fire-aim approach in an attempt to complete a project quickly. Many organizations do not allow project managers significant planning time or virtually any time at all. This often results in spending far more time and effort reworking errors, soothing unhappy stakeholders, and backing out of blind alleys. In short, the lack of adequate planning causes projects to fail.

The PMI survey states that "it is time for organizations to revisit the fundamentals of project management and, essentially, go back to the basics" (p. 4). I could not agree more. You, the reader, must lay your foundation and understand the basics presented here to ensure improvement and success as you move forward and manage your projects.

What Is Project Management?

The *PMBOK® Guide* definition of project management is the "application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Project management is accomplished through the application and integration of the 47 logically grouped project management processes comprising the 5 Process Groups: initiating, planning, executing, monitoring and controlling, and closing" (*PMBOK® Guide*, PMI, 2013, p. 6).

> **"Project management is the application of knowledge, skills, tools, and techniques to project activities to achieve project requirements. Project management is accomplished through the application and integration of the project management processes of initiating, planning, executing, monitoring and controlling, and closing."**
>
> ***—PMBOK® Guide***

The new *PMBOK® Guide* has added five new project management processes:

1. Plan Scope Management
2. Plan Schedule Management
3. Plan Cost Management
4. Plan Stakeholder Management
5. Control Stakeholder Management

This change emphasizes the requirement for the project team to *plan* prior to managing. The processes Plan Stakeholder Management and Control Stakeholder Engagement have been added to coincide with the addition of Project Stakeholder Management as the new (tenth) knowledge area (see page 22). This new knowledge area highlights the importance of appropriately engaging project stakeholders in key decisions and activities.

Project requirements include the PCTS targets mentioned previously. The various processes of initiating, planning, and so on are

addressed later in this chapter, and the bulk of this book is devoted to explaining how these processes are accomplished.

It would be better if the *PMBOK® Guide* specified that a project manager should facilitate planning. One mistake made by inexperienced project managers is to plan the projects for their teams. Not only do they get no buy-in to their plans, but their plans are usually full of holes. Managers can't think of everything, their estimates of task durations are wrong, and everything falls apart after the projects are started. The first rule of project management is that the people who must do the work should help plan it.

The first rule of project management is that the people who must do the work should help plan it.

The role of the project manager is that of an enabler. Her job is to help the team get the work completed, to "run interference" for the team, to get scarce resources that team members need, and to buffer them from outside forces that would disrupt the work. She is not a project czar. She should be—above all else—a *leader*, in the truest sense of the word.

The best definition of leadership that I have found is the one by Vance Packard, in his book *The Pyramid Climbers* (Crest Books, 1962). He says, "Leadership is the art of getting others to want to do something that you believe should be done." The operative word here is "want." Dictators get others to do things that they want done. So do guards who supervise prison work teams. But a leader gets people to want to do the work, and that is a significant difference.

"Leadership is the art of getting others to want to do something that you believe should be done."

—VANCE PACKARD

The planning, scheduling, and control of work represent the management or administrative parts of the job. But, without leadership, projects tend to just satisfy bare minimum requirements. With

leadership, they can exceed those bare minimums. I offer a comprehensive application of project leadership techniques in Chapter 14.

It Is Not Just Scheduling!

One of the common misconceptions about project management is that it is just scheduling. At last report, Microsoft had sold a huge number of copies of Microsoft Project®, yet the project failure rate remains high. Scheduling is certainly a major tool used to manage projects, but it is not nearly as important as developing a shared understanding of what the project is supposed to accomplish or constructing a good work breakdown structure (WBS) to identify all the work to be done (I discuss the WBS in Chapter 7). In fact, without practicing good project management, the only thing a detailed schedule is going to do is allow you to document your failures with great precision!

I do want to make one point about scheduling software. It doesn't matter too much which package you select, as they all have strong and weak points. However, the tendency is to give people the software and expect them to learn how to use it without any training. This simply does not work. The features of scheduling software are such that most people don't learn the subtleties by themselves. They don't have the time because they are trying to do their regular jobs, and not everyone is good at self-paced learning. You wouldn't hire a green person to run a complex machine in a factory and put him to work without training because you know he will destroy something or injure himself. So why do it with software?

The Accidental Project Manager

Have you been suddenly thrust into the role of managing a project without the title "project manager" or much support? Did you consider yourself the project manager *and* the project team? You are not alone. Increasingly, individuals are managing work that fits the *PMBOK® Guide* (PMI 3, 2013) definition of a project: "a temporary endeavor undertaken to create a unique product, service, or result." There is a deadline, a scope of work to define, limited resources, and often a fixed budget. Although less formal and not requiring a project team, these projects must be planned, scheduled, and controlled. An

exceptional/acceptable project product must be delivered and the customer delighted or at least satisfied.

"Essentials of Project Management for the Nonproject Manager" is a seminar that I lead for American Management Association International. It is very popular and has struck a chord with nontraditional project managers, subject matter experts, sponsors, and project contributors. Typical attendees include sales managers, administrative professionals, marketing managers, procurement specialists, and many other business types. It seems that everyone is involved with projects on some level. These attendees are not project managers in the traditional sense but must manage projects. Project management tools can help. I like to tell my attendees that project tools are universal but the value is evident in how the tools are applied.

First, assess the work. Are you constrained by scope, cost, and limited resources? Do you have a deadline? Then commit to managing the work as a project. Determine which project tools would be appropriate. For example, a project with a deadline of two weeks requires far fewer project management applications than a project due in 50 weeks. Streamline or expand your management approach to align with the length, width, depth, and breadth of the project.

The Big Trap: Working Project Managers

It is common to have individuals serve as project managers and also require that they do part of the actual work in the project. This is a certain prescription for problems. If it is a true team, consisting of several people, the project manager inevitably finds herself torn between managing and getting her part of the work done. Naturally, the work must take precedence or the schedule will slip, so she opts to do the work. That means that the managing does not get done. She hopes it will take care of itself, but it never does. After all, if the team could manage itself, there would be no need for a project manager in the first place. (Remember our argument about whether project management matters?)

Unfortunately, when the time comes for her performance evaluation, she will be told that her managing needs improving. Actually, she just needs to be allowed to practice management in the first place.

Yes, for very small teams—perhaps up to three or four people—a project manager can do some of the work. But, as team sizes increase, it becomes impossible to work and manage both because you are constantly being pulled away from the work by the needs of your team members.

One of the reasons for this situation is that organizations don't fully understand what project management is all about, and they think that it is possible for individuals to do both. The result is that nearly everyone in the company is trying to manage projects, and, as is true in every discipline, some of them will be good at it and others will have no aptitude whatsoever. I have found that a far better approach is to select a few individuals who have the aptitude and desire to be project managers and let them manage a number of small projects. This frees "technical" people (to use the term broadly) to do technical work without having to worry about administrative issues, while allowing project managers to get really good at their jobs.

It is outside the scope of this book to discuss how to select project managers, but, for the interested reader, the topic is covered in a book by Robert K. Wysocki and James P. Lewis titled *The World-Class Project Manager* (Perseus, 2001).

You Can't Have It All!

One of the common causes of project failures is that the project sponsor demands that the project manager must finish the job by a certain time, within budget, and at a given magnitude or scope, while achieving specific performance levels. In other words, the sponsor dictates all four of the project constraints. This doesn't work.

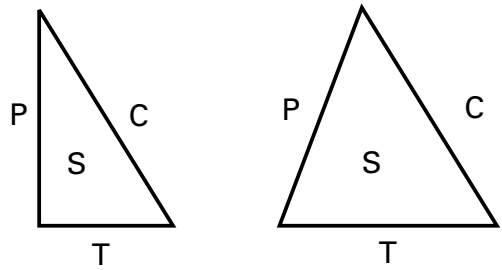
The relationship among the P, C, T, and S constraints can be written as follows:

$$C = f(x)\,(P, T, S)$$

In words, cost is a function of performance, time, and scope. Graphically, I like to show it as a triangle, in which P, C, and T are the sides and S is the area. This is shown in Figure 1-1.

In geometry, we know that if we are given values for the sides of a triangle, we can compute the area. Or, if we know the area and the

[FIGURE 1.1]
TRIANGLES SHOWING THE RELATIONSHIP BETWEEN P, T, C, AND S



length of two sides, we can compute the length of the remaining side. This translates into a very practical rule of project management: the sponsor can assign values to any three variables, but the project manager must determine the remaining one.

So let's assume that the sponsor requires certain performance, time, and scope parameters for the project. It is the project manager's job to determine what it will cost to achieve those results. However, I always caution project managers that they should have a paramedic standing by when they give the cost figure to the sponsor because she will probably have a stroke or heart attack, and the paramedic will have to revive her.

Invariably, the sponsor exclaims, "How can it cost that much?" She had a figure in mind, and your number will always exceed her figure. And she may say, "If it's going to cost that much, we can't justify doing the job." Exactly! And that is the decision she should make. But she is certain to try to get the project manager to commit to a lower number, and, if you do, then you only set up yourself—and her—to take a big fall later on.

It is your *obligation* to give the sponsor a valid cost so that she can make a valid decision about whether the project should be done. If you allow yourself to be intimidated into committing to a lower number, it is just going to be a disaster later on, and you are far better off taking your lumps now than being hanged later on.

Of course, there is another possibility. If she says she can afford only so much for the job, then you can offer to reduce the scope. If the job is viable at that scope level, then the project can be done. Otherwise, it is prudent to forget this project and do something else that can

make a profit for the company. As someone has said, there is a higher probability that things will accidentally go wrong in a project than that they will accidently go right. In terms of cost estimates, this means that there is always a higher likelihood that the budget will be overrun than that the project will come in under budget. This is just another way of stating Murphy's law: "Whatever can go wrong will go wrong."

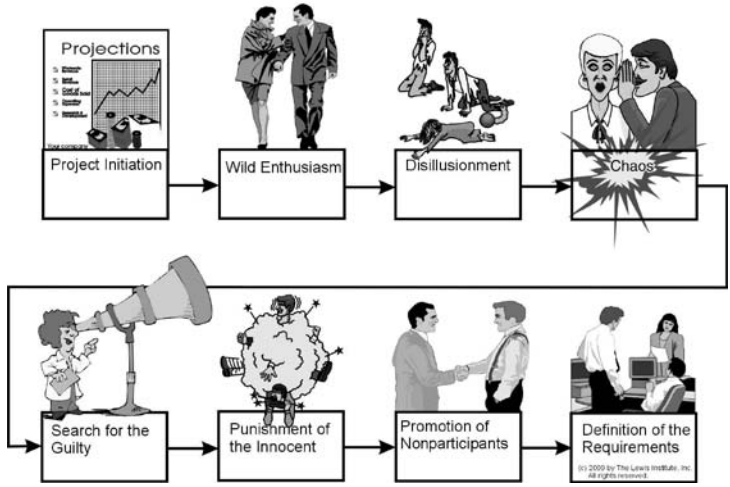
There is a higher probability that things will accidentally go wrong in a project than that they will accidentally go right.

The Phases of a Project

There are many different models for the phases a project goes through during its life cycle. One of these that captures the all-too-frequent nature of projects that are not managed well is shown in Figure 1-2.

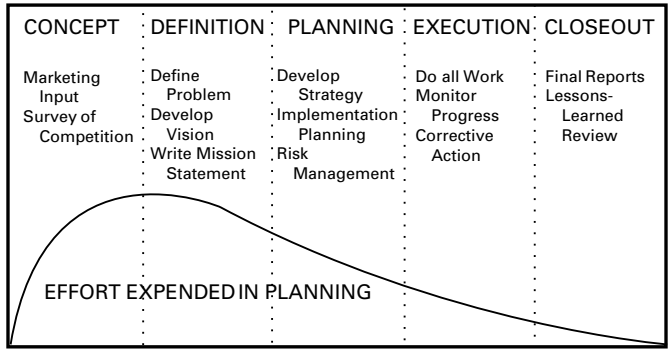
I have shown this diagram to people all over the world, and they invariably laugh and say, "Yes, that's the way it works." I suppose the comfort I can take is that we Americans are not the only ones who have the problem, but the bad news is that there are a lot of dysfunctional projects if everyone recognizes the model.

[FIGURE 1-2]
LIFE CYCLE OF A TROUBLED PROJECT



At the simplest level, a project has a beginning, middle, and end. I prefer the life-cycle model shown in Figure 1-3, but other versions are equally valid. In my model, you will notice that every project begins as a concept, which is always "fuzzy," and that the project team must formalize the definition of the job before doing any work. However, because of our ready-fire-aim mentality, we often start working on the job without ensuring that we have a proper definition or that everyone shares the mission and vision for the job. This invariably leads to major problems as the project progresses. This is illustrated by the example that follows.

[FIGURE 1-3]
APPROPRIATE PROJECT LIFE CYCLE



Definition

Some years ago, a project manager in one of my client companies called me and said, "I've just had a conference call with key members of my project team, and I realized that we don't agree on what the project is supposed to accomplish."

I assured him that this was common.

"What should I do?" he asked.

I told him that he had no choice but to get the team members all going in the same direction by clarifying the mission of the project. He asked me to facilitate a meeting to do this.

At the meeting, I stood in front of a flip chart and began by saying, "Let's write a problem statement." Someone immediately countered by saying, "We don't need to do that. We all know what the problem is."

I was unmoved by this comment. I said, "Well, if that is true, it's just a formality and will only take a few minutes, and it would help me if we wrote it down. So someone help me get started."

I'm going to be a little facetious to illustrate what happened next. Someone said, "The," and I wrote the word on the chart, and someone else said, "I don't agree with that!"

Three hours later, we finally finished writing a problem statement.

The project manager was right. The team did not agree on what the problem was, much less how to solve it. This is fundamental—and is so often true that I have begun to think we have a defective gene in all of us that prohibits us from insisting that we have a good definition of the problem before we start the work. Remember, project management is solving a problem on a large scale, and the way you define a problem determines how you will solve it. If you have the wrong definition, you may come up with the right solution—to the wrong problem!

In fact, I have become convinced that projects seldom fail at the end. Rather, they fail during the definition phase of a project. As the name implies, the *definition* phase of a project occurs very early when the problem is defined, the vision is developed, and the mission becomes clear. I call projects without clear definitions headless-chicken projects because they are like the chicken that has had its head chopped off and runs around spewing blood everywhere before it finally falls over and is "officially" dead. Projects work the same way. They spew blood all over the place until someone finally says, "I think that project is dead," and indeed it is. But it was actually dead when we chopped off its head in the beginning—it just took a while for everyone to realize it.

Once the project is defined, you can plan how to do the work. There are three components to the plan: strategy, tactics, and logistics. Strategy is the overall approach or "game plan" that will be followed to do the work. The following example of strategy was related to me by a friend who is into military history.

Strategy

The *strategy* phase of a project determines the high-level approach that your project will take to achieve the project requirements. A good example is the case of Avondale Shipyard. During World War II, defense contractors were under great pressure to build weaponry at intense levels. To accelerate the construction of ships and planes

in particular, many new assembly methods were invented. Avondale Shipyard, on the Mississippi River north of New Orleans, for example, worked on a new method of building ships. The traditional way had always been to build the ship in an upright position. However, ships built of steel require welding in the bottom, or keel area, of the boat, and this was very difficult to do. Avondale decided to build its ships upside down, to make the welding easier, and then turn them over to complete the structures above the top deck. This strategy was so effective that Avondale could build boats faster, cheaper, and of higher quality than their competitors, and the strategy is still being used today, nearly 70 years later.

Implementation Planning

The *implementation planning* phase of a project includes tactics and logistics. If you are going to build boats upside down, you must work out the details of how it will be done. A fixture must be constructed that will hold the boat and allow it to be turned over without being damaged. This is called working out the tactics. It also includes the sequence in which the work will be done, who will do what, and how long each step will take.

Logistics deals with making sure the team has the materials and other supplies needed to do their jobs. Ordinarily, we think about providing teams with the raw materials they need, but if the project is in a location where they can't get food, work will soon come to a grinding halt. So provisions must be made for the team to be fed—and possibly housed.

Execution and Control

Once the plan has been developed and approved, the team can begin work. This is the *execution* phase of the project, but it also includes *control* because, while the plan is being implemented, progress is monitored to ensure that the work is progressing according to the plan. When deviations from the plan occur, corrective action is taken to get the project back on track, or, if this is not possible, the plan is changed and approved, and the revised plan becomes the new baseline against which progress is tracked.

Closeout

When all the work has been completed, the *closeout* phase requires that a review of the project be conducted. The purpose is to learn lessons from this job that can be applied to future ones. Two questions are asked: "What did we do well?" and "What do we want to improve next time?"

Notice that we don't ask what was done wrong. This question tends to make people defensive, and they try to hide things that may result in their being punished. In fact, a lessons-learned review should never be conducted in a blame-and-punishment mode. If you are trying to conduct an inquisition, that's different. The purpose of an inquisition is usually to find who is responsible for major disasters and punish them. Lessons-learned sessions should be exactly what the words imply.

I have learned during the past few years that very few organizations do regular lessons-learned reviews of their projects. There is a reluctance to "open a can of worms." And there is a desire to get on with the next job. The problem is that you are almost sure to repeat the mistakes made on the previous project if no one knows about them or has an understanding of how they happened so that they can determine how to prevent them. But, perhaps most important, you can't even take advantage of the good things you did if you don't know about them.

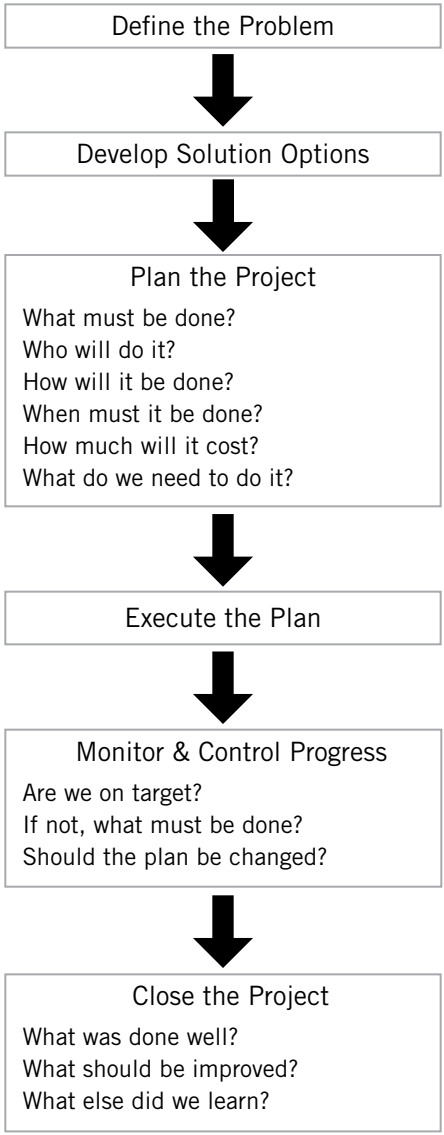
It has been said that the organizations that survive and thrive in the future will be those that learn faster than their competitors. This seems especially true for projects.

The Steps in Managing a Project

The actual steps in managing a project are straightforward. Accomplishing them may not be. The model in Figure 1-4 illustrates the steps.

Subsequent chapters of this book elaborate on how each step is accomplished. For now, here is a brief description of the actions involved.

[FIGURE 1-4]
THE STEPS IN MANAGING A PROJECT



Define the Problem

As discussed previously, you need to identify the problem to be solved by the project. It helps to visualize the desired end result. What will be different? What will you see, hear, taste, touch, or smell? (Use sensory evidence if things can't be quantified.) What client need is being satisfied by the project?

Develop Solution Options

How many different ways might you go about solving the problem? Brainstorm solution alternatives (you can do this alone or as a group). Of the available alternatives, which do you think will best solve the problem? Is it more or less costly than other suitable choices? Will it result in a complete or only a partial fix?

Plan the Project

Planning is answering questions: what must be done, by whom, for how much, how, when, and so on? Naturally, answering these questions often requires a crystal ball. We discuss these steps in more detail in Chapters 2, 3, and 5.

Execute the Plan

Obviously. Once the plan is drafted, it must be implemented. Interestingly, we sometimes find people going to great effort to put together a plan, then failing to follow it. If a plan is not followed, there is not much point in planning, is there?

Monitor and Control Progress

Plans are developed so that you can achieve your end result successfully. Unless progress is monitored, you cannot be sure you will succeed. It would be like having a road map to a destination but not monitoring the highway signs along the way.

Of course, if a deviation from the plan is discovered, you must ask what must be done to get back on track or—if that seems impossible—how the plan should be modified to reflect new realities.

Close the Project

Once the destination has been reached, the project is finished, but a final step should be taken. Some people call it an audit, others a postmortem (sounds a bit morbid, doesn't it?). Whatever you call it, the point is to learn something from what you just did. Note the way the questions are phrased: "What was done well? What should be improved? What else did we learn?" We can always improve on what we have done. However, asking, "What did we do wrong?" is likely to make people a bit defensive, so the focus should be on improvement, not on placing blame. More on this later.

The Project Management Body of Knowledge *(PMBOK® Guide)*

The Project Management Institute has attempted to determine a minimum body of knowledge that a project manager needs in order to be effective. As mentioned earlier when I defined project management, the *PMBOK® Guide* defines five processes, together with ten general areas of knowledge, and I will give brief summaries of them. If you want a complete document, you can get one by visiting PMI's website.

Project Processes

A *process* is a way of doing something. As previously mentioned, the *PMBOK® Guide* identifies five processes that are used to manage projects. Although some of them will be predominant at certain phases of a project, they may come into play at any time. Broadly speaking, however, they tend to be employed in the sequence listed as the project progresses. That is, initiating is done first, then planning, then executing, and so on. In the event that a project goes off course, replanning comes into play, and if a project is found to be in serious trouble, it may have to go all the way back to the initiating process to be restarted.

Initiating

Once a decision has been made to do a project, it must be *initiated* or launched. A number of activities are associated with this. One is for the

project sponsor to create a project charter, which defines what is to be done to meet the requirements of project customers. This is a formal process that is often omitted in organizations. The charter should be used to authorize work on the project; define the authority, responsibility, and accountability of the project team; and establish scope boundaries for the job. When such a document is not produced, the team members may misinterpret what is required of them, and this can be very costly.

Planning

One of the major causes of project failures is poor *planning*. Actually, I am being kind. Most of the time, the problem is caused by there being no planning! The team simply tries to "wing it," to do the work without doing any planning at all. As explained earlier in this chapter, many of us are task oriented, and we see planning as a waste of time, so we would rather just get on with the work. As we will see when we turn to controlling the project, failing to develop a plan means that there can be no actual control of the project. We are just kidding ourselves.

Executing

There are two aspects to the process of project *execution*. One is to execute the work that must be done to create the product of the project. This is properly called technical work, and a project is conducted to produce a product. Note that we are using the word "product" in a very broad sense. A product can be an actual tangible piece of hardware or a building. It can also be software or a service of some kind. It can also be a result; consider, for example a project to service an automobile that consists of changing the oil and rotating the tires. There is no tangible deliverable for such a project, but there is clearly a result that must be achieved, and if it is not done correctly, the car may be damaged as a result.

Executing also refers to implementing the project plan. It is amazing to find that teams often spend time planning a project, then abandon the plan as soon as they encounter some difficulty. Once they do this, they cannot have control of the work because without a plan, there is no control. The key is to either take corrective action to get back on track with the original plan or to revise the plan to show where the project is at present and move forward from that point.

Monitoring and Controlling

Monitoring and *controlling* can actually be thought of as two separate processes, but because they go hand in hand, they are considered one activity. Control is exercised by comparing where project work is to where it is supposed to be, then taking action to correct for any deviations from the target. Now the plan tells where the work should be. Without a plan, you don't know where you should be, so control is impossible, by definition.

Furthermore, knowing where you are is done by monitoring progress. An assessment of the quantity and quality of work is made using whatever tools are available for the kind of work being done. The result of this assessment is compared to the planned level of work; if the actual level is ahead of or behind the plan, something will be done to bring progress back in line with the plan. Naturally, small deviations are always present and are ignored unless they exceed some preestablished threshold or show a trend toward drifting farther off course.

Closing

In too many cases, once the product is produced to the customer's satisfaction, the project is considered finished, or closed. This should not be the case. A final lessons-learned review should be done before the project is considered complete. Failing to do a lessons-learned review means that future projects will likely suffer the same headaches encountered on the one just done.

Knowledge Areas

As previously mentioned, the *PMBOK® Guide* identifies ten knowledge areas that project managers should be familiar with in order to be considered professionals. These are as follows.

Project Integration Management

Project integration management ensures that the project is properly planned, executed, and controlled, including the exercise of formal project change control. As the term implies, every activity must be

coordinated or integrated with every other one in order to achieve the desired project outcomes.

Project Scope Management

Changes to project scope are often the factors that kill a project. *Project scope management* includes authorizing the job, developing a scope statement that will define the boundaries of the project, subdividing the work into manageable components with deliverables, verifying that the amount of work planned has been achieved, and specifying scope change control procedures.

Project Time Management

I consider this a bad choice of terms, as "time management" implies personal efforts to manage one's time. *Project time management* specifically refers to developing a schedule that can be met, then controlling work to ensure that this happens! It's that simple. Because everyone refers to this as scheduling, it should really be called *schedule management*. (I know, I may be booted out of PMI for such heresy!)

Project Cost Management

This is exactly what it sounds like. *Project cost management* involves estimating the cost of resources, including people, equipment, materials, and such things as travel and other support details. After this is done, costs are budgeted and tracked to keep the project within that budget.

Project Quality Management

As commented earlier, one cause of project failure is that quality is overlooked or sacrificed so that a tight deadline can be met. It is not very helpful to complete a project on time, only to discover that the thing delivered won't work properly! *Project quality management* includes both quality assurance (planning to meet quality requirements) and quality control (steps taken to monitor results to see whether they conform to requirements).

Project Human Resources Management

Project human resources management, often overlooked in projects, involves identifying the people needed to do the job; defining their roles, responsibilities, and reporting relationships; acquiring those people; and then managing them as the project is executed. Note that this topic does not refer to the actual day-to-day managing of people. The *PMBOK® Guide* mentions that these skills are necessary but does not attempt to document them. Given that these are the most important skills that a project manager must have, the *PMBOK® Guide* is deficient in omitting them.

Project Communications Management

As the title implies, *project communications management* involves planning, executing, and controlling the acquisition and dissemination of all information relevant to the needs of all project stakeholders. This information might include project status, accomplishments, and events that may affect other stakeholders or projects. Again, this topic does not deal with the actual process of communicating with someone. This topic is also mentioned but not included in the *PMBOK® Guide*.

Project Risk Management

Project risk management is the systematic process of identifying, quantifying, analyzing, and responding to project risk. It includes maximizing the probability and consequences of positive events and minimizing the probability and consequences of adverse events to project objectives. This is an extremely important aspect of project management that sometimes is overlooked by novice project managers.

Project Procurement Management

Procurement of necessary goods and services for the project is the logistics aspect of managing a job. *Project procurement management* involves deciding what must be procured, issuing requests for bids or quotations, selecting vendors, administering contracts, and closing them when the job is finished.

Project Stakeholder Management

Project stakeholder management includes the processes required to identify and manage the people, groups, or organizations that could impact or be impacted by the project. The term "stakeholder" is true to itself. The project manager must ask himself, "Who holds a stake in the outcome of the project?" If those viewed as stakeholders may affect or be affected by the project, then it is vital that they be identified and appropriately managed. All stakeholders should not be considered equal. The time and effort invested managing stakeholder engagement must be planned and executed according to their influence and support of the project.

KEY POINTS TO REMEMBER

- A project is a temporary endeavor undertaken to produce a unique product, service, or result.
- A project is also a problem scheduled for solution.
- Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. Project management is accomplished by applying the processes of initiating, planning, executing, monitoring and controlling, and closing.
- All projects are constrained by performance, time, cost, and scope requirements. Only three of these can have values assigned. The fourth must be determined by the project team.
- Projects tend to fail because the team does not take the time to ensure that they have developed a proper definition of the problem being solved.
- The major phases of a project include concept, definition, planning, execution, control, and closeout.
- Project stakeholders must be identified *and* managed.