THIRD EDITION

PROJECT MANAGEMENT
for SMALL PROJECTS

SANDRA F. ROWE
PhD, MBA, PMP

PROJECT MANAGEMENT FOR SMALL PROJECTS

Third Edition

Sandra F. Rowe, PhD, MBA, PMP

Project Management for Small Projects

To my parents Minnie Leola Rowe and Lewis Arthur Rowe

In memory of my aunts: Celia Carruthers, Mary Johnson,
Ida Booker, and Celess Ray

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Managing projects requires time, effort, and discipline, regardless of the project size. The difference between managing larger and smaller projects is not only the amount of time, effort, and discipline but also the processes and tools. *Project Management for Small Projects* provides scalable processes and simplified tools for immediate use in managing small projects.

This is an exciting time to enter the project management profession. Project management provides opportunities for professional and personal growth. If you are new to managing small projects or currently manage small projects and need more structure, *Project Management for Small Projects*, third edition, is for you. My desire is that you become so engaged in the use of these processes and tools that project management discipline becomes as much fun for you as it is for me. I have combined easy-to-follow steps with practical application tips to facilitate your learning.

Because my intention is for you to use project management on small projects in preparation for eventually managing larger projects, I am using the Project Management Institute (PMI), *A Guide to the Project Management Body of Knowledge*, sixth edition (*PMBOK® Guide**), which includes the standard for project management, as the base to build off. I have used PMI's project management terms

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* "PMBOK" is a trademark of the Project Management Institute, Inc. which is registered in the United States and other nations.

and definitions wherever possible. The *PMBOK®Guide* is inclusive and describes the sum of knowledge within the profession of project management. The complete project management body of knowledge includes proven, traditional practices that are widely applied and innovative practices that are emerging in the profession. In this book, I take the traditional practices used for larger projects and tailor them for small projects, while staying true to PMI's project management standards.

This third edition has been updated to align with *A Guide to the Project Management Body of Knowledge,* sixth edition, and provides new tools, templates, and techniques to support the revised processes. The third edition is organized in four parts. Part I sets the stage by providing a foundation for project management discipline. Part II defines a project management process for small projects. This part includes both management and leadership activities. Part III provides additional discipline on several project management topics. Finally, Part IV, a newly added section, incorporates agile practices.

I hope this updated edition helps readers have continued success in managing their small projects.

> —Sandra F. Rowe, PhD, MBA, MSCIS, PMP
> sandrarowe@comcast.net
> sandrarowe@projectwise-solutions.com
> www.projectwise-solutions.com

PROJECT MANAGEMENT DISCIPLINE

1 ■ Introduction to Project Management

Most organizations rely on a variety of projects, both large and small. Although small projects have unique challenges that are not present in large projects, small projects can still benefit from a defined project management methodology. To achieve maximum benefits, the processes, tools, and techniques must be scalable and adaptable. The more successful you are with managing small projects, the more opportunities you will have to obtain larger projects.

Almost everyone, to some degree, is involved with projects and should be prepared to manage them effectively. *Project Management for Small Projects* suggests an approach that allows the project manager to apply structure and discipline to managing small projects while balancing the needs of the project with the project management methodology.

As we discuss project management practices, I will use definitions from the Project Management Institute's (PMI) publications and other sources.

Project Management Best Practices

A best practice is an activity that has proven to be successful over time. Some project management best practices include:

- Using a project management approach that captures the intent of the project business case
- Developing a project charter
- Documenting project requirements
- Identifying what is in and out of scope
- Using a project schedule to plan and monitor project activities
- Developing a project budget to control project costs
- Managing project risks
- Communicating to project stakeholders
- Using project management tools, techniques, and templates
- Tailoring a methodology to fit the specific needs of the small project to address the competing constraints of scope, schedule, cost, resources, quality, and risk

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PMI defines the project management body of knowledge (PMBOK) as a term that describes the knowledge within the profession of project management. The project management body of knowledge includes proven traditional practices that are widely applied as well as innovative practices that are emerging in the profession.[1]

Therefore, the *PMBOK®Guide* provides a foundation which I used to build the techniques for small projects.

Project Overview

Projects are a more important part of business now than they ever have been. They exist at all levels of every organization and must be managed proactively, regardless of size. Normally when we think of

projects, we think of large initiatives such as developing a new product or service, developing a new information system or enhancing an existing one, constructing a building, or preparing for a major sports event. Small projects are not always viewed as projects and therefore are not always treated as projects—especially smaller, more informal projects, which are often called assignments.

Definition of a Project

"A project is a temporary endeavor undertaken to create a unique product, service, or result."[2] A project can create:

- A product that can be a component of another item, an enhanced item, or an end item in itself
- A service or a capability to perform a service
- A result, such as an outcome or document
- A unique combination of one or more products, services, or results

A project has three distinct characteristics.

1. A project is temporary in that it has a beginning and an end. A project always has a defined start and end date. The project begins with a statement of work or some form of description of the product, service, or result to be supplied by the project, and it ends when the objectives are complete or it is determined that the objectives cannot be met and the project is canceled.
2. A project is unique in that the product, service, or result created as a result of the project is different in some distinguishing way from all similar products, services, or results. *Unique* also indicates that although a project might appear to be similar to another project because you are producing the same type of deliverable, it really is not. In both projects you are creating something that did not exist before. Even a revision to an existing deliverable is considered unique because the revised product is something that did not exist before.

3. A project is characterized by progressive elaboration. This means the project develops in steps and grows in detail. Progressive elaboration allows you to continually improve your plan by adding more detailed and specific information as more accurate estimates become available. When you are first given a project, you have limited information to work with, usually in the form of a high-level project description, the project objective, and some assumptions and constraints. The scope might be further defined, and the work activities for the project will have to be planned in detail as more specific information becomes available. Progressive elaboration allows you to manage to a greater amount of detail as the project evolves.

Projects also drive change in organizations. A project is used to move an organization from its current state to a defined future state.

Finally, projects enable business value creation. There is value derived from doing the work. Business value is the benefit that the results of a project provides to the project stakeholders and can be tangible, intangible, or both.

Another way to view a project is to see a project as something we do one time, as opposed to operational work, which is continuous and repetitive and is undertaken to sustain the business. Operational activities have no real completion date; they are ongoing. An example of a project would be to develop or enhance an accounting system. The operational activity would be to process biweekly payroll or pay monthly expenses. Both operational activities and projects are constrained by resources and are planned, executed, and controlled (figure 1.1). However, projects, due to their temporary nature, are initiated and closed.

Projects can intersect with operations in several ways:

- When developing a new product or result for an existing system
- While developing new or enhancing existing procedures
- When a project is completed and transferred to operations
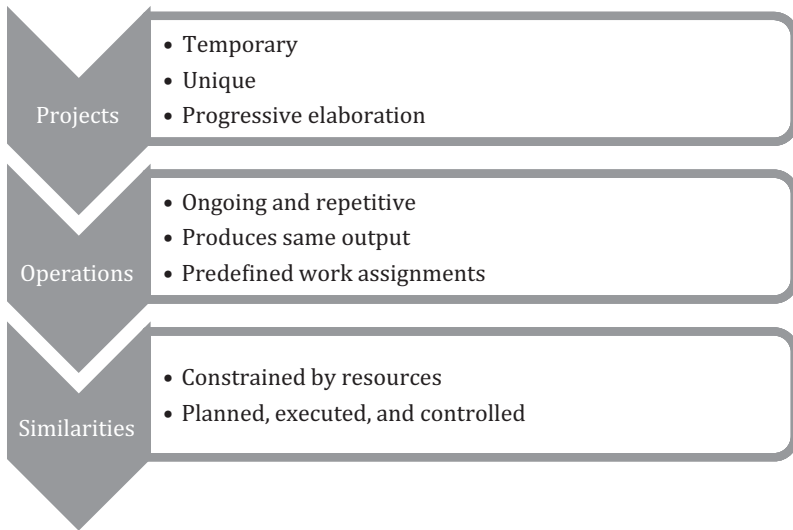
Figure 1.1: Projects and operations comparison

Why Use Project Management on Small Projects?

Imagine being assigned a project to revise an existing process. You have a team of three subject matter experts to assist with the design and implementation. Where do you begin? What are you planning to deliver? When will this project be completed? How much will this project cost? What are the team members' roles and responsibilities? The use of project management provides the discipline and tools for answering these questions.

Definition of a Small Project

Small projects are perceived to be relatively easy, but other than this there is no one way to define when a project is a small project. In some cases *small* could be defined on the basis of cost, such as costing less than $1 million. Cost is relative, however, and depends on the income of the organization. *Small* could also be defined by

time, for example, taking less than six months to complete. For the purpose of this book, we will use the following guidelines to define small projects. A small project generally:

- Is short in duration, typically lasting less than six months, and usually part-time in effort hours
- Has 10 or fewer team members
- Involves a small number of skill areas
- Has a single objective and a solution that is readily achievable
- Has a narrowly defined scope and definition
- Affects a single business unit and has a single decision maker
- Has access to project information and will not require automated solutions from external project sources
- Uses the project manager as the primary source for leadership and decision making
- Has no political implications with respect to proceeding or not proceeding
- Produces straightforward deliverables with few interdependencies among skill areas
- Costs less than $150,000 and has available funding

If the project involves a few skill areas but the deliverables are complex, it is not a small project. If the scope is broad, the project usually involves more skill areas, so it would not be considered a small project. The more skill areas involved, the more effort will be required to manage the project.

A small project can be a portion of a larger project. For example, if a team lead is responsible for planning and controlling specific project activities and then reporting results to the project manager, the team lead is, in effect, running a small project. Most small projects center on changes in organizational processes or enhancements to existing systems. Other examples of small projects include:

- Developing a training course
- Implementing a project management office (PMO)
- Implementing a purchased software application
- Enhancing an existing information system

- Improving business processes
- Developing a website
- Evaluating an existing practice
- Developing a strategy
- Developing a project proposal

The following are detailed descriptions of two small projects.

Characteristics	Criteria
Duration	Six months
Team members	Five part-time team members: project manager, instructional designer, two trainers, and an administrative assistant
Single objective	Develop introduction to project management training course
Narrowly defined scope	Training materials in alignment with other project management courses
Single decision-maker	Sponsor: corporate education director
Straightforward deliverables	PowerPoint presentation, facilitator's manual, participant's manual, and case study
Interdependencies among skill areas	Project Management Office

Characteristics	Criteria
Duration	Three months
Team members	Four part-time team members: project manager and three subject matter experts
Single objective	Revise the planning process to include changes made to the corporate project management process and to be consistent with the current version of the *PMBOK® Guide*.

(continued)

Characteristics	Criteria
Narrowly defined scope	Planning process description and templates
Single decision-maker	Sponsor: project management office director
Straightforward deliverables	Planning process description, work breakdown structure. Process and example, brainstorming techniques, project-planning templates
Interdependencies among skill areas	None

A small project can also be part of a program. (Refer to chapter 12 for a discussion on projects as part of a program.)

Definition of a Simple Project

This book differentiates between small and simple projects. Many of the best practices for small projects and simple projects are similar. When small projects and simple projects require different approaches, this book explains where and how.

Simple projects are even more straightforward than small projects. Simple projects are often called assignments. We usually do not think of assignments as projects, but assignments, like projects,

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Scenario

Kenny is an analyst with ambitions of becoming a project manager. He is aware of the definition of a project and the importance of using project management on small projects. He has been working on assignments and wonders if he could be more successful with completing his assignments if he used project management methods and tools. Can project management be used on an assignment?

The answer is yes. An assignment can be treated as a simple project.

have a definite beginning and end and produce a unique output. Assignments are usually short in duration and are completed by a small team consisting of three or fewer team members. Often only one person completes an assignment. (Refer to chapter 13, "The Power of One," for more details on one-person assignments.)

Because we do not think of assignments as projects, we do not treat them as projects. Assignments, because of their size and duration, do not need all the formality required by projects; however, they can still benefit from a simplified form of project management. Treating assignments as projects provides you with the opportunity to clearly define expectations, better use resources, and eliminate the frustration of wasted effort and unnecessary rework.

Examples of simple projects include:

- Developing procedures or a reference guide
- Revising a business process
- Developing an electronic filing system to store departmental documents
- Developing a presentation to communicate a new process

The factors that distinguish a small project from a simple project are duration, team size, and degree of formality required to effectively meet stakeholders' expectations. The project manager must determine what combination of processes and tools fits the needs of the project.

A simple project generally has the following characteristics:

- Is short in duration, typically lasting fewer than 30 days, and usually part-time in effort
- Has three or fewer team members, often handled by a single resource
- Involves a single skill area
- Has a single objective and a solution that is readily achievable
- Has a narrowly defined scope and definition
- Affects a single business unit and has a single decision maker

- Has access to project information and will not require automated solutions
- Uses the project manager as the primary source for leadership and decision making
- Has no political implications with respect to proceeding or not proceeding
- Produces straightforward deliverables with no interdependencies from other skill areas
- Does not require a project budget; costs are handled as part of ongoing operations

What Is Project Management?

"Project management is the application of knowledge, skills, tools, and techniques to meet project requirements."[3] It includes identifying requirements for the project, defining and planning the necessary work, scheduling the activities to complete the work, monitoring and controlling project activities, communicating project progress among project stakeholders, and finally conducting activities to end the project.

Project management involves coordinating the work of other people. A project manager and a project team are involved in the project. The project manager is the person assigned by the organization to achieve the project objectives. *Project manager* might not be the person's formal job title, but for the purpose of this book we will use the term for the person responsible for completing the project. The project team members are the people responsible for performing project work. They complete the project deliverables. They might or might not report directly to the project manager. For small projects team members usually work part-time on the project.

Project management has been called an art and a science. Project management is an art because of the human element. The involvement of interrelationships among diverse groups requires the use of leadership skills, which are applied on the basis of the project situation and are unique to each project. Some of these skills are communicating, negotiating, decision making, and problem solving.

The art of project management requires the project manager to gain agreement among technical and business resources, the project team and the customer, and multiple stakeholders. (Stakeholders are people and organizations that are actively involved in the project or whose interests might be positively or negatively affected as a result of project execution or project completion.) To effectively master the art of project management you must develop leadership skills.

Project management is a science because it is based on repeatable processes and techniques. The project manager has an array of tools, templates, and standards to assist with defining and planning

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Project Management Is Both an Art and a Science

Art: leadership skills

- Establish and maintain vision, strategy, and communications.
- Foster trust and team building.
- Influence, mentor, and monitor team performance.
- Evaluate team and project performance.

Science: the processes necessary to successfully complete a project

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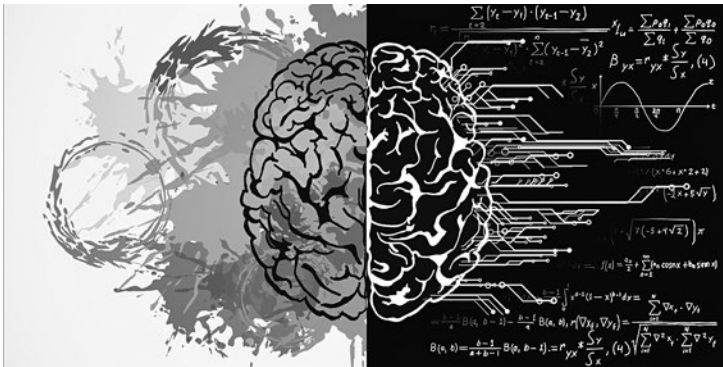
The Power of Project Management

A team was assigned to work on a project to revise an existing system. Since the changes were minor and the project was expected to last only five weeks, the project manager was lax in the use of project management processes and tools. Needless to say, the project got into trouble. The project work was not completed on time and the team was discouraged. A new project manager who insisted on the use of project management best practices was assigned. A project charter that gave the team a clear understanding of what was included in the project was developed. The team then worked together to develop the project schedule, which included the name of the resource responsible for completing the work along with the planned start and end dates. The team became reenergized and engaged in completing the project activities.

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a project. In addition, the project manager has an assortment of metrics and status reports for monitoring and controlling a project. To master the science of project management, you must effectively and efficiently apply a system that incorporates the appropriate project management processes and techniques.

Project management is art informed by science. "Learning the basic science is a requisite to practicing the art."[4] Learning the basics of project management—processes, tools, and techniques—is a start and you should not stop there. Incorporating leadership allows you to guide, motivate, and direct a team, make creative decisions, and communicate with all project stakeholders; therefore, increasing your ability to help the organization achieve its business goals.

The Value of Using Project Management on Small Projects

For larger projects, success is measured by product and project quality, timeliness, budget compliance, and degree of satisfaction.

Larger projects must balance competing project constraints, including scope, quality, schedule, budget, resources, and risk. However, for small projects, success can be defined as on time, within budget, and meeting the requirements of the project stakeholders. Managers of small projects need to be concerned with meeting this triple constraint, with an understanding that other project constraints may also need to be managed.

The value project management offers is the use of standard processes and tools. Project management is even more valuable when the processes and tools can be tailored to fit the different types and sizes of small projects. By using a methodology, the project manager is more prepared to define and manage the project scope, obtain project requirements, and provide ongoing communication. Stakeholders are engaged early and expectations are known. Add to this the ability to produce realistic estimates and schedules, and to effectively manage issues and risks, and you have a means of managing project constraints. When you can manage project constraints, you improve your chances for project success.

Why Use Project Management?

Project management:

- Helps the organization to meet its business objectives
- Provides processes and tools that create discipline and a means for organizing project data
- Provides a means to define scope and control scope changes
- Defines project roles and responsibilities
- Allows the project manager to manage stakeholder expectations
- Allows the team to focus on priorities
- Addresses the competing constraints of scope, schedule, cost, resources, quality, and risk

Scenario

Kenny has learned that project management is both an art and a science and has concluded that project managers need to constantly balance people and processes.

Finally, using project management on small projects will provide models for future projects. Most small projects tend to be similar in structure or outcome. If a template or model is developed, it can be used for future projects. This saves the project manager time and provides a basis for continuous process improvement.

2 ■ Concerns for Small Projects

We have determined that a project is a series of activities that must be performed to achieve a specific goal, within a specific timeframe, and that small projects require a degree of discipline to be successful. Now we look at the challenges and problems associated with managing small projects.

Challenges for Small Projects
A challenge is a call to action. Some challenges the project manager should respond to are identified below.

Planning
Planning is necessary to define and measure the project scope, develop the project management plan, and identify and schedule the project activities that occur within the project. It ensures that you request the appropriate amount of time and resources to complete

the work. Planning is a challenge for a project of any size. Getting the right people together at the right time to discuss the project details can be painful.

Planning for a small project is even more of a challenge. The project is already perceived as being easy to deliver because of its size. Small equals easy. Because of that perception, adequate time is not set aside for detailed planning. (Why waste time planning when you could be creating project deliverables?) The first reaction after receiving the small project is to jump right in and start performing the project activities without planning. Even the most experienced project manager has fallen into this trap at least once. By not planning, you start out thinking the project is small and then end up hoping that the project really is small. Also, by not planning you may overlook a critical component of the project.

The project manager should always make sure the scope, work effort, and costs are defined. With a loosely defined scope, the project manager runs the risk of it constantly changing, and scope creep could become a problem. The project manager should also make time to plan because the plan provides direction for the project, is a means for control, and is a communication tool for the sponsor and other project stakeholders. Planning gives the project the respect it deserves.

When planning a small project, the project manager should consider a few things.

- **Remember to plan.** It is easy to overlook the importance of planning on a small project. Add the planning deliverables to your list of project deliverables.
- **Involve the people who will do the work in planning the work.** It is easy for you to quickly create a plan based on what should be done, but the people who will do the work have more accurate information on what really needs to be done, how much effort it will actually take, and when they are available to do the work. Without this information, even a small project will fail.
- **Use the appropriate tools and techniques to manage the project.** Even a methodology designed for small

projects can be tailored to fit the specific needs of your project.

- **Be careful not to overplan or become too detailed.**
  Decide how much detail is required and know when enough is enough.
- **Control the urge to structure the project in a way that overemphasizes the elements you are most comfortable with.** The result of this can be that you don't give the attention required to the elements with which you are not as comfortable. Remember: don't get stuck on what you know.
- **Obtain business documentation.** Knowing the business needs and objectives will assist you with determining the project management approach for the project. Obtain a copy of the project business case, if it is available. If it is not available, work with the business sponsor to obtain the information.

Planning activities for small and simple projects might be time-consuming initially, but in the end long-term planning will save time and effort and reduce the risk of failure. Remember that even on a small project you should not work in a vacuum. Obtain input from stakeholders, and schedule project reviews with the project sponsor.

Project Challenge: Planning

Because small projects are generally short in duration and are perceived as easy to deliver, planning is often omitted as the team immediately begins working on producing project deliverables.

Without the exercise of defining all the deliverables and estimating the effort required to complete the deliverables, this team has already unknowingly put the project in jeopardy.

A team of three was assigned to develop a training course. Because the team members were all trainers, they were confident that they could develop a training course with no problem. They divided the course into six modules, and each trainer took two and immediately began developing presentation slides for the course. A week later the sponsor asked for an update and was told by the team that the project was on schedule and that the course would be developed in four weeks. Still operating with no defined deliverables, no schedule, no roles and responsibilities, no criteria for success, and no communication methods, the team members continued to independently design presentation slides.

With two days left, the team met to review its progress. Each trainer had developed two modules based on his or her own design. Since the deliverables were not defined, some of the modules were detailed and included activities and some were general and just included basic definitions. The responses were, "Oh, I didn't know you wanted to include that," or "Oh, that's a good idea. Why didn't you tell me what you were doing? What are we going to do now?" But with two days left, how was the team going to deliver a quality product to the sponsor? The team did what many teams do when they know they are going to miss a deadline: it asked the sponsor for more time.

The team had to explain to the sponsor why it was not able to make the deadline. This was embarrassing for the team because, after all, this was a small project (remember the perception—easy to deliver). The sponsor asked the team how much more time it needed. Before responding, this time the team did some planning. It defined the deliverables, estimated the effort, and established ongoing communication vehicles.

To fail once was bad enough. The team members had learned their lesson. They understood now that even for a small project, they had to plan their project activities if they wanted to be successful.

Reasons to Plan

Here is a summary of the reasons you should always plan. The plan:

- Defines scope, work effort, and costs
- Is a communication tool for project stakeholders
- Provides the means to control the project
- Enables you to keep track of changes
- Enables you to predict potential problems and provides a means for proactive management
- Establishes consistency among multiple projects
- Allows you to focus on the business objectives
- Increases the opportunity for project success

Low Prioritization

Another challenge for managing small projects is that they often have low priority within the organization. The project has low visibility and is often less important than larger projects, and it is therefore treated as a lower priority in the daily activities of the project team members. The project manager must work hard to convey a sense of project urgency.

The project manager can increase the importance of a low-priority project in the eyes of the project team by helping the team see how the project fits into the organization. This line of sight connects the team member with the small project, strategic initiative, organizational goal, and finally all the way up to the company vision. Connecting the small project to the organization's goals gives the project a stronger identity and the team members an understanding that they are part of something larger than just the small project.

Inexperienced Project Teams

Having an inexperienced project team should not discourage the project manager. Many times, less experienced project team members

are eager to learn and often request the opportunity to be part of the team. If people want to learn, they are more willing to try new things. Having an inexperienced team is also an opportunity for the project manager to build an informal network, as everyone on the team, including the project manager, learns together.

Small projects rarely have a dedicated project team and have difficulty obtaining key resources. Often a small project is staffed with inexperienced or less-skilled team members because the small project is viewed as not requiring the more highly skilled resources.

A small project might be given to an inexperienced project manager to provide an opportunity for the project manager to develop project management skills. Without the benefit of prior training or mentoring, such project managers are often left to their own devices or might not know what to do.

Project Manager Responsible for Multiple Functions
The project manager might have to perform multiple functions and could sacrifice good project management practice for the sake of getting the work done. In addition to managing the project, the project manager might be involved in one or more of the following:

- Operating as the subject matter expert on a given project. As the subject matter expert, the project manager might take on the roles of the analyst, specialist, designer, or developer, to name a few. As the subject matter expert, the project manager might be responsible for performing analyses, gathering business requirements, developing specifications, creating deliverables, or testing or implementing deliverables. To state it another way, the project manager might perform the tasks required to complete the project.
- Being responsible for operational activities. The project manager might manage projects part time and also have ongoing operational responsibilities.
- Managing more than one project. With small projects, there is a greater chance that the project manager will be

assigned to more than one. (Refer to chapter 11 for additional information on managing multiple projects.)

Process and Tools

Using the right processes and tools is a challenge because in many cases they are not available for small projects. In addition, it is a mistake to assume that if the process and tools work for large projects, they can be applied to small projects without modification.

Trying to fit a small project into the process and tools designed for a large project may not work. Using more process than required can be time-consuming and frustrating. Small projects need a short turnaround time. If plans cannot be produced quickly and key information cannot be communicated rapidly, the project is hurt. With a short timeframe, there is no time for rework. What usually happens is that the project manager moves forward without thoroughly planning the work and quickly loses control.

Problems Resulting from Not Using Project Management

Sometimes project managers choose to omit project management techniques. When this happens, the project manager is open to some possible problems—project failure, project manager failure, or both.

Project Failure

Many of the problems that occur from not using project management on large projects also occur on small projects—for example, scope creep, conflicting priorities, and unclear goals. These problems often lead to project failure, where the project results are not delivered as expected. Project failure usually means the project is delivered late, has a cost overrun, does not meet the requirements, or any combination of the three.

Factors that contribute to the failure of a small project include:

- Insufficient or inadequate resources
- Insufficient planning and control

Project Failure

A project is usually considered a failure if it is late, is over budget, or does not meet the customer's expectations. Without the control that project management provides, a project is more likely to have problems with one of these areas. A problem with only one constraint (scope, schedule, cost, resources, quality, and risk) can jeopardize the entire project.

- Lack of current project documentation, especially plans, status reports, and risk logs
- Unrealistic schedules
- Incomplete or inaccurate requirements
- Lack of participation from project sponsor
- Lack of participation from project team (project team members do not participate in key decisions or assume responsibility for their project activities)
- Not managing assumptions
- Using the wrong project management approach
- Inexperienced project manager

At times, small projects fail because we lose focus on what we are supposed to accomplish or produce. We get distracted by other projects or priorities and when we are able to return to the small project, it takes time to remember where we left off and even more time to get back on track.

Project Manager Failure

A problem unique to small projects is related to the project manager's reputation. A project manager's reputation suffers if he or she does not manage a small project successfully. The perception is that small projects are easier to manage, and therefore the expectation is always to have 100 percent success. Small projects are sometimes used as a training ground to prepare a project manager for larger

What Happens If a Project Manager Fails?

When project managers fail on a large project, they might get a second chance by being reassigned to a small project. When project managers fail on a small project, what's left? The moral: use project management tools to maximize your chance of success!

projects. A project manager who is unsuccessful in managing a small project runs the risk of professional embarrassment and possible career advancement delays.

Using project management on small projects allows the project manager to develop project management competency. The project manager will first acquire knowledge—an understanding of project management theory, processes, and practice. Then the project manager will develop skills at a level of proficiency needed to carry out project responsibilities. Small projects really are a training ground or an opportunity to prove that you are ready for something bigger.

3 ■ Managing and Leading Small Projects

The project manager is responsible for the overall success of the project. To be successful, the project manager must both manage and lead the small project. Warren Bennis, a well-known expert on leadership, has stated that managers are people who do things right and leaders are people who do the right thing. Both roles are crucial, and they differ profoundly.[1] Managers are efficient, and leaders are effective. The combination of efficiency and effectiveness is what makes a good project manager. This chapter provides more specifics on what it means to both manage and lead small projects.

The Difference between Management and Leadership

In "What Leaders Really Do," John Kotter says that managers cope with complexity and leaders cope with change. Both management and leadership require specific skills. According to Kotter, coping with complexity requires that you first plan and budget, then develop

the capability to achieve the plan by organizing and staffing, and finally ensure plan accomplishment by controlling and problem-solving. Coping with change requires that you set the direction and develop the vision, then align people by communicating the direction and vision, and finally motivate and inspire people to move in the right direction.[2]

This explanation of management and leadership holds true for project management. To manage projects, the project manager must understand and cope with complexity while performing the management functions of planning, organizing, directing, and controlling within the context of a project management system. To lead projects, the project manager must be able to cope with change because projects are a means for implementing change. Even small projects require both management and leadership skills to be successful.

Managers	Leaders
• Administrate.	• Innovate.
• Have short-term views.	• Have long-term views.
• Focus on the bottom line.	• Focus on the vision.
• Focus on processes.	• Focus on people.
• Rely on control.	• Empower and inspire trust.
• Direct using positional power.	• Collaborate using relational power.
• Do things right.	• Do the right things.

Managing Small Projects

To manage is to be in charge of or have responsibility for the project, which includes general management knowledge and skills and project management knowledge and skills. In general, the project manager plans, organizes, directs, and controls project activities. More specifically, for small projects to be efficient, the project manager ensures that the appropriate tools and techniques are used to manage the project. They also manage project resources, focus on the project timeline, and document project activities.

Managing projects requires time, effort, and discipline. The best way to view project management practices is through the *PMBOK® Guide*'s project management knowledge areas. Project management knowledge areas are defined by knowledge requirements and are described in terms of their component processes, practices, inputs, outputs, tools, and techniques. PMI has identified 10 project management knowledge areas for use in managing projects. This section builds off the *PMBOK® Guide,* sixth edition, definitions for each knowledge area and describes how each knowledge area can be applied to small projects.

- Project integration management "includes the processes and activities to identify, define, combine, unify, and coordinate the various processes and project management activities within the project management process groups."[3]
  - Project integration management details the high-level activities that tie together all aspects of the project and answers the question: How do all of the project management documents fit together?
  - In the project management context, integration includes characteristics of unification, consolidation, communication, and interrelationship. It provides actions that should be applied from the start of the project-develop project charter, through project completion-close project or phase. Project integration management includes making choices about resource allocation, balancing competing demands, examining any alternative approaches, tailoring the processes to meet the project objectives, and managing the interdependencies among the project management knowledge areas.
  - Project integration management activities include: develop project charter, develop project management plan, direct and manage project work, manage project knowledge, monitor and control project work, perform integrated change control, and close project or phase.

- o For small projects, these activities are accomplished by:
  - ▫ Developing a project charter or project charter lite.
  - ▫ Creating the necessary subsidiary plans, depending on the needs of the project, and consolidating the subsidiary plans into a project management plan. Subsidiary plans may include the scope, schedule, cost, communications, and risk management plans.
  - ▫ Executing the work defined in the project management plan.
  - ▫ Monitoring and controlling project activities.
- Project scope management "includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully."[4]
  - o Project scope management allows project managers to clarify what will and will not be included in the project. It also answers the questions: What will the project deliver and what is excluded?
  - o Project scope management activities include: plan scope management, collect requirements, define scope, create work breakdown structure (WBS), validate scope, and control scope.
  - o For small projects, these activities are accomplished by:
    - ▫ Identifying the requirements for the product, service, or result
    - ▫ Clearly defining the project scope and using it as a basis for project decisions
    - ▫ Creating a WBS
    - ▫ Reviewing and approving project deliverables
    - ▫ Identifying the impact of scope changes and obtaining approval before proceeding
- Project schedule management "includes the processes required to manage the timely completion of the project."[5]
  - o Project schedule management allows the project manager to determine when the project will be completed.

It answers the question: When will I deliver the project or project components?

- o Project schedule management activities include: plan schedule management, define activities, sequence activities, estimate activity durations, develop schedule, and control schedule.
- o For small projects, these activities are accomplished by:
  - □ Identifying the project activities and putting them in sequential order
  - □ Estimating the effort required to complete the project activities
  - □ Developing a project schedule
  - □ Keeping the project schedule current.
- Project cost management "includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget."[6]
  - o Project cost management allows the project manager to determine what the project will cost and answers the questions: How much will this project cost, and who will pay for what?
  - o Project cost management activities include: plan cost management, estimate costs, determine budget, and control costs.
  - o For small projects, these activities are accomplished by:
    - □ Developing a project budget
    - □ Managing the project budget
- Project quality management "includes the processes for incorporating the organization's quality policy regarding planning, managing, and controlling project and product quality requirements, in order to meet stakeholders' expectations."[7]
  - o Project quality management provides the project manager with an awareness of the project constraints, i.e., scope, time, cost, quality, etc., and potential trade-offs among the constraints. It also answers the question:

How will I ensure the project meets stakeholder expectations?

- o Project quality management activities include: plan quality management, manage quality, and control quality.
- o For small projects, these activities are accomplished by:
  - □ Identifying quality standards
  - □ Ensuring that project deliverables meet quality standards
- Project resource management "includes the processes to identify, acquire, and manage resources needed for the successful completion of the project."[8]
  - o Project resource management provides the project manager with guidance on who should be on the project team and what physical and team resources are needed. It answers the questions: Who and what physical resources do I need?
  - o Project resource management activities include: plan resource management, estimate activity resources, acquire resources, develop team, manage team, and control resources.
  - o For small projects, these activities are accomplished by:
    - □ Identifying which physical and team resources are needed
    - □ Defining project roles and responsibilities
    - □ Developing the project team
    - □ Resolving issues and removing barriers so the team can be successful
- Project communication management "includes the processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information."[9]
  - o Projects require continuous interaction with multiple stakeholders. Project communication management provides the project manager with processes to effec-

tively and efficiently communicate throughout the life of the project. It also answers the questions: With whom, how often, and by what means will I communicate with project stakeholders?

- o Project communication management activities include: plan communications management, manage communications, and monitor communications.
- o For small projects, these activities can be accomplished by:
  - □ Developing a communications matrix
  - □ Producing status reports

• Project risk management "includes the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project."[10]
  - o A risk is an unplanned event. Project risk management allows the project manager to be more prepared to respond to unknown events and answers the question: What bad thing could happen to prevent project success?
  - o Project risk management activities include: plan risk management, identify risks, perform qualitative risk analysis, perform quantitative risk analysis, plan risk responses, implement risk responses, and monitor risks.
  - o For small projects, these activities can be accomplished by:
    - □ Defining how risks will be managed
    - □ Identifying project risks
    - □ Analyzing project risks
    - □ Developing a risk register
    - □ Tracking identified risks and identifying new risks as the project progresses

• Project procurement management "includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team."[11]

- o Project procurement management provides the project manager with a framework for managing contracts. It answers the question: How do I acquire resources outside the organization?
- o Project procurement management activities include: plan procurement management, conduct procurements, and control procurements.
- o For small projects, these activities can be accomplished by
  - ▫ Identifying items/resources that will be outsourced
  - ▫ Developing procurement management plan
  - ▫ Awarding contract(s) to vendor(s)
  - ▫ Monitoring and controlling procurements
- Project stakeholder management "includes the processes required to identify the people, groups, or organizations that could impact or be impacted by the project. It is also used to analyze stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution."[12]
  - o A project stakeholder is anyone who can impact or is impacted by the project either positively or negatively.
  - o Project stakeholder management allows the project manager to engage stakeholders and determine how different stakeholder groups should be managed and answers the questions: Who are my project stakeholders, and how do I engage them?
  - o Project stakeholder management activities include: identify stakeholders, plan stakeholder management, manage stakeholder engagement, and monitor stakeholder engagement.
  - o For small projects, these activities can be accomplished by:
    - ▫ Identifying project stakeholders
    - ▫ Analyzing stakeholders
    - ▫ Managing stakeholder expectations

Although the project management knowledge areas are applicable to small projects, not all of them have to be used in their entirety or on every small project. They are included in this book because in order to become an expert manager of small projects, the project manager must understand the knowledge areas and know which ones are applicable for the small project and which ones can be omitted. This is a project-by-project decision.

At first glance, these management activities may appear to be overwhelming and too much process for a small project. But don't worry—these activities are explained in more detail in the project management process section, which provides tips and tools for scaling the project management activities to fit the needs of the project.

Leading Small Projects

Leadership drives change. To lead is to go before or with and show others the way. It is to guide in direction, course, action, and opinion. A good leader has the ability to motivate others to accomplish an objective. As a leader, the project manager must champion the endeavor and command authority as well as inspire and motivate the project team. The project manager sets the general direction of the project and allows team members to provide input along the way. During difficult times, the project manager must remain calm and be able to provide solutions to get things back on track.

The success of today's project manager is mostly the result of leadership. Leading a project requires authority, responsibility, and accountability.[13]

Authority	Power granted to individuals as a right to influence or command others' behavior. In project management, authority is often granted by position.
Responsibility	The obligation to answer for one's conduct in project management roles.
Accountability	Being answerable for the outcome of a project assignment.

Authority is based on power. For the project manager, power can be based on position or it can be granted through influence or by reason of a person's knowledge, skills, interpersonal abilities, competency, or expertise. The project manager has the authority to execute within the boundaries of the project and is accountable for project delivery. To be accountable means to accept the consequences of the outcomes. To be accountable, the project manager must have the authority and responsibility or the means to influence the outcomes. A key component in the project manager's ability to influence others is trust.

A leader:
- Can create and nurture a vision
- Can translate the vision to successful implementation
- Has the capacity and the willingness to balance courage with consideration
- Has the ability to empower others
- Can guide, influence, and collaborate with others
- Demonstrates both competence and character
- Is both giving and forgiving
- Has the ability to maintain a winning attitude
- Is humble
- Serves the team

Leadership involves focusing the efforts of a group of people toward a common goal and enabling them to work as a team.[14] In general terms, leadership is the ability to get things done through others. Respect and trust, rather than fear and submission, are the key elements of effective leadership. Although important throughout all project phases, effective leadership is critical during the beginning phases of a project when the emphasis is on communicating the vision and motivating and inspiring project participants to achieve high performance. Throughout the project, the project team leaders are responsible for establishing and maintaining the vision, strategy, and communications; fostering trust and teambuilding, influencing, mentoring, and monitoring; and evaluating the performance of the team and the project.

Leading by Influence

- Earn the trust and respect of your team by having good character.
- Know yourself and become proficient at performing your project responsibilities.
- Look for solutions; become a problem-solver.
- Get to know people. Work to build good relations. Develop good communications and respond rapidly to project stakeholders.
- Mentor project stakeholders by making yourself available to dispense advice to solve immediate problems.
- Coach and develop project team members and then delegate project responsibilities.

Being a leader is not about having a title; it is about having followers. A common leadership proverb states: If you think you are leading and no one is following you, then you are only taking a walk. People will follow you because they have to or because they want to. In time, people will begin to see what you do for them and the project and will want to follow you; they will begin to do more than is expected.

In reality, most project managers of small projects have to lead based on influence, not authority. Influence is the ability to get others to participate. To lead by influence, a project manager must become proficient at performing project responsibilities, work to build good relations with project stakeholders, and establish trust. The ability to lead, even on a small project, will enhance your project management success.

Trust is the positive expectation the other person will deliver. "When you trust people, you have confidence in them—in their integrity and in their abilities."[15] It takes time to form a trusting relationship because trust requires a form of knowledge and familiarity about the other party. Trust is a key component of the project manager's ability to be a successful leader. When trust is broken, it

can seriously impact performance and may not be easily restored. Trust promotes more efficient communication and coordination. There needs to be a mutual understanding of roles and responsibilities and the goals of the project. The project manager must work toward the best intentions for the project.

What Happens When Trust Is Broken?

- People stop believing in you
- You struggle to make meaningful connections
- Once lost it is difficult to rebuild
- Diminishes chances for successful collaborations

A lot of material regarding the importance of leadership skills is available; however, the importance of good character is worth mentioning.

- Character defines the person.
- Character is the inward motivation to do what is right in every situation.
- An effective leader has good character and strives to develop it daily.

Rebuilding Trust

- Treat others with respect.
- Always be honest, keep your word, and follow through when you say you will do something.
- Be consistent in your performance from day to day.
- Do not look to blame others.
- Think in terms of win-win.
- Show concern for others by listening and not interrupting, by being fully present in the conversation, and responding thoughtfully.
- Give people opportunities to grow or use their expertise.
- Share knowledge and expertise, specifically lessons learned.

"Your character determines who you are. Who you are determines what you see. What you see determines what you do."[16] And what you do determines your ability to influence others.

"Character Core by Strata Leadership" provides a list of leadership traits to assist with character development. "Character Core" defines character as "the qualities built into a person's life that determine his or her response, regardless of circumstances. It is the inward motivation to do what is right in every situation."[17] An effective leader has good character, with character development taking place every day. To continuously build character, the project

manager should emphasize the importance of good behavior. The project manager should appropriately address bad behavior from team members and should always recognize and praise team members for displaying good character.

For a project manager leading small projects, character development is essential. A good way to begin your character development activities is to start with the 36 Character Core qualities developed by Strata Leadership and tailor them for project management.[18] Below is a list of the character qualities and descriptions of how they apply to project management.

- Alertness—Being aware of what is taking place on the project and with the project stakeholders so you can respond appropriately
- Attentiveness—Concentrating on the needs of the project stakeholders and project activities
- Availability—Making your schedule and priorities secondary to the needs of the project team
- Cautiousness—Taking time to ensure the right decisions and actions are taken to meet stakeholder expectations
- Compassion—Doing whatever is necessary to help project stakeholders
- Cooperation—Understanding the needs of project participants and effectively working with them

- Courage—Overcoming fear by knowing expectations, and saying and doing what is right for the project
- Creativity—Approaching a need, an activity, or an idea from a new perspective
- Decisiveness—Having the ability to recognize key factors, process information, and finalize difficult decisions
- Dependability—Fulfilling project commitments, even in the face of difficulty
- Determination—Overcoming obstacles while working to accomplish project goals at the right time, regardless of the opposition
- Diligence—Focusing effort to complete the project
- Discipline—Choosing behaviors to help reach project goals
- Endurance—Having the inner strength to withstand stress and do your best
- Enthusiasm—Expressing interest and excitement in each activity as you give it your best effort
- Flexibility—Adjusting to a change in plans according to the direction of key project stakeholders, while keeping a good attitude
- Forgiveness—Clearing the record of those who have wronged you and releasing feelings of resentment
- Generosity—Carefully managing resources so you can freely give to those in need
- Gratefulness—Demonstrating appreciation to project stakeholders for what you have and how they have provided support to the project
- Honesty—Being truthful in what you say and do on the project
- Humility—Acknowledging that achievement results from the investment of others in the project
- Initiative—Recognizing and doing what needs to be done before you are asked to do it
- Loyalty—Demonstrating commitment to project stakeholders

- Orderliness—Organizing your thoughts and surroundings to achieve greater efficiency
- Patience—Taking time and patience to work through difficult project situations
- Persuasiveness—Effectively communicating with project stakeholders so they can better understand the project needs
- Positivity—Maintaining a good attitude during the project, even when faced with difficulty
- Punctuality—Showing respect for others by doing the right thing at the right time
- Resilience—Recovering from adversity
- Respect—Treating project stakeholders with honor and dignity
- Responsibility—Knowing and doing what is expected
- Sincerity—Doing what is right with transparent motives
- Thoroughness—Taking care of necessary project details
- Tolerance—Demonstrating respect for project stakeholders who do not share your perspective
- Trustworthiness—Gaining the confidence of project stakeholders by demonstrating reliability
- Wisdom—Making practical applications project lessons learned

This is not an all-inclusive list of character traits; it merely highlights some important leadership traits that can be developed over time.

Managing and Leading a Project

As a project manager, you should manage processes and lead people.

- Managing requires that the project manager plan, organize, direct, and control project activities by developing plans and keeping them current. It also involves: understanding and appropriately responding to the needs of the project stakeholders; managing schedules, budgets, and

> **Good and Poor Project Managers**
>
> - A good project manager listens to the team, allows the team members to perform project activities, makes decisions in a timely manner, and rewards the team for success.
> - A poor project manager is concerned only for him- or herself, does not respond to the needs of the team, blames the team when things go wrong, and takes all the credit when the team is successful.

    risks; resolving issues; and producing status reports. These are the routine activities that are essential for success.
- Leading requires interaction with people. The project manager must command authority and be able to inspire and motivate others. The project manager sets the general direction of the project and allows team members to provide input along the way. During difficult times, the project manager must remain calm and be able to provide solutions to get things back on track. As a leader, the project manager should develop and sell the project vision, set the direction and pace of the project, coach and empower the project team, facilitate communication with all project stakeholders, and demonstrate good character.

To effectively manage and lead, the project manager must have communication, facilitation, problem-solving, and decision-making skills.

Managing and Leading Simple Projects

Simple projects require both management and leadership; however, the time spent on these activities and how the activities are performed are based on the amount of work required for completing the project. The project manager should always understand the

> ### *Scenario*
>
> Kenny is more aware of the importance of process and people. Having this knowledge will allow him to properly balance the two. Kenny will use the *PMBOK® Guide*'s 10 knowledge areas to provide the project management foundation for his projects. Leadership, especially good character, is especially important for interacting with project stakeholders.
>
> Kenny is ready to document his ideas for a project.

project objective, define the project scope, plan project activities, manage project resources, and communicate with key stakeholders. Short-duration projects just require less formality.

4 ■ Preproject Activities

The project management process as discussed in chapter 5 begins after the project has been defined and approved. But how does a project get started? Projects usually begin with the project sponsor developing business documents, which include a project business case and a project benefits management plan. Both documents can be tailored for small projects. However, for simple projects, the statement of work can be used to define the project. After the project has been defined, a project request is developed for approval.

If your project does not require business documents, you should, at a minimum, develop a statement of work and project request. If you have the opportunity to determine what could be worked on as a project, you should also use the project request.

Regardless of the documents used to define the project, project success criteria should be defined. What does *done* look like? How will you know when the project is complete?

Business Documents

Business documents ensure that business needs are communicated, which allows the project manager to determine the appropriate approach for the project to make sure project stakeholders are engaged and are aware of the business expectations. Key business documents include: project business cases and project benefits management plan.

Project Business Case

The project business case provides the economic feasibility of the project. It lists the objectives and reasons for the project initiation. The business case includes the business needs, situation analysis, recommendation, and a statement on how to evaluate benefits realization. The project business case is where you have an opportunity to sell the short-term or long-term value from completing the project.

Project Benefits Management Plan

The project benefits management plan describes how and when the benefits of the project will be delivered and how those benefits will be measured.

> ### *Scenario*
>
> Bonita is an analyst in the accounting department and is assigned to oversee the installation of an accounting software upgrade and to develop and deliver training to the staff who will use the accounting software. Jasmine is the director of the accounting department and is also the business owner and project sponsor.
>
> Bonita gave some consideration on where to start. She decided her first step was to obtain a copy of the business documents.

Statement of Work

The preproject activities begin when you determine that there is a business need or opportunity. A business need or opportunity

may be based on a market demand, technological advance, legal requirement, government regulation, or environmental consideration. For small projects, you or someone in your organization may identify a business need based on a technology or process change. Small projects generally do not require a business case. However, if a business case is required, the business need or opportunity is included in the business case, along with the cost-benefit analysis.

In addition to defining the business need, you will also need to describe the scope of the product. A product scope description documents the characteristics of the product, service, or result the project will be undertaken to create. The product scope description should indicate the relationship to any other products, services, or results being created. It should also reference the business need or opportunity that the project will address. This section also makes it crystal clear what is in and what is out of scope for the project, so everyone will be in agreement on what will and what will not be included.

The final component of the statement of work is strategic plan alignment. Projects are a means for an organization to accomplish its strategic goals. Strategic goals are shared with the organizational units. Even small projects need to be in alignment with the organization's strategic vision, goals, and objectives. Strategic plan alignment ensures that the project contributes to the organization's goals and objectives. The business need or opportunity, product scope description, and strategic plan alignment are included in your statement of work. Your statement of work is input for your project request.

Project Request

The purpose of the project request is to document the business need, describe the product scope, and outline the potential project. The person or area that is trying to get a project approved completes the project request. The project request is then submitted to the decision maker or approval committee.

The decision maker will determine whether or not to proceed with the project. In addition to approving the project, the decision maker may also give the project a priority and indicate when the project can begin.

The project request consists of the following:

- **Business information**
  - Business area—Identify the organization or department requesting the project.
  - Business need or opportunity—Identify why this project is important and how it supports the business goal(s).
  - Link to strategic objective—Identify the strategic objective this project supports.
  - Customer—Identify the end user of the project.
- **Project description**
  - Objective—State what the project will achieve. The project objectives support the business need or opportunity. Objectives should be SMART—specific, measurable, attainable/achievable, realistic, and time-bound.
  - Scope—Identify what is included in the project.
  - Desired completion date—Provide a high-level estimate of when you expect the project to be completed.
  - Preliminary funding estimate—Provide a high-level estimate of what the project will cost.
- **Project information**
  - Assumptions—Assumptions are the factors that, for planning purposes, are considered true, real, or certain. Assumptions are events or conditions that must occur for the project to be successful, but at this time they are not certain. Clearly and concisely state the assumptions so everyone knows the premises on which the project request is based.
  - Issues—Identify points or matters that are in question or in dispute or a point or matter that is not settled and is under discussion or about which there are opposing views or disagreements.

- o Risks—Identify any uncertain event or condition that, if it occurs, will have a positive or negative effect on the project's objectives.
- o Acceptance criteria—Explain how you will know the project is considered complete and successful.

Scenario

Bonita made the right decision. She was able to use the business documents as a starting point for creating the statement of work and project request. After completion, Bonita will submit these documents to Jasmine, the project sponsor, for approval.

PROJECT EXAMPLE

Jackson Project Management Group (JPMG) is a consulting firm that offers a variety of project management services. Faye Jackson, founder and president, insists that her organization use project management best practices. One of the organization's strategic goals for this year is to increase operational efficiency and effectiveness by implementing project management processes and providing project management training to JPMG consultants. Faye asked Mary, the director of the newly established training organization, to provide a list of potential project management courses, along with the course description.

Mary developed a list of 10 potential courses. Two were introductory or beginning level, three were intermediate level, and five were advanced level. Mary developed a statement of work as shown in figure 4.1.

Project Success Measures

How do you define project success? Traditionally, project success was measured by metrics of scope, time, cost, and quality. In the *PMBOK®Guide*, sixth edition, PMI explained that project success should include consideration for the achievement of project objectives.[1] However, project stakeholders may have different ideas about

Statement of Work

Request Date	Project Name	
1/21/XX	Project Management Training	
Project Sponsor	Prepared By	Project Type
Mary Willie	Mary Willie	Small

Business Information

Business Area
Project Management Training Department
Business Need
Project management training to allow for consistent use of the project management methodology, and to demonstrate how to effectively and efficiently use the project management processes, tools, and techniques.
Product Scope Description
To develop and deliver 10 project management courses: two introductory or beginning level, three intermediate level, and five advanced level.
Link to Strategic Objective
Increase operational efficiency and effectiveness by implementing project management processes and provide project management training.

Figure 4.1: Statement of work

Scenario

Faye was impressed with the course descriptions and the statement of work, and she decided to start with one of the beginning level courses, a course called Project Management Overview. She would like to begin delivering the first course to the public the third quarter of this year. Faye asked Mary to sponsor the development of the course and to assign a business owner to develop the project request. Mary assigned Yvette Bennett, a training director, as the business owner. The project request is shown in figure 4.2.

Project Request

Request Date	Project Name	
1/21/XX	Project Management Overview course	
Project Sponsor	**Prepared By**	**Project Type**
Mary Willie	Yvette Bennett	Small

Business Information

Business Area
Project Management Training Department
Business Need
Project management training to allow for consistent use of the project management methodology, and to demonstrate how to effectively and efficiently use the project management tools and techniques.
Link to Strategic Objective
Increase operational efficiency and effectiveness by implementing project management processes and provide project management training.
Customer
Training department

Project Description

Objective
Develop a beginning level project management course that can be offered to the general public beginning third quarter 20XX.
Scope
The project scope includes: classroom training materials for the facilitator and participants. A blended training solution is desired; however, solutions must work with existing technology.
Out of scope: purchase of new technology.
Desired Completion Date
5/31/XX
Preliminary Funding Estimate
$100,000 from training budget

Figure 4.2: Project request

Project Information

Assumptions
No outside resources will be required to develop the course materials. Blended solution will work with existing technology.
Issues
None at this time.
Risks
Existing technology may not support the blended training solution.
Acceptance Criteria
Course materials are approved by the pilot team.

Approvals

Project Sponsor: _____

Business Owner: _____

Figure 4.2: (continued)

what success is. In addition to meeting project metrics of scope, time, cost, and quality, project stakeholders may also measure success by realizing benefits from project delivery, meeting financial and non-financial measures, achieving customer satisfaction, or achieving other agreed-upon success measures.

Specifically for small projects, where project metrics may not be the driver, it is important to discuss project success criteria. Key questions to consider are:

- What will success look like when this project is complete?
- What factors may impact success?
- What are the expected benefits from project delivery?
- What metrics should be used to evaluate success?
- What are the customer expectations?

PROJECT MANAGEMENT PROCESS FOR SMALL PROJECTS

5 ■ Process Overview

A project management methodology provides the structure and discipline for managing projects. Using such a methodology increases your odds of project success. To more effectively manage small projects, a methodology specifically designed for small projects should be used. The small and simple project management (SPM) methodology, created by the author, provides the framework, processes, tools, and techniques to manage small projects, and it can be further tailored for simple projects.

In addition to a project management methodology, projects will also need a defined project life cycle methodology. Together, the project management methodology and project life cycle methodology provide the structure for bringing a project to completion.

Project Life Cycle

The *PMBOK*®*Guide,* sixth edition, defines *project life cycle* as "a series of phases that a project passes through from its start to its completion."[1] The phases are generally sequential, and their names and numbers are determined by the management and control needs of the organization or organizations involved in the project, the nature of the project itself, and its area of application. The phases can be broken down by functional or partial objectives, intermediate results or deliverables, specific milestones within the overall scope of work, or financial availability. For example, a project life cycle to enhance an existing software application includes start-up and planning, definition, requirements analysis, design, build/construction, testing, implementation, and postimplementation.

The purpose of the project life cycle is to provide the basic framework for managing the project. Phases provide management control because each phase defines the work that should occur and results in a deliverable or deliverables that are passed on to the next phase. More specifically, a project life cycle defines the technical work required for each phase, when the deliverables are to be generated, who is involved, and how to control the work. It also provides review points for the project so that go/no go decisions can be

---

Advantages of Small and Simple Project Management Methodology

The small and simple project management methodology

- Was developed out of necessity, because methodologies for large projects were too cumbersome for small and simple projects
- Was designed specifically for small projects
- Contains easy-to-use templates
- Incorporates leadership activities
- Provides step-by-step procedures
- Contains process guides for easy reference

> ### Other Project Life Cycles
>
> Other project life cycles or project methodologies include the following:
>
> - Instructional design process
> - Web design
> - Process improvement
> - Project outsourcing

made. The end of the phase is often marked by a milestone, which indicates that a significant event has occurred. The end of a phase is also a good time to review the work that occurred in the previous phase and determine if any adjustments in the approach are required. Finally, the end of a phase is also a good time to conduct a lessons learned session.

A generic project life cycle for small projects, shown in figure 5.1, includes

- Project proposal
- Requirements definition
- Design
- Development or build
- Testing
- Implementation
- Postimplementation review

These phases are usually short, and some may be combined or planned at the phase level. Refer to the planning chapters (chapters 7 and 8) for more details.

The *PMBOK® Guide,* sixth edition, provides a generic life cycle structure that can be used when communicating with those who are less familiar with the details of a project.[2] The author included a phase for preproject work, which occurs prior to starting the project.

- Preproject work
- Starting the project
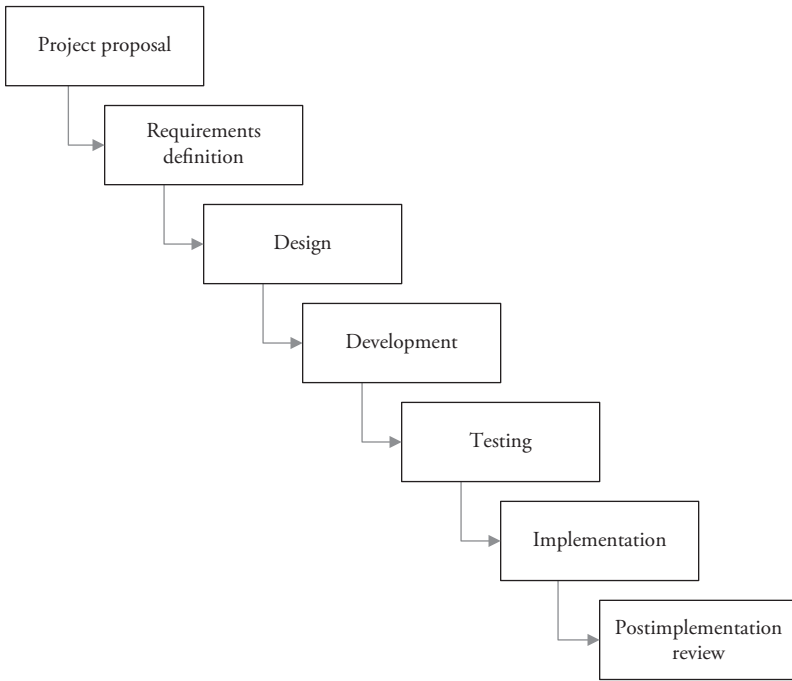
Figure 5.1: Generic project life cycle

- Organizing and preparing
- Carrying out the project work
- Completing the project

It is important for the project manager to understand the project life cycle because the project life cycle defines what the project will deliver. A generic project life cycle can be used for most small projects because most small projects are not industry specific and do not require a specific methodology. If a small project has a defined methodology, that methodology should be used. Specific details related to project life cycle or product deliverables are not discussed in this book because the content varies from project to project. The project management of the project life cycle or product deliverables remains constant. The focus of this book is on how to produce standard project management deliverables:

Deliverables

The *PMBOK® Guide,* sixth edition, defines a *deliverable* as "any unique and verifiable product, result, or capability to perform a service that must be produced to complete a process, phase, or project."[3] There are two types of deliverables: final and interim. Final deliverables are delivered to the customer, and interim deliverables are produced as part of the process of creating the final deliverable. For example, a project might require a procedure manual as the final deliverable. The individual sections or drafts of the procedure manual are the interim deliverables.

Project deliverables include both the output from the product or service of the project and project management deliverables, such as the project management plan and project documents. The *PMBOK® Guide,* sixth edition, distinguishes between the project management plan and project documents.[4] The project management plan is a formal, approved document that defines how the project is executed, monitored, and controlled. It may be summary or detailed and may be composed of one or more subsidiary management plans and other planning documents. Project documents are used to assist the project manager in managing the project but are not part of the project management plan. (The project management plan will be discussed in chapter 7, step 11.)

Most small projects can be managed using deliverables. The project manager can plan and control project progress for deliverables at the task level, which is how most projects are normally managed. Tasks can be added for specificity only if the additional details improve the project manager's ability to monitor and control the project activities. Otherwise, the use of only deliverables and interim deliverables allows the project manager to scale the process and tools to fit the project's needs. Managing using deliverables is covered in more detail in chapters 7 and 8.

Project Management Process for Small Projects

Effective project management is based on a repeatable process for describing, organizing, and completing the work of the project.

Small projects can be effectively managed; although they do not require as much formality as large projects, some form of project management discipline is suggested. What is needed is a process specifically designed for small projects. Applying a process designed for a large project to a small project could prove to be worse than not using a process.

SPM Process Overview

A process is a set of interrelated actions and activities that are performed to achieve a prespecified set of products, results, or services. Processes are composed of inputs, tools and techniques, and outputs. The SPM process is specifically designed for small projects and can be adjusted for simple projects and assignments. A good process is consistent and can be applied to all projects.

Process components as defined by the *PMBOK® Guide,* sixth edition, are:

- **Input**—"Any item, whether internal or external to the project, that is required by a process before that process proceeds. May be an output from a predecessor process."[5]
- **Tool**—"Something tangible, such as a template or software program, used in performing an activity to produce a product or result."[6]
- **Technique**—"A defined systematic procedure that is employed by a human resource to perform an activity to produce a product or result or deliver a service and may employ one or more tools."[7]
- **Output**—"A product, result, or service generated by a process. May be an input to a successor process."[8]

Inputs	Tools & Techniques	Outputs

It is important to note that for a process to be effective for small projects, it must be both scalable and adaptable. It should be scal-

able so that the level of complexity of the project management process, the time spent in using the process, and the focus of the process all fit the needs of the project. It should be adaptable so that the tools chosen to support the project can be easily applied. The tools and techniques are flexible, but the process does not change.

Another aspect of the SPM process is that the emphasis is placed on deliverables, with a focus on templates and checklists. Process guides keep the process visible and easy to follow. You can find process guides in chapters 6–10.

Project Management Process Description

The SPM process defines the overall project management life cycle and the process groups by which to organize the project. It explains how to move among project management process groups within the project, how to determine specific assignments to do the work, and what action is taken to complete the work. Some methodologies refer to the process groupings as stages, chunks, or steps. We use the term *process group* to represent a specific collection of project management activities.

The PMBOK®Guide, sixth edition, process groups are:

- **Initiating process group—**Those processes performed to define a new project or a new phase of an existing project by obtaining authorization to start the project or phase.
- **Planning process group—**Those processes required to establish the scope of the project, refine the objectives, and define the course of action required to attain the objectives that the project was undertaken to achieve.
- **Executing process group—**Those processes performed to complete the work defined in the project management plan to satisfy the project requirements.
- **Monitoring and controlling process group—**Those processes required to track, review, and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes.

- **Closing process group—**Those processes performed to formally complete the project, phase, or contract.[9]

The following is a summary of the SPM process. Each phase will be explained in detail in the following chapters. The four project management process groups are

1. **Initiating process**—Includes the activities conducted to start up the project. The initiating process defines and authorizes the project (see chapter 6).
2. **Planning process**—Includes the activities to define the project in detail and determines how the project objectives will be achieved (see chapters 7 and 8).
3. **Controlling process**—Includes the activities to carry out the project activities, measure and monitor progress, and take corrective action when necessary (see chapter 9).
4. **Closing process**—Includes the activities to bring the project to an end (see chapter 10).

The SPM process is consistent with the *PMBOK® Guide*, sixth edition, except that the process groups executing, monitoring, and controlling have been combined for simplicity. Figure 5.2 shows how this process works:
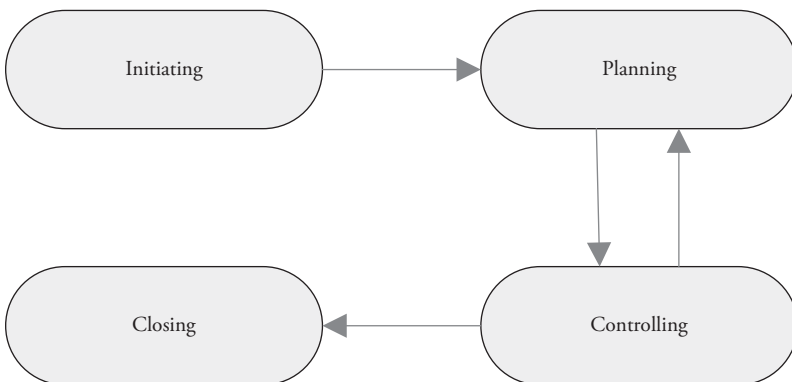
Figure 5.2: SPM Project Management Process

The PMBOK® *Guide*, sixth edition, is very important in the world of project management and has set the standard for good practices, so it is important to know how the SPM process groups differ from the *PMBOK*® *Guide*, sixth edition, process groups. Also, as you prepare to make the transition from smaller to larger projects, more processes will be required.

It is important to distinguish between the project life cycle and the project management process. The project life cycle is linear and defines the deliverables for each phase, whereas the project management process occurs for each phase, can recur multiple times within a phase, and is used to define the actions for completing the work. The project life cycle and the project management process, although separate and distinct, are integrated to allow the project manager to manage the entire project from start to finish.

PALM Principle

The SPM process previously discussed is designed for small projects; however, at times it will be too much process for your immediate project needs. The PALM principle (figure 5.3) is a component of the SPM process and is used for simple projects—projects that do not need much project management formality. Any of the SPM process documents can be used as needed to support PALM.

Plan project activities.

Analyze the situation and ask questions.

Lead the project activities.

Monitor and control time and resources.

Figure 5.3: PALM principle

- **P**lan project activities. Always take time to think through what needs to be accomplished, who is involved, and the timeframe for completing the work.
- **A**nalyze the situation and ask questions. Use project management tools as needed to make good decisions.
- **L**ead the project activities. Initiate communication with stakeholders. Make sure your project gets the attention it deserves.
- **M**onitor and control time and resources.

The PALM principle requires minimal documentation. The focus is on behavior. Your attitude about how to approach a simple project will determine how other people will support your efforts.

Leadership Connection

The project manager is responsible for leading the project team. Based on the previous definition of small projects, small projects typically have small teams. One of the first things the project manager must do with the project team is to communicate the processes that will be used on the project. Processes must be established at the beginning of the project and be understood by the team.

The project manager should:

- Determine how much process is required for the project and which tools and techniques are appropriate.
- Make the project management process understandable and visible.
- Understand the project life cycle for the project and integrate the project life cycle and management processes as needed.
- Understand and respect project roles and responsibilities.
- Build relationships with project stakeholders.
- Establish and maintain trust.

Keys for Process Success

Keys for process success include the following:

- Remember that each project is unique and to tailor the methodology to fit the project.
- Make sure the right amount of process is used for each project. If too much or too little is used initially, be flexible enough to make the necessary adjustments.
- Keep process guides handy for quick reference.
- Integrate the project management process with the product development process to gain more efficiency.
- Lead the way for other project managers to begin using project management on small projects.

6 ■ Initiating

Getting the project off to a good start is important. The initiating process allows the project manager to quickly gain an understanding of the project by defining project objectives, scope, assumptions, constraints, and risk factors. It is also important at this time for the project manager to develop a relationship with the project sponsor and to discuss project management expectations. Even small projects have unique project management needs; for example, by determining stakeholder management needs, the project manager can ensure that all stakeholders are engaged at the appropriate time throughout the project. The initiation process provides accountability and allows organizational resources to be applied to the project.

For the purposes of the SPM process, it is assumed that the decision to launch the project has already been made, the staffing has been approved, funding exists, and the project manager has been assigned. Preproject documents like the project request, requirements

overview, and project proposal have already been completed. Simple projects do not require this level of formality; as soon as the assignment is given, the initiating activities begin.

Initiating Process Summary

The PMBOK® Guide, sixth edition, defines the initiating process group as comprising "those processes that are performed to define a new project or a new phase of an existing project by obtaining authorization to start the project or phase."[1] In summary, they are the activities conducted to start up the project.
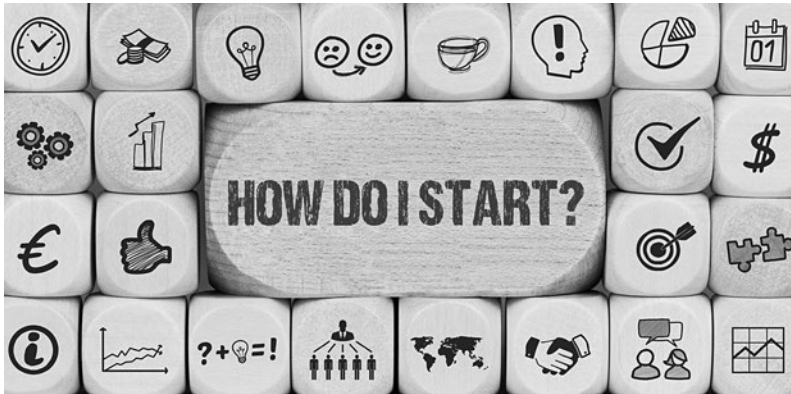
The first thing the project manager needs to do after being assigned responsibility for a project is to obtain the preproject documents and identify the project stakeholders. The project manager then interviews the project sponsor and stakeholders to get the information required for developing the project charter. The project charter provides structure for the project manager to use to obtain the additional information needed to plan the project. The project manager prepares the project charter and reviews it with the project sponsor and customer to ensure they are all in agreement. At the end of the initiating process, the project manager is ready to plan the project.

Initiating Process Steps

The following are the initiating process steps:

1. Obtain copies of preproject documents.
2. Identify project stakeholders.
3. Interview project sponsor and other stakeholders.
4. Prepare project charter.
5. Identify assumptions and constraints.
6. Review project charter with stakeholders.
7. Obtain approval from project sponsor to begin planning.

The Project Manager Must:

Align the stakeholders' expectations with the project purpose

Step 1: Obtain Copies of Preproject Documents

The project manager should obtain copies of all preproject documents. Preproject documents were discussed in chapter 4 and could include, but are not limited to, the project business case, project benefits management plan, statement of work, and project request. These documents will differ depending on an organization's project selection and approval methodology. That methodology may include the use of a project approval committee and a categorization of project types. The project type will need to be included in the project charter because it will be used later by the project approval committee to help establish the project's priority. Many small projects are not assigned as part of a project selection methodology;

they are simply given as assignments. If this is the case, the project manager should obtain any documents that supply background information for the project.

Step 2: Identify Project Stakeholders

The project manager will need to identify project stakeholders—the people, groups, or organizations that could impact or be impacted by a decision, activity, or outcome of the project. The project manager should identify and document information regarding the project stakeholders' interest, involvement, and influence on the project. It is important to identify the appropriate focus for each stakeholder so his or her expectations can be managed accordingly.

The project sponsor is the key project stakeholder and shares responsibility for project success. The project sponsor has ultimate sign-off authority for the project and for small projects is often the key decision maker. Other project stakeholders may include primary customers, secondary customers, and the project team.

Step 3: Interview Project Sponsor and Other Stakeholders

The project manager should begin to establish a relationship with the project stakeholders. As these relationships are being established, the project manager should be building trust and understanding the stakeholders' needs and expectations. It is not enough just to know the stakeholders' needs and expectations; the project manager must respond appropriately to those needs and expectations. It is essential for the project manager to build a solid foundation

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Trust

Ways to build trust:

- Tell the truth.
- Be consistent.
- Maintain confidences.
- Demonstrate competence.

of trust with the project stakeholders. See chapter 3 for more discussion on trust.

A key activity during the initiation phase is information gathering. The project manager must determine the stakeholders' needs and clarify their expectations. This is the time to identify what the stakeholders really want. The project manager should talk to people with expert judgment. This means obtaining information from technical and business subject matter experts. Ways to gather information include reviewing existing documentation, conducting interviews, distributing surveys, and observing the current operation. After the project manager has completed the information-gathering process, the information should be documented and shared with the project stakeholders.

Step 4: Prepare the Project Charter

The project charter describes the project and serves as an agreement between the sponsor and the project manager. The project manager prepares this document with direction from the project sponsor and input from the customer. The components of the project charter are discussed in the next section.

Step 5: Identify Assumptions and Constraints

An assumption is "a factor in the planning process that is considered to be true, real, or certain, without proof or demonstration."[2] A constraint is a limiting factor that affects the execution of a project or process.[3] An assumption log is a project document used to record all assumptions and constraints throughout the project life cycle. The project manager should begin identifying and tracking assumptions and constraints during the initiation phase.

Step 6: Review Project Charter with Stakeholders

The project manager distributes the initial draft of the project charter to key stakeholders to obtain feedback and build consensus. After the project manager receives their input, the project manager updates the project charter and distributes it to the appropriate stakeholders for buy-in.

Step 7: Obtain Approval from Project Sponsor to Begin Planning

The final initiating process step is to obtain approval from the project sponsor. After all the key project stakeholders have reviewed the project charter and provided input, the project manager shares the project charter with the project sponsor. If the project sponsor approves the project charter, the project manager can begin planning the project activities.

Project Charter

The project manager prepares the project charter with input from the project sponsor. The purpose of the project charter is to provide the project manager with the authority to apply organizational resources to project activities. The project charter provides a link to the ongoing work of the organization and also provides a line of sight from the strategic objective to the project objective. For small projects, the project charter provides a line of sight from the business unit (divisional or departmental) objectives to the project objectives.

The project charter is one of the most important documents in the SPM process because it identifies the project objectives and defines the project scope. The project charter is used as a reference throughout the project to ensure that the project scope does not change. A signed project charter signifies agreement on the work involved and resources committed to deliver the product, service, or result. For small projects, the project charter should be signed by the project sponsor, customer, and project manager.

The deliverable from the initiating process is the project charter or an abbreviated version of the project charter, depending on the size of the project. Two versions of the project charter are covered in this chapter, the project charter and the project charter lite.

The Project Charter

The project charter has the following functions:

- Formally authorizes the project
- Documents the business needs
- Requires sponsor approval
- Is the basis for scope changes
- Provides a line of sight from the business-unit objectives (divisional or departmental) to the project objectives

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Project Charter Components

The project charter includes the following:

- **Project Description**
    - *Background information*—Provide an overview of the purpose of the project and the business goals the project will support.
    - *Project objectives*—State what the project will achieve. The project objectives define the business need or opportunity. The objectives should be SMART—specific, measurable, attainable/achievable, realistic, and time-bound.
    - *Project scope*—The scope identifies the boundaries of the project by stating what will be done and what will not be done.
        - In Scope—Identify what is included in this project.
        - Not in Scope—Identify what is known not to be part of this project. (This is also known as an exclusion.)
    - *Project budget*—Identify the funding needed for this project and funding source, if applicable.
    - *Milestone summary*—Milestones are significant events in the project. Identify the milestones and their respective beginning or completion timeframes. These are estimated timeframes; specific dates will be identified during planning.

- **Project Information**
  - ○ *High-level deliverables*—List the major deliverables to be completed as part of the project.
  - ○ *Assumptions*—Assumptions are factors that for planning purposes are considered true, real, or certain. These events or conditions must occur for the project to be successful, but at this time they are not certain. Clearly and concisely state assumptions so everyone knows the premise on which the charter is based.
  - ○ *Constraints*—Constraints are restrictions that affect the performance of the project or factors that affect when an activity can be scheduled.
  - ○ *Technical decisions*—Identify any technical decisions that may impact the project.
  - ○ *Dependencies with other projects*—Identify links with other projects.
  - ○ *Overall project risk*—Identify uncertain events or conditions that if they occur could have a negative or positive impact on the project. This can also be used to document the risk level for the project.
- **Key Project Stakeholders**
  - ○ *Project sponsor*—Identify person with ultimate responsibility for the project.
  - ○ *Project manager*—Identify project manager and roles and responsibilities.
  - ○ *Other project stakeholders*—List other project stakeholders, including the customer or end user of the outcomes of the project.
  - ○ *Core team members*—Identify key team members.
- **Supporting Information**
  - ○ *Business process impact*—Note whether any existing business processes will have to change or whether new business processes will have to be developed.
  - ○ *Acceptance criteria*—Explain how you will know that the project is considered complete and successful.

- **Project Charter Approvals**
  - o Project sponsor
  - o Customer

PROJECT CHARTER EXAMPLE

Symone Lewis, as the project manager for the project management training project (from chapter 4), reviewed the preproject documents, which consisted of the statement of work and project request. She then identified the project stakeholders and scheduled a meeting to discuss the project charter. During the meeting, Symone interviewed the project stakeholders and obtained the high-level deliverables, assumptions, constraints, and known risks. Symone then developed the project charter (figure 6.1) and the assumption log (figure 6.2).

Symone shared the project charter with the project sponsor, Yvette Bennett, and obtained approval. Symone is ready to begin the planning activities.

Project Charter Lite Components

An abbreviated charter, referred to in this book as a project charter lite, can be used for simple projects—for example, short-term projects that do not have a financial impact. For simple projects, the initiation process is meant to be quick. The project manager prepares the project charter and reviews it with the project sponsor and customer to ensure they are all in agreement. Agreement at this point is informal, usually verbal; however, it is a good idea for the project manager to provide a copy of the project charter to the project sponsor and customer for their records. At the end of the initiating process, the project manager is ready to plan the project.

The project charter lite consists of the following:

- **Project objectives**—State what the project will achieve. The project objectives define the business need or opportunity.
- **Stakeholders**—Identify the persons who are actively involved in the project. They include the project sponsor, project manager, and any key stakeholders.

Project Charter

Project Number	Project Name	
S107	Project Management Overview course	
Prepared by	Date	Project Type
Symone Lewis	1/21/XX	Small

Project Description

Background Information—Project Purpose
Jackson Project Management Group will begin offering project management training courses later this year. A training department was established to develop and deliver training courses. The Project Management Overview course will be the first course.
Project Objectives
Develop a beginning level project management course that can be offered to the general public beginning third quarter 20XX.
Project Scope
In scope: classroom training materials for the facilitator and participants. Out of scope: web-based training solutions and course delivery to the public.
Project Budget
$100,000 from training budget.

Project Information

High Level Deliverables
Participant's manual, facilitator's manual, presentation slides, case study
Milestone Summary
• Requirements defined $\quad$ 1st quarter • Instructional design completed $\quad$ 1st quarter • Course developed $\quad$ 2nd quarter • Pilot started $\quad$ 2nd quarter • Course materials finalized $\quad$ 2nd quarter
Assumptions
• No outside resources will be required to develop the course materials.
Constraints
• JPMG consultants must be available to participate in the pilot. • Course materials must be completed in time for third quarter delivery.

Figure 6.1: Project charter

Technical Decisions
No new technology will be included in this project.

Dependencies with Other Projects
None

Overall Project Risk
Existing technology may not support the blended training solution.

Key Project Stakeholders

Project Sponsor
Mary Willie, JPMG Training Vice President

Business Owner
Yvette Bennett, JPMG Training Director

Project Manager
Symone Lewis

Other Project Stakeholders
Faye Jackson, JPMG President

Core Team Members
Instructional designer, trainer, administrative assistant, JPMG consultants

Supporting Information

Business Process Impact
None

Acceptance Criteria
Course materials are approved by the pilot team.

Approvals

Project Sponsor: _____

Business Owner: _____

Figure 6.1: (continued)

Assumption Log

ID	A/C	Category	Assumption/Constraint	Responsible Party	Due Date	Actions	Status	Comments
1	A	Resources	No outside resources will be required to develop the course materials.	Symone Lewis	2/14/XX		Active	
2	C	Resources	JPMG consultants must be available to participate in the pilot.	Rachel Thompson	4/1/XX		Active	
3	C	Delivery	Course materials must be completed in time for third quarter delivery.	Caleb Lett	6/30/XX		Active	

Figure 6.2: Assumption log

Project Charter as Basis for Scope Change

A project team was developing a website for the organization. During one of the team meetings, the team identified additional features that would really enhance the appearance of the website. The project manager immediately referenced the project charter and realized that the additional features were not part of the original scope. Although these additional features could enhance the final product, just adding them at will would have been bad for the project. Uncontrolled scope changes can cause any project to be late or go over budget. The correct response is to do change control, identify the impact of adding the new features, and obtain approval from the sponsor.

- **Project scope**—Specify what is included and what is not included in the project.
- **Major deliverables**—State the major results, goods, or services that will be produced as part of the project.
- **Assumptions**—Identify factors that are considered true, real, or certain.
- **Constraints**—Identify restrictions that limit project options.
- **Risk factors**—Identify potential problems that could affect the project.
- **Dependencies with other projects**—Identify links to other projects.
- **Acceptance criteria**—Explain how you will know that the project is considered complete and successful.

PROJECT CHARTER LITE EXAMPLE

At the beginning of May, the training director, Yvette Bennett, gave consultant Herman Edwards an assignment to prepare a project management process presentation. This half-day presentation would be given to existing clients free of charge and would serve as a marketing tool for the upcoming project management course.

Herman wanted to be clear about the assignment, so the first thing he did was develop a project charter lite, shown in figure 6.3.

Project Roles and Responsibilities

The project manager must identify the project stakeholders at the beginning of the project. In addition to the project manager, the project stakeholders for small projects usually include the project sponsor, customer, and project team. The project manager should define roles and responsibilities for the project stakeholders and obtain their buy-in.

Clarifying expectations at the beginning of the project makes it easier to manage expectations throughout the project. Small projects in particular need to have roles and responsibilities communicated because team members will be working on other projects or operational activities and might not intuitively know their project responsibilities or the short timeframe in which they must occur. Also, with small teams there might not be a backup resource, and lack of communication could result in a project delay.

Small projects usually do not require a steering committee or oversight committee. These committees consist of high-level organizational leaders who represent the decision-making bodies that provide direction for the course of a project. For small projects the project sponsor is normally all that is required to make key project decisions and determine the project direction.

Sponsor

The sponsor initiates the project and is responsible for its overall success. The project sponsor serves as the project champion and provides financial resources, approves project plans, and is responsible for removing organizational barriers that might impede project progress. For small projects the project sponsor may be the project manager's direct supervisor. Small projects can also be interdepartmental, in which case the project sponsor may be the director in charge of the division.

Project Charter Lite

Project Number	Project Name		
A-TJ06	Project Management Process presentation		
Prepared by	Date		Project Type
Herman Edwards	5/1/XX		Simple

Project Description

Project Objectives
Develop a project management process presentation to serve as a marketing tool for the JPMG project management introduction course.

Stakeholders
Yvette Bennett, training director and project sponsor Pilot team from project management training project

Project Scope
In scope: project management process overview Out of scope: project management tools and techniques

Major Deliverables
Presentation slides, activities, handouts

Assumptions
The pilot team from the project management overview course will review the presentation.

Constraints
Material must be consistent with the project management overview course

Risk Factors
Significant changes resulting from the project management overview course pilot cause rework for the project management process presentation.

Dependencies with Other Projects
Project Management Overview course project

Acceptance Criteria
Presentation approved by the pilot team

Figure 6.3: Project charter lite

Customer

The customer is the person who will use the outcomes of the project, whether internal or external to the organization. For small projects the sponsor and the customer might be the same person. If the sponsor and customer are not the same person, it is important to engage the customer in the initiating process. The customer is responsible for providing input during the planning phase, contributing to problem-solving and decision-making efforts, and taking ownership of the final product.

Project Manager

The project manager is responsible for achieving the project objectives. The project manager decides on the project management process components, documents the project requirements, prepares the project charter, plans the project activities, monitors project progress, communicates with all project stakeholders, captures and uses lessons learned, and manages change. Project manager might not be the person's formal title, although this person will assume the project manager's responsibilities as defined in the SPM project methodology.

Project Team

A team is two or more people who share a common goal and work in a cooperative effort to get a common job done. More specifically, the team members work together to complete the project deliverables. Small projects might have five or fewer team members who are considered part-time resources on the project. Team members are sometimes referred to as subject matter experts. The project team should use the defined approach and processes, adapted to comply with project requirements, to meet stakeholder needs and expectations.

Stakeholder Register

The stakeholder register is used to identify the people impacted by the project. This document includes relevant information

Stakeholder Register

Project Title: Project Management Overview course

Date Prepared: 1/21/XX

ID	Name	Position	Project Role	Contact Information	Expectations
1	Faye Jackson	President	Executive		
2	Mary Willie	Vice-President	Sponsor		
3	Yvette Bennett	Director	Business Owner		
4	Symone Lewis	Project Manager	Project Manager		
5	Caleb Lett	Consultant	SME		
6	Rachel Thompson	Consultant	SME		
7	Joseph Moore	Instructional Designer	SME		
8	Robert Christian	Trainer	SME		
9	Edwin Stewart	Analyst	Administrative Assistant		

Figure 6.4: Stakeholder register

about each stakeholder and can be updated as the project progresses.

STAKEHOLDER REGISTER EXAMPLE

Continuing with the Project Management Overview course project example, Symone identified the project stakeholders and developed the stakeholder register shown in figure 6.4.

LEADERSHIP CONNECTION

Leadership activities that occur during the initiation phase include:

- Create and nurture the project vision. If project management is typically not used on small projects, the project manager can provide the vision of using project management for small projects and motivate others to use the project management process and tools.
- Map the project objective to the business goal.
- Secure project resources.
- Identify project stakeholders and set expectations.
- Define the roles and responsibilities of project team members.
- Set up communications. The project manager must determine how often, by what means, and with which stakeholders to communicate.
- Gather project information through a series of surveys, questionnaires, interviews, review of outcomes from previous projects, and observation of current operations. Information gathering is a key activity because it allows the project manager to determine the project needs, identify project stakeholders, and clarify expectations.

KEYS FOR INITIATING SUCCESS

Keys for initiating success include:

- Engage project stakeholders early in the process and keep them engaged throughout the life of the project.
- Establish trust.
- Remember that the project charter sets the stage for the planning phase and should include input from all key stakeholders.
- Obtain necessary approvals before proceeding.

Initiating Process Guide

Description
Initiating defines and authorizes the project or a project phase.

Purpose
The purpose of project initiating is to perform the activities necessary to start up the project.

Inputs
- Business documents
- Statement of work
- Project request
- Project proposal

Tools and Techniques
- Project charter instructions
- Project charter template
- Project charter lite template
- Assumption log template
- Stakeholder register template

Outputs

- Project charter or project charter lite
- Assumption log
- Stakeholder register

Procedures

1. Obtain copies of preproject documents.
2. Identify project stakeholders.
3. Interview project sponsor and other stakeholders.
4. Prepare project charter.
5. Identify assumptions and constraints.
6. Identify project stakeholders.
7. Review project charter with stakeholders.
8. Obtain approval from project sponsor to begin planning.

7 ▪ Planning for Small Projects

Defining the work and identifying the resources necessary to complete the project are important. Planning allows you to define what you are going to do, when you are going to do it, and how the project goals will be accomplished. Unfortunately, planning is often viewed as tedious and time-consuming. The response to planning is often that there is no time to plan or that planning is not needed. Either of these responses will set the project manager up for problems later on in the project. Documenting planning activities provides the project manager the opportunity to communicate to project stakeholders, obtain support from team members, and set up a basis on which to analyze and manage the impacts of change.

For a small project, the planning cycle should be short. Scalability is especially important during planning. The effort required to plan the project depends on the type and amount of information and the level of detail that needs to be communicated. The duration required to plan depends on the length of time necessary to discover and

document the information, as well as the time required to gain agreement with the sponsor on scope, schedule, and cost.

Planning Process Summary

The PMBOK® Guide, sixth edition, defines the planning process group as "those processes performed to establish the effort, define and refine the objectives, and develop the course of action required to attain those objectives."[1]

Planning is an iterative process. It should be repeated as new information becomes available. Planning is critical for project success, because this is where the project manager defines and documents the project details. These details are then used as the means to manage the project. The planning process allows the project manager to collect requirements and develop all the necessary planning documents, including the project scope, work breakdown structure (WBS), project schedule, budget, risk response plan, and communications plan, all of which can then be incorporated into a formal project plan. Some people mistake the project schedule for the project plan, when in reality the project schedule is only one of the necessary planning documents.

Small projects might not require developing a formal project plan or fully developed planning documents. The SPM process uses a combination of fully developed planning documents and interim planning documents that allows for flexibility in the planning process.

Top-down planning is appropriate for small projects. Top-down planning is starting at the highest level and then adding additional levels as needed. The size of the project determines whether high-level planning at the deliverable level is sufficient or whether more detailed planning is required.

Planning Process Steps

Planning process steps include:

1. Prepare for planning activities.
2. Collect requirements.

3. Develop scope statement.
4. Develop a work breakdown structure (WBS).
5. Develop an activity list and milestone list.
6. Estimate effort and duration.
7. Develop a project schedule.
8. Develop a project budget.
9. Identify quality standards.
10. Identify and acquire resources.
11. Plan, identify, assess, and respond to risks.
12. Develop communications documents.
13. Develop procurement management plan.
14. Update assumptions log.
15. Develop a project management plan.
16. Obtain sponsor's approval.

Step 1: Prepare for Planning Activities

The project manager begins the planning process by reviewing the project charter or project charter lite and any documents used as part of the preproject activities, such as the business case, statement of work, project request, or project proposal. If background information or other supporting documents are available, the project manager should review them as well. As you review these documents you should also begin to document assumptions. An assumption is a factor in the planning process that is considered to be true, real, or certain, without proof or demonstration.

This is also a good time for the project manager to review lessons learned from previous projects. Reviewing lessons learned prepares the project manager for problems that might occur on the current project. Early detection of problems or risks allows for more options in developing a risk-mitigation strategy. The project manager should prepare to incorporate lessons learned information into the planning sessions, especially the risk planning session.

The project manager should prepare to engage the project team. The people who will do the work should always be a part of the planning process because they have the information on how and when the work can be completed. Planning sessions are an excellent

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Reviewing Lessons Learned

- Obtain relevant lessons learned from previous projects by searching the database using key words or key data fields for specific categories.
- Lessons learned categories could include: project management, subdivided by knowledge area or process group; by project life cycle, such as requirements, design, development, testing; or by technical and business/operational.
- Review the observation of what occurred, the impact on the project (positive or negative), and the suggestions for what could be done going forward.

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way to obtain input from the project team. The project manager should identify the participants, prepare a planning session agenda, provide advance copies of the project charter to all participants, and develop a WBS strawman to use to facilitate the planning discussion. (A strawman is a temporary document or item that is used as a starting point and is intended to be replaced when more information becomes available.) Separate planning sessions may be held for developing the WBS, estimating effort and duration, and identifying and assessing risk.

Finally, the project manager should be prepared to share with the team the decision-making process, scope change process, and issue escalation process. These processes should always be reviewed at the beginning of the project and should be thoroughly understood by all project team members.

Step 2: Collect Requirements

Collecting requirements is the process of determining and documenting stakeholders' needs to meet the project objectives.[2] A project requirement is a need or expectation for the project or product. Requirements represent how the deliverable will be accomplished. Collecting requirements is an important step in the planning process because missing or unclear requirements could lead to project failure.

For small projects, collecting requirements might consist of documenting the needs and expectations of the project sponsor. It might also involve obtaining information from other stakeholders through interviews or facilitated requirements-gathering sessions. Interviews can be structured or informal, consisting of prepared and spontaneous questions. To be most effective, the project manager should prepare the questions in advance and have a tool for documenting the responses. An interview schedule or discussion guide is a tool that can be used to document questions and track responses. A facilitated requirements-gathering session is used to bring key stakeholders together to define the requirements. During this session, the project manager identifies the project needs and reconciles stakeholder differences. This method is especially useful for information technology projects. Customer requirements should represent the voice of the customer, which can then be translated into the language of the project. For example, for an information technology project, customer requirements are translated into technical requirements. Requirements can be recorded in a document or spreadsheet, and they should be clear and unambiguous.

Types of Requirements

- **Business**—describes the higher-level needs of the organization
- **Stakeholder**—describes the needs of the stakeholder or stakeholder groups
- **Solution**—describes features, functions, and characteristics of the product, service, or result
- **Transition and readiness**—describes temporary capabilities (data conversion, training) needed to transition from the current state to the desired future state
- **Project**—describes the actions, processes, or other conditions the project needs to meet
- **Quality**—conditions or criteria needed to validate the successful completion of a project deliverable or fulfillment of other project requirements

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REQUIREMENTS DOCUMENTATION EXAMPLE

The Project Management Overview course project that was initiated in chapter 6, was approved. The project manager, Symone Lewis, can now begin her planning activities. Her first step is to review the project charter and begin to document the requirements. She met with the project stakeholders and identified the requirements shown in figure 7.1.Since planning is iterative, Symone will revisit this requirements document as she continues her planning activities to incorporate additional details as they become available.

Step 3: Develop Scope Statement

"Define scope is the process of developing a detailed description of the project and product,"[3] including requirements, which results in a project scope statement. A project scope statement is critical to the success of the project because it describes in detail the project's deliverables and the work required to complete those deliverables. The scope statement takes the risks, assumptions, and constraints identified in the project charter and uses the concept of progressive elaboration to analyze them to completeness, while including

Requirements Documentation

Project Title: Project Management Overview course

Date Prepared: 1/21/XX

ID	Requirement	Stakeholder	Type	Priority	Acceptance Criteria	Test or Verification	Phase or Release
1	Initiation process presentation slides, activities, and handouts	Sponsor, Mary Willie	Solution	High	Training materials must align with project initiation process.	Initiation pilot	n/a
2	Planning process presentation slides, activities, and handouts	Sponsor, Mary Willie	Solution	High	Training materials must align with project planning process.	Planning pilot	n/a

Figure 7.1: Requirements documentation

additional risks, assumptions, and constraints. The scope statement serves as the foundation for the remaining planning activities and is used for project control.

According to the *PMBOK® Guide*, sixth edition, the project scope statement could include a detailed version of the following:

- **Product scope description**—Progressively elaborates the characteristics of the product, service, or result described in the project charter and requirements document.
- **Deliverable**—Any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project. Deliverables also include ancillary results, such as project management reports and documentation. These deliverables may be described at a summary level or in great detail.
- **Acceptance criteria**—A set of conditions that is required to be met before deliverables are accepted.
- **Project exclusion**—Generally identifies what is excluded from the project. Explicitly stating what is out of scope for the project helps manage stakeholders' expectations.
- **Constraints**—A limiting factor that affects the execution of a project or process. Constraints identified with the project scope statement list and describe the specific internal or external restrictions or limitations associated with the project scope that affect the execution of the project; for example, a predefined budget or any imposed dates or schedule milestones that are issued by the customer or performing organization. When a project is performed under an agreement, contractual provisions will generally be constraints. Information on constraints may be listed in the project scope statement or in a separate log.
- **Assumptions**—A factor in the planning process that is considered to be true, real, or certain, without proof or demonstration. Assumptions also describe the potential impact of those factors if they prove to be false. Project teams frequently identify, document, and validate

assumptions as part of their planning process. Information on assumptions may be listed in the project scope statement or in a separate log.[4]

The project manager may choose to track assumptions and constraints in a separate log instead of incorporating them into the scope statement. The value of tracking them separately from the scope statement is that assumptions that are factors for planning purposes and that are considered to be true, real, or certain, but without proof, are progressively elaborated throughout the project. Eventually assumptions are validated and are then no longer assumptions. Some assumptions to consider relate to availability of resources, work schedules, priorities, and efficiency of decision makers/approvers. Constraints that are a restriction or limitation that will affect the performance of the project or process may need to be addressed later in the project.

If a separate assumption and constraint log is used, it should contain the following:

- **Category**—If both assumptions and constraints are contained in the same log, this field will be used to identify assumptions from constraints.
- **Description**—Define the assumption or constraint.
- **Owner**—Assign assumption to someone for validation.
- **Due date**—Date assumption should be validated.
- **Actions**—Identify the activity required to validate the assumption or address the constraint.
- **Status**—Identify if the assumption or constraint is open or closed.
- **Comments**—Any clarification on the action or status of the assumption or constraint.

SCOPE STATEMENT EXAMPLE

Symone knows that scope information is contained in the project charter, which may be sufficient for some small projects. However, Symone decided for this project, it would be beneficial to have more informa-

tion to allow the project team to perform detailed planning. Symone developed the scope statement shown in figure 7.2. Since she already created an assumption log (figure 6.2) during the initiation phase, when she developed the project charter, she chose not to include assumptions and constraints in her scope statement document.

Step 4: Develop a Work Breakdown Structure (WBS)

Step 4 of the SPM planning process is to develop a WBS. Developing a WBS is the process of identifying high-level deliverables and then decomposing them into smaller, more manageable components. The WBS can be a simple hierarchy showing only major or high-level deliverables, or it can be more detailed and contain lower-level deliverables. The intent is not to become too detailed but to make sure all the project components are included. In some cases one level of deliverables is all that is needed. Defining the deliverables, even on a small project, helps the project manager know what should and should not be included.

The WBS Defined

The WBS is a tool for breaking a project down into its component parts. Building a WBS helps to illustrate project scope, create schedule and cost estimates, assign resources, and provide a basis for control. As stated in the *PMBOK® Guide,* sixth edition, "the WBS is a hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and create the required deliverables. The WBS organizes and defines the total scope of the project and represents the work specified in the current approved statement of work."[5]

For the SPM methodology, the hierarchy is deliverable-oriented. It provides a top-down decomposition of deliverables, where each descending level represents an increasingly detailed definition of the project work. Decomposition is the subdivision of project deliverables into smaller, more manageable components until the work and deliverables are defined to the work package level. For small projects the deliverables should be decomposed to a level of detail sufficient for the project.

Scope Statement

Project Number	Project Name	
S107	Project Management Overview course	
Prepared by	Date	Project Type
Symone Lewis	1/21/XX	Small

Project Scope Description
Develop a beginning level project management course that can be offered to the general public beginning third quarter 20XX. The project will include the development of classroom training materials for the facilitator and participants. • Facilitator materials include PowerPoint slides with speaker notes, case study discussion questions and answers, and practice project discussion questions and answers • Participant materials include PowerPoint slides in handout format, case study, discussion questions, and practice project.
Deliverables
• Project management plan • Training requirements document • Instructional design document • Case study materials • Practice project scenario and expected results • Facilitator's manual • Participant's material • Pilot results
Acceptance Criteria
Course materials are approved by the pilot team. The pilot should include a representative of project management consultants and trainers.
Project Exclusions
Web-based training solutions and course delivery to the public.

Figure 7.2: Scope statement

There are two approaches for developing a WBS: top-down and bottom-up. The top-down approach is useful when you have significant knowledge of the project deliverables. To use the top-down approach, the project manager begins with the project scope statement and identifies what the project will produce. The final project deliverable becomes the top level on the WBS. From there the project manager decomposes the project by incorporating the project life cycle and project deliverables. For example, a software development project would include the software development life cycle phases and a training project would include the instructional design process along with the associated deliverables. The life cycle phases and deliverables are then decomposed into more manageable components of deliverables until the desired level is reached. The final level should represent a tangible deliverable for which the work effort can be planned and controlled. Instead of using the project life cycle, the top-down approach can also be based on business areas, systems, and so on.

The bottom-up approach is useful when the project manager is not familiar with the type of project or the nature of the project life cycle is not well known. The bottom-up approach requires the project manager to conduct brainstorming activities to identify the project deliverables. The project team should generate a list of deliverables for the project. Using an affinity analysis technique, the deliverables should be arranged in related groupings and each grouping should be given a label. The groupings should then be arranged into a hierarchy with names given at each level. The bottom-up approach is easy to use for small projects because it allows for more flexibility and does not require a shared understanding of the project life cycle. The project team identifies the project deliverables, arranges them into related groupings, and then establishes a hierarchical structure.

The WBS for the Project Management Overview course, which was used as an example in chapters 4 and 6, is shown in figure 7.3.

Developing a Top-Down WBS

The following are steps for developing a WBS:

1. Begin by listing the end product. There is only one box at this level.
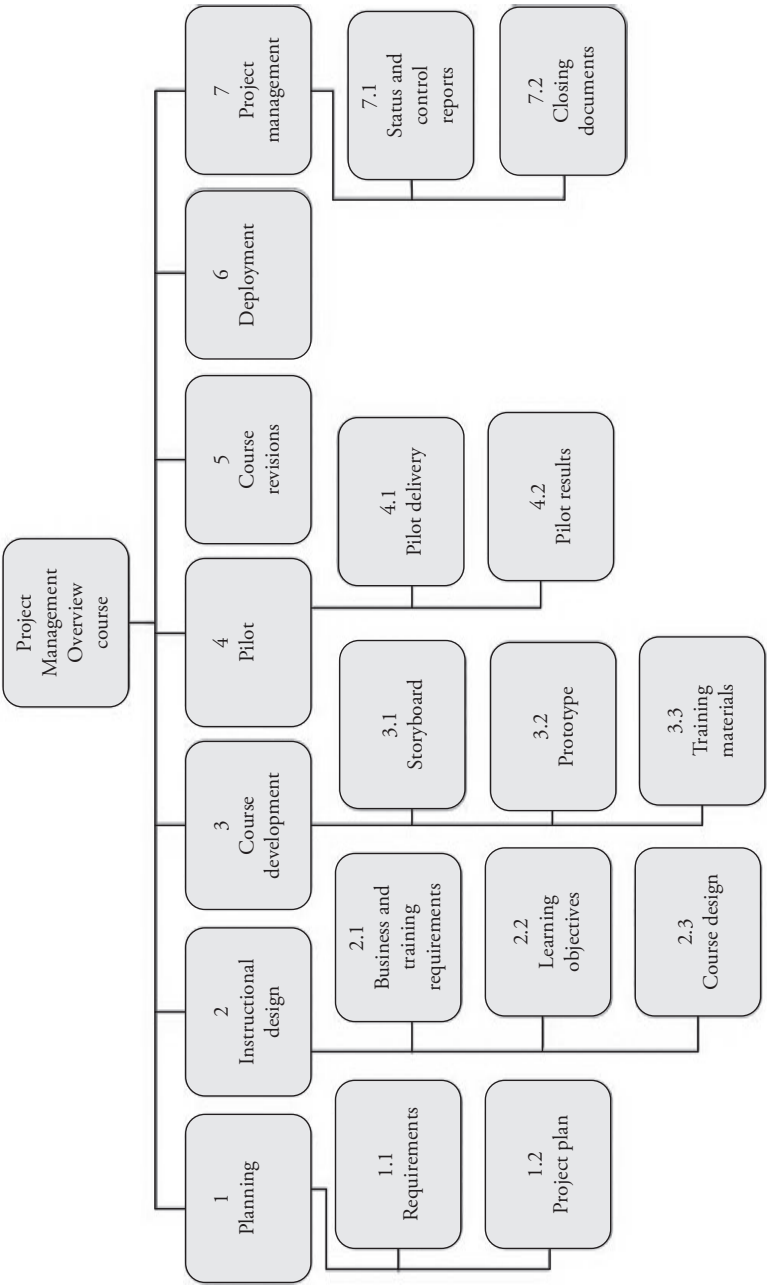
Figure 7.3: WBS—Project Management Overview course

2. Identify major deliverables. For small projects this might represent the major components of the project.
   2.1 Make sure major deliverables encompass all the work to be conducted on the project.
   2.2 Establish a numbering scheme that shows the hierarchical relationship. As identified in figure 7.1, the major deliverables are Instructional Design Planning, 2.0 Course Design, 3.0 Course Development, 4.0 Pilot, and 5.0 Project Management.
3. Meet with stakeholders to review the major deliverables.
4. Decompose major deliverables to a level of detail sufficient for the project. For small projects, two levels might be all that is needed. Not all deliverables need to be symmetrical in terms of the number of levels developed. Some deliverables will have more levels than others. Deliverable 3.0 Course Development is decomposed into five deliverables: 3.1 Presentation Slides, 3.2 Participant's Manual, 3.3 Facilitator's Manual, 3.4 Assessment Exams, and 3.5 Laminated Wall Charts. Also note that deliverable 3.2 is further decomposed into three deliverables: 3.2.1 Narrative, 3.2.2 Examples, and 3.2.3 Binding. Deliverable 3.2 was the only deliverable that needed to be decomposed to a lower level; the other deliverables stopped at two levels.
5. Assign a coding scheme. The numbering scheme should represent the hierarchical structure.
6. Continue to work with the stakeholders to refine the WBS.
7. Assign responsibility for deliverables at the lowest level.

Note: The WBS does not necessarily designate sequence; however, deliverables can be arranged in sequential order if the first level of the WBS represents the project life cycle phases. The first level of the WBS could also represent major project activities.

Another way to develop a WBS is to have the team create it as part of a project planning session. Before the meeting the project manager can create a WBS strawman and distribute it to the team

along with the project charter for review. During the meeting the project manager or meeting facilitator should:

1. Review the project charter with the team with a focus on the project scope.
2. Distribute sticky notes to team members.
3. Have the team list one deliverable per sticky note.
   3.1.1 Place sticky notes on chart paper on the wall.
   3.1.2 Organize the notes into high-level and lower-level deliverables.
4. Update the WBS by adding or removing deliverables (include a heading for out-of-scope deliverables). Recall the example of the Project Management Overview course that has been used previously in this book. To develop the WBS for the project of creating the class, the team brainstormed the deliverables. After all of the possible deliverables were identified, the team identified the five major deliverables and then organized the remaining subordinate deliverables. Some deliverables were discarded because they were duplicates or covered by the remaining deliverables. Some deliverables were added because, after organizing the structure, it became apparent what was missing. If out-of-scope deliverables are known at this time, a separate heading titled "Out of Scope" can be included without the relationship lines.
5. Have team members assign responsibility at the lowest level.

Guidelines for Developing a WBS

When developing a WBS, remember the following:

- Deliverables should be expressed as nouns.
- Each WBS element should represent a single tangible deliverable.
- If a deliverable is broken down, it should contain at least two sub or interim deliverables.
- The same deliverable may not be listed twice.

- Ownership should be assigned at the lowest level, and only one person should be assigned to the deliverable.
- You should stop breaking down the work when you reach a level low enough to estimate the effort and cost.

Using a WBS

The WBS helps the project manager focus on how to achieve project goals, and it can be used in numerous ways:

- To ensure that all of the work identified in the scope statement is included in the project
- To ensure that all of the requirements are defined and approved
- As a starting point for team members to define their tasks
- To show how much time it will take to complete each deliverable, and therefore how much time it will take to complete the project
- To show how much each deliverable will cost, and therefore how much the project will cost
- To ensure that there is a single point of accountability for each deliverable
- As a communication tool to show how the project deliverables are organized
- As a tool for identifying project risk.

WBS Outline

A WBS can be produced without a charting application. Although the graphical representation provided by an organization chart display is preferred because it is easy to read, a WBS can be produced in a text outline format (figure 7.4). The outline format shows the numbering scheme and the deliverables. Higher-level deliverables are shown as main headings, and lower-level deliverables are indented underneath them. The WBS outline can be contracted or expanded to fit the needs of the project. For example, you might display only the highest-level deliverable, the high- and low-level deliverables, or all levels of deliverables and tasks for specific deliverables.

WBS	Deliverable
1	Planning
1.1	Requirements
1.2	Project Plan
2	Instructional Design
2.1	Business and Training Requirements
2.2	Learning Objectives
2.3	Course Design
3	Course Development
3.1	Storyboard
3.2	Prototype
3.3	Training Materials
4	Pilot
4.1	Pilot Delivery
4.2	Pilot Results
5	Course Revisions
6	Deployment
7	Project Management
7.1	Status and Control Reports
7.2	Closing Documents

Figure 7.4: WBS outline format

Step 5: Develop an Activity List and Milestone List
The activity list and milestone list are used to identify and organize project activities.

Activity List
The activity list includes the schedule activities required on the project. This document can also show who is responsible for completing the activity. Depending on the size of the small project, more detailed planning might be necessary. The activity list can also be expanded to show duration and effort, which will be discussed in

Making the WBS Planning Session Fun

You can make the WBS planning session fun by:

- Color coding the WBS to represent specific areas, phases, or deliverables of the project by using different colored sticky notes
- Using color dots to represent resources instead of writing the resource name
- Using color markers to represent areas, phases, or deliverables
- Allowing team members to organize the deliverables into categories
- Providing trinkets for the team to play with during the session

the next sections. There might not be time or a need to create a detailed project schedule for small projects, and simple projects certainly don't need a detailed project schedule. The activity list provides a quick means to define the project activities, allowing for a form of control. The project manager should develop an activity for each deliverable and then estimate the effort, duration, and cost for each deliverable. Again, the level of detail depends on the needs of the project.

Versions of the activity list are shown in figures 7.5 and 7.6. Both lists are partial lists from the example Project Management Overview course. Figure 7.5 shows deliverables and activities. Figure 7.6 is more detailed and includes resources, planned start and finish dates, and space for a short status statement.

Hours can be added to this document, but usually the timeframe is so short for small projects that start and end dates are enough detail. Simple projects, which have an even shorter duration, might not have an associated budget. However, even in the case of a simple

WBS	Activity Name
1	Planning
1.1	Requirements
1.1.1	Develop project requirements
1.2	Project Plan
1.2.1	Develop subsidiary plans
1.2.2	Consolidate subsidiary plans into project plan
2	Instructional Design
2.1	Business and Training Requirements
2.1.1	Analyze business needs
2.1.2	Analyze training needs
2.1.3	Develop learners' profile
2.1.4	Identify branding requirements
2.2	Learning Objectives
2.2.1	Frame learning objectives
2.2.2	Develop learning objectives
2.3	Course Design
2.3.1	Develop topic list
2.3.2	Develop instructonal approach
2.3.3	Identify activities
3	Course Development
3.1	Storyboard
3.1.1	Create storyboard
3.1.2	Develop related content
3.2	Prototype
3.2.1	Develop functional prototype
3.2.2	Review and approve prototype
3.3	Training Materials
3.3.1	Develop case study
3.3.2	Develop practice project
3.3.3	Develop training materials
4	Pilot
4.1	Pilot Delivery
4.1.1	Schedule pilot
4.1.2	Conduct pilot

Figure 7.5: Activity list—deliverables and activities

WBS	Activity Name
4.2	Pilot Results
4.2.1	Analyze pilot results
4.2.2	Share pilot results with stakeholders
5	Course Revisions
5.1	Revise Course Materials
6	Deployment
6.1	Transition
6.2	Support Training
7	Project Management
7.1	Status and Control Reports
7.1.1	Prepare status and control reports
7.2	Closing Documents
7.2.1	Conduct project closure meeting
7.2.2	Develop project closure document

Figure 7.5: (continued)

project such as a three-week assignment where the costs are absorbed by the department, the project manager is still concerned about deliverable due dates.

Milestone List
A milestone is a significant point or event in a project. The milestone list (figure 7.7) provides a view of key dates or events based on project activities. The activity list can include milestones, or a separate view can be used displaying on milestones. Since milestones by definition are zero duration, the work effort is scheduled using activities.

Step 6: Estimate Effort and Duration
An estimate by definition is a quantitative assessment of the likely amount or outcome. Preliminary time estimates provide information on how long the project will take. The time-estimating process includes effort and duration.

WBS	Activity Name	Resource Names	Start	Finish	Status
1	Planning				
1.1	Requirements				
1.1.1	Develop project requirements	Symone Lewis	02/03/20	02/05/20	
1.2	Project Plan				
1.2.1	Develop subsidiary plans	Symone Lewis	02/06/20	02/12/20	
1.2.2	Consolidate subsidiary plans into project plan	Symone Lewis	02/13/20	02/13/20	
2	Instructional Design				
2.1	Business and Training Requirements				
2.1.1	Analyze business needs	Caleb Lett, Rachel Thompson	02/14/20	02/18/20	
2.1.2	Analyze training needs	Robert Christian	02/14/20	02/18/20	
2.1.3	Develop learners' profile	Joseph Moore	02/19/20	02/20/20	
2.1.4	Identify branding requirements	Joseph Moore	02/21/20	02/24/20	
2.1.5	Review and approve requirements	Yvette Bennett	02/25/20	02/27/20	
2.2	Learning Objectives				
2.2.1	Frame learning objectives	Joseph Moore	02/28/20	03/03/20	
2.2.2	Develop learning objectives	Edwin Stewart	03/04/20	03/10/20	
2.3	Course Design				
2.3.1	Develop topic list	Robert Christian	03/11/20	03/12/20	

Figure 7.6: Detailed activitiy list

WBS	Activity Name	Resource Names	Start	Finish	Status
2.3.2	Develop instructional approach	Joseph Moore	03/13/20	03/16/20	
2.3.3	Identify activities	Robert Christian	03/17/20	03/18/20	
3	Course Development				
3.1	Storyboard				
3.1.1	Create storyboard	Joseph Moore	03/19/20	03/23/20	
3.1.2	Develop related content	Caleb Lett, Rachel Thompson	03/24/20	03/26/20	
3.2	Prototype				
3.2.1	Develop functional prototype	Joseph Moore, Robert Christian	03/27/20	03/31/20	
3.2.2	Review and approve prototype	Yvette Bennett	04/01/20	04/03/20	
3.3	Training Materials				
3.3.1	Develop case study	Caleb Lett	03/24/20	03/30/20	
3.3.2	Develop practice project	Rachel Thompson	03/24/20	03/30/20	
3.3.3	Develop training materials	Robert Christian	04/06/20	04/13/20	
4	Pilot				
4.1	Pilot Delivery				
4.1.1	Schedule pilot	Edwin Stewart	02/14/20	02/20/20	
4.1.2	Conduct pilot	Robert Christian	04/14/20	04/15/20	
4.2	Pilot Results				
4.2.1	Analyze pilot results	Caleb Lett, Rachel Thompson	04/16/20	04/24/20	
4.2.2	Share pilot results with stakeholders	Symone Lewis, Yvette Bennett	04/27/20	04/29/20	
5	Course Revisions				
5.1	Revise Course Materials	Robert Christian	04/30/20	05/13/20	

Figure 7.6: (continued)

WBS	Activity Name	Resource Names	Start	Finish	Status
6	Deployment				
6.1	Transition	Symone Lewis	05/14/20	05/15/20	
6.2	Support Training	Robert Christian	05/15/19	05/21/20	
7	Project Management				
7.1	Status and Control Reports			05/29/20	
7.1.1	Prepare status and control reports	Symone Lewis	02/14/20	05/29/20	
7.2	Closing Documents				
7.2.1	Conduct project closure meeting	Symone Lewis	05/15/20	05/18/20	
7.2.2	Develop project closure document	Symone Lewis	05/19/20	05/29/20	

Figure 7.6: (continued)

Milestone List		
No.	Description	Date
I	Requirements Defined	02/27/20
2	Instructional Design Completed	03/18/20
3	Course Developed	04/13/20
4	Pilot Started	04/15/20
5	Course Materials Finalized	05/13/20

Figure 7.7: Milestone list

Estimating Effort

Effort is the number of units, usually expressed in hours or days, required to complete an activity or deliverable. Estimates should be realistic and reasonable. The use of historical information improves the accuracy of estimates. The project manager should involve the project team in estimating activities.

An estimating technique that can be used for small projects is three-point estimating. Three-point estimating improves the accuracy of a single-point estimate because it takes into consideration uncertainty and risk. This concept originated with the program evaluation and review technique (PERT) providing the beta distribution formula. Another commonly used formula is the triangular distribution. The three-point estimate (tE) includes three components[6]:

- Most likely (tM)—Based on the duration of the activity, given the resources likely to be assigned, their productivity, realistic expectations of availability for the activity, dependencies on other participants, and interruptions
- Optimistic (tO)—The activity duration based on analysis of the best-case scenario for the activity
- Pessimistic (tP)—The activity duration based on analysis of the worst-case scenario for the activity.

After the most likely, optimistic, and pessimistic estimates are determined, the expected duration, tE, can be calculated using either the triangular distribution or beta distribution formula.

- Triangular distribution: $tE = (tO + tM + tP) / 3$
- Beta distribution: $tE = (tO + 4tM + tP) / 6$

Of the numerous techniques for estimating effort, some are extremely detailed and provide more accuracy. For the purposes of the SPM process, however, we use bottom-up estimating as a quick and simple estimating technique.

Bottom-up estimating consists of starting at the lowest level of the project and working upward.

1. Start at the task level and identify how much time it will take to complete each task. Remember to include in your estimate how many times an activity will have to be repeated to get a more accurate estimate of the time required to complete the task. To keep the numbers manageable, use quarter-hour increments—0.25, 0.50, and 0.75. If you are managing your project using deliverables only, start with step 2.
2. Determine the time for completing the lowest-level deliverables by adding together the times required for the tasks that make up the individual deliverables.
3. Determine the time for completing the higher-level deliverables by adding together the time for completing the lower-level deliverables.
4. Determine the total project time by adding together the time for completing the highest-level deliverables.

Even if the project manager does not have to manage the costs associated with the project, he or she should still have some idea of the effort required to complete the work. A good visual for showing project effort for small projects is the WBS. The project manager can indicate the time required for all levels.

Estimating Duration

Duration is the number of work periods required to complete an activity or deliverable. After hour estimates are complete, the project manager can estimate duration.

Duration defines how long—in hours, weeks, months, and other units of time—the work will take. It includes the effort required to complete the work, along with other factors. For example, the reviewer of a document might require an hour to review the document but is given three days to complete the review. The effort is one hour, and the duration is three days.

To effectively estimate duration, you will need to know the skill set of the resource assigned to do the work. Remember that a less-skilled resource will require more time than an experienced resource.

As you estimate the effort and duration, remember to review and update the assumption log and lessons learned. See chapter 10 for a more detailed discussion on lessons learned.

Step 7: Develop a Project Schedule

Scheduling involves converting the work into sequenced tasks. The project schedule provides the planned start and end dates for tasks and milestones. A milestone is a significant event in the project, usually the completion of a major deliverable. Small projects planned at the deliverable level will show deliverable start and end dates. Milestones would still represent the completion of a series of major deliverables.

Developing a project schedule could become a burdensome task. Small projects can benefit from a simplified version of a project schedule. The schedule can be managed at a high level by including only deliverables or, if needed, key tasks associated with each deliverable. The project manager needs to decide what information will be shown on the project schedule. For example, is it necessary to show hours? For some smaller projects, start and end dates are adequate.

Other key scheduling terms are:

- **Activity**—A grouping of tasks. If planning is done at the deliverable level, each deliverable represents an activity.
- **Activity sequence**—The logical order of the activities or tasks.
- **Parallel**—An activity or task that can be done during the same timeframe as one or more other tasks or activities.

- **Predecessor**—An activity or task that must begin or end before another activity or task can begin or end.
- **Successor**—An activity or task that follows a predecessor activity or task. This is also known as a dependent activity or task.
- **Milestones**—Markers that show a point in time; they have zero duration.

The project schedule includes the start and finish dates, effort, expected duration, deliverables, and dependencies for project activities. If the start and finish dates are not realistic, the project is not likely to be finished as scheduled. The schedule development process must often be repeated before finalizing the project schedule. The project schedule should be reviewed and updated periodically to be meaningful.

The project schedule can be viewed using the following documents:

- **Gantt chart**—The Gantt chart, originally developed by Henry Gantt in 1915, illustrates project information using a bar chart format. The Gantt chart provides a visual outline of the amount of time a project will take. Project activities are displayed on a vertical axis against a horizontal timescale. The Gantt chart is an effective tool for small projects, especially when there is no need to show dependencies among activities because the dependencies are already understood.
- **Spreadsheet view**—A spreadsheet displays the project schedule using columns and rows.
- **Milestone chart**—A milestone chart shows only the most significant project events against a timescale in order to draw attention to the importance of the event. A milestone represents a point in time and can show the dates of key deliverables, project phases, major activities, or important events. Milestones should be displayed in the milestone chart in sequential order.

Depending on the project's needs, the project schedule might reflect differing levels of detail or contain different elements. If task-level planning is required, the project manager should be careful not to plan too many short-duration tasks. Short-duration tasks should be combined using one week of effort as a guideline. Additional guidelines for defining tasks include:

- If a task is longer than two weeks, split it into more tasks.
- If a task contains multiple resources, develop a separate task for each resource.

Most small projects can be easily planned at the deliverable level, and the order in which the deliverables are listed designates the sequencing. Small projects can also be planned at the major activity level with deliverables as the next level. This approach eliminates the need for a project management application. Small project schedules can be developed using software like Microsoft Word or Excel. Figure 7.8 provides the project schedule created using Excel. This is only a portion of the activities. The full list of activities is provided in figure 7.6. Figure 7.9 and Figure 7.10 were created in Microsoft Project and are provided as a comparison. The Project view of the milestone chart is shown in figure 7.11.

Step 8: Develop a Project Budget

Small projects often do not require a budget if the funding is covered as part of operations. When funding is required, the project budget is developed by allocating cost estimates to project activities. A cost estimate is an approximation of the monetary resource required to complete the project. Cost estimates are usually expressed in units of currency to allow for easy comparison across projects. However, costs can also be expressed in units of measure such as days or hours. To estimate costs, the project manager has to approximate the monetary resources needed to complete project activities. This can be accomplished by referencing the WBS to identify the deliverables for the project and then determining the cost associated with completing each deliverable.

WBS	Activity Name	Duration	Start	Finish	Resource Names
1	**Planning**	**9 days**	**02/03/20**	**02/13/20**	
1.1	**Requirements**	**3 days**	**02/03/20**	**02/05/20**	
1.1.1	Develop project requirements	3 days	02/03/20	02/05/20	Symone Lewis
1.2	**Project Plan**	**6 days**	**02/06/20**	**02/13/20**	
1.2.1	Develop subsidiary plans	5 days	02/06/20	02/12/20	Symone Lewis
1.2.2	Consolidate subsidiary plans into project plan	1 day	02/13/20	02/13/20	Symone Lewis
2	**Instructional Design**	**24 days**	**02/14/20**	**03/18/20**	
2.1	**Business and Training Requirements**	**10 days**	**02/14/20**	**02/27/20**	
2.1.1	Analyze business needs	3 days	02/14/20	02/18/20	Caleb Lett, Rachel Thomas
2.1.2	Analyze training needs	3 days	02/14/20	02/18/20	Robert Christian
2.1.3	Develop learners' profile	2 days	02/19/20	02/20/20	Joseph Moore
2.1.4	Identify branding requirements	2 days	02/21/20	02/24/20	Joseph Moore
2.1.5	Review and approve requirements	3 days	02/25/20	02/27/20	Yvette Bennett
2.1.6	Requirements defined	0 days	02/27/20	02/27/20	
2.2	Learning Objectives	8 days	Fri 2/28/20	Tue 3/10/20	
2.2.1	Frame learning objectives	3 days	Fri 2/28/20	Tue 3/3/20	Joseph Moore
2.2.2	Develop learning objectives	5 days	Wed 3/4/20	Tue 3/10/20	Edwin Stewart
2.3	Course Design	6 days	Wed 3/11/20	Wed 3/18/20	

Figure 7.8: Project schedule—Excel version

WBS	Activity Name	Duration	Start	Finish	Resource Names
2.3.1	Develop topic list	2 days	Wed 3/11/20	Thu 3/12/20	Robert Christian
2.3.2	Develop instructional approach	2 days	Fri 3/13/20	Mon 3/16/20	Joseph Moore
2.3.3	Identify activities	2 days	Tue 3/17/20	Wed 3/18/20	Robert Christian
2.3.4	Instructional design completed	0 days	Wed 3/18/20	Wed 3/18/20	
3	Course Development	18 days	Thu 3/19/20	Mon 4/13/20	
3.1	Storyboard	6 days	Thu 3/19/20	Thu 3/26/20	
3.1.1	Create storyboard	3 days	Thu 3/19/20	Mon 3/23/20	Joseph Moore
3.1.2	Develop related content	3 days	Tue 3/24/20	Thu 3/26/20	Caleb Lett, Rachel Thomas
3.2	Prototype	6 days	Fri 3/27/20	Fri 4/3/20	
3.2.1	Develop functional prototype	3 days	Fri 3/27/20	Tue 3/31/20	Joseph Moore, Robert Christian
3.2.2	Review and approve prototype	3 days	Wed 4/1/20	Fri 4/3/20	Yvette Bennett
3.3	Training Materials	15 days	Tue 3/24/20	Mon 4/13/20	
3.3.1	Develop case study	5 days	Tue 3/24/20	Mon 3/30/20	Caleb Lett
3.3.2	Develop practice project	5 days	Tue 3/24/20	Mon 3/30/20	Rachel Thomas
3.3.3	Develop training materials	6 days	Mon 4/6/20	Mon 4/13/20	Robert Christian
3.3.4	Course developed	0 days	Mon 4/13/20	Mon 4/13/20	
4	Pilot	54 days	Fri 2/14/20	Wed 4/29/20	
4.1	Pilot Delivery	44 days	Fri 2/14/20	Wed 4/15/20	

Figure 7.8: (continued)

| WBS	Activity Name	Duration	Start	Finish	Resource Names
4.1.1	Schedule pilot	5 days	Fri 2/14/20	Thu 2/20/20	Edwin Stewart
4.1.2	Conduct pilot	2 days	Tue 4/14/20	Wed 4/15/20	Robert Christian
4.1.3	Pilot started	0 days	Wed 4/15/20	Wed 4/15/20	
4.2	Pilot Results	10 days	Thu 4/16/20	Wed 4/29/20	
4.2.1	Analyze pilot results	7 days	Thu 4/16/20	Fri 4/24/20	Caleb Lett, Rachel Thomas
4.2.2	Share pilot results with stakeholders	3 days	Mon 4/27/20	Wed 4/29/20	Symone Lewis, Yvette Bennett
5	Course Revisions	10 days	Thu 4/30/20	Wed 5/13/20	
5.1	Revise Course Materials	10 days	Thu 4/30/20	Wed 5/13/20	Robert Christian
5.2	Course Materials Finalized	0 days	Wed 5/13/20	Wed 5/13/20	
6	Deployment	6 days	Thu 5/14/20	Thu 5/21/20	
6.1	Transition	1 day	Thu 5/14/20	Thu 5/14/20	Symone Lewis
6.2	Support Training	5 days	Fri 5/15/20	Thu 5/21/20	Robert Christian
7	Project Management	76 days	Fri 2/14/20	Fri 5/29/20	
7.1	Status and Control Reports	76 days	Fri 2/14/20	Fri 5/29/20	
7.1.1	Prepare status and control reports	76 days	Fri 2/14/20	Fri 5/29/20	Symone Lewis
7.2	Closing Documents	11 days	Fri 5/15/20	Fri 5/29/20	
7.2.1	Conduct project closure meeting	2 days	Fri 5/15/20	Mon 5/18/20	Symone Lewis
7.2.2	Develop project closure document	9 days	Tue 5/19/20	Fri 5/29/20	Symone Lewis

Figure 7.8: (continued)

WBS	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1	**Planning**	**9 days**	**Mon 2/3/20**	**Thu 2/13/20**		
1.1	**Requirements**	**3 days**	**Mon 2/3/20**	**Wed 2/5/20**		
1.1.1	Develop project requirements	3 days	Mon 2/3/20	Wed 2/5/20		Symone Lewis
1.2	**Project Plan**	**6 days**	**Thu 2/6/20**	**Thu 2/13/20**		
1.2.1	Develop subsidiary plans	5 days	Thu 2/6/20	Wed 2/12/20	3	Symone Lewis
1.2.2	Consolidate subsidiary plans into project plan	1 day	Thu 2/13/20	Thu 2/13/20	5	Symone Lewis
2	**Instructional Design**	**24 days**	**Fri 2/14/20**	**Wed 3/18/20**		
2.1	**Business and Training Requirements**	**10 days**	**Fri 2/14/20**	**Thu 2/27/20**		
2.1.1	Analyze business needs	3 days	Fri 2/14/20	Tue 2/18/20	6	Caleb Lett, Rachel Thompson
2.1.2	Analyze training needs	3 days	Fri 2/14/20	Tue 2/18/20	6	Robert Christian
2.1.3	Develop learners' profile	2 days	Wed 2/19/20	Thu 2/20/20	10, 9	Joseph Moore
2.1.4	Identify branding requirements	2 days	Fri 2/21/20	Mon 2/24/20	11	Joseph Moore
2.1.5	Review and approve requirements	3 days	Tue 2/25/20	Thu 2/27/20	12	Yvette Bennett
2.1.6	Requirements defined	0 days	Thu 2/27/20	Thu 2/27/20	13	
2.2	**Learning Objectives**	**8 days**	**Fri 2/28/20**	**Tue 3/10/20**		
2.2.1	Frame learning objectives	3 days	Fri 2/28/20	Tue 3/3/20	13	Joseph Moore
2.2.2	Develop learning objectives	5 days	Wed 3/4/20	Tue 3/10/20	16	Edwin Stewart
2.3	**Course Design**	**6 days**	**Wed 3/11/20**	**Wed 3/18/20**		
2.3.1	Develop topic list	2 days	Wed 3/11/20	Thu 3/12/20	17	Robert Christian
2.3.2	Develop instructional approach	2 days	Fri 3/13/20	Mon 3/16/20	19	Joseph Moore
2.3.3	Identify activities	2 days	Tue 3/17/20	Wed 3/18/20	20	Robert Christian
2.3.4	Instructional design completed	0 days	Wed 3/18/20	Wed 3/18/20	21	
3	**Course Development**	**18 days**	**Thu 3/19/20**	**Mon 4/13/20**		
3.1	**Storyboard**	**6 days**	**Thu 3/19/20**	**Thu 3/26/20**		
3.1.1	Create storyboard	3 days	Thu 3/19/20	Mon 3/23/20	21	Joseph Moore
3.1.2	Develop related content	3 days	Tue 3/24/20	Thu 3/26/20	25	Caleb Lett, Rachel Thompson

Figure 7.9: Project schedule—task sheet view in Project

WBS	Task Name	Duration	Start	Finish	Predecessors	Resource Names
3.2	**Prototype**	**6 days**	**Fri 3/27/20**	**Fri 4/3/20**		
3.2.1	Develop functional prototype	3 days	Fri 3/27/20	Tue 3/31/20	26	Joseph Moore, Robert Christian
3.2.2	Review and approve prototype	3 days	Wed 4/1/20	Fri 4/3/20	28	Yvette Bennett
3.3	**Training Materials**	**15 days**	**Tue 3/24/20**	**Mon 4/13/20**		
3.3.1	Develop case study	5 days	Tue 3/24/20	Mon 3/30/20	25	Caleb Lett
3.3.2	Develop practice project	5 days	Tue 3/24/20	Mon 3/30/20	25	Rachel Thompson
3.3.3	Develop training materials	6 days	Mon 4/6/20	Mon 4/13/20	29	Robert Christian
3.3.4	Course developed	0 days	Mon 4/13/20	Mon 4/13/20	33	
4	**Pilot**	**54 days**	**Fri 2/14/20**	**Wed 4/29/20**		
4.1	**Pilot Delivery**	**44 days**	**Fri 2/14/20**	**Wed 4/15/20**		
4.1.1	Schedule pilot	5 days	Fri 2/14/20	Thu 2/20/20	6	Edwin Stewart
4.1.2	Conduct pilot	2 days	Tue 4/14/20	Wed 4/15/20	6, 33	Robert Christian
4.1.3	Pilot started	0 days	Wed 4/15/20	Wed 4/15/20	38	
4.2	**Pilot Results**	**10 days**	**Thu 4/16/20**	**Wed 4/29/20**		
4.2.1	Analyze pilot results	7 days	Thu 4/16/20	Fri 4/24/20	38	Caleb Lett, Rachel Thompson
4.2.2	Share pilot results with stakeholders	3 days	Mon 4/27/20	Wed 4/29/20	41	Symone Lewis, Yvette Bennett
5	**Course Revisions**	**10 days**	**Thu 4/30/20**	**Wed 5/13/20**		
5.1	Revise Course Materials	10 days	Thu 4/30/20	Wed 5/13/20	42	Robert Christian
5.2	*Course Materials Finalized*	0 days	Wed 5/13/20	Wed 5/13/20	44	
6	**Deployment**	**6 days**	**Thu 5/14/20**	**Thu 5/21/20**		
6.1	Transition	1 day	Thu 5/14/20	Thu 5/14/20	44	Symone Lewis
6.2	Support Training	5 days	Fri 5/15/20	Thu 5/21/20	47	Robert Christian
7	**Project Management**	**76 days**	**Fri 2/14/20**	**Fri 5/29/20**		
7.1	**Status and Control Reports**	**76 days**	**Fri 2/14/20**	**Fri 5/29/20**		
7.1.1	Prepare status and control reports	76 days	Fri 2/14/20	Fri 5/29/20	6	Symone Lewis
7.2	**Closing Documents**	**11 days**	**Fri 5/15/20**	**Fri 5/29/20**		
7.2.1	Conduct project closure meeting	2 days	Fri 5/15/20	Mon 5/18/20	47	Symone Lewis
7.2.2	Develop project closure document	9 days	Tue 5/19/20	Fri 5/29/20	53	Symone Lewis

Figure 7.9: (continued)
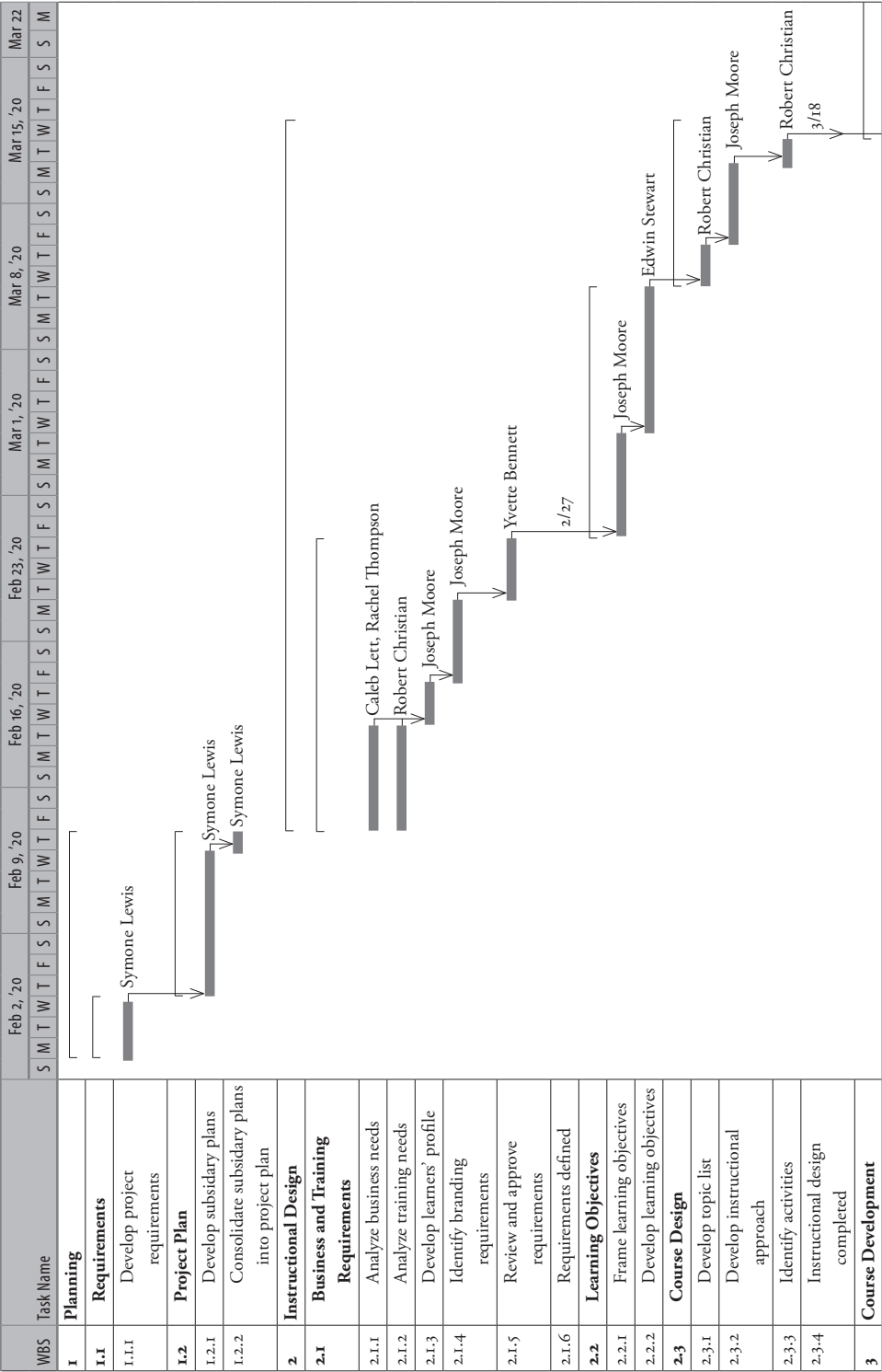
Figure 7.10: Project Schedule—Gantt chart view in Project

Task Name	Date	1st Quarter			2nd Quarter			3rd Quarter		
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Requirements Defined	Thu 2/27		2/27							
Instructional Design Completed	Wed 3/18			3/18						
Course Developed	Mon 4/13				4/13					
Pilot Started	Wed 4/15				4/15					
Course Materials Finalized	Wed 5/13					5/13				

Figure 7.11: Milestone chart in Project

There are three levels of estimates: order-of-magnitude, budget, and definitive. Each of these estimates carries a different degree of accuracy and is used at different decision points in the project.

The order-of-magnitude estimate, also known as the rough order of magnitude (ROMf), is considered a ballpark estimate. It is stated early in the project and does not involve a lot of project details. This is a top-down estimate that usually takes into consideration the highest level of the WBS as a means to provide a quick calculation on whether to proceed with the project. The order-of-magnitude estimate should be accurate within a range of -25 percent to +75 percent.

Definitive, the final level, is a bottom-up estimate that includes detailed estimating techniques and is accurate within a range of −5 percent to +10 percent. Because of the time and effort associated with completing a definitive estimate, for small projects the order-of-magnitude and budget estimates are frequently used.

Type of Estimate	Accuracy	WBS Approach
Order-of-Magnitude (ballpark)	−25% to +75%	Top-down
Definitive (detailed)	−5% to +10%	Bottom-up

The following are some of the common techniques for estimating costs[7]:

- **Analogous estimating**—Analogous estimating compares values of parameters, such as scope, cost, budget, and duration of existing projects to a similar project and accounts for the dissimilarities. Analogous estimating is less time-consuming and costly than the other estimating techniques; however, it is also less accurate.
- **Parametric estimating**—Parametric estimating uses historical information and mathematical relationships to calculate cost. The level of accuracy is based on the data used in the calculation.
- **Bottom-up estimating**—Bottom-up estimating is a method of estimating component work. The estimates are done at the

lowest level of the WBS and then summarized or rolled up to the higher levels of the WBS. The accuracy of the bottom-up estimate is based on the accuracy of the lower-level estimates. The bottom-up estimate is the most accurate but is also the most time-consuming. Also, the bottom-up estimate can be used only if the detailed information is available. Small projects that are planned using historical information are able to take advantage of bottom-up estimating to obtain more accurate estimates. However, the very nature of small projects may not require the additional time and effort required to conduct bottom-up estimating.

- **Three-point estimates**—The three-point estimate (cE) includes three components: optimistic (cO), most likely (cM), and pessimistic (cP). The optimistic (cO) estimate is based on analysis of the best-case scenario for the activity. The most likely (cM) estimate is based on realistic effort assessment for the required work and expected expenses. The pessimistic (cP) estimate is based on analysis of the worst-case scenario for the activity. After these estimates are developed, the weighted average is calculated. The two common formulas for the three-point estimate are:
  - Triangular distribution: $cE = (cO + cM + cP) / 3$
  - Beta distribution: $cE = (cO + 4cM + cP) / 6$

The project budget represents the cost baseline for the project and is used to keep the project under control. The budget should include

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Budget Categories

- Labor
- Hardware
- Software
- Purchased services
- Travel
- Meals

the work effort (labor) to complete the project. Labor costs can be calculated by combining estimated hours to complete the tasks with individual resource rates. In addition to labor, the budget should include other resources required to complete the project, such as materials, equipment, supplies, license fees, training, travel, and meals. The budget can be prepared to show resource costs for each project activity. Also, the budget can be time-phased to show when the costs should be incurred. In the time-phased budget, costs are allocated to a specific time period, for example monthly, and then summarized for the project.

As you develop the project budget, remember to review and update the assumption log and lessons learned. See chapter 10 for a more detailed discussion on lessons learned.

Step 9: Identify Quality Standards

Although quality applies to all projects, quality measures and techniques should be specific to the type of deliverables being produced. The project manager should work with project stakeholders to design quality into the deliverables rather than wait and find quality issues during inspection. Keep in mind: prevention-keeping errors out of the process is preferred over inspection-keeping errors out of the hands of the customer.

For small projects, the project manager should incorporate quality into the planning and designing of the project and product. The team should understand, evaluate, define, and manage requirements so that customer expectations are met. Use a quality management plan to document quality decisions on standards, roles and responsibilities, deliverables and processes subject to quality review, and the quality tools that will be used for the project.

Step 10: Identify and Acquire Resources

Project resources include team members, facilities, equipment, materials, supplies, and other resources necessary to complete the work. Resource planning is used to determine and identify an approach to ensure that sufficient resources are available, when needed.

For small projects, the project manager should use the WBS as a starting point to identify the team and physical resources needed for the project.

Step 11: Identify, Assess, and Respond to Risks

The PMBOK® Guide, sixth edition, defines individual project risk as "an uncertain event or condition that, if it occurs, has a positive or negative effect on project objectives."[8] Risks are events that *may or may not* occur. Positive effects of risks are considered opportunities for small projects; these new opportunities are usually handled as a separate project. For purposes of the SPM process, we will focus on the negative effects that risk events can have on a project. Risk planning consists of four activities: risk management planning, risk identification, risk analysis, and risk response planning.

Risk Management Planning

As stated in the *PMBOK® Guide*, sixth edition, "risk management planning is the process of deciding how to approach and plan the risk management activities for a project."[9] The risk management plan for small projects serves as a tool for the project manager to document and communicate risk management activities.

Because the risk management planning process for small projects is simplified with clearly defined tools, the risk management plan has only a few components. It is a narrative document that describes how risk identification, analysis, response planning, monitoring, and control will be structured.

The risk management plan for small projects includes the following:

- **Methodology**—Identifies the approach and tools that will be used to perform risk management on the project
- **Roles and responsibilities**—Identifies the project manager, project team, and other stakeholders and their corresponding roles and responsibilities during the risk-planning sessions

- **Timing**—Identifies when the risk identification session will occur and how often the risk management process will be revisited throughout the process
- **Reporting**—Defines how the results of the risk management process will be documented, analyzed, and communicated to the project team and other project stakeholders
- **Tracking**—Identifies how risk management activities will be recorded for the benefit of the current needs, future needs, and lessons learned

A risk management plan might not be required for small projects, but it would serve as a communication tool to inform stakeholders how risks will be handled. Another option is to define the risk management plan as part of the process and update the plan on the basis of the specific needs of the project.

Risk Identification

Risks should be identified. Risk identification involves determining which risks might affect the project and documenting them. Risk identification should occur at the beginning of the project or phase and should be repeated during the project or phase as risk factors change, new action strategies are considered, and new risks are identified. The project team can identify risk events at a brainstorming session.

Risk Categories

- **Technical**—scope, requirements, technology
- **Management**—project management, operations management, organization
- **Commercial**—contractual, internal procurement, suppliers and vendors
- **External**—legislation, site/facilities, environmental/weather, competition

Participants at the brainstorming session should include the members of the project team. However, other stakeholders, technical experts, and people with similar experience should also be encouraged to participate. Normally it is recommended that someone other than the project manager facilitate the risk identification session; however, for small projects it is acceptable for the project manager to be the facilitator. A list of risk categories can be used to facilitate brainstorming. Some possible categories are organization (e.g., management approach, policy, structure, culture); project management (e.g., schedule, costs, quality, resources, requirements, controlling); implementation (e.g., testing, integration, training); and tools and technology.

Asking "what if" is important. For example, what if the resources are not available when needed, or what if the team is unable to complete a deliverable as scheduled? Risks should be documented on the risk register (figure 7.12), which is developed during the risk identification process and updated during risk analysis. During risk identification, risk descriptions, categories, and potential responses are added to the risk register.

The risk description should be clear enough for the project manager to monitor the risk if it does occur. A clear risk description can include an "if/then" statement that reads, "if" the risk occurs, "then" what will the impact be.

Risk Analysis

Risks should be analyzed. Risk analysis involves quantifying and prioritizing risks. A simplified process for analysis includes assessing the probability, impact, and priority of each risk using low, medium, and high ratings. Risks are normally prioritized in a team session but depending on the size of the project and the number of risks, the project manager might end up working alone.

- Risk probability is the likelihood that a risk will occur. Probability should be classified as low, medium, or high. Risks with zero probability of occurrence should be discarded. Risks with 100 percent probability of occurrence

Risk Register

Number	Status	Category	Risk Event	Probability	Impact	Priority	Risk Response	Owner
1		Technology	If existing technology does not support the blended training solution, then the course development work cannot proceed as planned.					Robert Christian
2		Project Management	The project manager is working on several medium-sized projects. If the project manager does not have time to work on this small project, then the project activities may fall behind schedule.					Symone Lewis
3		Design	The trainer who also has course development expertise is looking for new opportunities. If the trainer leaves the organization, then the project would lose a key resource and the instructional design document may be late or not meet the quality requirements.					Joseph Moore

Figure 7.12: Risk register

Probability Rating	Occurrence	Meaning
Zero	Will not occur	There is no chance that this risk will occur.
Low (L)	Unlikely to occur but could	The probability that this event will occur is between 1 and 40%.
Medium (M)	May occur	The probability that this event will occur is between 41 and 70%.
High (H)	Likely to occur	The probability that this event will occur is between 71 and 99%.
Certainty (Assumption)	Not a risk	If the probability of occurrence is 100%, then that means it is not a risk but an assumption.

Figure 7.13: Probability rating

are not really risks because by definition a risk is the chance that an adverse event will occur, and without the element of chance, there is no risk. These items are actually assumptions and should be treated as such. Figure 7.13 provides a probability rating, occurrence, and meaning that can be used for small projects.[10]

- Impact is the effect a risk has if it does occur. Impact should be classified as low, medium, or high. Risks with a zero impact should be discarded. Figure 7.14 provides the level of impact and meaning for small projects.[11]

- The risk priority is determined by combining the probability rating with the impact rating, as shown in Figure 7.15, or the graphical representation in Figure 7.16.[12]

- The owner is the person responsible for managing the risk. Each risk must belong to someone on the team. The person assigned accountability will make sure that the risk is monitored, and responses are carried out.

Level of Impact	Meaning
Zero	There is no impact if this risk should occur. Therefore, it is not truly a risk.
Low—Little impact	The impact on the project is minor but would be noticed by the customer or sponsor and would create minor customer dissatisfaction. More than 5% time increase or <10% cost increase.
Medium—Some impact to the project schedule	The impact to the project is moderate and would create customer and/or sponsor dissatisfaction with the project. Five percent to 10% time increase or 10–20% cost increase.
High—Major impact to the project schedule	The impact is major and could create significant customer or corporate dissatisfaction. It could jeopardize the project. Less than 10% time increase or >20% cost increase.

Figure 7.14: Impact levels

Probability	Impact	Priority
Low	Low	Low
Low	Medium	Medium
Low	High	Medium
Medium	Low	Medium
Medium	Medium	Medium
Medium	High	High
High	Low	Medium
High	Medium	Medium
High	High	High

Figure 7.15: Risk priority
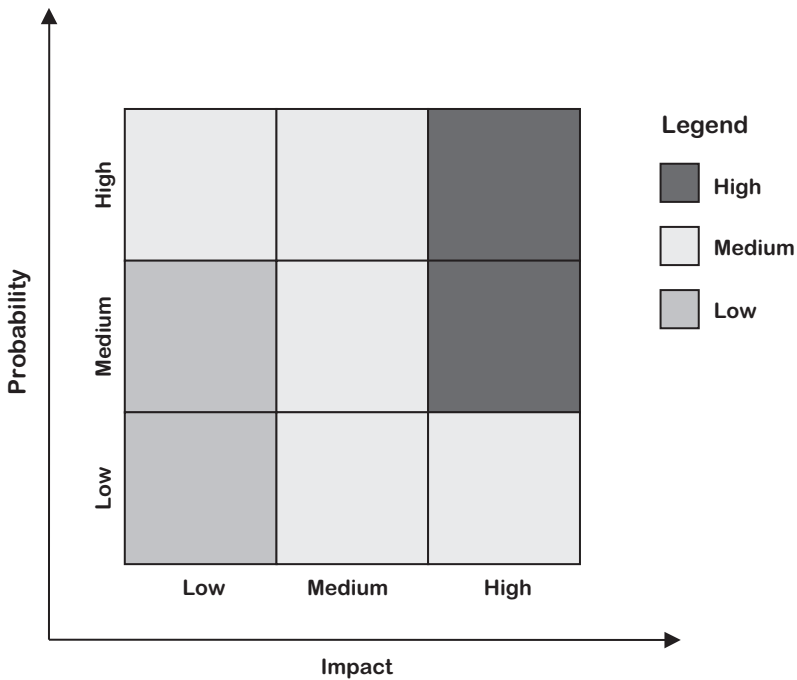
Figure 7.16: Probability impact risk matrix

After risk analysis is complete, the risk register should be updated to include the probability, impact, and priority of each risk. Risks can also be grouped by category or sorted by priority.[13]

Risk Response Planning

A negative risk is considered a threat to the project objectives. Risk response planning involves determining a proactive response to risks in order to remove threats to the project. The *PMBOK® Guide*, sixth edition, provides the five strategies for proactively responding to negative risks as escalate, avoid, transfer, mitigate, and accept.[14]

- **Escalate**—Escalation occurs when the threat is outside the scope of the project or that the proposed response would exceed the project manager's authority. Escalated risks are

managed at the program, portfolio, or organizational level. These risks are not monitored further by the project team, although they may be recorded in the risk register for information.

- **Avoid**—Risk avoidance involves making changes to the project approach, some aspect of the project management plan, or changing the project objective that is in jeopardy to eliminate the threat entirely, reducing its probability of occurrence to zero.

- **Transfer**—Risk transfer allows the project manager to shift all or some of the negative impact of a threat, along with the responsibility for managing the risk, to someone who is better able to manage it. Transference does not eliminate the risk; it just allows a third party to manage the risk. Risk transfer is effective for financial risk exposure and usually involves payment of a risk premium to the party taking on the risk.

- **Mitigate**—Risk mitigation is used to reduce the probability and/or impact of the threat. One way to mitigate a project risk is to introduce more processes or reviews.

- **Accept**—Risk acceptance means that you are willing to accept the consequences of the risk; but no proactive action is taken. Sometimes it is not possible to eliminate a threat because you cannot identify any suitable strategies and therefore you have to accept the risk. This active acceptance usually results in the development of a contingency plan. Also, at times, low-priority risks are just accepted. This passive acceptance requires no action; however, these risks should still be monitored for changes in probability or impact. If either the probability or impact changes, the risk should be reevaluated to determine the appropriate response strategy.

Figure 7.17 provides more definition on when to use the five risk response strategies for negative risks.

Risk Response	Risk Response Type	Definition	When to Use	Example
Escalation	Shift Responsibility	Risks that are outside the scope of the project and should be managed at the program level, portfolio level, or other relevant part of the organization. After escalation, these risks are not monitored further by the project team; however, they may be recorded for information.	Use when the project team or project sponsor agrees that risk is outside the scope of the project and that the proposed risk response could exceed the project manager's authority.	Five projects are part of a data warehouse program. The same risk has been reported by three of the projects in the program. This risk should be escalated to the program manager and managed at the program level.
Avoidance	Preventive	Risk avoidance is changing the project plan to eliminate the risk or condition or to protect the project objectives from its impact. Risk avoidance eliminates the threat of a specific risk by eliminating its cause.	Always use as the first line of defense. Use with all risks whenever possible.	Clarifying requirements, obtaining information, improving communication, reducing scope to avoid high-risk activities, adding resources or time, adopting a familiar approach instead of an innovative one.
Mitigation	Preventive	To mitigate a risk is to reduce the probability or impact of the risk to an acceptable level.	If the risk cannot be avoided, then it may be possible to reduce its probability or impact.	Adopting less complex processes, incorporating additional processes for new activities, adding resources or time to the schedule.

Figure 7.17: Risk responses

Risk Response	Risk Response Type	Definition	When to Use	Example
Transference	Shift Responsibility	Risk transfer is seeking to shift the risk to a third party together with ownership of the response. Transferring the risk simply gives another party responsibility for its management; it does not eliminate it.	When outsourcing is a possibility.	Insurance, performance bonds, warranties, guarantees, and contracts.
Acceptance	Reactive	Acceptance indicates that the project team has decided not to deal with a risk or is unable to identify any other suitable response strategy. Active acceptance may involve having a contingency plan should a risk occur. Passive acceptance requires no action, leaving the project team to deal with the risks as they occur.	When there is no practical way to reduce or eliminate the risk, or when it is cost-prohibitive to do so.	Externally imposed constraints, regulations, or mandatory tasks. Dependent projects over which you have no control.

Figure 7.17: (continued)

Although all risks should be documented and monitored, for small projects, responses are generally prepared for high-priority and sometimes medium-priority risks. The risk response register should be updated to include more detail for the high and medium risks (figure 7.18). Risk descriptions are updated with more definition, risk response strategies/plans are identified, and risk owners are assigned.

Step 12: Develop Communications Documents

Communications planning is the process of determining the information and communications needs of the project stakeholders. We communicate to inform, solve problems, and make decisions. Effective communication is vital to project success. Effective communication requires the project manager to identify stakeholders, understand their diverse needs, and then get the right information to the right people in a timely manner.

Stakeholder Register

A stakeholder is a person or organization that is actively involved in the project or whose interests may be positively or negatively affected by execution or completion of the project. A stakeholder may also exert influence over the project and its deliverables. It is important to identify the project stakeholders early in the project and to assess their level of interest, expectations, importance, and involvement in the project. A stakeholder analysis will reveal who the stakeholders are and how they should be managed.

Stakeholders can be identified by reviewing the project charter, organizational charts, and previous project plans as well as by talking with known stakeholders. Remember to include anyone who is in a decision-making or management role for the project. After you have identified the stakeholders, you will need to identify the potential impact or support each stakeholder could generate and each stakeholder's expectations for project communications.

The stakeholder register includes:

				Risk Register					
Number	Status	Category	Risk Event	Probability	Impact	Priority	Risk Response	Owner
1		Technology	If existing technology does not support the blended training solution, then the course development work cannot proceed as planned.	Medium	High	Medium	Evaluate the technology and research the options.	Robert Christian
2		Project Management	The project manager is working on several medium-sized projects. If the project manager does not have time to work on this small project, then the project activities may fall behind schedule.	Medium	High	Medium	Determine if some of the work can be transferred to the analyst on the project. Determine if an administrative assistant can support some of the routine project management activities.	Symone Lewis
3		Design	The trainer who also has course development expertise is looking for new opportunities. If the trainer leaves the organization, then the project would lose a key resource and the instructional design document may be late or not meet the quality requirements.	High	High	High	Make sure knowledge transfer is occurring at every phase of the project.	Joseph Moore

Figure 7.18: Updated risk register

- **Stakeholder name**—Identify the stakeholder's name and title.
- **Department**—Identify the stakeholder's department name and position in the organization.
- **Role**—Identify the stakeholder's role in the project.
- **Contact information**—List the stakeholder's contact information.
- **Requirements**—List the stakeholder's wants and needs for the project. Note whether approval is required.
- **Expectations**—List the stakeholder's expectations for the project and from you as the project manager. Identify when and how to communicate with the stakeholder.
- **Influence**—List the stakeholder's level and type of influence.
- **Strategy**—Document the strategy for managing the stakeholder.
- **Issues/concerns**—List any specific issues or concerns the stakeholder has expressed, especially if the stakeholder has asked for special attention.

Communications Matrix

The communications matrix (figure 7.19) describes the communications needs and expectations for the project. It identifies the purpose or description of communication, document or medium used, audience, and frequency.

Responsibility Assignment Matrix

The responsibility assignment matrix (RAM) (figure 7.20) is a good tool for identifying how and with whom to communicate. It is also a good communications tool because it identifies key stakeholders and their roles in the project. The project manager can see at a glance the type of responsibility each person has for each deliverable.

If the project has a small number of deliverables and a couple of stakeholders, the project manager may choose a more informal method of communicating responsibility.

Communications Matrix				
No.	Purpose/Description of Communication	Document / Medium Used	Audience	Frequency
1	Monitor project progress to plan	Monthly project status report	Sponsor Business owner	Monthly
2	Provide overall project status	Detailed weekly status report	Sponsor Business owner	Weekly
3	Manage project issues	Issues log	Project team	Weekly
4	Meeting management	Agenda and meeting minutes	Project team	Weekly

Figure 7.19: Communications matrix

For small projects, the responsibility matrix can show all the project deliverables, or it can be scaled to show just the major deliverables.

Begin by listing the deliverables in the left column. List the key stakeholders or roles in the top row. Identify the type of responsibility each stakeholder or role has for each deliverable.

The following is a description of the types of responsibilities that can be included in the responsibility matrix. The project manager can create responsibilities if needed.

- **A**—approves. The person or role has decision-making authority on the quality of the deliverable. A deliverable might have multiple approvers or multiple levels of approval.
- **C**—creates. The person or role is responsible for creating the deliverable. Only one person or role should be assigned to create a deliverable. If multiple people work on a deliverable, only one person has the lead; the other people are support.
- **I**—informs. The person or role must be made aware of the progress of the deliverable.
- **R**—reviews. The person or role reviews the deliverable.

- **S**—supports. The person or role assists in developing the deliverable. The deliverable might have multiple support responsibilities.

Responsibility Assignment Matrix

Another version of the RAM uses the RACI to define the involvement of stakeholders in project activities.

- R—responsible. The person performing the work
- A—accountable. The person who is answerable to the project manager for the completion and quality of the work
- C—consult. The person who has knowledge and information necessary to complete the work
- I—inform. The person who should be notified about the status of the work

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Project Notebook

The project notebook provides a practical way to organize and easily access project information. The intent is to ensure that the project manager has key project data available, and therefore the notebook should be small enough to be carried at all times. The project notebook should include the project charter, WBS, project schedule, project directory, status reports, risk response plan, and change requests.

Even with the use of a project notebook, an electronic filing system is used. The project manager should define the file structure and location early in the project and store the documents as they are completed. An Excel workbook could be used as a means to organize key project documents for easy references. A separate tab could be used for each of the key documents.

Step 13: Develop Procurement Management Plan

The procurement management process includes determining if goods and services are required from outside the project, and if so,

Responsibility Assignment Matrix

A = Approves, C = Creates I = Informs, R = Reviews, S = Supports	PM Symone Lewis	Business Owner Yvette Bennett	Inst Des Joseph Moore	Trainer Robert Christian	Consultant Caleb Lett	Consultant Rachel Thompson	Analyst Edwin Stewart
WBS Deliverable							
1.1 Requirements	C	A	I	I	I	I	I
1.2 Project Plan	C	A	I	I	I	I	I
2.1 Business and Training Requirements	R	A	C	S	S	S	
2.2 Learning Objectives	I		C	S	R	R	C
2.3 Course Design	R	A	C	S	S	S	
3.1 Storyboard	I		C	S	S	S	
3.2 Prototype	I		R	C			
3.3 Training Materials	R		S	C	R	R	S
4.1 Pilot Delivery	S	I	S	C	S	S	S
4.2 Pilot Results	I	I	S	S	C	C	
5 Course Revisions	R	A	S	C	S	S	
6 Deployment	C	I	I	C	I	I	

Figure 7.20: Responsibility assignment matrix

Barriers to Communication

A conversation consists of at least two parties, each of whom has individual wants and needs. If these wants and needs are not the same for both parties, they can present barriers to the message's being received. Barriers to effective communication include:

- Not listening, or hearing only what you want to hear
- Sender and receiver having different perceptions
- Words meaning different things to different people
- Ignoring nonverbal cues

what to acquire as well as how and when to acquire the goods and services.

For small projects, the project manager may need to engage external resources to work on the project. Organizations often have an approved seller/vendor list and specific procedures that must be followed. The project manager should develop a procurement management plan to document how the procurement will be coordinated with the project schedule, the timetable for procurement activities, and how vendors will be selected and managed.

Step 14: Update Assumptions Log

The assumptions log should be updated during the planning process. The project manager should work with the project team to update the existing assumptions and constraints and include new assumptions and constraints that were identified during the planning activities.

Step 15: Develop a Project Management Plan

The project management plan is a formal, approved document that defines how the project is executed, monitored, and controlled. It may be a summary or a detailed plan and may contain some or all of the planning documents. Because planning is an iterative process,

the project plan is often revised several times through drafts, reviews, and revisions. The final version of the project plan is approved by the project sponsor and baselined to preserve performance measurements. The baseline plan is the approved plan for the project work against which project execution is measured. Any deviations from this plan appear in the reports used to monitor and control project activities.

Small projects might not require a formal project plan. The subsidiary or standalone version of some or all of the plans is enough to manage the projects. Subsidiary plans are also baselined and used to track project performance. In the absence of a formal project plan, key planning documents are approved by the project sponsor.

The project management plan includes:

- Scope statement
- WBS
- Project schedule
- Project budget
- Quality standards and metrics
- Risk management plan
- Procurement strategy and bid documents

The project plan also includes the following project documents required for planning:

- Requirements documentation
- Assumptions and constraints log
- Deliverables list
- Risk register
- Stakeholder register
- Communications matrix
- Responsibility matrix

Step 16: Obtain Sponsor Approval

After you have completed your planning documents and reviewed them with the project team and other project stakeholders, you must obtain approval from the project sponsor. You are now ready to work on completing the deliverables.

LEADERSHIP CONNECTION

The project manager is responsible for creating an environment in which the members can share project information. Planning leadership activities include:

- Select the appropriate level of process, including the right tools and techniques, and make sure the team is aware of and follows the processes.
- Engage the right people at the right time.
- Define stakeholder expectations and determine how those expectations will be managed.
- Identify and plan for the use of resources.
- Hold a project kickoff meeting. Incorporate team-building activities to motivate the team to work together.
- Facilitate planning sessions.

KEYS FOR PLANNING SUCCESS

Keys for planning success include the following:

- Plan to plan and be prepared to replan.
- Involve the people who will be doing the work in planning the work.
- Use brainstorming sessions to engage the team.
- Use decision-making tools and techniques to facilitate the planning process. Remember that the earlier you identify a problem, the easier it is to solve.
- Include more than the project schedule in the project plan; include all the planning documents.
- Collect project requirements and define project scope.
- Document assumptions and constraints.
- Be aware of logical relationships and plan for them. By default, most relationships are finish-to-start, in which

(continued)

the successor depends on the finish of the predecessor. Other relationships to consider carefully are finish-to-finish (the finish of the successor depends on the finish of the predecessor) and start-to-start (the start of the successor depends on the start of the predecessor). A column can be added to the project schedule to indicate task or deliverable dependencies.

- If project management software is not available, perform planning for small projects by using word processing or spreadsheet software applications. A WBS can easily be drawn by hand or developed using an outline format.
- Negotiate for key project resources.
- Use lessons learned from previous projects at the start of new projects.
- Keep project documents in a project notebook, and set up an electronic filing system at the beginning of the project.
- Remember that if you do not plan, you will not have what you will need to keep the project in control.
- Obtain sponsor approval.

Planning Process Guide

Description

Planning is important to ensure that a project can be delivered on time, within budget, and according to specifications. The amount of planning performed should be commensurate with the scope of the project and the usefulness of the information developed. The planning process defines and refines objectives and plans the course of action required to attain the objectives and scope that the project was undertaken to address.

Purpose

The purpose of the planning process is to define the work and identify the resources necessary to complete the project.

Inputs
- Project charter
- Assumption log

Tools and Techniques
- Requirements gathering guidelines
- Scope statement template
- Assumptions and constraints log template
- WBS instructions
- Deliverable/task list template
- Project schedule guidelines
- Cost template
- Quality guidelines
- Risk identification and analysis guidelines
- Risk management plan template
- Risk identification guidelines (including risk categories, information gathering, and brainstorming techniques)
- Risk register template
- Risk analysis guidelines (including probability and impact scales, and probability and impact table)
- Risk response strategies guidelines
- Stakeholder register template
- Communication matrix template
- Responsibility matrix template
- Procurement management plan template
- Project plan template

Outputs
- Requirements documentation
- Scope statement
- WBS (graphical or outline)
- High-level deliverable list
- Detailed deliverable/activity list
- Project schedule

(*continued*)

- Project budget
- Quality standards and metrics
- Risk register
- Stakeholder register
- Communications plan
- Procurement management plan
- Updated assumptions log
- Project plan

Procedures

1. Prepare for planning activities.
2. Collect requirements.
3. Develop scope statement (including assumptions and constraints).
4. Develop a WBS.
5. Develop an activity and milestone list.
6. Estimate effort and duration.
7. Develop a project schedule.
8. Develop a project budget.
9. Identify quality standards.
10. Identify and acquire resources.
11. Identify, analyze, and plan responses to risks.
12. Develop communications documents.
13. Define procurement strategy and develop bid documents.
14. Update assumptions log.
15. Develop a project plan.
16. Obtain sponsor approval.

8 ■ Planning for Simple Projects

Defining the work and identifying the resources necessary to complete a project is also important for simple projects. Simple projects generally involve three or fewer people and occur over a short period, have few task dependencies and no dependencies with other projects, and produce three or fewer deliverables. But simple projects still benefit from planning. You still need to define how you will achieve the objective, who will do the work, when the work will get done, and, if necessary, what it will cost.

Planning Process Summary

Planning for simple projects requires less formality than planning for small projects. Many of the activities are abbreviated, with tools and techniques discussed for small projects used on an as-needed basis. Regardless of the level of detail used, it is still advantageous to follow the planning process steps. An abbreviated planning

process for simple projects includes collecting requirements, defining the project scope, and developing a WBS or deliverable list. After the deliverables are defined, depending on the size of the project, the project manager should develop an action plan, a to-do list, or both. It is also important to communicate with project stakeholders. If more detailed planning is required, the project manager should use the small project planning tools.

Planning Steps

The steps for planning for simple projects include the following:

1. Prepare for planning activities.
2. Collect requirements.
3. Develop a scope statement.
4. Develop a WBS.
5. Develop an action plan or to-do list.
6. Plan project communications.

Step 1: Prepare for Planning Activities

Using the tools designed for small projects could overcomplicate the planning process for simple projects. Using nothing, however, will cause the project manager to quickly lose focus on the project objective. The process that follows assumes that simple projects have little to no risk and that the costs do not have to be tracked by the project manager. For example, an assignment to revise a process could be considered a departmental activity, with costs absorbed as part of the base or departmental budget.

The project manager begins the planning process by reviewing the project charter lite and any documents that provide background information on the project. The project manager should also take the time to review lessons learned from previous projects.

Step 2: Collect Requirements

Collecting requirements is the process of defining and documenting the stakeholders' need to meet the project objectives. Even simple

projects have requirements. Remember, these projects have a short duration; the shorter the duration, the less time there is for rework. Having clear and concise requirements allows the project manager to start off the project moving in the right direction. For simple projects, collecting requirements consists of documenting the needs and expectations of the project sponsor and can also include obtaining information from other stakeholders. Requirements can be gathered using informal techniques such as discussions, brainstorming, and mind mapping. Requirements can be documented, and the project manager should obtain agreement from the project stakeholders.

Step 3: Develop a Scope Statement

A defined scope is critical for simple projects. A defined scope allows the project manager to better understand what is included in the project and what is not. This also helps ensure that the project manager is applying resources to the right things. The project scope statement should define in detail the project deliverables and the work required to complete those deliverables. Using progressive elaboration, the project manager should build on the project scope, major deliverables, assumptions, and constraints identified on the project charter lite. The scope statement serves as a foundation for the remaining planning activities and is used for project control.

Step 4: Develop a WBS

The WBS is a good tool for showing the components of a simple project, and it should be broken down to the level of detail that will be used to execute the project. Either the top-down or bottom-up approach can be used for WBS development; however, the WBS should contain no more than three levels. Refer to chapter 7 for WBS details. Figure 8.1 is an example of a WBS with two levels for the project management presentation project. As the WBS shows, the project will include deliverables for developing presentation slides for the initiation, planning, controlling, and closing processes; and will provide activities for only the planning and controlling processes. The remaining two deliverables identified are activities and project management.
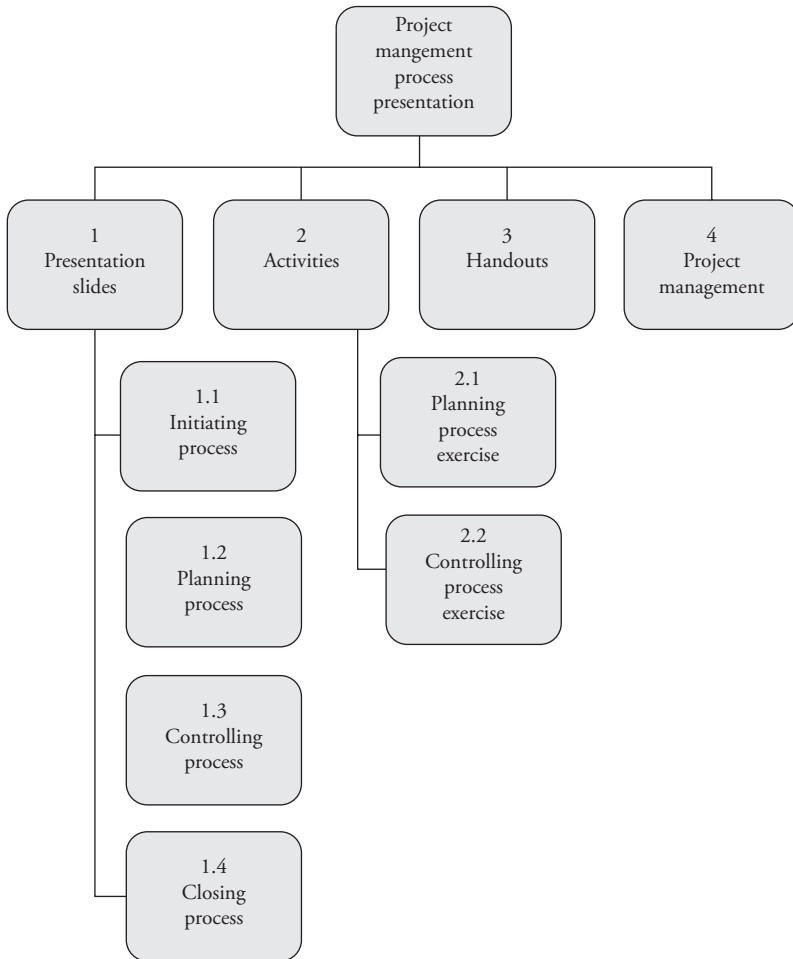
Figure 8.1: WBS for project management process presentation

A more abbreviated activity would be to develop just a deliverable list. The spreadsheet version of the project schedule can also be used to show summary or activity-level project information for deliverables, tasks, resources, effort, and cost, if necessary.

Step 5: Develop an Action Plan or To-Do List

An action plan (figure 8.2) is a list of activities required to complete a deliverable. Action items are usually completed within a couple of

Project Management Process Presentation Action Plan

WBS	Activity	Resource	Start	Finish	Status
1	Presentation Slides				
1.1	Initiating Process				
	Develop Initiation Process Slides	Herman Edwards	5/2	5/2	
	Finalize Initiation Process Slides	Herman Edwards	5/8	5/12	
1.2	Planning Process				
	Develop Planning Process Slides	Herman Edwards	5/2	5/5	
	Finalize Planning Process Slides	Herman Edwards	5/8	5/12	
1.3	Controlling Process				
	Develop Controlling Process Slides	Herman Edwards	5/2	5/3	
	Finalize Controlling Process Slides	Herman Edwards	5/9	5/12	
1.4	Closing Process				
	Develop Closing Process Slides	Herman Edwards	5/4	5/5	
	Finalize Closing Process Slides	Herman Edwards	5/9	5/12	
2	Activities				
2.1	Planning Process Exercise				
	Develop Planning Process Exercises	Caleb Lett	5/8	5/10	
	Finalize Planning Process Exercises	Herman Edwards	5/13	5/14	
2.2	Controlling Exercise				
	Develop Controlling Process Exercises	Rachel Thomas	5/8	5/10	
	Finalize Controlling Process Exercises	Herman Edwards	5/13	5/14	
3	Handouts				
3.1	Develop Handouts	Edwin Stewart	5/8	5/10	
	Finalize Handouts	Herman Edwards	5/13	5/14	
4	Project Management				
	Plan Project Activities	Herman Edwards	5/1	5/2	
	Monitor & Control Project Activities	Herman Edwards	5/3	5/14	

Figure 8.2: Action plan

weeks, the usual duration of a simple project deliverable. It is a good practice to keep track of the work associated with simple projects, because tracking helps to ensure that nothing is missed. A simple project might have three deliverables. The action plan would show the three deliverables and the activities for each deliverable, when the activities will be done, and by whom they will be done. An action plan is similar to a deliverable/task list.

A to-do list is a list of all the tasks you need to carry out for a particular period. It combines tasks from different projects. Tasks on the to-do list are prioritized so you can complete them in order of importance.

Step 6: Identify Resources

Project resources may include team members, materials, or supplies. Resource planning is used to determine and identify an approach to ensure that sufficient resources are available when needed.

For simple projects, the project manager should identify and document the required resources and timing.

Step 7: Plan Project Communications

Communications planning is the process of determining the information and communications needs for project stakeholders. Communication is required to inform, solve problems, and make decisions. Simple projects have minimal but still important communication needs. Project stakeholders need to be engaged; adequate communication ensures that processes are in place to make sure they are aware of project progress.

For simple projects, the project manager should decide which of the communications documents or components of the communications documents are required for the project. The stakeholder register allows the project manager to identify and document stakeholder needs and expectations. The communications matrix describes the communication needs and expectations for the project. The responsibility matrix identifies how and with whom to communicate. And the project notebook provides a practical way to organize and easily access project information.

LEADERSHIP CONNECTION

- Select the appropriate level of process.
- Identify project stakeholders, understand their expectations, and determine their communication needs.
- Engage stakeholders in the planning sessions.

KEYS FOR PLANNING SUCCESS

- Do some form of planning even for the simplest projects.
- Use the tools and techniques defined for small projects as needed. Some form of planning should be done, however, to ensure that the requirements are understood and that the project will be delivered on time.

Planning Process Guide for Simple Projects

Description

Simple projects are generally short in duration and do not require detailed planning. Some form of planning should be done, however, to ensure that the requirements are understood and that the project will be delivered on time.

Purpose

The purpose of the planning process is to define the work and identify the resources necessary to complete the project.

Inputs
- Project charter lite

Tools and Techniques
- WBS instructions
- Action plan template

- Identify resources
- To-do list template

Outputs
- Requirements
- Scope statement
- WBS (graphical or outline)
- Action plan
- To-do list
- Communication documents

Procedures
1. Prepare for planning activities.
2. Collect requirements.
3. Develop scope statement.
4. Develop a WBS.
5. Develop action plan or to-do list.
6. Plan project communications.

9 ■ Controlling

The plans are all in place. The focus is now on executing, monitoring, and controlling project activities. For small projects these three processes are combined, and for simplicity we are calling them controlling. Keeping all the project documents current is important. These activities should not be overly time-consuming because the choice of tools and techniques in the planning phase was based on the needs of the project. If the process begins to become burdensome, the project manager should make adjustments as necessary.

Controlling Process Summary

The *PMBOK® Guide*, sixth edition, provides the following definitions:

- Executing process group consists of "those processes performed to complete the work defined in the project

management plan to satisfy the project requirements."[1] This process group involves coordinating people and resources, managing stakeholder expectations, and integrating and performing the activities of the project in accordance with the project management plan.

- Monitoring and controlling process group consists of "those processes required to track, review, and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes."[2] The key benefit of this process group is that project performance is measured and analyzed at regular intervals, appropriate events, or exception conditions to identify variances for the project management plan.

Controlling Process Activities

To control is to compare actual performance with planned performance, analyze variances, and recommend appropriate corrective action as needed. In the SPM methodology, controlling also includes coordinating people and resources, managing stakeholder expectations, and monitoring ongoing project management activities.

It is important to control the scope of the project to prevent scope creep. Scope creep is adding features and functionality to the project without addressing the effects on time, cost, and resources, or without obtaining approval from the customer. To control the project, the project manager should compare the plans developed during the planning process with actual project results, and then identify and analyze variances. The project manager must then determine the cause of the variance and determine how to respond. The project manager should also communicate project progress to project stakeholders.

Controlling activities are not sequential. Some occur routinely and some occur if needed. The following is a list of controlling activities:

- Update project schedule.
- Control costs.
- Prepare status reports.
- Manage issues.
- Update risk register.
- Review and approve deliverables.
- Manage scope changes if necessary.

Update Project Schedule

The project schedule should be reviewed and updated weekly. Activities that have been completed during the current week should be updated to show a completed status. The remaining activities should be reviewed to determine the focus for the current week. Any activities that are behind schedule should be reviewed, and decisions should be made immediately on how to get back on track. Any additional work details required for management purposes that do not change the project scope can be added. Sometimes the work might be planned at the deliverable level, and task-level information is needed for better control. Include additional details only if necessary. Remember that the more detailed the project schedule is, the more time will be required to maintain it. The goal is to have the right amount of detail for each project.

Even small projects get into trouble sometimes. The project manager should be aware of signs that the project is heading for trouble. For example, if the number of late activities keeps increasing each week, or the planned versus actual variances get bigger, these warning signs should not be ignored. The project manager should work closely with the team to determine the causes. If it is determined that the original estimates cannot be met and new estimates are required, the project manager should follow the change control process.

Control Costs

Controlling costs is the process of monitoring the status of the project to update the project budget and manage changes to the cost baseline. The project budget is used to control project costs and

should be reviewed on a regular basis to compare planned expenditures to actual spending and identify any variance. Spending should be tracked separately for each of the cost categories (such as labor, materials, equipment, supplies, license fees, training, travel, and meals). This will add value to the variance analysis, as it will enable the project manager to determine what is causing the variance and to determine what corrective actions are required. Project costs can be analyzed by project phase as well as by time period. The time-phased budget will allow you to track spending by time period.

Prepare Status Reports

Status reporting for small projects can be simple and should occur weekly. The team should update the project manager during team meetings or by email. The project manager should complete a report and distribute it to the project sponsor and other project stakeholders. The status report should include a project description, the overall project status, major accomplishments, project variances, plans for the next period, and project issues.

Traffic light reports provide an overall summary of a project using green, yellow, and red indicators.

- Green indicates that the project is on track.
- Yellow provides a warning that there is some indication that the project might not meet completion criteria.
- Red indicates that the project is in trouble and has missed a key milestone.

This type of status report is valuable because it causes the reader to focus immediately on the problem areas. This status report should include indicators for schedule and cost, along with an explanation for the indicator color. In addition to the summary indicators, this status report should include the same components identified for the simple status report. An easy way to produce a traffic light report is to use the word (green, yellow, or red) as the indicator in the overall project status section of the status report.

Another really simple way to report variances is by breaking it down into three categories:

- **Cause**—What caused the schedule or cost variance to occur? Resources didn't show up, the weather caused a delay, the permit didn't get approved when expected, etc.
- **Impact**—What will the impact be on the remaining activities? Installation will be delayed by three days, we have to reschedule the subcontractor, etc.
- **Correction**—What action will be taken to recover the schedule or reduce some future costs? Try to run a few activities concurrently, pay overtime on critical activities to bring them back on schedule, etc.

STATUS REPORT EXAMPLE

Today is March 30, and Symone has prepared her weekly status report (figure 9.1). She is somewhat concerned that she might be losing a key resource, and therefore she has given the resource portion of the status report a yellow indicator. An issue related to this problem was also logged. The case study and practice project were due on March 30, but they are not complete. The consultants plan to complete these tasks next week.

Manage Issues

It is very important to identify and resolve issues. An issue is a point or matter in question or in dispute. It will impede project progress and cannot be resolved by the project team without outside help.

There should not be many issues on small projects; however, if an issue is identified, the project manager should document the issue and develop a plan for resolving it. Because of the small number of issues, a formal issues log might not be required for small projects. The project manager should communicate the issue and plan immediately to the project sponsor. The issue can be documented in the issues section of the status report. The information should include an issue description, plans for resolving the issue, current status, person assigned, and estimated completion date. There is no need to prioritize for small projects because time is of the essence. Any issue that arises should be considered a high priority that needs immediate action.

Status Report

Project Objective
Develop a beginning level project management course that can be offered to the general public beginning third quarter 20XX. The project will include the development of classroom training materials for the facilitator and participants.

Overall Project Status

Scope	G	Meeting requirements, no scope changes
Schedule	G	On schedule
Budget	G	On budget
Resources	Y	The trainer may be leaving the project.

Milestone Status

No.	Milestone	Planned End	Actual End	Comments
1	Requirements defined	2/27/20	2/25	Complete
2	Instructional design completed	3/18/20	3/18	Complete
3	Course developed	4/13/20		Concern-see issue No. 1
4	Pilot started	4/15/20		Not started
5	Course materials finalized	5/13/20		Not started

Issue

No.	Description	Action
1	The trainer was offered another position within this company and may not be available to complete the training materials.	Knowledge transfer sessions are occurring within the team. The project sponsor will meet with both department managers to determine if trainer can continue working on this project.

Accomplishments This Period
• Created storyboard • Developed content for storyboard • Developed functional prototype

Figure 9.1: Status report

> **Plans for Next Period**
> • Finalize the case study.
> • Finalize the practice project.
> • Begin development of training materials.
>
> **Late Activities**
> • Develop case study and develop practice project are both behind schedule and will be completed next week.

Figure 9.1: (continued)

If it is determined that a formal issues log is necessary, the issues log should contain the issue, priority, date the issue was identified, name of the person who identified the issue, name of the person assigned the issue, current status, date resolved, and resolution.

The project manager should have a defined issues escalation process. This process should be communicated to and adhered to by the project team. The escalation process should identify the timeframe the team is given to resolve an issue and how to treat issues that the team is unable to resolve within that timeframe.

Update Risk Register

There is very little risk management activity for small projects. However, if risks were identified, the project manager should review the risk response plan periodically. Updates to the plan include identifying additional risks and changes in risk priorities, updating the status, and closing risks that no longer apply.

Review and Approve Deliverables

Small projects usually do not have a formal quality plan. It is important, however, to build quality into the deliverable review and approval process. The two types of deliverable reviews are in-process and completed. During the in-process deliverable review, the project manager should meet with the sponsor and other stakeholders as needed to verify that the work performed on deliverables is meeting their expectations. In-process reviews provide an opportunity to

make midcourse corrections. During the completed deliverables review, the project manager ensures that each deliverable meets the stakeholders' needs and that the stakeholders are willing to take ownership.

The project manager should receive formal approval for final deliverables. It can be in the form of an email indicating acceptance. A deliverable review and approval log can be used to track the progress of project deliverables. This log can also be used as a contents document that provides hyperlinks to the deliverables.

Deliverable Review and Approval Report Example
It is May 16, and Michael has received and stored the deliverables. He has chosen to use the deliverable review and approval log (figure 9.2) as a contents document and has hyperlinked the deliverables for easy access.

Manage Changes
Change control is managing the scope of the project. Scope changes do not occur often for small projects, but they could include adding or removing deliverables, changing the effort or duration required to complete the work, or changing the project budget. If a scope change is needed, the project manager should document the requested change and identify the impacts on the project in terms of effort, cost, and duration. The scope change request is communicated to the project sponsor, who has to approve the request before any changes to the plan are made. If the scope change request is approved, the project manager should update the project schedule to include the new activities and communicate the change to the project stakeholders.

Change requests are either accepted or rejected. The project manager can monitor the type, frequency, and status of change requests by using a project change log. The project change log should be in the form of a spreadsheet and should include the change number, change title, description of change, submitted by, submission date, decision, and status. The project change log can also be

Deliverable Review and Approval

Project Objective				
Develop a beginning level project management course that can be offered to the general public beginning third quarter 20XX.				

WBS	Milestone	Date Received	Review Status	File Name and Location
2.1	Business and Training Requirements	2/25	Reviewed by business owner: Yvette Bennett	• PMOC Business Requirements • Project team site
2.2	Learning Objectives	3/10	Reviewed by PM: Symone Lewis	• PMOC Learning Objectives • Project team site
2.3	Course Design	3/18	Reviewed by business owner: Yvette Bennett	• PMOC Course Design • Project team site
3.1	Storyboard			
3.2	Prototype			
3.3	Training Materials			
4.1	Pilot Delivery			
4.2	Pilot Results			
5	Course Revisions			
6	Deployment			

Figure 9.2: Deliverable review and approval

used to track project date and budget changes, as well as any other items the project manager considers to be important for managing project scope changes.

> ## Signs a Small Project Is Heading for Trouble
>
> Here are some signs that a small project is heading for trouble:
>
> • Due dates are missed.
> • There is no scope control—work is added without assessing the impact and getting approval.
> • Project plans are not current or nonexistent.
> • Project data is disorganized or missing.
> • Project team is dysfunctional.

Small projects should not have many changes. In the case of an exception, the project manager should use a change request log to track the changes. The log should include the scope change request number, scope change description, responsibility, date requested, date resolved, status, and resolution.

CHANGE REQUEST EXAMPLE

Symone was pleased with the progress the team was making, but the risk identified at the beginning of the project became an issue. The existing technology will not support a blended training solution; therefore, additional funding is needed to purchase the technology and hire a technical resource to implement the solution. This change will require approval; therefore, Symone filled out a change request (figure 9.3). The change was approved.

Action Items

Small projects do not require a separate action item log. Action items are unplanned activities that occur during the project and require little effort (usually a couple of hours) and have a short duration (usually no more than a couple of weeks). Most action items are identified during meetings and are assigned to a team member

Change Request

Change Number	Change Title
7	Project Management Overview Course Technology for Blended Training

Change Description
The existing technology does not provide the capabilities needed for the blended training solution. To achieve the business and training requirements, the project will need to purchase additional technology and hire a technical resource to support the implementation.

Assessment
The training needs analysis revealed the significance of the blended training solution. The existing tools do not work with the proposed solution. The team reviewed options and selected a technical solution; however, a technical resource is needed to implement the solution in a timely manner.

Impacts
The budget will have to be increased by $20,000 to cover the technology and technical resource. The timeline will need to be extended by 30 days to accommodate the implementation and training material development.

Decision	Comments
■ Approved	
❏ Deferred	
❏ Rejected	

Approved by: Yvette Bennett, Training Director, Business Owner   Mary Willie, Training Vice-President, Project Sponsor

Figure 9.3: Change request

Leadership Connection

The project manager is responsible for executing, monitoring, and controlling the project. Controlling leadership activities include:

- Take responsibility for the project.
- Build and empower teams by understanding the stages of team development and responding to the needs of the team.
- Insist that team members use the project management processes.
- Facilitate problem-solving and decision-making sessions.
- Track issues and drive them to closure.
- Initiate project communications with all stakeholders.

Keys for Controlling Success

Keys for controlling success include:

- Carefully monitor project progress, respond to variances, and communicate to project stakeholders.
- Manage issues and risks, and escalate when necessary.
- Identify the impact a requested change will have on the project resources, schedule, and budget; obtain approval to incorporate the changes into the project.
- Have a positive attitude, especially during difficult times.

because work is required to answer a question or complete an activity. Action items can be handled in one of two ways: they can be added to the project schedule, or they can be captured and monitored in the meeting minutes. If you need to track action items, refer to chapter 8 for an example of an action plan.

Controlling Process Guide

Description

The executing and controlling processes occur in parallel. Executing is the process of completing the work as defined in the project management plan or planning documents. Controlling is the process of measuring and monitoring project activities so that corrective action can be taken when necessary.

Purpose

The purpose of the executing and controlling process is to define the activities required to keep the project on schedule. Controlling activities are not sequential. Some activities occur routinely and some occur only if needed.

Inputs
- WBS
- High-level deliverable list
- Detailed deliverable/task list
- Project schedule
- Project budget
- Risk register
- Communications plan
- Project plan

Tools and Templates
- Status reporting template
- Issues log template
- Deliverables review and approval log template
- Scope change request template

Outputs
- Updated project schedule
- Updated risk register
- Status reports
- Issues log
- Scope change request

Activities

1. Update project schedule.
2. Control costs.
3. Prepare status reports.
4. Manage issues.
5. Update risk register.
6. Review and approve deliverables.
7. Manage scope changes.

10 ■ Closing

Projects, by definition, end. When the project is finished, the project manager should finalize all project activities. But what does this mean for small projects? And how much formality does it really take to close a simple project?

Closing Process Summary

The *PMBOK*®*Guide*, sixth edition, defines the closing process group as "those processes performed to formally complete or close the project, phase, or contract."[1] This process group, when completed, verifies that the defined processes are completed within all of the process groups to close the project or a project phase, as appropriate, and formally establishes that the project or project phase is complete.

The closing process is important not only for current projects but also for the success of future projects. Small projects are easy to close. The focus is administrative closure, more specifically, to de-

liver project outputs and shut down the work. The project manager should collect project records, analyze project success or failure, gather lessons learned, produce a project closure report, and archive project information for future use.

Closing Process Steps

Closing process activities include the following:

- Close out project files.
- Evaluate the project.
- Gather lessons learned.
- Produce a project closure report.
- Archive project documents.

The project manager should use the project closure checklist to ensure that critical close-out activities are not missed. Note that these are called activities, not steps, because they are not always performed sequentially.

PROJECT CLOSURE CHECKLIST EXAMPLE

At the end of the project, Symone will prepare the project closure checklist as shown in figure 10.1.

Activity 1: Close Out Project Files

At this time all the deliverables are complete, and the project manager has possession of all required sign-offs. The deliverable review and approval checklist should be complete. The project manager should do the following:

- Review the project schedule to verify that all the tasks were completed.
- Produce and distribute a final status report to project stakeholders indicating that the project is complete.
- Make sure there are no outstanding issues. Any open issues should be resolved, or a decision should be made on

Project Closure Checklist

Project Management

No.	Description	Cmpl
1	Project Deliverables Approved	Yes
2	Issues Resolved	Yes
3	Final Status Report Produced	Yes
4	Achieved Success Criteria	Yes
5	Resources Released	Yes
6	Completed Project Survey	Yes
7	Conducted Lessons Learned	Yes
8	Produced Project Closure Report	Yes
9	Project Data Archived	Yes

Rationale for Items Not Completed

No.	Rationale

Figure 10.1: Project closure checklist

who in the operational area will be responsible for resolving them.
- Determine whether any project risks need to be transferred to the operational area.
- Review the project budget and determine what will happen to any excess project funds.

Activity 2: Evaluate the Project

The purpose of the project evaluation is to compare what was produced to what was planned. The project manager must make sure all project requirements were satisfied and that the criteria for success were met. A project survey (figure 10.2) can be issued to project stakeholders to obtain this vital information.

Project Survey

Project Management

No.	Description	SA	A	N	D	SD
1	The project followed the methodology.					
2	The project used the appropriate tools.					
3	Adequate time was spent planning project activities.					
4	Adequate time was spent controlling project activities.					
5	Changes in the project scope were managed.					
6	Project meetings were organized and productive.					
7	The project met its objectives.					
8	There was clear communication for all stakeholders.					

Project Development

No.	Description	SA	A	N	D	SD
1	The appropriate development methodology was used.					
2	Project requirements were clearly defined.					
3	The design followed the requirements.					
4	Project deliverables were reviewed and approved.					
5	Appropriate tests were conducted.					
6	Acceptance criteria were agreed on and documented.					

Key: SA = Strongly Agree, A = Agree, N = No Opinion, D = Disagree, SD = Strongly Disagree

Figure 10.2: Project survey

The project manager must also identify any postproject responsibilities and make arrangements to address them with the appropriate people. This is also a good time to make sure everything is in place for future project audits or performance evaluations.

Activity 3: Capture Lessons Learned

Whatever you learn from the process of performing the project is called lessons learned. Lessons learned are the documented information that reflects both the positive and negative experiences of the project. Although we are discussing lessons learned as part of the project closing process, in reality lessons learned can be accumulated at any point during the project.

The project manager should make sure that a lessons learned session is conducted. During the session the participants identify what was learned as a result of using the project management process and what was learned from doing the project work. The four key questions to answer are:

1. What went well?
2. What went wrong?
3. What can be improved?
4. Are there any recommendations?

Team members should participate in the lessons learned sessions, and the project sponsor and key stakeholders should also be invited. The project manager should not facilitate the session or prepare the lessons learned report. Someone not closely connected with the project, such as another project manager or coworker, is a better choice for a facilitator.

It is not enough to conduct a lessons learned session. Lessons learned should be documented and stored for easy retrieval. And lessons learned should be used (figure 10.3). They should be reviewed before starting a new project, they should be shared with the project team, and they should be used for risk mitigation. Future projects cannot benefit from lessons learned if lessons learned are not reported for the current project.

If it is not practical to conduct a formal lessons learned session for the small or simple project, the project manager can still capture the lessons learned information and use it for future projects. Figure 10.4 is a simplified lessons learned report that can be used for small projects. It has been partially completed with information from the example Project Management Overview course project.
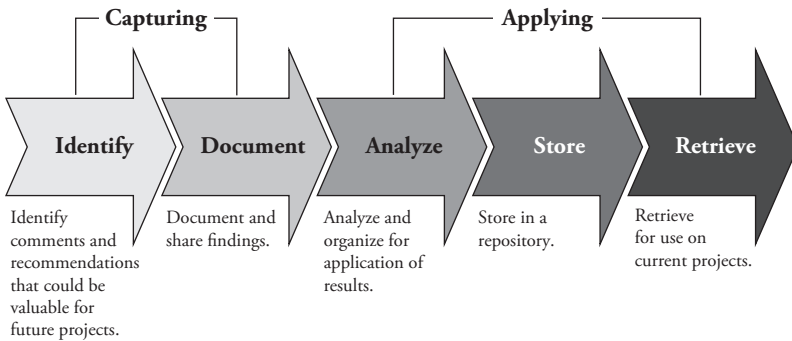
Figure 10.3: Lessons learned process

Lessons Learned Process

Lessons learned should be conducted at a minimum at the end of every project. A lessons learned process should include the following:

- Identify comments and recommendations that could be valuable for future projects.
- Document and share the findings with project stakeholders.
- Analyze lessons for application of results.
- Store the lessons learned documentation in a repository.
- Retrieve the lessons learned documentation for use on current projects.

  Here is how to use lessons learned:

- Review lessons learned prior to starting new projects.
- Analyze lessons learned to identify process improvements or training needs.
- Develop risk mitigation strategies using lessons learned.

Lessons Learned Report

Project Management Process	
Initiation (project charter, project roles and responsibilities)	
What went well	The project charter clarified the objective and scope of the project.
What went wrong	
What can be improved	
Required action	None

Planning (WBS, project schedule, risk planning, communications, resources)	
What went well	
What went wrong	
What can be improved	
Required action	

Controlling (plan maintenance, issues management, risk management, performance reports, change control, stakeholder management, teambuilding)	
What went well	Change control prevented scope creep.
What went wrong	Not all issues were documented.
What can be improved	A separate issues log should be used to better track the issue status.
Required action	Create a separate issues log.

Closing (project evaluation, lessons learned, project archives)	
What went well	Lessons learned session
What went wrong	
What can be improved	A more structured document versioning process
Required action	

Figure 10.4: Lessons learned report

Development Process	
Requirements	
What went well	Requirements were clear.
What went wrong	
What can be improved	
Required action	

Design	
What went well	
What went wrong	
What can be improved	
Required action	

Development	
What went well	
What went wrong	
What can be improved	
Required action	

Implementation	
What went well	
What went wrong	
What can be improved	
Required action	

Postimplementation	
What went well	
What went wrong	
What can be improved	
Required action	

Figure 10.4: (continued)

Lessons Learned Activities

Here are activities to perform before, during, and after your lessons learned session:

- Have the participants fill out a project survey. Doing so allows them to identify the items that should be discussed during the session.
- Have the facilitator review key project documents in advance and prepare a list of discussion items.
- Set up flip charts with lessons learned category headings.
- Discuss the lessons learned for each category.
- Focus on the process, not the people. The lessons learned session should not become a finger-pointing session.
- Send the participants a copy of the lessons learned output for them to review and provide additional input.
- Prepare a summary report and distribute it to stakeholders.

Activity 4: Produce a Project Closure Report

For more formality, the project manager can produce a project closure report. This is an optional activity because small projects do not require this level of detail, but it is nice to have all the key project closing information in one document. The project closure report is used to measure project success and provide information for future projects. It contains the information from the project evaluation and lessons learned.

The project closure report should be started near the end of the project and completed after the final deliverable is turned over to the customer. This document can also be used if the project is terminated for reasons other than completion.

The project closure report should include the following:

- **Reason for closing the project**—State why the project is being closed: all objectives have been completed, or the project was canceled and the reason for doing so.
- **Postproject responsibilities**—Identify any activities required by the operational area. This section can also be

used to list enhancements that were identified during the project but were not within the project scope.

- **Project performance**—Performance against objectives describe how the project met the objectives defined in the project charter.
- **Performance against success criteria**—Describe how the project compared to the success criteria defined in the project charter.
- **Performance against schedule**—Describe actual performance against the project schedule.
- **Performance against budget**—Describe actual performance against the project budget.
- **Lessons learned**
  - What worked well—Identify what worked well for the project.
  - What did not work well—Identify what did not work well for the project.
  - What can be improved—Identify any process improvements or training opportunities encountered during the project.
  - Recommendations—List recommendations.

PROJECT CLOSURE REPORT EXAMPLE

The project is complete. The team completed the project survey and participated in the lessons learned session. Michael has used the results from the lessons learned report, along with other project metric information, to complete the project closure report, shown in figure 10.5.

Project Celebrations

The project manager should reward the project team members for success. Some examples of rewards include:

- A team luncheon
- An after-work reception
- Certificates and awards
- Personal thank-you notes

Project Closure Report

Reason for Closing the Project
Project deliverables were completed.

Postproject Responsibilities
The training department will make future revisions on project course materials.

Project Performance	
Performance Against Objectives	The beginning level project management course was available to be offered to the public beginning third quarter 20XX.
Performance Against Success Criteria	Course materials were approved by the pilot team.
Performance Against Schedule	The project completed on schedule.
Performance Against Budget	The project finished $1,000 under budget.

Lessons Learned	
What Went Well	The use of the project charter clarified the scope. The change control process prevented scope creep.
What Went Wrong	Not all issues were documented.
What Can Be Improved	Issues management.
Recommendations	Develop an issues log.

Figure 10.5: Project closure report

- Desk accessories
- Gift certificates

Activity 5: Archive Project Information

It is important to have a document management system for storing project documents electronically. The system allows easy retrieval during the project and provides historical data for future projects.

The project manager should not wait until the end of the project to begin storing project documents. The document management system should include file locations, naming and standards, versioning, retention/purging criteria, and backup instructions.

LEADERSHIP CONNECTION

Closing leadership activities include:

- Bring the project to closure and communicate closure status to the project stakeholders.
- Arrange for the lessons learned session.
- Recognize the project team for a job well done.

KEYS FOR CLOSING SUCCESS

Keys for closing success include:

- Make sure project objectives are met.
- Make sure all deliverables are complete.
- Archive project documentation.
- Celebrate project success.

Closing Process Guide

Description
It formalizes acceptance of the product, service, or result and brings the project to an orderly end.

Purpose
The purpose of the closing process is to provide the activities to formally close the project.

Inputs
- Updated project schedule
- Status reports
- Issues logs

Tools and Templates
- Project closure checklist
- Project survey
- Lessons learned report template
- Project closure report template

Outputs
- Project closure checklist
- Lessons learned report

Procedures
- Close out project files.
- Evaluate the project.
- Gather lessons learned.
- Produce a project closure report.
- Archive project information.

ADDITIONAL DISCIPLINE

11 ■ Managing Multiple Small Projects

Project managers are often expected to manage a number of projects concurrently. Managing multiple projects allows the project manager to more efficiently plan and control project activities. When projects are grouped, schedule impacts across projects become more visible. Consolidated reporting allows the project manager to view the progress of the entire project portfolio. Finally, the use of a multiproject process allows for repeatable practices for managing small projects, continuous learning, and process improvement.

However, it may be that the multiple projects a project manager is managing are in different phases of the project life cycle. This can become problematic if the correct tools and techniques are not used.

Multiproject Overview

The term *multiple projects* can mean different things in different project environments; therefore, it is useful to review some definitions that relate to the multiproject environment.

PMBOK® Guide Definitions

The *PMBOK® Guide,* sixth edition, provides the following definitions:[1]

- **Project**—A temporary endeavor undertaken to create a unique product, service, or result.[1]
- **Program**—Related projects, subsidiary programs, and program activities that are managed in a coordinated manner to obtain benefits not available from managing them individually.[2] A program may include elements of related work outside the scope of the discrete projects in the program. A project may or may not be part of a program, but a program will always have projects.
- **Portfolio**—A collection of projects, programs, subportfolios, and operations managed as a group to achieve strategic objectives.[3]
- **Project management**—The application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.[4]
- **Program management**—The application of knowledge, skills, and principles to a program to achieve the program objectives and obtain benefits and control not available by managing components individually.[5]
- **Portfolio management**—The centralized management of one or more portfolios to achieve strategic business objectives.[6]

In addition, the *PMBOK® Guide* provides a comparative overview of projects, programs, and portfolios (figure 11.1).[7]

Although program management can consist of managing a number of interrelated small projects, program management is out

	Projects	Programs	Portfolios
Definition	A project is a temporary endeavor undertaken to create a unique product, service, or result.	A program is a group of related projects, subsidiary programs, and program activities that are managed in a coordinated manner to obtain benefits not available from managing them individually.	A portfolio is a collection of projects, programs, subsidiary portfolios, and operations managed as a group to achieve strategic objectives.
Scope	Projects have defined objectives. Scope is progressively elaborated throughout the project life cycle.	Programs have a scope that encompasses the scope of the program components. Programs produce benefits to an organization by ensuring that the outputs and outcomes of program components are delivered in a coordinated and complementary manner.	Portfolios have an organizational scope that changes with the strategic objectives of the organization.
Change	Project managers expect change and implement processes to keep change managed and controlled.	Programs are managed in a manner that accepts and adapts to change as necessary to optimize the delivery of benefits as the program's components deliver outcomes and/or outputs.	Portfolio managers continuously monitor changes in the broader internal and external environment.
Planning	Project managers progressively elaborate high-level information into detailed plans throughout the project life cycle.	Programs are managed using high-level plans that track the interdependencies and progress of program components. Program plans are also used to guide planning at the component level.	Portfolio managers create and maintain necessary processes and communicate relative to the aggregate portfolio.

Figure 11.1: Overview of projects, programs, and portfolios

	Projects	Programs	Portfolios
Management	Project managers manage the project team to meet the project objectives.	Programs are managed by program managers who ensure that program benefits are delivered as expected by coordinating the activities of a program's components.	Portfolio managers may manage or coordinate portfolio management staff or program and project staff that may have reporting responsibilities into the aggregate portfolio.
Monitoring	Project managers monitor and control the work of producing the products, services, or results that the project was undertaken to produce.	Program managers monitor the progress of program components to ensure the overall goals, schedules, budget, and benefits of the program will be met.	Portfolio managers monitor strategic changes and aggregate resource alloca-tion, performance results, and risk of the portfolio.
Success	Success is measured by product and project quality, timeliness, budget compliance, and degree of customer satisfaction.	A program's success is measured by the program's ability to deliver its intended benefits to an organization and by the program's efficiency and effectiveness in delivering these benefits.	Success is measured in terms of the aggregate investment perfor-mance and benefit realization of the portfolio.

Figure 11.1: (continued)

of scope for this book because small projects within programs are usually managed using the same methodology as the other projects in the program. The focus of this chapter is on how to manage small project portfolios effectively.

Small Project Portfolios

The following are two main types of portfolios:

- A portfolio of related projects consists of projects of a similar type, organization, or subject matter: for example, small maintenance and enhancement projects; business process reengineering projects; or preproject efforts for requesting, estimating, and approving projects. These projects often share resources and are formally managed by a project portfolio manager. Failure or success of one project may impact the other projects in the portfolio.
- A portfolio of unrelated projects consists of multiple projects assigned to the project manager. These projects may consist of some related projects in addition to ad hoc projects and assignments. The project manager can combine these projects into a portfolio, giving the project manager the tools to more efficiently plan, monitor, and control project activities. Failure or success of one project does not greatly impact the other projects in the portfolio.

Project portfolio management is concerned with selecting and prioritizing projects, along with assigning the project manager. The focus is on controlling the flow of the work. The portfolio manager must take a strategic view and align project selection and performance with organizational goals and objectives. The portfolio manager's role is not the emphasis of this chapter. We specifically look at the project manager's role and responsibilities. The type of portfolio—related or unrelated projects—does not matter. The point is for the project manager to efficiently plan and control an individual portfolio of multiple projects.

Building on the portfolio definitions outlined in the comparative overview, the scope of the small project portfolio is based on a strategic business unit. For example, an organization may be responsible for implementing a number of software applications. Each software application would have its own portfolio. Or an organization may be responsible for implementing projects for a specific department or geographical area. Again, each of these

project types would be considered a portfolio of related projects. Finally, a project manager may be assigned projects from each of these categories, which would be considered a portfolio of unrelated projects. Regardless of the portfolio, the project manager must continually monitor changes in the environment to control the projects within the portfolio.

The project manager must plan the individual projects and then be able to provide communications for the aggregate portfolio. For small projects, the project manager must be able to coordinate the project resources, many of which will be part-time and shared across projects. Success is measured in terms of the aggregate portfolio as well as the individual projects within the portfolio. A portfolio of unrelated projects may have different success criteria for specific projects within the portfolio. Monitoring, which we are calling control, is based on the aggregate portfolio performance.

Problems with Managing Multiple Projects

As a project manager of small projects, you are aware of the importance of using a methodology and tools to manage a single project. You have achieved a level of success with managing small projects and have been awarded the opportunity to manage more projects simultaneously. At first the single-project methodology applied over a few projects appears to work. After a short time, however, you become concerned. Some of your concerns are:

- Common resources are assigned to multiple projects.
- Many of your project team members are part-time resources to the project.
- Team members are juggling priorities—they're working on multiple projects and are also responsible for performing operational activities.

You know you need to more efficiently manage time and resources. Because time is of the essence, you also need to more efficiently report project progress and manage issues and risks. You notice that several of your resources are shared among several of your projects

and realize that you need to better monitor project interdependencies to ensure that your key resources are available when needed.

What to do? You need to be more efficient. You need more control. And you need a tool to communicate project interdependencies.

The time has come to use the SPM multiple-project management process.

SPM Multiple-Project Management Process

Multiple projects often present multiple challenges. To be successful in a multiproject environment, you must first have a process for managing single projects and use it consistently. As we have discussed, a process specifically designed for small projects should be scalable and adaptable. *Scalable* means that the level of complexity of the process, the time spent in using the process, and the focus of the process all fit the needs of the project. *Adaptability* refers to knowing how much process is required for an individual project. It is important for the project manager to know which tools and techniques to apply. Process and tool usage become even more important in the multiproject environment.

How is success achieved in a multiproject environment? The SPM multiple-project management process has three major steps:

1. Develop a single project plan for each individual project.
2. Incorporate individual project plans into a multiproject plan.
3. Execute and control the multiproject plan.

Step 1: Develop a Single Project Plan for Each Individual Project

As noted, to be successful in a multiproject environment, you must first have a process for managing single projects and use it consistently. This is the reason the first activity in the SPM multiple-project management process is to develop project plans for individual projects.

Each project should have a project charter or project charter lite. Developing a work breakdown structure, or WBS (as discussed in

chapter 7), is the first step for organizing and planning projects. The WBS should also be used to manage multiple projects, especially for a portfolio of related small projects, because it provides a uniform framework for planning and control. The project manager can summarize project activities at the deliverable level for focused communications. The consistent use of a WBS allows the project manager to summarize data across projects.

The project plan or planning deliverables should be prepared based on the needs of the project. However, the planning deliverables must be prepared with process and tool consistency among projects to allow for easy integration into the multiproject process. As the project manager is planning the individual projects, consideration must be given to the project start and finish dates because they will be important for developing the multiproject plan. While developing the individual project plan, the project manager will also take into consideration how the project will interface with other projects within the project portfolio. After the project plan or planning deliverables are developed for the individual projects, additional planning is required to obtain multiproject process efficiencies.

Step 2: Incorporate Individual Project Plans into Multiproject Plan

After individual plans are developed, they should be consolidated so that the project manager can see the results of all the projects together.

Multiproject Summary

The multiproject summary is a spreadsheet view of high-level project information. Summary information is obtained from the project charter and project plan. The multiproject summary is a good communication tool, but its value comes from the project manager's knowing what is in his or her portfolio. The spreadsheet can be sorted or filtered based on reporting requirements. Additional categories can be added for more reporting control. Information to include on the multiproject summary is:

- **Project ID**—Include the project number.
- **Project name**—Include the project name.

- **Priority**—Use your organization's code or establish your own system for your portfolio. It is important to know where to focus your efforts. The project priority could change due to its phase or the importance of other projects.
- **Category**—Category refers to the kind of work done on the project; for example, information system, process improvement, research, or training. Depending on your work environment, categories could include industry, location, methodology, and so on.
- **Type**—Identify whether the project is small or simple.
- **Objectives**—State what the project will achieve. The project objectives define the business need or opportunity.
- **Budget**—Identify the approved funding.
- **Estimated completion date**—Identify the estimated completion date. If you are assigned projects that have not started, a column can be added to track estimated start dates.
- **High-level deliverables**—List the major deliverables to be completed as part of the project.
- **Project dependencies**—List projects that your project is dependent on or projects that are dependent on your project.
- **Status**—Note whether the project is active, completed, or on hold.

The following information can also be included on the multiproject summary. Including this information is optional because this information could be lengthy. An option is to produce a multiproject detail report, which has all of this information:

- **Scope**—The scope identifies the boundaries of the project by stating what will be done and what will not be done.
- **Assumptions**—Assumptions are factors that for planning purposes are considered to be true, real, or certain.
- **Constraints**—Constraints are restrictions that affect the performance of the project or factors that affect when an activity can be scheduled.

Multiproject Risk

Small projects are considered low-risk; however, after projects are combined using the multiproject process, the project manager might uncover additional project risks. Risk factors common in the multiproject environment include:

- Project manager trying to manage too many projects
- Too many active small projects sharing the same resources
- Interproject dependencies from high-risk projects
- Too many interproject dependencies
- Key resources being shared among projects
- Poor planning on any project in the project manager's portfolio
- Loss of control on any project in the project manager's portfolio

After the risk assessment is completed for the single project, the project manager should develop a portfolio risk register. The portfolio risk register consolidates the project risks for integrated monitoring and control. Sometimes a single project risk may have a low priority, but when viewed across multiple projects this same risk could have a higher priority. The multiproject risk register should include the following:

- **Number**—Include the risk number, which is the project number followed by a sequential number. For example, if your project number is S150 and this is your third risk, then the risk number is S150-3. The risk number allows you to map the risk to the project.
- **Project name**—Include the individual project name.
- **Status**—Status is either open or closed.
- **Category**—Identify the risk category. A risk category is a group of potential causes of risk. Examples of risk categories are project management, technical, organizational, schedule, cost, scope, and quality.
- **Risk event**—Identify the event or discrete occurrence that may affect the project for better or worse.

- **Probability**—Identify the probability: low, medium, or high. The probability is the likelihood that a risk will occur.
- **Impact**—Identify the impact: low, medium, or high. The impact is the effect the risk would have if it does occur.
- **Priority**—Identify the priority: low, medium, or high. Use the tools in chapter 7 to determine the priority.
- **Risk response**—Indicate how you plan to handle the risk. You can avoid, transfer, accept, or mitigate a negative risk.
- **Owner**—Identify the person responsible for managing the risk.

The project manager now has a consolidated view of the project risks and can determine whether any of the priorities need to be adjusted due to other project risks. If project risk priorities need to be adjusted, the project manager should also update the individual project risk register.

Consolidated Project Schedule

The consolidated project schedule is a high-level Gantt view of the projects. This information can be displayed at the project level, project phase level, major activity level, or any combination. The multiproject schedule is a good communication tool. It also makes it easier to control key project activities.

The multiproject schedule has two important components—interproject dependencies and duration. Interproject dependencies or logical relationships among projects, phases, or activities should be identified with the appropriate links. Any time a deliverable from one project (regardless of the level—project, phase, or activity) affects the completion of another project, it should be identified on the multiproject schedule. If a project that is not within your control has a deliverable that affects one of your projects, or if one of your projects has a deliverable that affects someone else's project, that dependency should also be identified and shown on the multiproject schedule.

Even if there are no project dependencies (all the projects are independent), the multiproject schedule allows the project manager to see the timeframe for project activities that could affect resource

allocation. A single resource might be assigned to multiple projects that require the resource's involvement at the same time. Being aware of this condition early on allows the project manager to negotiate for resources before the completion of either project is in jeopardy. In addition, the project manager is aware of the project management activities required for specific timeframes and will know whether the project management components of the project are in jeopardy.

Step 3: Execute and Control the Multiproject Plan

Projects should be monitored, executed, and controlled using the methods defined during the planning process. To gain more efficiency and control, the project manager should use the following multiproject management process tools:

- **Consolidated project schedule**—The consolidated project schedule should be updated to show planned and actual information.
- **Multiproject calendar**—A month-at-a-glance calendar should display project milestones and key project activities. The same calendar should be used to record the information for all projects. This document provides a quick, easy-to-read, consolidated view of key project activities. For additional clarity, the project manager can color-code the projects and record project information by project color.
- **Multiproject status report**—Status information for multiple projects should be summarized into one document.
- **Milestone reports**—This is an effective way to show the planned and actual dates for important events for multiple projects. Milestone reports are especially useful for related projects because they often involve some of the same project stakeholders.

Focus

Focus affects your perception and performance. It provides clarity and helps you stay on track. It is easy to lose sight of a project goal when you are shifting among projects throughout the day. It is

important to focus on the activities that will help you to achieve your project objectives. The key to managing multiple projects is to maintain a clear focus.

A suggestion to maintain focus is to use the Activity Board for Small Projects for tracking project activities. You can designate a color for each project and use Post-it notes to track progress for project activities. See chapter 17 for more details on how to set up and use the Activity Board for Small Projects.

LEADERSHIP CONNECTION

Multiproject leadership activities include the following:

- Take the initiative to develop an individual portfolio for unrelated projects.
- Use a consistent WBS for related projects and ensure that consistent data are used for planning projects.
- Stress the benefits achieved from applying the multiproject tools.

KEYS FOR MANAGING MULTIPROJECT SUCCESS

Keys for managing multiproject success include:

- Use the process and tools consistently for individual projects.
- Consolidate the projects, manage at the appropriate level, and analyze across projects.
- Ensure that risk planning occurs twice—first while planning the individual project and then again during multiproject planning.
- Communicate project progress using consolidated reports. Color-code projects for more clarity.
- Use the Activity Board for Small Projects as a tool for managing project activities.

12 ■ Projects as Part of a Program

Program management has become the recognized way of managing a group of related projects in a coordinated way to obtain benefits and control not available from managing them individually.[1] Project managers who work on projects within a program face new challenges.

The project environment becomes more complicated when project managers who are responsible for their own projects must work with other project managers as part of a program. Project managers who are proficient at managing and leading their own projects are increasingly being called upon to work collaboratively with other project managers to lead components of a program. This means that the project manager no longer has full control of all project activities. In addition to knowing how to manage processes and how to lead the team, project managers must now also know how to collaborate and share knowledge with other project managers.

The previous chapters of this book have focused on the implementation of a single small project. In chapter 11 the emphasis shifted

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Program Example

For example, a hospital management organization may have a strategic objective to improve its ability to schedule patients across its 15 hospitals within five years. A program is then initiated to coordinate the 15 projects required to implement the patient scheduling applications across the 15 hospitals.

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from the individual project perspective to the multiple small projects perspective, where the project manager focuses on coordinating multiple related and unrelated projects. However, with program management, the program manager can obtain benefits and control that are not available from managing the projects individually. Because a program is a means of achieving organizational goals and objectives, often in the context of a strategic plan,[2] it is important that the program as a whole deliver its intended outcomes and benefits.

As indicated in the *PMBOK® Guide,* sixth edition, figure 12.1 provides a comparative overview of project and program management.[3]

Project Activities and Collaboration

Program management requires project managers to look beyond their individual projects. As part of a program, projects must align with the decisions driving the program. Processes, tools, templates, timelines, and approaches are dictated by the program.

One of the biggest challenges in the program environment is coordinating the activities of a single project with those of the program. Having to align project decisions with the program constrains project decisions and also forces the project managers, who would normally work independently, to work together in a collaborative fashion. In addition, project teams are often cross-functional, representing multiple departments and providing different knowledge, skills, and expertise. Solutions for one project must be relevant for other projects in the program and project managers must share

	Projects	Programs
Definition	A project is a temporary endeavor undertaken to create a unique product, service, or result.	A program is a group of related projects, subsidiary programs, and program activities that are managed in a coordinated manner to obtain benefits not available from managing them individually.
Scope	Projects have defined objectives. Scope is progressively elaborated throughout the project life cycle.	Programs have a scope that encompasses the scope of its program components. Programs produce benefits to an organization by ensuring that the outputs and outcomes of program components are delivered in a coordinated and complementary manner.
Change	Project managers expect change and implement processes to keep change managed and controlled.	Programs are managed in a manner that accepts and adapts to change as necessary to optimize the delivery of benefits as the program's components deliver outcomes and/or outputs.
Planning	Project managers progressively elaborate high-level information into detailed plans throughout the project life cycle.	Programs are managed using high-level plans that track the interdependencies and progress of program components. Program plans are also used to guide planning at the component level.
Management	Project managers manage the project team to meet the project objectives.	Programs are managed by program managers who ensure that program benefits are delivered as expected, by coordinating the activities of a program's components.
Monitoring	Project managers monitor and control the work of producing the products, services, or results that the project was undertaken to produce.	Program mangers monitor the progress of program components to ensure the overall goals, schedules, budget, and benefits of the program will be met.
Success	Success is measured by product and project quality, timeliness, budget compliance, and degree of customer satisfaction.	A program's success is measured by the program's ability to deliver its intended benefits to an organization, and by the program's efficiency and effectiveness in delivering these benefits.

Figure 12.1: Comparative overview of projects and programs

consistent information with their project team members. It is still important for the project to meet quality, schedule, budget, and customer satisfaction expectations, but now the definition of success is broadened to include the degree to which the program satisfies the needs and benefits for which it was undertaken.

Projects are viewed as a means for an organization to improve technology, reduce costs, increase efficiency, and remain competitive. The accomplishment of a project within a program can start providing benefits before the entire program is complete. Collaboration occurs when project managers within a program share a common purpose, establish mutual trust, and agree upon the project management approach. With so much riding on the success of a project, it has become apparent that processes, tools, templates, and metrics are not enough.

Because of the complexity of programs, more collaboration is required among project managers who are managing the project activities as part of a program. For purposes of this discussion, we will use the project management life cycle phases: initiation phase, planning phase, delivery phase, and closure phase as defined below.[4]

- **Initiation phase**—The idea is scoped into a project and the work is authorized.
- **Planning phase**—Work is planned and organized in detail, along with the people to do it.
- **Delivery phase**—Work is done and might involve a number of delivery phases, depending on the size and scale of the outputs.
- **Closure phase**—The project is brought to an orderly close.

Initiation Phase

During the initiation phase of the project within the program, the project manager must coordinate with the program manager and other project managers on the communications plan and collaboration tools to facilitate communications. At this time, the communications plan could be high-level, indicating required frequency and

methods for key communications. This is also the time for the project managers to set up the shared document storage space and/or shared working space, and identify other collaboration tools that will be used by project participants.

Planning Phase

Collaboration requires detailed planning. Planning effectively for a program requires a combination of top-down and bottom-up approaches. Top-down planning occurs from the program perspective, and bottom-up planning occurs from the project perspective. To accomplish top-down planning, the program manager must first identify the projects for the program and then identify the major milestone dates for each project.

At times it may be necessary to coordinate milestone dates for key activities such as testing or training among projects to gain greater efficiency by sharing resources. After the milestone dates have been solidified, project managers must apply the bottom-up approach. Bottom-up planning requires that each project manager prepare detailed plans to align with the predefined milestones.

This combined top-down and bottom-up collaborative planning approach is iterative and time-consuming, and it requires a lot of coordination. Trust among project managers is a must because a win-win means sharing information and sharing responsibility.

During the planning phase, your collaboration tools will allow you to coordinate project information and communicate decisions, changes, and status to your team and consistently among project teams within the program.

Delivery Phase

Delivery is where the majority of the project work occurs. Project managers must monitor and control the planned activities. Project managers in a program environment must work together to master problem-solving, decision making, and communication. Communication should be frequent and clear. Project managers forge strong personal bonds when they work together to manage issues and risks and to solve problems. At times, resources may have to be shared

among projects. Project managers who have strong behavioral skills are more likely to involve other project managers in decision making, and shared decision making is one of the hallmarks of successful program management. Good project managers listen to their project stakeholders. Even more important, good project managers listen to the other project managers on the program.

Project managers may need to work together to develop status reports or manage stakeholder meetings. They may use a single document for the program with sections for each project. Project managers should work together to ensure the style and level of detail is consistent among projects. A premeeting with the project managers, prior to sharing the materials with other project stakeholders, is always a good practice.

Closure Phase

All of the projects within the program may not end at the same time. However, after a project is complete and is ready to close down, the project closure documents should be stored and available for use by other projects within the program. Specifically, if the closure documents contain lessons learned that can be used to benefit existing and/or future projects within the program. Use collaboration tools to capture, analyze, and share lessons learned. A more detailed discussion on lessons learned is included later in this chapter.

Knowledge Sharing

Knowledge can be tacit or explicit. Tacit knowledge is the knowledge that is embedded in a person's mind; it is difficult to articulate and hard to formalize because it includes skills. Explicit knowledge is the knowledge that is codified or clearly explicated, such as procedure manuals. Tacit and explicit knowledge work together to create knowledge assets—the "knowledge possessed by the organization and its workforce in the form of information, ideas, learning, understanding, memory, insights, cognitive and technical skills, and capabilities."[5]

Knowledge assets, consisting of both explicit and tacit knowledge, are constantly evolving and must be managed by the organization. Although tacit knowledge is difficult to articulate and communicate, it is necessary for knowledge sharing. "Knowledge transfer is the methodical replication of the expertise, wisdom, insight, and tacit knowledge of key professionals into the heads and hands of their coworkers"[6] The ability to transfer tacit knowledge to explicit knowledge will enable project managers to share their experiences and know-how effectively. As situations change over time, project managers will become aware of what knowledge is essential and where it can be obtained. The challenge is for project managers to leave their comfort zones of focusing only on their projects and reach out to other project managers to form collaborative relationships based on mutual knowledge sharing.

A knowledge management plan can be used to describe how the people will be connected to one another in the program and to information generated throughout the program.[7] The knowledge management plan can be prepared by the program manager or in collaboration with the project managers. The goal is for project managers to have defined roles and responsibilities for knowledge management identified early in the program so they can use consistent tools and techniques to obtain knowledge throughout their projects.

Team Learning

Teams provide a shared context where individuals can interact with each other and share knowledge. The project manager works in collaboration with the project team to determine which processes are important, the appropriate degree of rigor for each process, the actions required to ensure that project performance matches expectations, and that the right message is communicated to the right audience at the right time. In this way, the project manager shares knowledge gained from project team experiences with other project managers.

Project Manager Mentoring

Mentoring is a way to encourage collaboration between experienced and new project managers. This process can be formal or informal.

A formal mentoring process can be for a new project manager and can last for the first 90 days, or it can be for an experienced or new project manager and last for the duration of the project. Some mentoring programs include a formal agreement between the mentor and mentee. This formal agreement specifies mentor and mentee responsibilities and learning objectives.

An informal mentoring process can simply be agreed upon between the mentor and mentee. The experienced or new project manager works with an experienced project manager to gain knowledge in a specific area. This type of mentoring can also be used to gain a better understanding of how to apply knowledge to specific project situations. The experienced project manager mentor can shadow the project manager mentee or sit in on project management meetings as an observer and then provide feedback.

Regardless of whether the mentoring process is formal or informal, the project manager mentee should have a learning objective, desired results, and action steps that are agreed upon by both the mentor and the mentee. During the mentor-mentee relationship, the project manager mentee is in a position to learn from someone who is doing the work and should value and respect the relationship by making sure that meaningful conversations are occurring and that trust is maintained.

Lessons Learned

Lessons learned from one project must be documented for use on the next project. Project managers can acquire relevant knowledge from lessons learned sessions and use this knowledge to develop or enhance their skills for application on current and future projects. We learn from our own project experiences as well as the experiences of others. Sharing lessons learned among project team members prevents an organization from repeating the same mistakes and also allows it to take advantage of organizational best practices.

Learning is essential for improvement. Too often capturing lessons learned is seen as optional, if time permits. Learning should be deliberate. Lessons learned should be documented and stored in a manner that allows for easy retrieval. Project managers should be

prepared to take advantage of the key learning opportunities that projects provide and also be prepared to consult with other project managers. The organization needs to assess whether project managers are learning from other projects. Organizations need to make sure they have a structure in place to share lessons learned. Project managers should commit to the capture and use of lessons learned; the organization should commit to storing lessons learned in a manner that is easy for project managers to retrieve and use.

Research indicates that lessons learned should be shared at the start of a new project as well as among projects within a program. Lessons learned could also be shared during learning activities, such as within a customized training class or a lunch-and-learn session. One director of a project office incorporates actual lessons learned into the project management course that all project managers new to the organization are required to take.

The author surveyed 80 project managers during project management conferences and obtained these suggestions for capturing and sharing lessons learned:

- Share with the project team at the end of the project.
- Share with other project managers during a lunch-and-learn session.
- Incorporate lessons learned into risk management discussions.
- Categorize lessons learned and make them available on a shared drive.
- Consider how lessons learned can be used effectively, and explain the process prior to collection.
- Make sharing mandatory, and hold meetings explicitly for sharing lessons learned.
- Make sure sharing consists of blameless communication.
- Vet all lessons learned to make sure they have value.
- Collect key metrics to go along with the lessons learned to support the value of the lessons.
- Consider things that have gone right as well as things that have gone wrong. Then convert lessons learned into an

action-item list and assign responsibility to project managers for disseminating the lessons learned.

- Establish a disciplined lessons learned process and require project managers to follow the process.
- Have defined project management processes and templates in place, and then use lessons learned along with the change management process to keep those processes and templates current.

13 ■ Building Effective Teams

A team is a group of people who share a common goal and are striving to get a common job done. The project team is responsible for accomplishing project goals. As stated in the *PMBOK® Guide*, sixth edition, team building is the process of helping a group of individuals, bound by a common purpose, to work with each other, the leader, external stakeholders, and the organization.[1] The result of good leadership and good team building is teamwork. Teamwork is critical for project success. Team building is an ongoing process that occurs throughout the life of the project. The project manager is responsible for creating an environment for the team to achieve the project goals.

Teams for a Small Project

Small projects typically have small project teams of fewer than 10 members. These team members are usually assigned part time to

work on project activities and are often assigned to work on more than one project at a time. The project manager must provide direction for the project team. Small project teams might operate with less formality than large project teams, but general team concepts still apply. Effective project teams, regardless of size, have defined roles and responsibilities:

- **Project manager**—The project manager's primary responsibility is to manage the project activities. Basic management includes planning, organizing, leading, and controlling activities that occur throughout the duration of the project. The project manager does not have to be an expert on the technical portions of the project; however, the project manager should be knowledgeable. Other project team members will be responsible for performing the technical activities. The project manager must continually motivate the team using open and effective communication.
- **Business analyst**—As the primary interface between the project team and the business area, the business analyst develops the project proposal, defines and documents the business requirements, and provides direction during the project. For small projects the business analyst might also perform some of the subject matter expert activities.
- **Subject matter experts**—Subject matter experts have the specific expertise to complete the project work. They design, develop, test, and implement project deliverables.

Team Charter

Effective teams have operating guidelines, which can be defined in the team charter. The team charter formally recognizes the existence of a project team and describes the conditions under which the team is organized. It is a mutually agreed-upon contract of behavior for the team that defines the mission, team expectations, operating agreement, and escalation process. Specifically, the team

charter clarifies to others what the team is expected to do and the team's purpose.

The project team works together to complete the team charter. Components of the team charter include:

- **Team name**—Develop a name for the team. A name allows the team to have its own identity.
- **Project manager**—Identify the person responsible for delivering the project.
- **Team members**—List all team members assigned to work on the project and the areas of responsibility they represent.
- **Mission**—State what the team is trying to accomplish, the purpose for the team's existence.
- **Values**—Develop a team value statement, which includes specific characteristics of importance to the members; for example, respect, trust, integrity.
- **Administrative guidelines**—Describe how team communications will occur.
- **Ground rules**—Describe how team members will be expected to interact with each other.
- **Decision guidelines**—Describe how decisions will be made, including time limits on discussions and an escalation process.
- **Meeting guidelines**—Describe when, where, and how the team will conduct meetings, including frequency, time, and facilitation tools.

Two optional items for the team charter that are nice to have are:

- **Slogan**—Create a distinctive catch phrase or motto to describe the project.
- **Logo**—Create a graphical representation for the project.

The slogan and logo can be used on project communications or team paraphernalia. Creating a team slogan and logo is also a good team-building exercise.

Some teams might not require all components of the team charter; they might need to have only specific components defined. This

is especially true for simple projects. For example, the team members might question their mission and therefore develop a clear, concise mission statement. This mission statement can then be displayed as a reminder to the team of what it is expected to do.

If a team charter is not used, the project manager should ensure that the team is productive and that project goals are being met. If the team becomes unproductive, the project manager should engage the team in developing a team charter, or at least the key components of the team charter that will allow the team to get back on track.

Meeting Management

The project manager is responsible for the process used for meeting management. At minimum the project manager should begin the process by distributing an agenda and end with the distribution of meeting minutes.

Meeting Agenda

The project manager should always prepare for meetings in advance. Each meeting should have a clearly defined purpose. Team members should be given an opportunity to provide agenda items. The agenda should include time to review action items from previous meetings along with key discussion items. For each discussion item, the time allocation and discussion leader should be noted. The agenda should be distributed to team members prior to the meeting, along with any documents that will be discussed during the meeting. Doing this allows the team members to come prepared. The meeting agenda should always include the meeting date, time, location, and purpose.

Meeting Roles and Responsibilities

It is important to clearly define meeting expectations, including roles and responsibilities. The project team is more productive if it knows what to expect from the project manager, as well as what the project manager expects from it. Although this information might not be contained in a formal document, the following roles and re-

sponsibilities should be communicated to and understood by the project team members:

- **Facilitator**—For small projects, the project manager usually serves as the facilitator. Facilitation activities include setting the tone for the meeting, making sure the meeting follows the agenda, engaging team members to participate in the discussion, identifying action items for follow-up, and using the proper facilitation tools.
- **Scribe**—In many cases, for small projects the project manager also serves as the scribe. The scribe takes notes for the team and produces meeting minutes. To keep the team on track and focused, it might be necessary to capture information on chart paper. The scribe captures the information and distributes it to the team.
- **Timekeeper**—The timekeeper makes sure the meeting starts and ends on time and that agenda items are given the appropriate allotted time.
- **Meeting participants**—The project team should come prepared to discuss the project activities.

Meeting Minutes

Meeting minutes are the official record of what occurred during the meeting. They should be written clearly and concisely. They should include the time and place of the meeting, the names of attendees, the items discussed, the decisions made, and any new issues identified. Action items should also be included, along with the name of the person assigned to follow up and the deadline. The scribe should distribute meeting minutes to the project team and allow a reasonable time for the team to review them and submit corrections or additions. Meeting minutes should be finalized and stored with other project documents.

Effective Team Meetings

Small project teams have impromptu, informal, and formal meetings. Impromptu meetings occur on the spur of the moment or with very

short notice and offer a quick forum for discussion. They are ideal for discussing specific issues, solving minor problems, or making urgent announcements. Informal meetings are planned and consist of specific team members required to solve a specific problem. Decisions made during the impromptu and informal meetings should be shared with the project team during the formal project team meetings.

Formal meetings are regularly scheduled meetings that have a defined purpose, guidelines, and expectations. For formal meetings to be effective, they should be well planned and organized. The project manager should plan for meetings to occur at a time that is convenient for team members. If it is determined in advance that a meeting is no longer required, it should be canceled. The project team should have a formal team meeting at least once a week, and these meetings should always start and end on time. Remember that meeting participants usually do not mind if a meeting ends early, but overrunning a meeting is often perceived negatively. Formal meetings should have a meeting agenda, defined meeting roles and responsibilities, and meeting minutes. The project manager should be flexible when establishing the structure for meetings and will find that at times the structure of the meeting may need to be adjusted to meet the needs of the team members.

The Tuckman Model

The Tuckman model, developed by Bruce W. Tuckman, a respected educational psychologist, identifies the distinct stages that small groups go through. The first four stages—forming, storming, norming, and performing—were developed in 1965, and the fifth stage, adjourning, was added in 1977 by Tuckman in conjunction with Mary Ann Jensen.[2]

These stages can also be applied to small teams. Each stage must be completed for the team to move on to the next stage. When changes in the team occur, it is common to revert to a previous stage.

Stage 1: Forming

During the forming stage, the team tries to decide on its purpose and explores the boundaries of team behavior. Individual roles and responsibilities are unclear, and team members are busy trying to identify their tasks and how to approach the project work. Common questions are as follows: What are we supposed to do? Who is responsible for completing this activity? When will this project end? As individuals, the team members are driven by a desire to be accepted by the others as they try to avoid controversy or conflict. During this orientation period, team members are extremely polite to each other while serious issues and feelings are avoided.

At this time the team needs structure and relies on the project manager to provide guidance and direction. The project manager should clearly establish roles and responsibilities and develop a climate of trust and respect for the team. It is important for the project manager to set project goals and to include the project team in the planning process. Team members will need to appreciate their individual differences and understand the benefits that come from working together as a team. Therefore, the project manager must share relevant information with the team, keep project communications current, and encourage participation from all team members. This is also the time to establish the decision-making process. Team members need to understand how decisions will be made—different situations require different decision-making methods—so they can respond appropriately.

Team-building activities help facilitate the transition from operating as an individual to operating as a team. A quick and easy team-building activity to consider is developing a team charter or having the team agree on operating guidelines or ground rules.

Team Identity

How does a team develop its own identity? One way is through its team name. Some teams select team names based on the objectives of the team. Others, especially smaller teams, use portions of the team members' personal names as the basis for forming the team

name. After the team name is selected, the development of a team logo or slogan adds a special touch to the team's identity. The team members can then acquire trinkets decorated with the team's identity (name, logo, and slogan) for a nice touch.

Consensus Decision Making

Consensus decision making is an approach that is used when complete agreement is not necessary. *Consensus* means that everyone understands the situation or problem and is willing to work together to arrive at a decision. Consensus building takes time, but it allows team members to feel that they have been heard and understood by the rest of the team. To achieve consensus, each team member must be able to live with the decision and be committed to carrying it out.

Not every decision will require consensus; however, some decisions are so important that achieving consensus is the only viable option.

Stage 2: Storming

The storming stage consists of conflict. Team members are forced to address important issues; in doing so, they often challenge each other as they express their individual viewpoints. "What about me?" and "I want . . ." are phrases often expressed by team members. Minor confrontations that are quickly dealt with or glossed over arise. At this stage the team lacks unity and members often react emotionally; cliques and factions begin to form. Some team members observe that it's good to be getting into the real issues, while others want to remain in the comfort and security of the forming stage.

The team is looking for structural clarity and rules to prevent the conflict from persisting. The project manager should acknowledge conflict and use procedures and techniques appropriate for the situation. Controls should also be in place to facilitate decision making and issue escalation. Bad behavior should not be tolerated. The project manager should be assertive, actively listen to the project team, and encourage team members to view alternatives.

Techniques for Resolving Conflict[1]

The *PMBOK® Guide,* sixth edition, identifies six general techniques for resolving conflict[3]:

- Withdrawing/Avoiding. Retreating from an actual or potential conflict situation
- Smoothing/Accommodating. Emphasizing areas of agreement rather than areas of difference
- Compromising. Searching for solutions that bring some degree of satisfaction to all parties
- Forcing. Pushing one's viewpoint at the expense of others; offers only win-lose solutions
- Collaborating. Incorporating multiple viewpoints and insights from differing perspectives; leads to consensus and commitment
- Confronting/Problem solving. Treating conflict as a problem to be solved by examining alternatives; requires a give-and-take attitude and open dialogue

Stage 3: Norming

During the norming phase conflict is reduced. The team becomes more established, operating guidelines are in place, and roles and responsibilities are more clearly defined. The team responds well to the guidance of the project manager. The team members also become more supportive of each other as they begin to understand and appreciate each other's skills and experiences. Team cohesiveness is established. Big decisions are made by the team, while smaller decisions are delegated to subteams or individuals. Team members have a respect for the project manager and also share in some of the leadership responsibilities.

The project manager should encourage team members to work collaboratively. The project manager should keep the team motivated by being open and supportive and providing positive feedback.

It is difficult for some teams to move beyond the norming stage because team members have had to work hard to reach this stage and might resist any pressure to change—especially from the outside—for fear that the team will break up or revert to storming.

Stage 4: Performing

Not all teams reach the performing stage, which is characterized by a state of interdependence and flexibility. The team works well together, and the members trust each other enough to allow independent activity. Roles and responsibilities change according to need in an almost seamless way. Team identity, loyalty, and morale are all high, which allows the team members to use their energy to focus on completing the project objectives.

During this phase the project manager monitors progress and helps the team to understand how to manage change. The project manager recognizes and rewards team accomplishments. The project manager must also watch for changes in participation patterns as the team nears the adjourning stage.

Stage 5: Adjourning

The adjourning stage is about project completion and focuses on the well-being of the project team. This stage is also referred to as deforming and mourning. During the adjourning stage, team members complete project tasks and plans are made to dissolve the project team. Team members have a sense of accomplishment for what they have done and are glad to have been part of a successful team. Team members also have a sense of sadness over the upcoming dissolution of the project team as they individually prepare to move on.

As project team members' project activities come to an end, the project manager should show sensitivity to team members' vulnerabilities, while assisting with their departure from the project. Remaining team members should be encouraged to finish the project. The project manager should recognize the team members for what they have accomplished and celebrate the completion of the project.

Tips for Productive Meetings

Meetings cost time and money but are a necessary communication vehicle for project teams. Successful project managers must have meeting-management skills. Here are some tips for holding productive meetings:

- Choose the meeting time and location carefully.
- Distribute a meeting agenda in advance. Include time allocations for agenda items. The time devoted to each item should be indicative of its priority. Discuss the most important items early in the meeting.
- Distribute documents that will be covered during the meeting in advance. Include in your communication the purpose of the materials and how they will be used at the meeting. Let the participants know if they are expected to provide input or approval.
- Keep the meeting on track. Use a timekeeper.
- Engage all participants.
- Control sidebars.
- Track action items.
- Use a parking lot to track items for later discussion.
- Use facilitation tools for decision making.
- At the close of the meeting, review next steps.
- Prepare and distribute meeting minutes.

Facilitation Tools

During a meeting, problem-solving and decision-making opportunities can present themselves without prior notice. The project manager must be prepared to respond immediately to keep the meeting moving. Some common facilitation tools include:

- **Brainstorming**—The spontaneous generation of ideas. It allows the team to identify a range of ideas before decisions are made. Tips for brainstorming:

- o Let ideas flow freely—hold off on evaluating ideas until later.
- o Build on the ideas of others.
- o Remind the team that there are no bad ideas, and encourage everyone to participate.
- o Be creative and think in new ways.
- o Do not debate.
- o Allow everyone to participate, and keep the discussion moving.
- o Record ideas as they are generated. When using an easel use alternating marker colors.

- **Multivoting**—A tool to allow the team to identify priorities from a list of ideas. Steps for multivoting:
  - o List the items. This list could include the items from the brainstorming session.
  - o Remind the team of the purpose of the vote—what you are trying to accomplish. Each member of the team is given a finite number of votes to give to items on the list. Add the number of items and determine the number of votes per person. For lists with more than 10 items, divide the total by five and round up to the nearest whole number. This number represents the number of votes each team member will have. For lists with fewer than 10 items, give slightly fewer votes than half the items on the list:
    - ▢ Team members vote for their top choices.
    - ▢ After team members have voted, tally the votes to arrive at the priorities.
    - ▢ To add a little fun to the process, team members can be given color sticker dots to use for voting. Team members can place the dot by the item on the flip chart to indicate their choice.

- **Decision grid**—A matrix of information used to assess a set of ideas in order to make a decision. A rating system is used to score the options. Steps for using the decision grid:
  - o Identify the criteria for judging potential solutions.

- o Identify options.
  - □ Rate each option against the criteria. Remember not to rate options against each other.
  - □ Add the scores to determine the solution.
- **Gap analysis**—A means to identify obstacles to achieving a desired goal. Gap analysis allows you to look at the current state and to identify things that need to be done to arrive at the desired or future state. The steps to perform a gap analysis are:
  - o Identify the future state.
  - o Identify the current state.
  - o Identify the gaps or what's missing.
  - o Obtain consensus on the gaps.
  - o Develop recommendations and action plans.
- **Affinity analysis**—A method used to gather diverse perspectives from team members and then to synthesize and order the items:
  - o Develop the question.
  - o Allow team members to write their responses on notecards or sticky notes.
  - o Representatives from the team group the responses into similar concepts.
  - o Representatives from the team label the related groupings with a word or phrase.
  - o The team uses multivoting or some other priority-setting approach to order the list.

Project Manager as Coach

One of the responsibilities of the project manager is to coach the project team to realize its full potential so that the team can perform the project work. As a coach, the project manager should:

- Help the project team to align with the project goal.
- Set an example for team members. If the project manager wants the team members to attend meetings on time, then the project manager should be on time.
- Praise and recognize team members for accomplishing tasks.
- Reserve constructive criticism for private conversations.
- Give team members the opportunity to share knowledge with other team members.
- Allow teams to come up with their own solutions. Follow through with team ideas to make sure they are implemented.
- Spend additional time with a team when necessary.
- Remain positive, be flexible, and provide support when needed.
- As the team members gain confidence in their performance, they will take on more responsibility for accomplishing team goals.

Leadership Connection

Team leadership activities for the project manager include:

- Direct the team during the forming stage.
- Support the team during the storming stage.
- Coach the team during the norming stage.
- Delegate project activities to team members during the performing stage.
- Direct during the adjourning stage.

KEYS FOR TEAM SUCCESS

Keys for team success include:

- Ensure that meeting minutes are clear and concise and contain sentences that are short and to the point.
- Establish processes for decision making and issue escalation.
- Provide team-building activities during the forming stage help the team make the transition from operating as individuals to operating as a team.
- During the storming stage, use appropriate procedures and techniques to manage conflict.
- Coach during the norming stage by using interactive questioning, collaborative goal setting, constructive feedback, and positive guidance.
- Allow interdependence and flexibility among team members during the performing stage.
- Show sensitivity and appreciation during the adjourning stage.

14 ■ The Power of One

As indicated in chapter 13, a team is a group of people who share a common goal and are striving to get a common job done. Another way to define a team is two or more persons working in a cooperative effort. The benefits of working on a team include shared ownership and responsibility for project activities, faster response to change, synergy, and personal growth. The purpose of the team is to work together to accomplish the project objectives. So, what happens when the project manager has to work alone? What happens when you have to rely on the power of one?

What Is the Power of One?

With the power of one, the support, synergy, and sharing realized from working on a team are lost. However, personal growth is still possible. The power of one means one person is solely responsible

for the outcome of the project with the power to choose how it will be managed.

The power of one means you have the ability to:

- Use project management to clearly define the project, develop realistic schedules, and manage change.
- Choose the processes, systems, level of detail, and amount of discipline for managing your project.
- Operate in an organized and efficient manner.
- Define quality up front and edit your own work harshly and objectively and from as many perspectives as you can.
- Keep things simple.

Power of One Challenges

A unique challenge for the power of one is for the project manager to use project management processes and tools when no one else is watching. On a small team, you have at least one person who is aware of your project management practices. Operating alone requires additional discipline because it is easy to tell yourself that you know what is going on and you have everything under control. However, if you do not plan, you are guessing about how much work you have and how much time you have to complete it. If you guess wrong—and this often happens—you are faced with the embarrassment of having to explain why you missed the deadline or need more time.

Roles and Responsibilities

The project deliverables must be completed, and initiating, planning, monitoring, executing and controlling, and closing activities must be performed if you want project success. Remember the triple constraints (on time, within budget, and according to requirements). They still apply. To be successful now, you must wear multiple hats—you are the project manager, leader, and subject matter expert.

Project Manager

As the project manager, you are responsible for the overall success of the project. It is up to you to determine how and when to apply project management processes, tools, and techniques. As a project management practitioner who understands the value of using project management, you will not omit your project management tasks just because you believe no one is watching.

As the project manager, you are responsible for coordinating project activities, which include:

- Deciding on the processes and ensuring that they are followed
- Defining and documenting the project and obtaining agreement
- Monitoring project progress
- Communicating with the sponsor and customer
- Managing change.

It is important to manage the processes, which include the project management process and any other development or business processes required to complete the project. Refer back to part 2, "Project Management Process for Small Projects," for a simplified project management process for small projects.

Leader

When you operate with the power of one, many of the common problems normally associated with teams are eliminated. For example, personality conflicts, nonteam players, bullies, and the like are not an issue. The ongoing team-building process is also eliminated. Leadership, however, is still required. Leadership is discussed in detail in chapter 3.

As a leader it is important to:

- **Be a visionary.** Create and nurture a vision.
- **Have integrity.** Have words and actions in alignment.
- **Be a change agent.** Be willing to change personally and then create a climate for others to change.

- **Be a problem-solver/decision maker.** Be able to recognize a problem in its early stages, and analyze and respond appropriately.
- **Have a positive attitude.** Choose to respond to daily situations/challenges with optimism.
- **Have a business orientation.** Understand the culture and where the project fits in achieving organizational goals.
- **Have a high tolerance for ambiguity.** Understand that uncertainty exists and work to provide clarity.
- **Communicate effectively.** Clearly articulate information, and actively listen to others.

Subject Matter Expert

You also have the role of subject matter expert, which requires you to take on the responsibilities of the analyst, specialist, designer, or developer, to name a few. As subject matter expert, you are responsible for performing analyses, gathering business requirements, developing specifications, creating deliverables, and testing and implementing deliverables. To state it another way, you perform all the tasks required to complete the project.

Realizing the Power of One

If you have the opportunity to operate with the power of one, welcome it as a learning experience. Tailor the project management process and tools discussed in part 2 of this book to fit your small or simple project. The more you use these tools, the more proficient you will become with your project management practices and the sooner you will be ready for larger projects. As a leader, you want to always show respect for project management. You never know who is watching or what they will see. You want people to know you believe in the process and tools and that you use them because it is the right thing to do. You want to be known for being able to get the job done. The role of subject matter expert allows you to keep your technical and organizational skills current.

Remember that all small projects are a training ground for larger projects. Use every opportunity to develop your skills.

Assignments as Projects

Assignments are really small or simple projects. Treating assignments as projects allows for better planning and more control of resources.

PALM and the Power of One

Project management can easily be applied to a one-person project by using the PALM principle discussed in chapter 5. For example, a project manager was assigned to develop a presentation in three weeks. The project manager planned the project using an activity list. During the three weeks the project manager continually analyzed the situation and kept the activity list current. Leadership is always important, and the project manager took the lead and sent weekly updates to the project sponsor. The project manager monitored the project activities and completed the presentation on schedule.

Time Management

Project management is an exciting profession that places many demands on the project manager. Managing stakeholder expectations, keeping up with technology, managing multiple projects, and wearing multiple hats leaves the project manager with little time, if any, to spare. Effective time management skills are a valuable asset for any project manager looking to achieve project success. The ability to effectively manage time becomes even more critical when you operate as the power of one.

Time management requires discipline. It requires you to write down what you want to accomplish, create lists, and set priorities. The concept of time management is not new, and lots of material exists on the topic.

A suggestion to help with time management is to use the Small Projects Kanban Board for tracking activities. This solution will allow you to plan activities and track your progress in a manner

that is portable and convenient. You can designate a color for each project or category and use Post-it notes to track progress for project activities. See chapter 17 for more details on how to set up and use the Activity Board for Small Projects.

Following are some common time management techniques:

- Use a document management system. This will allow you to easily access your files.
- Create monthly, weekly, and daily priority lists (to-do lists). Writing down what you have to do allows you to start thinking about how you will accomplish the activities.
- Organize your workspace. Your workspace design should be based on your productivity needs. Keep things you use often close at hand. Keep things organized so that you will be able to find what you need when you need it. A cluttered desk makes you look disorganized.
- Plan every day in advance. Set aside uninterrupted time for planning every day. Pick a time that works for you, either early in the morning, before you start working, or the evening, when you can plan out your next workday. Planning your daily activities allows you to set priorities for the day.
- Keep track of due dates. This prevents you from having to rush to complete your activities at the last minute.
- Do the most difficult task first. This forces you to overcome procrastination and helps you concentrate, because you are not constantly worrying about the difficult task.
- Develop systems that work for you. Do not let technology dictate. Whether it's time management, document management, or life management, use the tools that provide you comfort and sustained success.
- Work according to your temperament. Know yourself. Schedule key activities to fit your productivity pattern.
- Allow a little time for the unexpected. Put some slack time in your schedule. If your schedule is too tight, an interruption can throw your entire day off course.

- Eliminate wasteful activities. Saying no to wasteful activities provides you more of an opportunity to say yes to productive activities. Try to keep interruptions to a minimum.
- Choose to be positive. A positive attitude increases your energy and effectiveness. Find things that motivate, inspire, rejuvenate, and energize you.

Time Robbers

Time robbers are events you didn't plan for that prevent you from accomplishing what you really need to get done. Some common time robbers include:

- Interruptions
- Disorganization
- Poor communication
- Waiting for people
- Poor planning

KEYS FOR THE POWER OF ONE SUCCESS

Keys for the power of one success include:

- Use project management because it is the right thing to do.
- Use all small projects as a training ground for larger projects.
- Effectively manage time and find ways to stay motivated.

15 ■ Transitioning to Larger Projects

Congratulations on the successful management of your small projects. The knowledge and skills you are acquiring from using the small and simple project management process and tools allow you to become competent in the management of small projects. This chapter presents some of the challenges and issues you will face if you make the transition to managing larger projects.

Project Management Skills

The project management skills you are acquiring from managing small projects serve as the foundation on which you can continue to build additional skills. Here are some additional project management complications that you will manage when you lead large projects:

- **Project management process**—The processes used to manage projects will increase to include more activities

from the 10 knowledge areas: project integration management, project scope management, project schedule management, project cost management, project quality management, project resource management, project communication management, project risk management, project procurement management, and project stakeholder management.

o Initiating—Project charters will be more detailed and will require input from more project stakeholders. You may also have to develop a preliminary scope statement that provides a high-level definition of the project. Project and product requirements will need to be documented.

o Planning—More planning will be required. You will spend time planning to plan as you prepare for planning sessions to obtain the information for more detailed and formal project plans. You will incorporate budgeting, resource planning, and contracting activities into your project plans. You will use more techniques for risk analysis. You will need to regularly use progressive elaboration.

o Executing—More emphasis will be placed on managing quality to ensure that the project employs all of the processes needed to meet the requirements.

o Monitoring and controlling—These activities will increase significantly. You will need to keep detailed project schedules current and manage costs and risks. You will produce more types of performance reports—status, variance, metric, trend, and earned value—and manage the needs of more levels of stakeholders. Document control will become very important because you are sharing more critical team documents with more team members.

o Closing—Larger projects are more likely to be audited; therefore, project closure is more formal because key

project documents need to be retained. At the close of
the project you will also be expected to close contracts
and release resources.

- **Project management software**—You will need to use a
project management application for detailed project
planning and control.
- **Process integration**—Projects are more complex and will
require the incorporation of other processes:
  - Product development process—You will use a specific
  industry development life cycle.
  - Business processes—You will become more involved
  with the use of processes from the impacted business
  areas.
  - Change management—You will incorporate the
  behavior activities required to prepare the organization
  for a change from the current state to the future state.

Leadership Skills

Your leadership activities will increase:

- You will have to be willing to listen and learn.
- You will be expected to drive the project to completion.
You have to take charge and make sure the work is
getting done. When issues arise, you must make sure they
are addressed immediately and resolved as quickly as
possible.
- You will be leading larger teams, which will require more
meeting management and facilitation skills.
- You will be expected to make key project decisions in a
timely manner.
- You will be expected to deliver presentations to project
stakeholders.
- Your team will be looking to you for answers. Your
credibility will be key. Your team members will need to

know they can trust you to get them through the difficult times.

People, Process, and Technology

You will have to find a way to balance people, process, and technology to truly be successful. This will be a continuous challenge because projects are unique and people, process, and technology are constantly changing. Remember to choose the processes that fit your project, make allowances for technological changes, and get to know the people on your team and allow them to become fully engaged in the project activities.

Project Management Keys for Success

Description
The following are keys for success when managing small projects.

Process Overview
- Make sure the right amount of process is used for each project. If too much or too little is used initially, be flexible enough to make the necessary adjustments.
- Keep process guides handy for quick reference.
- Integrate the project management process with the product development process to gain more efficiency.
- Lead the way for other project managers to begin using project management on small projects.

Project Initiation
- Engage project stakeholders early in the process and keep them engaged throughout the life of the project.
- Establish trust.
- Remember that the project charter sets the stage for the planning phase and should include input from all key stakeholders.
- Obtain necessary approvals before proceeding.

Project Planning
- Plan to plan and be prepared to replan.
- The people doing the work should help plan the work.
- Use brainstorming sessions to engage the team.
- Use decision-making tools and techniques to facilitate the planning process. Remember that the earlier you identify a problem the easier it is to solve.
- Include more than the project schedule in the project plan; include all the planning documents.
- Collect project requirements and define project scope.
- Document assumptions and constraints.

(*continued*)

- Be aware of logical relationships and plan for them. By default most relationships are finish-to-start, where the successor depends on the finish of the predecessor. Other relationships to consider carefully are finish-to-finish (the finish of the successor depends on the finish of the predecessor) and start-to-start (the start of the successor depends on the start of the predecessor). A column can be added to the project schedule to indicate task or deliverable dependencies.
- If project management software is not available, do planning for small projects by using word processing or spreadsheet software applications. A work breakdown structure (WBS) can easily be drawn by hand or developed using an outline format.
- Negotiate for key project resources.
- Use lessons learned from previous projects at the start of new projects.
- Keep project documents in a project notebook, and set up an electronic filing system at the beginning of the project.
- Remember that if you do not plan, you will not have what you will need to keep the project in control.
- Obtain sponsor approval on the project plan.

Project Planning for Simple Projects
- Do some form of planning even for the simplest projects.
- Use the tools and techniques defined for small projects as needed.

Project Controlling
- Carefully monitor project progress, respond to variances, and communicate to project stakeholders.
- Manage issues and risks, and escalate when necessary.
- Identify the impact that a requested change will have on the project resources, timeframe, and budget; obtain approval to incorporate the change into the project.
- Have a positive attitude, especially during difficult times.

Project Closing
- Make sure project objectives are met.
- Make sure all deliverables are complete.

- Archive project documentation.
- Celebrate project success.

Managing Multiple Projects

- Use processes and tools consistently for individual projects.
- Consolidate projects, manage at the appropriate level, and analyze across projects.
- Ensure that risk planning occurs twice—first while planning the individual project and then again during multiproject planning.
- Communicate project progress using consolidated reports.
- Color-code projects for more clarity.

Building Effective Teams

- Make sure meeting minutes are clear and concise, and that they contain sentences that are short and to the point.
- Establish processes for decision making and issue escalation.
- Provide team-building activities during the forming stage to help the team make the transition from operating as individuals to operating as a team.
- During storming, use the appropriate procedures and techniques to manage conflict.
- Coach during the norming stage by using interactive questioning, collaborative goal setting, constructive feedback, and positive guidance.
- Allow interdependence and flexibility among team members during the performing stage.
- Show sensitivity and appreciation during the adjourning stage.

The Power of One

- Use project management because it is the right thing to do.
- Use all small projects as a training ground for larger projects.
- Effectively manage time and find ways to stay motivated.

AGILE

16 ■ Agile

"Agile is the ability to create and respond to change. It is a way of dealing with, and ultimately succeeding in, an uncertain and turbulent environment."[1] It's really about considering what's going on in the environment that you're in today, identifying what uncertainty you're facing, and figuring out how you can adapt to that as you go along.[2] The one thing that separates agile from other approaches is that solutions evolve through collaboration between self-organizing cross-functional teams. "Agile is a mind-set based on a set of key values and principles designed to better enable collaborative work and deliver continuous value through a 'people-first' orientation."[3] "Agile" is also an umbrella term used to describe many different frameworks and practices that support the values and principles expressed in the Agile Manifesto and the 12 Principles behind the Agile Manifesto.

History of Agile

During the 1990s, software developers realized they needed to change the way they were building software. By mixing old and new ideas, they found a combination that worked.

These methodologies were collectively referred to as agile software development methods, and they emphasized close collaboration between the development team and business stakeholders. During this time, different frameworks started to grow, but there was no consistent way of describing the different approaches for developing software. In 2001, 17 software developers met to discuss these agile software development methods and together they published the "Manifesto for Agile Software Development." The Agile Alliance was formed shortly after this gathering to encourage practitioners to further explore and share ideas and experiences.[4]

In 2011, the Agile Alliance created the Guide to Agile Practices (renamed the Agile Glossary in 2016), an evolving open-source compendium of the working definitions of agile practices, terms, and elements, along with interpretations and experience guidelines from the worldwide community of agile practitioners. The Agile Manifesto provided a set of value statements that form the foundation for agile software development. In the months afterward, the authors expanded on these ideas with the 12 Principles behind the agile manifesto.

Agile Manifesto and 12 Principles behind the Agile Manifesto

Agile is a mindset informed by the values contained in the Agile Manifesto and the 12 Principles behind the Agile Manifesto.[5] Those values and principles provide guidance on how to create and respond to change and how to deal with uncertainty.

Project Life Cycles: From Predictive to Adaptive (Waterfall to Agile)

As stated in chapter 5, "Process Overview," a project life cycle provides the basic framework for managing the project. In chapter 5, we discussed the traditional or waterfall life cycle. The traditional/

Agile Manifesto

"We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

- *Individuals and Interactions* over processes and tools
- *Working Software* over comprehensive documentation
- *Customer Collaboration* over contract negotiation
- *Responding to Change* over following a plan

That is, while there is value in the items on the right, we value the items on the left more."[6]

12 Principles

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
4. Businesspeople and developers must work together daily throughout the project.
5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
7. Working software is the primary measure of progress.

8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
9. Continuous attention to technical excellence and good design enhances agility.
10. Simplicity—the art of maximizing the amount of work not done—is essential.
11. The best architectures, requirements, and designs emerge from self-organizing teams.
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.[7]

waterfall life cycle is also known as predictive. On the other hand is the agile life cycle, which is known as adaptive. Other life cycles include iterative, incremental, and hybrid.

This section begins with a discussion on the predictive (waterfall) life cycle and ends with a discussion on the agile life cycle. The hybrid life cycle combines predictive and adaptive, or multiple adaptive frameworks, to create a tailored life cycle to meet the needs of the organization. Figure 16.1 provides a view of the phases contained in the waterfall and agile life cycles.

Predictive

A predictive life cycle (figure 16.2), also known as the waterfall life cycle, is considered a more traditional approach, which takes advantage of things that are known and proven. This reduced uncertainty and complexity allows teams to segment work into a sequence of predictable groupings, such as requirements, analysis, design, build, test, and so on. The bulk of planning occurs upfront; requirements are fixed; project scope, time, and cost are set early in the life cycle and are managed through change control; and activities are executed in a single pass, with a sequential process.

WATERFALL

Analysis

Design

Implementation

Testing

Maintenance

AGILE

Deploy

Test

Review

Develop

Plan

Design

Launch
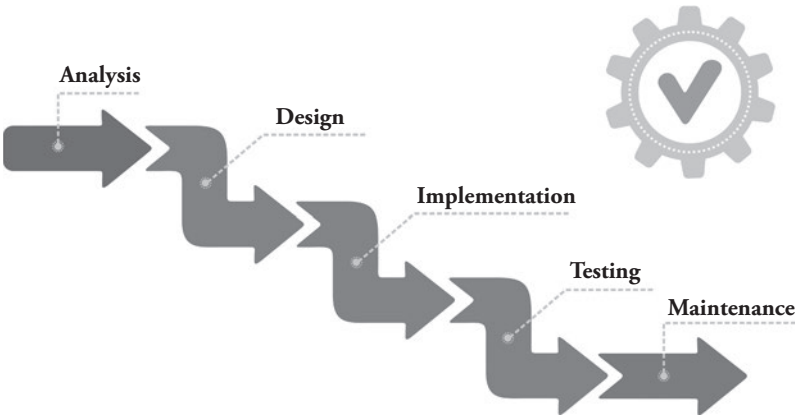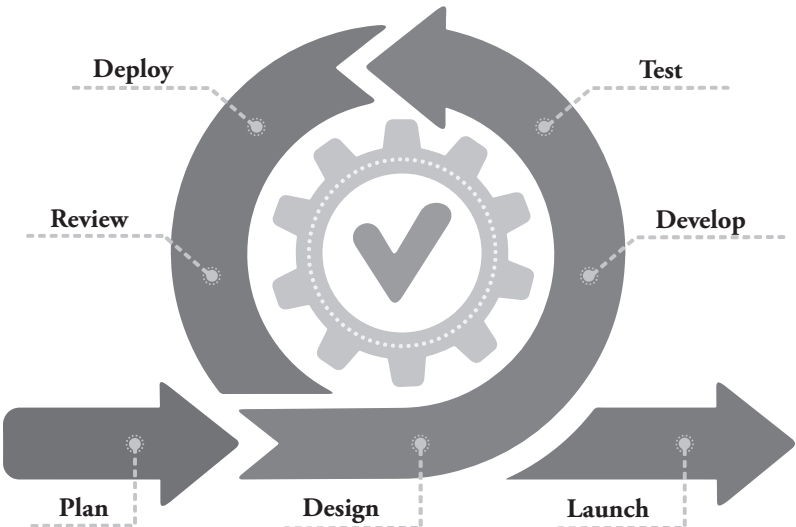
Figure 16.1: Waterfall and Agile life cycles

Waterfall versus Agile
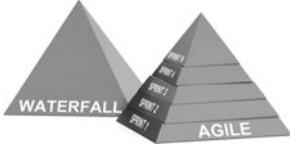
	Traditional/Waterfall	Agile
	• Generally progresses from requirements, design, build, testing, implementation/delivery.	• Allows for changes to be made after the initial planning is completed; allows for rewrites to the program, as the customer decides to make changes.
	• Revisiting a previous phase disrupts the flow.	• Easier to add features.
	• Value is accomplished when the scope is delivered at the end of the project.	• At the end of each sprint, project priorities are evaluated, which allows the customer to add their feedback so they can get the product they desire.
	• Disadvantage: time lag between business requirements and delivery, during which the business requirements could change causing the final product not to meet the business needs.	• Disadvantages: the initial project does not have a definitive plan; the final product can be grossly different than what was initially intended.

Analysis → Design → Build → Test → Deliver

Figure 16.2: Predictive/Waterfall life cycle

Analysis → Analysis Design → Build Test → Deliver

Figure 16.3: Iterative life cycle

Iterative

An iterative life cycle (figure 16.3) allows feedback to occur on partially completed or unfinished work, so the work can be improved or modified. Requirements are dynamic, project scope is set early in the life cycle, time and cost are modified as more information becomes available, and activities are repeated until correct. During the analysis and design phases the teams may deliver a prototype to the customer for feedback. Customer feedback helps the team to learn what is needed, allowing for refinements to occur during the build and test phases.

Incremental

The incremental life cycle (figure 16.4) provides finished deliverables that the customer may be able to use immediately. The requirements are dynamic, and activities are performed once for a given increment.

Agile

Agile is also known as adaptive. Agile includes both iterative and incremental approaches to refine work items and deliver frequency. Requirements are dynamic and activities are repeated until correct. The agile life cycle is shown in figure 16.5.

When teams use agile approaches, they iterate over the product to create finished deliverables. The team gains early feedback and can release earlier, which provides an earlier return on investment because the team delivers the highest value work first.
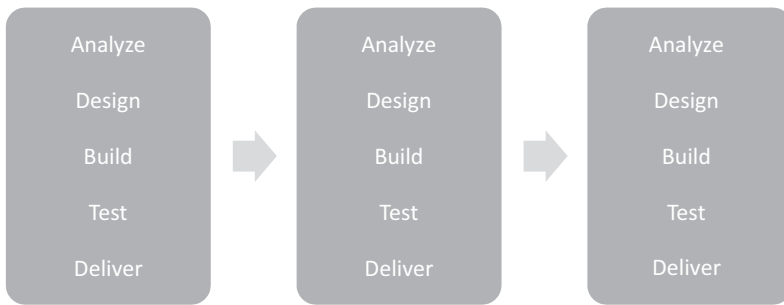
Figure 16.4: Incremental life cycle
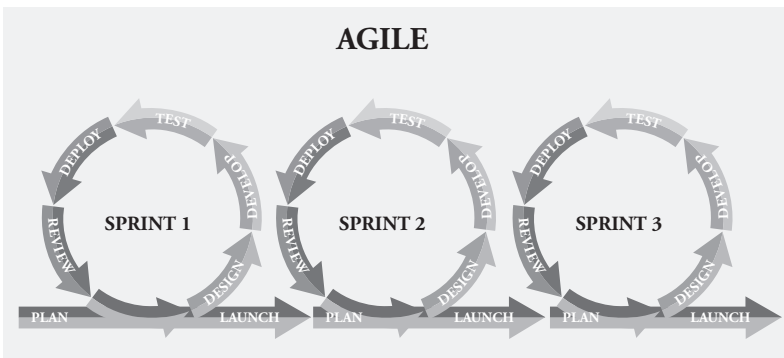
Figure 16.5: Agile life cycle

Benefits of Agile

Agile approaches and practices realize benefits:
- 36–36% increased employee satisfaction
- 31–40% more empowered employees
- 41–51% improved customer experience
- 42–56% improved product/service quality[8]

Agile and the Project Management Knowledge Areas

Agile ideas apply to many disciplines. When you think of agile as an adjective, it describes the way in which you perform some activity. Therefore, agile in project management explains how we might

perform project management in a way that allows us to create and respond to change and deal with uncertainty. Therefore, the Agile Alliance and Project Management Institute (PMI) created the *Agile Practice Guide*, which explores the use of agile approaches. *PMBOK® Guide,* sixth edition, integrates agile concepts with the 10 knowledge areas.

- **Project integration management**—"Agile approaches promote the engagement of team members. Team members determine how plans and components should integrate."[9]
  - "The project manager's focus is on building a collaborative decision-making environment and ensuring the team has the ability to respond to changes."[10]
  - For small projects include cross-functional team members in project discussions during iterative planning, stand-up meetings, and project retrospectives. Use visual management tools to enhance collaboration.
- **Project scope management**—"In projects with evolving requirements, high risk, or significant uncertainty, the scope is often not understood at the beginning of the project or it evolves during the project."[11]
  - "Agile methods deliberately spend less time trying to define and agree on scope in the early stage of the project and spend more time establishing the process for its ongoing discovery and refinement. Many environments with emerging requirements find that there is often a gap between the real business requirements and the business requirements that were originally stated."[12] Agile methods allow you to build release versions in order to refine requirements.
  - For small projects, refine and redefine the scope, and define and manage requirements throughout the project. Use a backlog to list everything that is known to be needed for the project.
- **Project schedule management**—"Adaptive approaches use short cycles, undertake work, review the results, and adapt as necessary."[13]

- o Adaptive planning allows for new knowledge to be incorporated, which may drive changing priorities. Short cycles provide rapid feedback on approaches for iterative schedules and incremental deliverables.
- o The project manager, in an agile environment, will need to include the use of agile tools and techniques for developing and managing the project schedule.
- o For small projects use a Kanban board to manage the flow of the work.
- **Project cost management**—"Projects with high degrees of uncertainty or those where the scope is not yet fully defined may not benefit from detailed cost calculations due to frequent changes."[14]
  - o "Lightweight estimation methods can be used to generate a fast, high-level forecast of project labor costs, which can then be easily adjusted as changes arise. Detailed estimates are reserved for short-term planning horizons in a just-in-time fashion."[15]
  - o In small projects, as the scope and schedule are adjusted, the cost forecasts can be easily adjusted to stay in alignment.
- **Project quality management**—"In order to navigate changes agile methods call for frequent quality and review steps built in throughout the project rather than toward the end of the project."[16]
  - o "Recurring retrospectives regularly check on the effectiveness of the quality processes. They look for the root causes of issues and then suggest trials of new approaches to improve quality."[17]
  - o For small projects, use small batch systems to uncover inconsistences and quality issues, early in the process.
- **Project resource management**—"Projects with high variability benefit from team structures that maximize focus and collaboration, such as self-organizing teams with generalizing specialists."[18]
  - o The project manager should use collaboration to boost productivity and facilitate innovative problem solving.

Use collaboration tools to facilitate team discussions and decision making.

- o For small projects, use collaborative and supportive management to allow for team-based decision making.
- **Project communications management**—"Project environments subject to various elements of ambiguity and change have an inherent need to communicate evolving and emerging details more frequently and quickly."[19]
  - o Project managers should post project artifacts in a transparent fashion and communicate regularly with project stakeholders.
- **Project risk management**—"High-variability environments, by definition, incur more uncertainty and risk. To address this, project management using adaptive approaches makes use of frequent reviews of incremental work products and cross-functional project teams to accelerate knowledge sharing and ensure that risk is understood and managed."[20]
  - o "Risk is considered when selecting the content of each iteration, and risks will also be identified, analyzed, and managed during each iteration."[21]
- **Project procurement management**—"In agile environments, specific sellers may be used to extend the team. This collaborative working relationship can lead to a shared risk procurement model where both the buyer and the seller share in the risk and rewards associated with a project."[22]
- **Project stakeholder management**—"Projects experiencing a high degree of change require active engagement and participation with project stakeholders."[23]
  - o "To facilitate timely, productive discussion and decision making, adaptive teams engage with stakeholders directly rather than going through layers of management."[24]
  - o In order to accelerate the sharing of information within and across the organization, agile methods promote aggressive transparency. The intent of inviting any stakeholders to project meetings and

> reviews or posting project artifacts in public spaces
> is to surface as quickly as possible any misalignment,
> dependency, or other issue related to the changing
> project.

Servant Leadership

Servant leadership is a leadership philosophy in which the main goal of the leader is to serve. The phrase "servant leadership" was coined by Robert K. Greenleaf in "The Servant as Leader," an essay that he first published in 1970. In that essay, Greenleaf said: "The servant-leader is servant first."[25] A servant-leader focuses primarily on the growth and well-being of people and the communities to which they belong. While traditional leadership generally involves the accumulation and exercise of power by one at the top of the pyramid, servant leadership is different. The servant-leader shares power, puts the needs of others first, and helps people develop and perform as highly as possible.

Servant leadership is emphasized in agile approaches as a way to empower teams. It is the practice of leading through service to the team by focusing on understanding and addressing the needs and development of team members in order to enable the highest possible team performance. According to the *Agile Practice Guide*, "the role of the servant leader is to facilitate the team's discovery and definition of agile."[26] Servant-leaders approach project work in this order.

- **Purpose**—Work with the team to define the why or purpose so they can engage and coalesce around the goal for the project. The entire team optimizes at the project level, not the person level.
- **People**—Once the purpose is established, encourage the team to create an environment where everyone can succeed. Ask each team member to contribute across the project work.
- **Process**—Do not plan on following the perfect agile process, but instead look for the results.[27]

10 Principles of Servant Leadership
by Robert Greenleaf

1. **Listening**—Listen intently to others. Identify and clarify the will of a group. Listen receptively to what is being said and not said. Getting in touch with one's own inner voice and seeking to understand what one's body, spirit, and mind are communicating.

2. **Empathy**—Strive to understand and empathize with others. Accept and recognize people for their special and unique spirits. One assumes the good intentions of coworkers and not reject them as people, even when forced to reject their behavior or performance.[28]

3. **Healing**—Healing of relationships is a powerful force for transformation and integration. One of the great strengths of servant leadership is the potential for healing one's self and relationships with others.

4. **Awareness**—General awareness, and especially self-awareness, strengthens the servant-leader. It allows one to view most situations from a more integrated, holistic position.

5. **Persuasion**—Rely on persuasion, rather than positional authority in making decisions. Servant-leaders seek to convince others, rather than coerce compliance. The servant-leader is effective at building consensus within groups.

6. **Conceptualization**—Servant-leaders seek to nurture their abilities to "dream great dreams." The ability to look at a problem (or an organization) from a conceptualizing perspective means that one must think beyond day-to-day realities. Servant-leaders must stretch their thinking to encompass broader-based conceptual thinking and seek a delicate balance between conceptualization and day-to-day focus.

7. **Foresight**—The ability to foresee the likely outcome of a situation. Foresight is a characteristic that enables servant-leaders to understand lessons from the past, the realities of the present, and the likely consequence of a decision in the future. It is deeply rooted in the intuitive mind.

8. **Stewardship**—All levels—CEOs, directors, and staff—play significant roles in holding their institutions in trust for the greater good of society.

9. **Commitment to growth of people**—Servant-leaders believe that people have an intrinsic value beyond their tangible contributions as workers. As such, servant-leaders are deeply committed to a personal, professional, and spiritual growth of each and every individual within the organization.

10. **Building community**—Servant-leaders seek to identify a means for building community among those who work within a given institution.

Servant-leaders educate stakeholders on agile practices, support the team through mentoring, encouragement, and professional development, help the team with technical project management activities, and celebrate team success. In an agile environment, project managers shift from being the center to serving the team and management. As a servant-leader, project managers change their emphasis to coaching team members, fostering greater collaboration on the team, and aligning stakeholder needs. This shift allows the team, the people with the knowledge, to get the work done.

Agile Teams

Agile teams are cross-functional, self-organizing entities that can define, build, and test a solution. They are optimized for communi-

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Servant Leadership Characteristics

- Promoting self-awareness
- Listening
- Serving those on the team
- Helping people grow
- Coaching vs. controlling
- Promoting safety, respect, and trust
- Promoting the energy and intelligence of others[29]

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cation and delivery of business value. The work is sized and sequenced so that incremental value can be delivered every two weeks. Ideally, agile teams range from three to nine members, colocated in a team space, and members are 100 percent dedicated to the team.

Roles and Responsibilities

Agile teams are structured for creative collaboration and can include the following roles: project manager, cross-functional team members, product owner, and team facilitator.

Scrum Master

The scrum master serves the team and management. As a servant-leader, the scrum master coaches those who want help, fosters greater collaboration on the team, aligns stakeholder needs, and encourages those people who have the knowledge to get the work done.

The scrum master needs to respond quickly to change. It is about having access to information and having the ability to understand how to use that information to support the project team and respond to project stakeholders. This requires a strong relationship between the scrum master and business owner for efficient and effective information sharing for collaboration and prioritization.

In an agile environment, the scrum master needs to understand how the project aligns with the organization's strategic objectives and the business requirements for meeting the project objectives. Therefore, as identified by PMI, strategic and business management skills are required along with technical project management and leadership skills.

Cross-Functional Team Members

Cross-functional team members have the skills necessary to produce a working product. They can deliver the finished work in the shortest possible time, with higher quality—especially when there are no external dependencies. These teams are self-organizing, are flexible and creative, are empowered to manage their work, and are accountable for product delivery.

Product Owner

The product owner is responsible for providing vision and guiding the direction of the product. The product owner works with project stakeholders to define boundaries for the project and works with the team daily to provide feedback and set the direction on the next piece of work to be developed/delivered. This is accomplished by reviewing and reprioritizing the team backlog that is used for iteration planning. In addition, the product owner coordinates work dependencies with other product owners as a part of iteration planning. Finally, the product owner is responsible for defining "done" by defining the acceptance criteria for user stories and determining when the user stories are done.

Team Facilitator

The team facilitator operates as a servant-leader to facilitate, coach, and remove impediments. A key responsibility is to protect the team from external forces by removing impediments and barriers. In addition, this person helps the team to learn and follow agile principles and practices. This role may be handled by a project manager, scrum master, project team lead, team coach, or team facilitator.

Team Structure

The agile team structure could consist of self-managing, cross-functional, colocated, and/or dedicated teams.

Self-Managing

Agile teams are self-managing. Within this team, each member is equally important (no hierarchy), but responsibilities are clearly defined. This means that each team member should get equal opportunity to voice his or her opinion. Together, they can then form a solution. Ultimately, the product owner gets the final say about prioritization, but all other discussions are guided by the scrum master to a solution everybody agrees with.

Cross-Functional

The team should possess all knowledge required to deliver a working product. This does not mean that each team member should be the perfect developer and have all of this knowledge, but this knowledge needs to be spread across team members.

Colocated

Agile methods suggest close collaboration. Ideally, the entire team would be sitting in the same room so that there are no barriers (no matter how small) to communication. When team members are spread out over different rooms, locations, or time zones, it is normal for people to postpone their interaction.

For small projects, teams may not be colocated. Therefore, teams should schedule dedicated working time and use team workspaces. Dedicated working time in a common location would allow team members to work uninterrupted for a period of time. Technology such as video conferencing, document sharing, and other collaboration tools should be used for collaboration. Using video cameras during virtual conferencing sessions will allow team members to be more engaged during the sessions and help build relationships and foster trust.

Dedicated

Every member of the team should be assigned to the project full time, as any distraction will just delay work. Focused work is far more effective than switching between assignments or dividing attention between two projects. Being dedicated to a single project is also the best way to take up ownership and responsibility (allowing for better self-management).

A concern is that when the team is not 100 percent dedicated, team members lose productivity by multitasking. Multitasking reduces the throughput on the team's work and impacts the team's ability to predict delivery consistently.

For small projects, team members are not always fully dedicated to a single project. They often work on multiple small projects or a small project and operational activities. It is important to note that people experience productivity losses, somewhere between 20 percent to 40 percent, when task switching. And people are more likely to make mistakes when they multitask. Therefore, careful planning and the use of collaboration tools will help with the use of an agile methodology.

Tools and Techniques

Tools and techniques consist of Scrum, Kanban method, and Scrumban.

Scrum

Scrum is a single-term process framework used to manage product development. The framework consists of Scrum roles, artifacts, and rules, and uses an iterative approach to deliver working product. Scrum is run on timeboxes of one month or less with consistent durations called sprints where a potentially releasable increment of product is produced.

The scrum board (figure 16.6) shows the sprint backlog, the work that is in process, and the work that has been completed.

The Scrum team consists of a product owner, development team, and scrum master.[30]

Scrum Board		
Sprint Backlog	In Process	Done
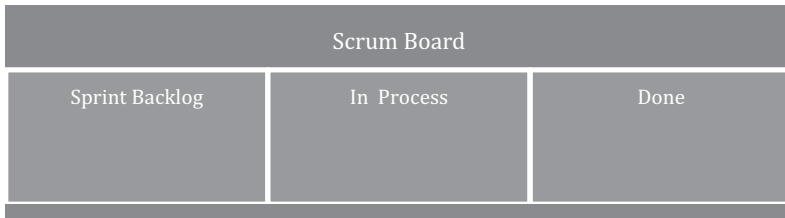
Figure 16.6: Scrum board

- The product owner is responsible for maximizing the value of the product.
- The development team is a cross-functional, self-organizing team consisting of members who have everything they need within the team to deliver working product without depending on others outside of the team.
- The scrum master is responsible for ensuring the Scrum process is upheld and works to ensure the Scrum team adheres to the practices and rules as well as coaches the team on removing impediments.

Scrum

Events	Artifacts
• Sprint • Sprint planning • Daily scrum • Sprint review • Sprint retrospective	• Product backlog • Sprint backlog • Increments

Kanban Method

Kanban is a visual process management system. The word *Kanban* is literally translated as "visual sign," "card," or "sign board." Kanban boards enable and promote the visualization and flow of the work through the system for everyone to see. This display is made up of columns that represent the states the work needs to flow

through. A simple board could have three columns to represent to-do, doing, and done. The Kanban board could also be arranged by the activities in the project life cycle; for example, to-do, analysis, development, test, delivery. The Kanban method is utilized and applicable in many settings and allows for a continuous flow of work and value to the customer.

Unlike most agile approaches, the Kanban method does not prescribe the use of timeboxed iterations. Iterations can be used within the Kanban method, but the principle of pulling single items through the process continuously and limiting work in progress to optimize flow should always remain intact. The Kanban method may be best used when a team or organization is in need of the following conditions:

- **Flexibility**—Teams are typically not bound by timeboxes and will work on the highest priority item in the backlog.
- **Focus on continuous delivery**—Teams are focused on work flowing through the system to completion and not beginning new work until work-in-progress is completed.
- **Increased productivity and quality**—Productivity and quality are increased by limiting work in progress.
- **Increased efficiency**—Checking each task for value-adding or nonvalue-added activities and removing the nonvalue-adding activities.
- **Team member focus**—Limited work in progress allows the team to focus on the current work.
- **Variability in the workload**—When there is unpredictability in the way that work arrives, and it becomes impossible for teams to make predictable commitments, even for short periods of time.
- **Reduction of waste**—Transparency makes waste visible so it can be removed.[31]

Kanban boards provide clear insight to workflow, bottlenecks, blockers, and overall status. They allow you to limit work-in-progress by setting limits on the maximum amount of work that can exist in each status of the workflow and by defining precondi-
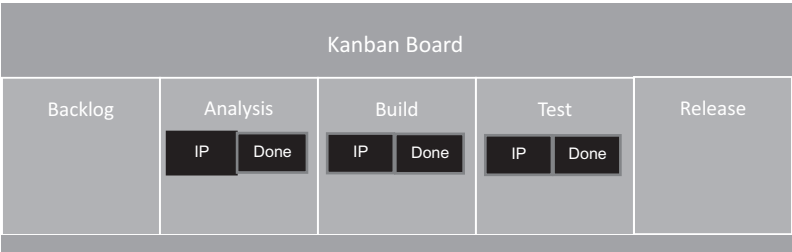
Figure 16.7: Kanban board

tions that must be fulfilled before work will begin. The Kanban board in figure 16.7 allows the team to identify the backlog items as well as what is in process and done for each of the analysis, build, and test activities.

In the Kanban method, it is more important to complete work than it is to start new work. There is no value derived from work that is not completed, so the team works together to implement and adhere to the work-in-progress limits and get each piece of work through the system to done.

Scrum and Kanban

Scrum	Kanban
• Scrum teams work in two-week increments called sprints. • Teams commit to a certain amount of work to complete in a sprint. • Predictable work fits well with a Scrum approach.	• Kanban teams work in a continuous process. • The Kanban backlog is very dynamic and is continuously prioritized. • Unpredictable work fits well with a Kanban approach.

Scrumban

As stated in the *Agile Practice Guide*, Scrumban is an agile approach originally designed as a way to transition from Scrum to Kanban. As additional agile frameworks and methodologies emerged, it became an evolving hybrid framework in and of itself where teams use Scrum as a framework and Kanban for process improvement.

In Scrumban, the work is organized into small sprints, and it leverages the use of Kanban boards to visualize and monitor the work. The stories are placed on the Kanban board and the team manages its work by using work-in-progress limits. Daily meetings are held to maintain the collaboration between the team and to remove impediments. A planning trigger is set in place for the team to know when to plan next, typically when the work-in-progress level is lower than a predetermined limit. There are no predefined roles in Scrumban—the team retains their current roles.

The Scrumban approach is suitable for small projects because it provides the flexibility of the agile methodology and can be easily adapted to the needs of the project.

Common Practices

Common practices include user stories, retrospectives, backlog preparation and refinement, and daily standups.

User Stories

A user story is a short, simple description of a feature as told from the perspective of the person who desires the new capability, written by the team that will be doing the work. Each user story is expected to provide a contribution to the value of the overall product. The goal of the user story is to provide clarity on what will be developed in enough detail so the team will know how to implement.

Retrospectives

Retrospectives are an important practice because they allow the team to learn from previous work on the product and its process. A retrospective usually occurs after an iteration, about every two weeks. They can also occur after a release or after the team reaches a project milestone.

The purpose of a retrospective is to learn from the previous work and to make small improvements. During the retrospective, the team looks at qualitative (people's feelings) and quantitative (measurements) data to find root causes, design countermeasures, and develop action plans.

User Stories Consist of:

- Description. An explanation of what will be developed and why.
- Anticipated tasks. The actions required to compete the story.
- Acceptance criteria. Validation that story's end state has been achieved.

Backlog Preparation and Refinement

The backlog is an ordered list of all the work for the team. This work is presented in story form that is sufficient enough to understand the current iteration and broad enough to understand the next iteration.

Daily Standups

Daily standups should take no longer than 15 minutes. This allows the team to engage in discussion to allow them to uncover problems and ensure the work flows smoothly. During the daily standups, everyone answers the following questions:

- What did I complete since the last standup?
- What am I planning to complete between now and the next standup?
- What are my impediments (or risks or problems)?

PROJECT EXAMPLE

Dallas Lee is the project manager for a software development project. He planned the project using the waterfall method and has included phases for requirements, analysis, build, test, and release activities. The organization has decided to transition from the waterfall methodology to agile, and Dallas is filling the role of scrum master. A portion of the waterfall version of the project schedule is shown in figure 16.8. Dallas planned the first three sprints as shown in the sprint planning sheet and sprint planning board, figures 16.9 and 16.10, respectively.

Now that Dallas is using the agile methodology, he created user stories for each sprint. An example of one of Dallas's user stories is shown in figure 16.11.

WBS	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1	**Software Development**	**196 days**	**Mon 9/9/19**	**Mon 6/8/20**		
1.1	**Project Planning**	**12 days**	**Mon 1/6/20**	**Tue 1/21/20**		
1.1.1	Confirm project scope	1 day	Mon 1/6/20	Mon 1/6/20		Faith Michaels
1.1.2	Develop project plan	10 days	Tue 1/7/20	Mon 1/20/20	3	Dallas Lee
1.1.3	Obtain project plan approval	1 day	Tue 1/21/20	Tue 1/21/20	4	Dallas Lee
1.1.4	Project planning complete	0 days	Tue 1/21/20	Tue 1/21/20	5	
1.2	**Analysis/Software Requirements**	**10 days**	**Wed 1/22/20**	**Tue 2/4/20**		
1.2.1	Draft preliminary software specifications	5 days	Wed 1/22/20	Tue 1/28/20	6	Mellinee Adams
1.2.2	Review software specifications with team	3 days	Wed 1/29/20	Fri 1/31/20	8	Mellinee Adams, Dallas Lee
1.2.3	Incorporate feedback on software specifications	1 day	Mon 2/3/20	Mon 2/3/20	9	Mellinee Adams
1.2.4	Obtain approvals to proceed	1 day	Tue 2/4/20	Tue 2/4/20	10	Faith Michaels, Dallas Lee
1.2.5	Analysis complete	0 days	Tue 2/4/20	Tue 2/4/20	11	
1.3	**Design**	**21 days**	**Wed 2/5/20**	**Wed 3/4/20**		
1.3.1	Review preliminary software specifications	2 days	Wed 2/5/20	Thu 2/6/20	12	Mellinee Adams
1.3.2	Develop functional specifications	10 days	Fri 2/7/20	Thu 2/20/20	14	Mellinee Adams
1.3.3	Review functional specifications	3 days	Fri 2/21/20	Tue 2/25/20	15	Faith Michaels
1.3.4	Incorporate feedback into functional specifications	5 days	Wed 2/26/20	Tue 3/3/20	16	Faith Michaels
1.3.5	Obtain approval to proceed	1 day	Wed 3/4/20	Wed 3/4/20	17	Faith Michaels, Dallas Lee
1.3.6	Design complete	0 days	Wed 3/4/20	Wed 3/4/20	18	
1.4	**Development**	**22 days**	**Thu 3/5/20**	**Fri 4/3/20**		
1.4.1	Review functional specifications	1 day	Thu 3/5/20	Thu 3/5/20	19	Stephen Brown
1.4.2	Identify modular/tiered design parameters	1 day	Fri 3/6/20	Fri 3/6/20	21	Stephen Brown
1.4.3	Develop code	20 days	Mon 3/9/20	Fri 4/3/20	22	Stephen Brown
1.4.4	Developer testing (primary debugging)	15 days	Mon 3/16/20	Fri 4/3/20	23FS-75%	Stephen Brown
1.4.5	Development complete	0 days	Fri 4/3/20	Fri 4/3/20	24	

Figure 16.8: Waterfall project schedule

Sprint	Name	Work	Board Status	Resource Names	Task Summary Name	Deadline	Show on Board
Sprint 1	Confirm project scope	8 hrs	Not Started	Faith Michaels	Project Planning	NA	Yes
Sprint 1	Develop project plan	80 hrs	Not Started	Dallas Lee	Project Planning	NA	Yes
Sprint 1	Obtain project plan approval	8 hrs	Not Started	Dallas Lee	Project Planning	NA	Yes
Sprint 1	Project planning complete	0 hrs	Not Started		Project Planning	NA	Yes
Sprint 2	Draft preliminary software specifications	40 hrs	Not Started	Mellinee Adams	Analysis/Software Requirements	NA	Yes
Sprint 2	Review software specifications with team	48 hrs	Not Started	Mellinee Adams, Dallas Lee	Analysis/Software Requirements	NA	Yes
Sprint 2	Incorporate feedback on software specifications	8 hrs	Not Started	Mellinee Adams	Analysis/Software Requirements	NA	Yes
Sprint 2	Obtain approvals to proceed	16 hrs	Not Started	Faith Michaels, Dallas Lee	Analysis/Software Requirements	NA	Yes
Sprint 3	Review preliminary software specifications	16 hrs	Not Started	Mellinee Adams	Design	NA	Yes
Sprint 3	Release 1: Design	8 hrs	Not Started	Penny Bright	Design	NA	Yes
Sprint 3	Release 1: Develop	8 hrs	Not Started	Stephen Brown	Design	NA	Yes

Figure 16.9: Sprint planning sheet

Sprint	Name	Work	Board Status	Resource Names	Task Summary Name	Deadline	Show on Board
Sprint 3	Release 1: Unit Test	8 hrs	Not Started	Stephen Brown	Design	NA	Yes
No Sprint	Release 1: Integration Test	8 hrs	Not Started	Mellinee Adams	Design	NA	Yes
No Sprint	Release 1: Deploy	8 hrs	Not Started	Dallas Lee	Design	NA	Yes
No Sprint	Release 1: Review	8 hrs	Not Started	Faith Michaels	Design	NA	Yes
No Sprint	Release 2: Design	8 hrs	Not Started	Penny Bright	Design	NA	Yes
No Sprint	Release 2: Develop	8 hrs	Not Started	Stephen Brown	Design	NA	Yes
No Sprint	Release 2: Unit Test	8 hrs	Not Started	Stephen Brown	Design	NA	Yes
No Sprint	Release 2: Integrated Test	8 hrs	Not Started	Mellinee Adams	Design	NA	Yes
No Sprint	Release 2: Deploy	8 hrs	Not Started	Dallas Lee	Design	NA	Yes
No Sprint	Release 2: Review	8 hrs	Not Started	Faith Michaels	Design	NA	Yes
No Sprint	Develop functional specifications	80 hrs	Not Started	Mellinee Adams	Design	NA	Yes

Figure 16.9: (continued)

No Sprint

New Task [+]

Release 1: Integration Test
👤 Mellinee Adams

Release 1: Deploy
👤 Dallas Lee

Release 1: Review
👤 Faith Michaels

Release 2: Design
👤 Penny Bright

Sprint 1

Confirm project scopes
👤 Faith Michaels

Develop project plan
👤 Dallas Lee

Obtain project plan approval
👤 Dallas Lee

Project planning complete

Sprint 2

Review software specifications with team
👤 Mellinee Adams, Dallas Lee

Incorporate feedback on software specifications
👤 Mellinee Adams

Draft preliminary software specifications
👤 Mellinee Adams

Obtain approvals to proceed
👤 Faith Michaels, Dallas Lee

Sprint 3

Release 1: Unit Test
👤 Stephen Brown

Review preliminary software specifications
👤 Mellinee Adams

Release 1: Design
👤 Penny Bright

Release 1: Develop
👤 Stephen Brown

Figure 16.10: Sprint planning board

User Story

Description

As an analyst, I will draft the preliminary software specifications to include the functionality for release 1 and release 2, so that the developers will be able to focus on the requirements for each release.

Anticipated tasks:
- Develop the preliminary software specifications for release 1.
- Develop the preliminary software specifications for release 2.
- Validation: review the preliminary software specifications with the team.

Acceptance criteria:

The preliminary software specification document is reviewed and approved.

Figure 16.11: User story

17 ■ Activity Board for Small Projects

The Activity Board for Small Projects can be used to manage small projects, assignments, multiple projects, or any project activities. It is not project life cycle dependent; it works well for all project life cycles. A benefit of the Activity Board for Small Projects is that it will allow you to maintain focus even when you are on your own, operating with the power of one.

What Is the Activity Board for Small Projects?

The Activity Board for Small Projects uses the same concept as the Kanban board. Based on agile principles, it allows you to track your progress by identifying action items and limit the number or items you work on at one time. You can also see progress when your activities are complete. The Activity Board for Small Projects is portable, so it can travel with you throughout the day. It contains the following sections:

- **To-do**—To track planned activities
- **Doing**—To track in-progress activities
- **Done**—To show completed activities

How to Use the Activity Board for Small Projects

The following are guidelines for using the Activity Board for Small Projects; however, as you work with this tool, you may make adjustments to better fit your personal style.

1. Determine your tracking duration; weekly is suggested for small projects.
2. Record your activities on sticky notes. The small size works best. You can use different colored sticky notes to represent different projects or major activities. This provides a quick visual on which projects/major activities need attention.
3. Place your planned activities in the **to-do** section. This gives you a visual of the work you need to accomplish.
4. The **doing** section represents the work in progress. Move the sticky note from the t**o-do** section to the **doing** section when the work begins.
5. When the work is complete, move the sticky note to **done**. At the end of the week you will be able to see your accomplishments in the **done** section.

Set aside time at the end of the period to reflect on your progress and plan for the next period. Use a backlog to keep track of activities that are not part of the current period but will be done in the future.

Make it powerful, make it personal, and make it productive.

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This glossary contains common project management terms. This is not an all-inclusive list; rather, it includes terms specifically addressed in this book.

The entries with asterisks reproduce, in whole or in part, definitions from the *PMBOK® Guide*, sixth edition, with the permission of PMI.[1]

acceptance criteria.* A set of conditions that is required to be met before deliverables are accepted.

accountability. Being answerable for the outcome of a project assignment.

action plan. A list of activities required to complete project deliverables. An action plan also includes when the activities will be done and by whom.

activity.* A distinct, scheduled portion of work performed during the course of a project.

adaptive life cycle.* A project life cycle that is iterative or incremental.

adjourning stage. The fifth stage of the Tuckman model. The adjourning stage is about project completion and is also referred to as deforming and mourning.

agile.* A term used to describe a mindset of values and principles as set forth in the Agile Manifesto.

Agile Manifesto.* The original and official definition of agile values and principles.

assumption.* A factor in the planning process that is considered to be true, real, or certain, without proof or demonstration.

authority. Power granted to individuals as a right to influence or command others' behavior. In project management, authority is often granted by position.

brainstorming. A facilitation tool that allows for the spontaneous generation of ideas. It allows the team to identify a range of ideas before decisions are made.

budget.* The approved estimate for the project or any work breakdown structure component or any schedule activity.

character. The qualities built into a person's life that determine his or her response, regardless of circumstances. Character is the inward motivation to do what is right in every situation.

closing process. The project activities that bring the project to an end.

colocation.* An organizational placement strategy where the project team members are physically located close to one another in order to improve communication, working relationships, and productivity.

communication matrix. A document that defines the communication needs and expectations for the project.

constraint.* A limiting factor that affects the execution of a project, program, portfolio, or process.

controlling process. The project management activities required to carry out the project activities, measure and monitor progress, and take corrective action when necessary.

customer.* The person or organization that will pay for the project's product, service, or result. Customers can be internal or external to the performing organization.

decision grid. A facilitation tool that provides a matrix of information used to assess a set of ideas in order to make a decision. A rating system is used to score the options.

decomposition.* A technique used for dividing and subdividing the project scope and project deliverables into smaller, more manageable parts.

deliverable.* Any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, product, or project.

deliverable/activity list. An outline of the deliverables and the associated activities.

duration.* The total number of work periods required to complete an activity or work breakdown structure component, expressed in hours, days, or weeks. Contrast with *effort*.

effort.* The number of labor units required to complete a schedule activity or work breakdown structure component, often expressed in hours, days, or weeks. Contrast with *duration*.

facilitation tools. Problem-solving and decision-making tools that help team members work together more effectively.

forming stage. The first stage of the Tuckman model. During the forming stage the team tries to decide on its purpose and explores the boundaries of team behavior.

gap analysis. A facilitation tool that provides a means to identify obstacles to achieving a desired goal. Gap analysis allows you to look at the current state and to identify things that need to be done to arrive at the desired or future state.

initiating process. The activities that start up the project. Defines and authorizes the project.

Kanban board.* A visualization tool that enables improvements to the flow of work by making bottlenecks and work quantities visible.

Kanban method.* An agile method inspired by the original Kanban inventory control system and used specifically for knowledge work.

lead. To go before or with, and guide others along the way.

leader. Someone who guides and directs others toward the accomplishment of a common goal. As a leader, the project manager motivates the project team to accomplish the project objectives.

leadership. Having the capacity to lead with authority, responsibility, and accountability.

lessons learned.* The knowledge gained during a project that shows how project events were addressed or should be addressed in the future with the purpose of improving future performance.

manage. To plan, organize, direct, and control project activities with a degree of skill.

milestone.* A significant point or event in the project, program, or portfolio.

multivoting. A facilitation tool that allows the team to identify priorities from a list of ideas.

norming stage. The third stage of the Tuckman model. During the norming stage team members operate as a cohesive and supportive team.

PALM principle. A component of the SPM process that is used for projects that do not need much formality. The elements of the PALM principle are plan project activities, analyze the situation and ask questions, lead the project activities, and monitor and control time and resources.

performing stage. The fourth stage of the Tuckman model. During the performing stage the team works well together with interdependence and flexibility. Not all teams reach this stage.

planning process. The project management activities required to define the project activities and determine how the project objectives will be achieved.

portfolio.* Projects, programs, subportfolios, and operations managed as a group to achieve strategic objectives.

portfolio management.* The centralized management of one or more portfolios to achieve strategic objectives.

portfolio of related projects. A portfolio that consists of projects of a similar type, organization, or subject matter. These projects often share resources and are formally managed by a project portfolio manager.

portfolio of unrelated projects. A portfolio that consists of multiple projects assigned to the project manager. These projects may consist of some related projects in addition to ad hoc projects and assignments. The project manager can combine these projects into a portfolio, giving the project manager the tools to plan, monitor, and control project activities more efficiently.

preproject documents. Documents that support the preproject activities and are used to identify the business need and outline the potential project.

process.* A systematic series of activities directed toward causing an end result such that one or more inputs will be acted upon to create one or more outputs.

product.* An artifact that is produced, is quantifiable, and can be either an end item in itself or a component item. Additional words for products are *material* and *goods*. See also *deliverable*.

product scope.* The features and functions that characterize a product, service, or result.

program.* Related projects, subsidiary programs, and program activities managed in a coordinated manner to obtain benefits not available from managing them individually.

program management.* The application of knowledge, skills, tools, and techniques to a program to achieve the program objectives and to obtain benefits and control not available by managing program components individually.

progressive elaboration.* The iterative process of increasing the level of detail in a project management plan as greater amounts of information and more accurate estimates become available.

project.* A temporary endeavor undertaken to create a unique product, service, or result.

project charter.* A document issued by the project initiator or sponsor that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities.

project charter lite. A simpler version of the project charter that can be used to formally authorize the existence of a simple project and provides the project manager with the authority to apply organizational resources to project activities.

project communication management. Includes the processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management control, monitoring, and the ultimate disposition of project information.

project cost management.* Includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget.

project integration management.* Includes the processes and activities needed to identify, define, combine, unify, and coordinate the various processes and project management activities within the project management process groups.

project life cycle.* The series of phases that a project passes through from its start to its completion.

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

project management knowledge area.* An identified area of project management defined by its knowledge requirements and described in terms of its component processes, practices, inputs, outputs, tools, and techniques.

project management plan. The document that describes how the project will be executed, monitored, and controlled.

project management process group.* A logical grouping of project management inputs, tools and techniques, and outputs. The project management process groups include initiating processes, planning processes, executing processes, monitoring and controlling processes, and closing processes. Project management process groups are not project phases.

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

project notebook. A document that provides a practical way to organize and easily access project information to allow the project manager to have key project data available.

project procurement management.* Includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team.

project quality management.* Includes the processes for incorporating the organization's quality policy regarding planning, man-

aging, and controlling project and product quality requirements, in order to meet stakeholders' expectations.

project resources management.* Includes the processes to identify, acquire, and manage the resources needed for the successful completion of the project.

project risk management.* Includes the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project.

project schedule.* An output of a schedule model that presents linked activities with planned dates, durations, milestones, and resources.

project schedule management.* Includes the processes required to manage the timely completion of the project.

project scope management.* Includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully.

project stakeholder management.* Includes the processes required to identify the people, groups, or organizations that could impact or be impacted by the project; to analyze stakeholder expectations and their impact on the project; and develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution.

project team.* A set of individuals who support the project manager in performing the work of the project to achieve its objectives.

responsibility. The obligation to answer for one's conduct in project management roles.

responsibility matrix. A document that identifies key stakeholders and their roles in the project.

risk.* An uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives.

risk analysis. The process of quantifying and prioritizing risks.

risk identification. The process of determining which risks might affect the project and documenting their characteristics.

scalability. The ability to alter the level of complexity of the project management process, the time spent in using the process, and the focus of the process to fit the needs of the project.

Scrum.* An agile framework for developing and sustaining complex projects, with specific roles, events, and artifacts.

simple project. A project that is small, straightforward, and short in duration and is completed by a team of three or fewer team members. Simple projects are often called *assignments*.

small and simple project management (SPM). A methodology that includes processes and tools specifically designed for managing small and simple projects.

small and simple project management multiproject management process. A logical grouping of project management processes designed specifically for use on multiple small projects.

small and simple project management process. A logical grouping of project management processes designed specifically for use on small and simple projects. The four project management phases are initiate, plan, control, and close.

small project. Generally, a project that is short in duration, typically lasting less than six months; is part-time in effort hours; has 10 or fewer team members; involves a small number of skill areas; has a single objective and a solution that is readily achievable; has a narrowly defined scope and definition; affects a single business unit and has a single decision maker; has access to project information and will not require automated solutions from external project sources; uses the project manager as the primary source for leadership and decision making; has no political implications with respect to proceeding or not proceeding; produces straightforward deliverables with few interdependencies among skill areas; and costs less than $75,000 and has available funding.

sponsor.* A person or group that provides resources and support for the project, program, or portfolio and is accountable for enabling success.

sprint.* Describes a timeboxed iteration in Scrum.

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

storming stage. The second stage of the Tuckman model. During the storming stage the team is in conflict and team members are forced to address important issues.

strawman. A temporary document or item that is used as a starting point and is intended to be replaced when more information becomes available.

team building. A planned process and activities designed to encourage effective working relationships among team members.

team charter. A document that provides operating guidelines for the project team.

Tuckman model. A model developed by Bruce W. Tuckman that identifies the distinct stages that small groups go through. The first four stages—forming, storming, norming, and performing—were developed in 1965. The fifth stage, adjourning, was added in 1977.

user story.* A brief description of deliverable value for a specific user. It is a promise for a conversation to clarify details.

work breakdown structure (WBS).* A hierarchical decomposition of the total scope of work to be carried out by the project team to accomplish the project objectives and create the required deliverables.

Note: Page numbers followed by "f" or "t" refer to figures and tables, respectively.

Sandra F. Rowe, PhD, MBA, MSCIS, PMP, has more than 30 years of project management experience. Her responsibilities have included leading information technology and process improvement projects; developing project management processes, tools, and techniques; and designing, developing, and delivering project management programs. She has also taught MBA courses and project management professional (PMP) certification classes.

Photo by Sandra F. Rowe

Dr. Rowe speaks regularly at project management conferences on a variety of topics related to project management processes, project management for small projects, the project office, and knowledge sharing.

Dr. Rowe is a member of PMI and received her PMP certification in 1995. Her educational background includes a doctor of philosophy in business with a specialization in project management, a bachelor of science in business administration, a master's of business administration, and a master's of science in computer and information systems.

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