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 to nearly 250,000 in 2006. For those of you who don't know, PMI is the professional organization for people who manage projects. You can get more information from their web site, *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, they have established a certification process whereby qualifying individuals receive the Project Management Professional (PMP®) designation. To do so, such individuals must have work experience (approximately 5000 hours) and pass an online exam which is based on the Project Management Body of Knowledge or PMBOK®.

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 treat 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 produce a unique product, service, or result" (PMBOK 2004, 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, will be referred to throughout this book as the PCTS targets.

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

Dr. J. M. Juran, the quality 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

In fact, the Standish Group (www.standishgroup.com) has found that only about 17 percent of all software projects done in the

United States meet the original PCTS targets, 50 percent must have the targets changed—meaning they are usually late, overspent, and have performance requirements reduced—and the remaining 33 percent are actually canceled. One year, we spent over 250 billion dollars on software development nationwide, so this means that 80 billion dollars was completely lost on canceled projects. What is truly astonishing is that 83 percent of all software projects get into trouble!

The Standish study reported here was conducted in 1994. In the February 2001 issue of Software Development magazine, an ad for a software development conference stated that we spend about 140 billion dollars on canceled and over-budget projects each year.

Now, lest you think I am picking on software companies, let me say that these statistics apply to many different kinds of projects. Product development, for example, shares similar dismal rates of failure, waste, and cancellation. Experts on product development estimate that about 30 percent of the cost to develop a new product is rework. That means that one of every three engineers assigned to a project is spending full-time just re-doing what two other engineers did wrong in the first place!

I also have a colleague, Bob Dudley, who has been involved in construction projects for 35 years. He tells me that these jobs also tend to have about 30 percent rework, a fact that I found difficult to believe, because I have always thought of construction as being fairly well defined, and thus easier to control than might be true of research projects, for example. Nevertheless, several colleagues of mine confirm Bob's statistics.

The reason for these failures is consistently found to be inadequate project planning. People adopt a ready-fire-aim approach in an effort to get a job done really fast and end up spending far more time than necessary by reworking errors, recovering from diversions down blind "alleys," and so on.

I am frequently asked how to justify formal project management to senior managers in companies, and I always cite these statistics. However, they want to know whether using good project

management really reduces the failures and the rework, and I can only say you will have to try it and see for yourself. If you can achieve levels of rework of only a few percent using a seat-of-the-pants approach to managing projects, then keep doing what you're doing! However, I don't believe you will find this to be true.

The question I would ask is whether general management makes a difference. If we locked up all the managers in a company for a couple of months, would business continue at the same levels of performance, or would those levels decline? If they decline, then we could argue that management must have been doing something positive, and vice versa. I doubt that many general managers would want to say that what they do doesn't matter. However, we all know that there are effective and ineffective general managers, and this is true of project managers as well.

Project management is 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.

What Is Project Management?

The PMBOK definition of project management is ". . . 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 2004, p. 8). Project requirements include the PCTS targets

mentioned previously. The various processes of initiating, planning, and so on, will be 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 specified that a project manager should *facilitate* planning. One mistake made by inexperienced project managers is to plan the project for the team. Not only do they get no buy-in to their plan, but it is usually full of holes. They can't think of everything, their estimates of task durations are wrong, and the entire thing falls apart after the project is started. The first rule of project management is that the people who must do the work should help plan it.

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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 them, to get scarce resources that they need, and to buffer them from outside forces that would disrupt the work. She is not a project czar. She should be—above everything—a *leader*, in the true sense of the word.

The best definition of leadership that I have found is the one by Vance Packard (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 over 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 is the management or administrative part of the job. But without leadership,

projects tend to just satisfy bare minimum requirements. With leadership, they can exceed those bare minimums.

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 failures remain 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 will discuss the WBS later). 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 would destroy something or injure himself. So why do it with software?

One-Person Projects

When is managing a project not project management? When only one person is involved.

A lot of people are sent to my seminars to learn how to manage projects, but they are the only person working on their projects. Now it is true that a one-person job can be called a project,

because it has a definite starting point, target end date, specific performance requirements, defined scope of work, and a budget. However, when no one else is working on the project (including outside vendors), there is no need for a critical path schedule. A critical path schedule is one that has a number of parallel paths, and one of them will be longer than the others and will determine how long it will take to complete the job, or ultimately, whether the given end date can be met. When you're working on a job by yourself, there aren't any parallel paths—unless you are ambidextrous!

One-person projects do require good self-management, or good time management, but all you need is a good to-do list, which comes from a task listing. However, unless you are coordinating the work of other people, you aren't practicing true project management.

The Big Trap—Working Project Managers

It is common to have individuals serve as project managers and 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 will inevitably find 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 will 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 above about whether project management matters?).

Unfortunately, when 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, and allows 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 entitled *The World-Class Project Manager* (Wysocki & Lewis, 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, 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.

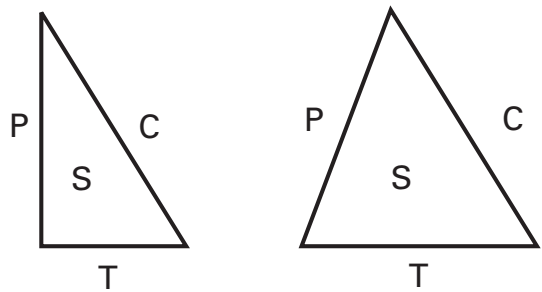
The relationship between the PCTS constraints can be written as follows:

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

In words, this says, "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 two sides, we can compute the length of the remaining side. This translates into a very practical rule of project manage-

Figure 1-1. Triangles showing the relationship between P, C, T, and S.



ment: 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 from 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 must 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 or not. 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 to take your lumps now than to be hung later on.

Of course, there is another possibility. If she says she can only afford 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

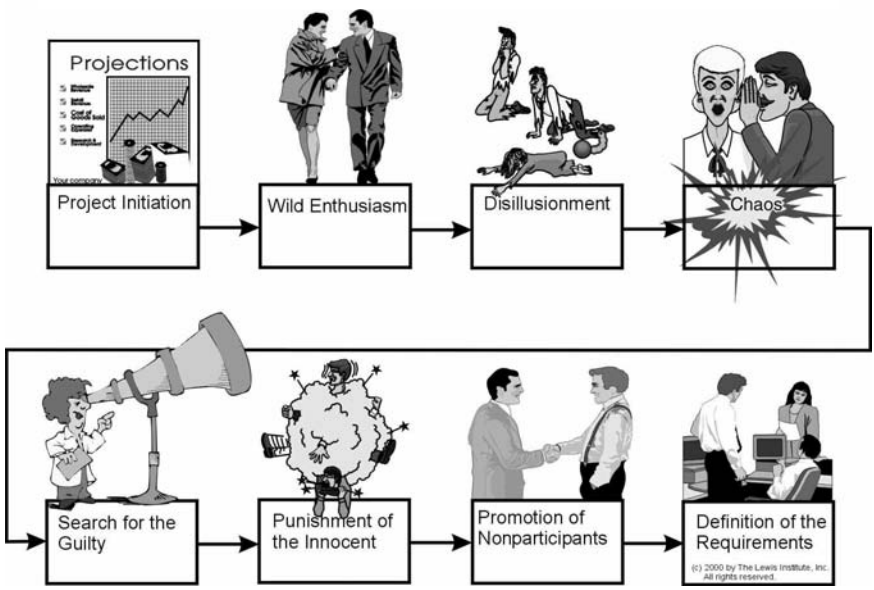
that can make profits for the company. As someone has said, there is a higher probability that things will accidentally go wrong in a project than that they will accidently go right. In terms of cost estimates, this means that there is always a higher likelihood that the budget will be overrun than that the project will come in below budget. This is just another way of stating Murphy's law, that "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 captures the all-too-frequent nature of projects that are not managed well, and is shown in Figure 1-2.

Figure 1-2. Life cycle of a troubled project.



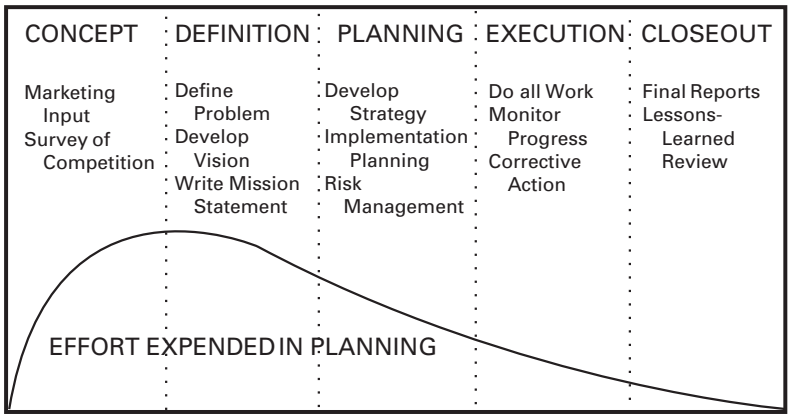
I have shown this diagram to people all over the world, and they invariably laugh and say, "Yes, that's the way it works." I suppose the comfort I can take is that we Americans are not the only ones who have the problem, but the bad news is that there are a lot of dysfunctional projects if everyone recognizes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

At the simplest level, a project has a beginning, middle, and end. I prefer the life-cycle model shown in Figure 1-3, but there are other versions that 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 the mission and vision for the job are shared by everyone. This invariably leads to major problems as the project progresses. This is illustrated by the example which follows.

Definition Phase

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 mem-

Figure 1-3. Appropriate project life cycle.



bers 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 them all going in the same direction by clarifying the mission of the project. He asked me to facilitate a meeting to do this, and 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. They did not agree on what the problem was, much less how to solve it. This is fundamental—and is so often true that I begin 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 at the definition stage. I call these projects *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. An example of strategy was related to me by a friend who is into military history.

Strategy

During World War II, defense contractors were under great pressure to build weaponry at an intense level. To accelerate construction of ships and planes in particular, many new assembly methods were invented. Avondale shipyards, for example, worked on the method of building ships. The traditional way had always been to build the ship in an upright position. However, ships built from steel required welding in the bottom, or keel area of the boat, and this was very difficult to do. Avondale decided to build their 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 they could build boats faster, cheaper, and of higher quality than their competitors, and the strategy is still being used today, nearly 60 years later.

Implementation Planning

This phase 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 deal with making sure the team has the materials and other supplies needed to do their jobs. Ordinarily we think about providing them with the raw materials they need, but if the project is in a location where they can't get food, it 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, 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?" The second is, "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 should be exactly what the words imply.

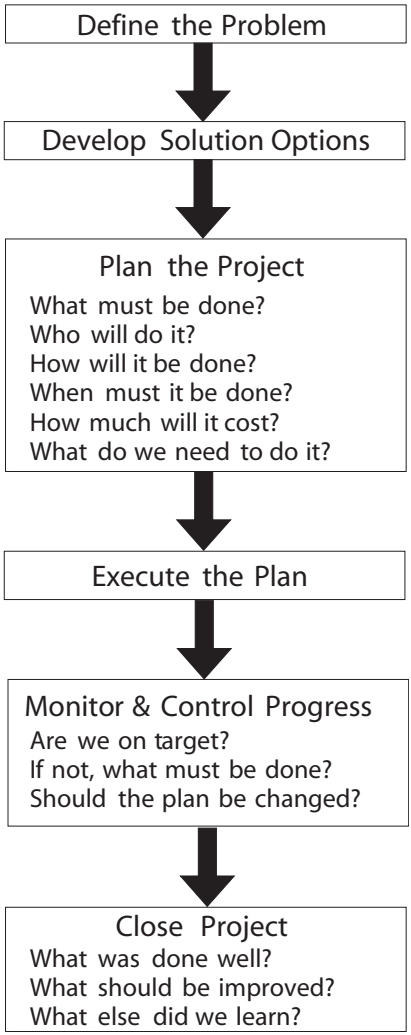
I have learned during the past few years that very few organizations do regular lessons-learned reviews of their projects. There is a reluctance to "open a can of worms." And there is a desire to get on with the next job. The problem is that you are almost sure to repeat the mistakes made on the previous 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 importantly, 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 to manage a project are straightforward. Accomplishing them may not be. The model in Figure 1-4 illustrates the steps.

Figure 1-4. The steps in managing a project.



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

DEFINE THE PROBLEM

As was 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 will discuss these steps in more detail in chapters two through four.

EXECUTE THE PLAN

Obvious. 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 roadmap to a destination, but not monitoring the highway signs.

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 should the plan be modified to reflect new realities?

CLOSE THE PROJECT

Once the destination has been reached, the project is finished, but there is a final step that should be taken. Some people call it an audit, others a post-mortem (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®)

The Project Management Institute has attempted to determine a minimum body of knowledge that is needed by a project manager in order for him or her to be effective. As I mentioned earlier when I defined project management, there are five processes defined by the PMBOK, together with nine general areas of knowledge, and I will give brief summaries of them. If you want a complete document, you can get one by visiting the PMI web site: www.pmi.org.

Project Processes

A process is a way of doing something. As previously mentioned, the PMBOK 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, re-planning 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 re-started.

Initiating

Once a decision has been made to do a project, it must be initiated or launched. There are a number of activities associated with this. One is for the project sponsor to create a project charter, which would define 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 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 due to no planning! The team simply tries to "wing it," to do the work without doing any planning at all. As I have 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 this process. 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, which 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, since 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 continue forward from that point.

Monitoring and Controlling

These could 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 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 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 and if the actual level is ahead or behind of 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 pre-established threshold or they show a trend to drift further off course.

Closing

In too many cases, once the product is produced to the customer's satisfaction, the project is considered finished. 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 identifies nine 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. 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. For projects, it 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. It 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 I have 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! Quality management included both quality assurance (planning to meet quality requirements) and quality control (steps taken to monitor results to see if they conform to requirements).

Project Human Resource Management

Managing human resources is often overlooked in projects. It 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. PMBOK 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, PMBOK is deficient in omitting them.

Project Communications Management

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

Project Risk Management

Risk management is the systematic process of identifying, quantifying, analyzing, and responding to project risk. It includes maxi-

mizing 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. It involves deciding what must be procured, issuing requests for bids or quotations, selecting vendors, administering contracts, and closing them when the job is finished.

Summary

Following are the key points that you should retain from this chapter.

- 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 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 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 and control, and closeout.

Questions for Review

1. Project management is not just:
   a. planning
   b. rework
   c. scheduling
   d. controlling

2. The problem with being a working project manager is that, in a conflict between working and managing:
   a. You don't know what priorities to set.
   b. Your boss will think you're slacking off.
   c. There will never be enough time to do both.
   d. The work will take precedence and managing will suffer.

3. PMBOK defines:
   a. The body of knowledge identified by PMI as needed by project managers to be effective.
   b. A test administered by PMI to certify project managers
   c. An acronym for a special kind of risk analysis, like FMEA.
   d. None of the above

4. Project scope defines:
   a. A project manager's visibility to the end date.
   b. The magnitude or size of the job.
   c. How often a project has been changed.
   d. The limits of a project manager's authority.