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Managing the Information Systems Project

Chapter Objectives

After studying this chapter, you should be able to:

- Describe the skills required to be an effective project manager.
- List and describe the skills and activities of a project manager during project initiation, project planning, project execution, and project closedown.
- Explain what is meant by critical path scheduling and describe the process of creating Gantt charts and Network diagrams.
- Explain how commercial project management software packages can be used to assist in representing and managing project schedules.

Chapter Preview . . .

In Chapter 1, we introduced the four phases of the systems development life cycle (SDLC) and explained how an information system project moves through those four phases. In this chapter, we focus on the systems analyst's role as project manager of information systems projects. Throughout the SDLC, the project manager is responsible for initiating, planning, executing, and closing down the systems development project. Figure 3-1 illustrates these four functions.

We use two fictional companies in this book—Pine Valley Furniture and Hoosier Burger—to help illustrate key SDLC concepts. Icons appear in the margins to make references to these companies easy to spot while you read. The next section gives you background on Pine Valley Furniture, a manufacturing company. Next, we describe the project manager's role and the project management process. The subsequent section examines techniques for reporting project plans using Gantt charts and Network diagrams. At the end of the chapter, we discuss commercially available project management software that a systems analyst can use in a wide variety of project management activities.

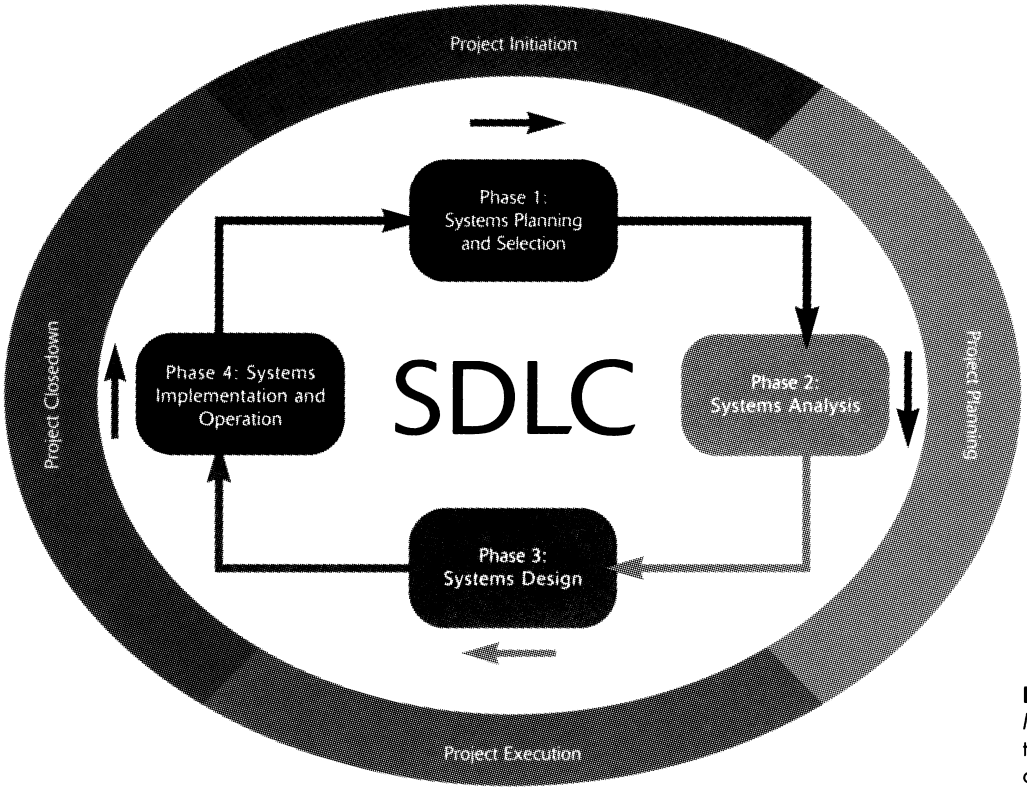


FIGURE 3-1
Management is necessary throughout the systems development life cycle (SDLC).

Pine Valley Furniture Company Background

PINE VALLEY FURNITURE

Pine Valley Furniture (PVF) Company manufactures high-quality wood furniture and distributes it to retail stores within the United States. Its product lines include dinette sets, stereo cabinets, wall units, living room furniture, and bedroom furniture. In the early 1980s, PVF's founder, Alex Schuster, started to make and sell custom furniture in his garage. Alex managed invoices and kept track of customers by using file folders and a filing cabinet. By 1984, business expanded and Alex had to rent a warehouse and hire a part-time bookkeeper. PVF's product line had multiplied, sales volume had doubled, and staff had increased to fifty employees. By 1990, PVF moved into its third and present location. Because of the added complexity of the company's operations, Alex reorganized the company into the following functional areas:

- Manufacturing, which was further subdivided into three separate functions—fabrication, assembling, and finishing
- Sales
- Orders
- Accounting
- Purchasing

Alex and the heads of the functional areas established manual information systems, such as accounting ledgers and file folders, which worked well for a time. Eventually, however, PVF selected and installed a minicomputer to automate invoicing, accounts receivable, and inventory control applications.

When the applications were first computerized, each separate application had its own individual data files tailored to the needs of each functional area. As is typical in such situations, the applications closely resembled the manual systems on which they were based. Three computer applications at PVF are depicted in Figure 3-2: order filling, invoicing, and payroll. In the late 1990s, PVF formed a task force to study the possibility of moving to a database approach. After a preliminary study, management decided to convert its information systems to such an approach. The company upgraded its minicomputer and implemented a database management system. By the time we caught up with PVF, it had successfully designed and populated a company-wide database, and had converted its applications to work with the database. However, PVF is continuing to grow at a rapid rate, putting pressure on its current application systems.

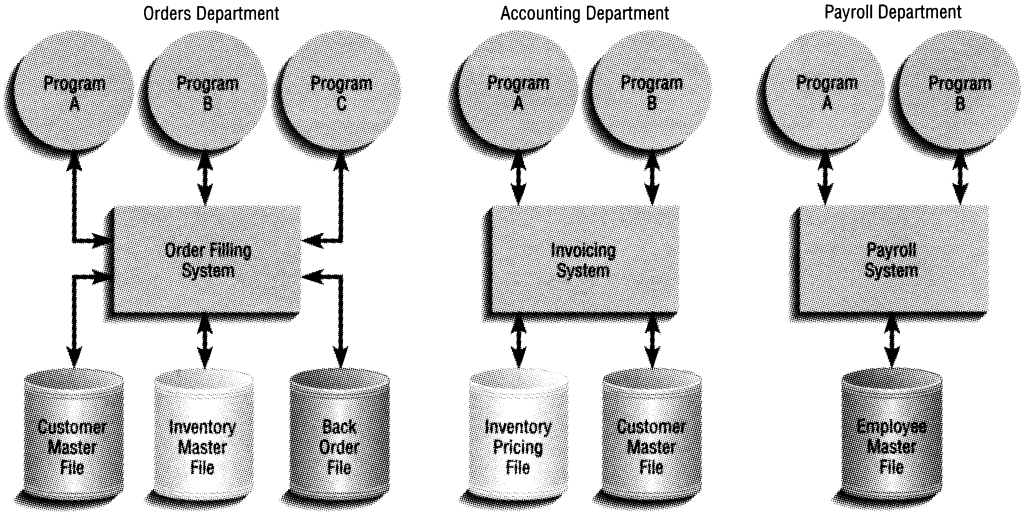


FIGURE 3-2
Three computer applications at Pine Valley Furniture: order filling, invoicing, and payroll.

Source: Hoffer, Ramesh, and Topi, 2011.

The computer-based applications at PVF support its business processes. When customers order furniture, their orders must be processed appropriately: Furniture must be built and shipped to the right customer and the right invoice mailed to the right address. Employees have to be paid for their work. Given these tasks, most of PVF's computer-based applications are located in the accounting and financial areas. The applications include order filling, invoicing, accounts receivable, inventory control, accounts payable, payroll, and general ledger. At one time, each application had its own data files. For example, PVF had a customer master file, an inventory master file, a back-order file, an inventory pricing file, and an employee master file. The order filling system uses data from three files: customer master, inventory master, and back order. With PVF's new centralized database, data are organized around entities, or subjects, such as customers, invoices, and orders.

Pine Valley Furniture Company, like many firms, decided to develop its application software in-house; that is, it hired staff and bought computer hardware and software necessary to build application software suited to its own needs. (Other methods used to obtain application software were explained in Chapter 2.) Although PVF continues to grow at a rapid rate, market conditions are becoming extremely competitive, especially with the advent of the Internet and the World Wide Web. Let's see how a project manager plays a key role in developing a new information system for PVF.

Managing the Information Systems Project

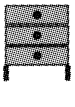
Project management is an important aspect of the development of information systems and a critical skill for a systems analyst. The focus of project management is to ensure that system development projects meet customer expectations and are delivered within budget and time constraints.

The **project manager** is a systems analyst with a diverse set of skills—management, leadership, technical, conflict management, and customer relationship—who is responsible for initiating, planning, executing, and closing down a project. As a project manager, your environment is one of continual change and problem solving. In some organizations, the project manager is a senior systems analyst who "has been around the block" a time or two. In others, both junior and senior analysts are expected to take on this role, managing parts of a project or actively supporting a more senior colleague who is assuming this role. Understanding the project management process is a critical skill for your future success.

Project manager
A systems analyst with a diverse set of skills—management, leadership, technical, conflict management, and customer relationship—who is responsible for initiating, planning, executing, and closing down a project.

Creating and implementing successful projects requires managing resources, activities, and tasks needed to complete the information systems project. A **project** is a planned undertaking of a series of related activities, having a beginning and an end, to reach an objective. The first questions you might ask yourself are, Where do projects come from? and, after considering all the different things that you could be asked to work on within an organization, How do I know which projects to work on? The ways in which each organization answers these questions vary.

Project
A planned undertaking of related activities, having a beginning and an end, to reach an objective.



In the rest of this section, we describe the process followed by Juanita Lopez and Chris Martin during the development of Pine Valley Furniture's Purchasing Fulfillment System. Juanita works in the purchasing department, and Chris is a systems analyst.

Juanita observed problems with the way orders were processed and reported: sales growth had increased the workload for the manufacturing department, and the current systems no longer adequately supported the tracking of orders.

It was becoming more difficult to track orders and get the right furniture and invoice to the right customers. Juanita contacted Chris, and together they developed a system that corrected these purchasing department problems.

Deliverable
An end product in a phase of the SDLC.

The first **deliverable,** or end product, produced by Chris and Juanita was a system service request (SSR), a standard form PVF uses for requesting systems development work. Figure 3-3 shows an SSR for purchasing a fulfillment system. The form includes the name and contact information of the person requesting the system, a statement of the problem, and the name and contact information of the liaison and sponsor.

This request was then evaluated by the Systems Priority Board of PVF. Because all organizations have limited time and resources, not all requests can be approved. The board evaluates development requests in relation to the business problems or opportunities the system will solve or create. It also considers how the proposed project fits within the organization's information systems architecture and long-range development plans. The review board selects those projects that best meet overall organizational goals. In the case of the Purchasing Fulfillment System request, the board found merit in the request and approved

FIGURE 3-3
System service request for purchasing fulfillment with name and contact information of the person requesting the system, a statement of the problem, and the name and contact information of the liaison and sponsor.

Pine Valley Furniture
System Service Request

REQUESTED BY Juanita Lopez DATE November 2, 2012

DEPARTMENT Purchasing, Manufacturing Support

LOCATION Headquarters, 1-322

CONTACT Tel: 4-3267 FAX: 4-3270 e-mail: jlopez@pvf.com

TYPE OF REQUEST

[X] New System
[ ] System Enhancement
[ ] System Error Correction

URGENCY

[ ] Immediate—Operations are impaired or opportunity lost
[ ] Problems exist, but can be worked around
[X] Business losses can be tolerated until new system installed

PROBLEM STATEMENT

Sales growth at PVF has caused greater volume of work for the manufacturing support unit within Purchasing. Further, more concentration on customer service has reduced manufacturing lead times, which puts more pressure on purchasing activities. In addition, cost-cutting measures force Purchasing to be more agressive in negotiating terms with vendors, improving delivery times, and lowering our investments in inventory. The current modest systems support for manufacturing purchasing is not responsive to these new business conditions. Data are not available, information cannot be summarized, supplier orders cannot be adequately tracked, and commodity buying is not well supported. PVF is spending too much on raw materials and not being responsive to manufacturing needs.

SERVICE REQUEST

I request a thorough analysis of our current operations with the intent to design and build a completely new information system. This system should handle all purchasing transactions, support display and reporting of critical purchasing data, and assist purchasing agents in commodity buying.

IS LIAISON Chris Martin (Tel: 4-6204 FAX: 4-6200 e-mail: cmartin@pvf.com)

SPONSOR Sal Divario, Director, Purchasing

TO BE COMPLETED BY SYSTEMS PRIORITY BOARD

[ ] Request approved
[ ] Recommend revision
[ ] Suggest user development
[ ] Reject for reason

Assigned to _____
Start date _____

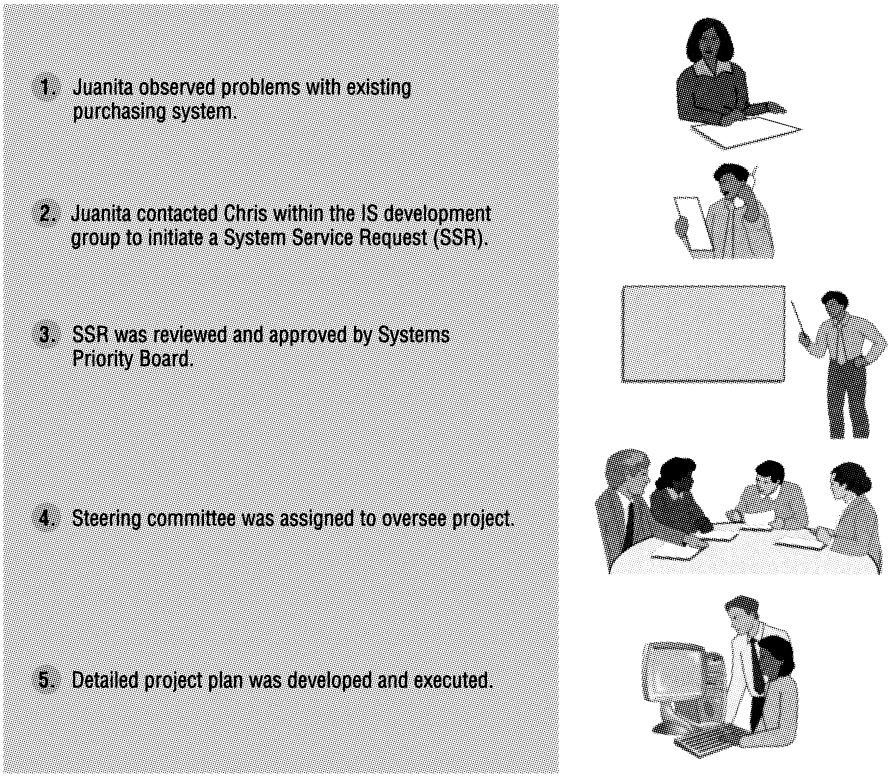


FIGURE 3-4
A graphical view of the five steps followed during the project initiation of the purchasing fulfillment system.

a more detailed **feasibility study.** A feasibility study, conducted by the project manager, involves determining whether the information system makes sense for the organization from an economic and operational standpoint. The study takes place before the system is constructed. Figure 3-4 is a graphical view of the steps followed during the project initiation of the Purchasing Fulfillment System.

Feasibility study
Determines whether the information system makes sense for the organization from an economic and operational standpoint.

In summary, systems development projects are undertaken for two primary reasons: to take advantage of business opportunities and to solve business problems. Taking advantage of an opportunity might mean providing an innovative service to customers through the creation of a new system. For example, PVF may want to create a Web page so that customers can easily access its catalog and place orders at any time. Solving a business problem could involve modifying how an existing system processes data so that more accurate or timely information is provided to users. For example, a company such as PVF may create a password-protected intranet site that contains important announcements and budget information.

Projects are not always initiated for the rational reasons (taking advantage of business opportunities or solving business problems) previously stated. For example, in some instances organizations and government undertake projects to spend resources, attain or pad budgets, keep people busy, or help train people and develop their skills. Our focus in this chapter is not on how and why organizations identify projects but on the management of projects once they have been identified.

Once a potential project has been identified, an organization must determine the resources required for its completion by analyzing the scope of the project and determining the probability of successful completion. After getting this information, the organization can then determine whether taking advantage of an opportunity or solving a particular problem is feasible within time and resource constraints. If deemed feasible, a more detailed project analysis is then conducted.

As you will see, determining the size, scope, and resource requirements for a project are just a few of the many skills that a project manager must possess. A project manager is often referred to as a juggler keeping aloft many balls, which reflect the various aspects of a project's development, as depicted in Figure 3-5.

To successfully orchestrate the construction of a complex information system, a project manager must have interpersonal, leadership, and technical skills. Table 3-1 lists the project manager's common activities and skills. Note that many of the skills are related to personnel or general management, not simply technical skills. Table 3-1 shows that not only does an effective project manager have varied skills, but he or she is also the most instrumental person to the successful completion of any project.

Project management
A controlled process of initiating, planning, executing, and closing down a project.

The remainder of this chapter will focus on the **project management** process, which involves four phases:

1. Initiating the project
2. Planning the project
3. Executing the project
4. Closing down the project

Several activities must be performed during each of these four phases. Following this formal project management process greatly increases the likelihood of project success.

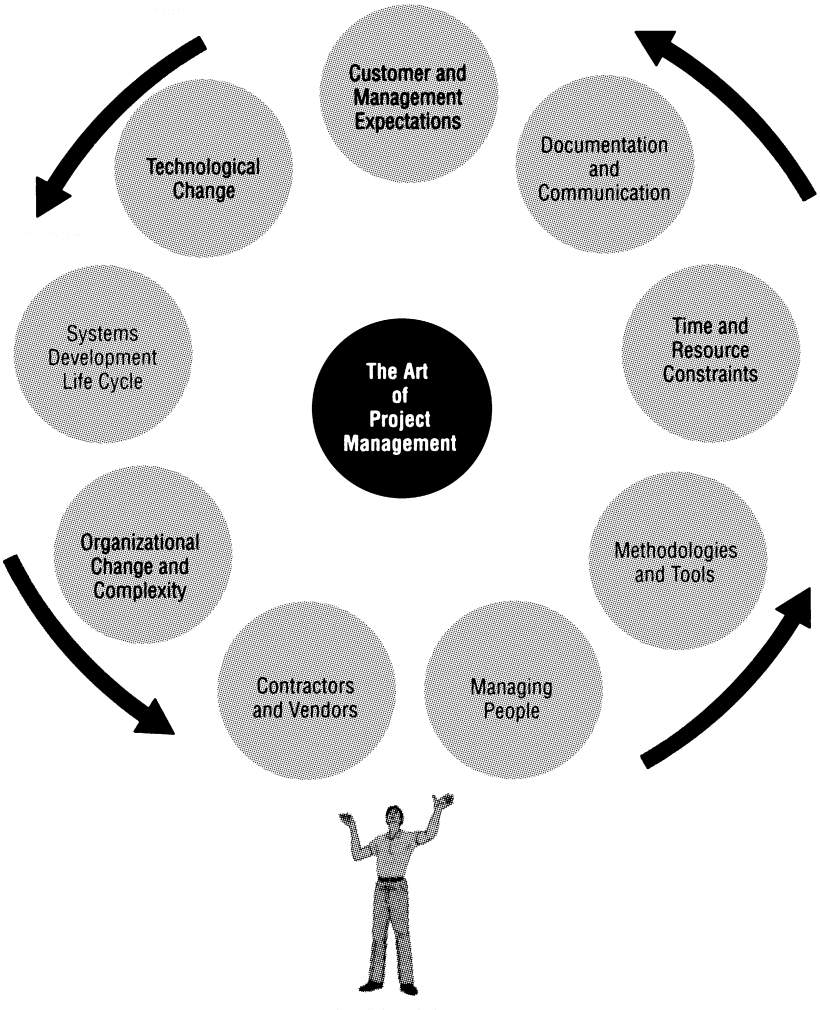


FIGURE 3-5
A project manager juggles numerous activities.

TABLE 3-1: Common Activities and Skills of a Project Manager

Activity	Description	Skill
Leadership	Influencing the activities of others toward the attainment of a common goal through the use of intelligence, personality, and abilities	Communication; liaison between management, users, and developers; assigning activities; monitoring progress
Management	Getting projects completed through the effective utilization of resources	Defining and sequencing activities; communicating expectations; assigning resources to activities; monitoring outcomes
Customer relations	Working closely with customers to ensure project deliverables meet expectations	Interpreting system requests and specifications; site preparation and user training; contact point for customers
Technical problem solving	Designing and sequencing activities to attain project goals	Interpreting system requests and specifications; defining activities and their sequence; making trade-offs between alternative solutions; designing solutions to problems
Conflict management	Managing conflict within a project team to ensure that conflict is not too high or too low	Problem solving; smoothing out personality differences; compromising; goal setting
Team management	Managing the project team for effective team performance	Communication within and between teams; peer evaluations; conflict resolution; team building; self-management
Risk and change management	Identifying, assessing, and managing the risks and day-to-day changes that occur during a project	Environmental scanning; risk and opportunity identification and assessment; forecasting; resource redeployment

Initiating the Project

During **project initiation** the project manager performs several activities that assess the size, scope, and complexity of the project, and establishes procedures to support subsequent activities. Depending on the project, some initiation activities may be unnecessary and some may be more involved. The types of activities you will perform when initiating a project are summarized in Figure 3-6 and are described next.

Project initiation
The first phase of the project management process in which activities are performed to assess the size, scope, and complexity of the project and to establish procedures to support later project activities.

1. *Establishing the project initiation team.* This activity involves organizing an initial core of project team members to assist in accomplishing the

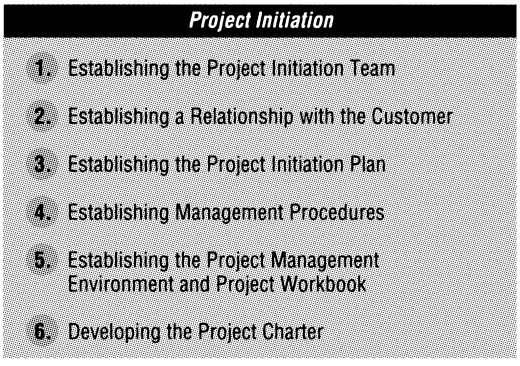


FIGURE 3-6
Six project initiation activities.

project initiation activities. For example, during the Purchasing Fulfillment System project at PVF, Chris Martin was assigned to support the purchasing department. It is a PVF policy that all initiation teams consist of at least one user representative, in this case Juanita Lopez, and one member of the IS development group. Therefore, the project initiation team consisted of Chris and Juanita; Chris was the project manager.

2. *Establishing a relationship with the customer.* A thorough understanding of your customer builds stronger partnerships and higher levels of trust. At PVF, management has tried to foster strong working relationships between business units (such as purchasing) and the IS development group by assigning a specific individual to work as a liaison between both groups. Because Chris had been assigned to the purchasing unit for some time, he was already aware of some of the problems with the existing purchasing systems. PVF's policy of assigning specific individuals to each business unit helped to ensure that both Chris and Juanita were comfortable working together prior to the initiation of the project. Many organizations use a similar mechanism for establishing relationships with customers.
3. *Establishing the project initiation plan.* This step defines the activities required to organize the initiation team while it is working to define the scope of the project. Chris's role was to help Juanita translate her business requirements into a written request for an improved information system. This task required the collection, analysis, organization, and transformation of a lot of information. Because Chris and Juanita were already familiar with each other and their roles within a development project, they next needed to define when and how they would communicate, define deliverables and project steps, and set deadlines. Their initiation plan included agendas for several meetings. These steps eventually led to the creation of their system service request (SSR) form.
4. *Establishing management procedures.* Successful projects require the development of effective management procedures. Within PVF, many of these management procedures had been established as standard operating procedures by the Systems Priority Board and the IS development group. For example, all project development work is charged to the functional unit requesting the work. In other organizations, each project may have unique procedures tailored to its needs. Yet, in general, when establishing procedures, you are concerned with developing team communication and reporting procedures, job assignments and roles, project change procedures, and determining how project funding and billing will be handled. It was fortunate for Chris and Juanita that most of these procedures were already established at PVF, allowing them to move quickly on to other project activities.
5. *Establishing the project management environment and project workbook.* The focus of this activity is to collect and organize the tools that you will use while managing the project and to construct the **project workbook.** For example, most diagrams, charts, and system descriptions provide much of the project workbook contents. Thus, the project workbook serves as a repository for all project correspondence, inputs, outputs, deliverables, procedures, and standards established by the project team. The project workbook can be stored as an online electronic document, a Web site, or in a large three-ring binder. The project workbook is used by all team members and is useful for project audits, orientation of new team members, communication with management and customers, identification of future projects, and performance of postproject reviews. The establishment and diligent recording of all

Project workbook
An online or hard-copy repository, for all project correspondence, inputs, outputs, deliverables, procedures, and standards, that is used for performing project audits, orienting new team members, communicating with management and customers, identifying future projects, and performing postproject reviews.

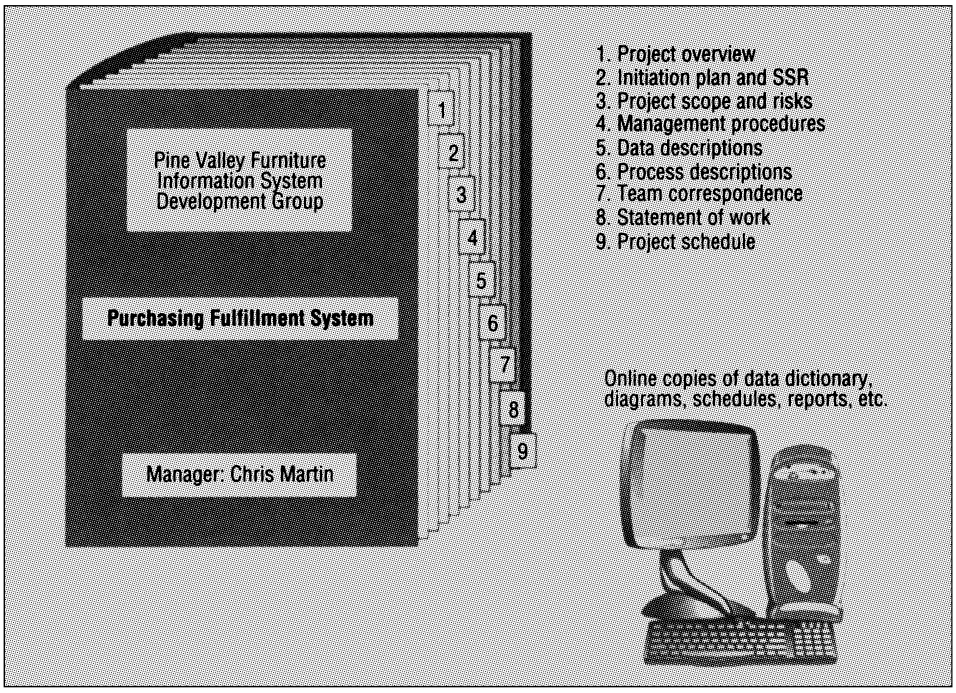


FIGURE 3-7
The project workbook for the Purchase Fulfillment System project contains nine key documents in both hard-copy and electronic form.

project information in the workbook are two of the most important activities you will perform as project manager.

Figure 3-7 shows the project workbook for the Purchasing Fulfillment System. It consists of both a large hard-copy binder and online storage where the system data dictionary, a catalog of data stored in the database, and diagrams are stored. For this system, all project documents can fit into a single binder. It is not unusual, however, for project documentation to be spread over several binders. As more information is captured and recorded electronically, however, fewer hard-copy binders may be needed. Many project teams keep their project workbooks on the Web. A Web site can be created so that all project members can easily access all project documents. This Web site can be a simple repository of documents or an elaborate site with password protection and security levels. The best feature of using the Web as your repository is that it allows all project members and customers to review a project's status and all related information continually.

6. *Developing the project charter.* The **project charter** is a short (typically one page), high-level document prepared for the customer that describes what the project will deliver and outlines many of the key elements of the project. A project charter can vary in the amount of detail it contains, but often includes the following elements:
   - Project title and date of authorization
   - Project manager name and contact information
   - Customer name and contact information
   - Projected start and completion dates
   - Project description and objectives
   - Key assumptions or approach
   - Key stakeholders, roles, responsibilities and signatures

   The project charter ensures that both you and your customer gain a common understanding of the project. It is also a useful communication tool; it helps to announce to the organization that a particular project has been chosen for development. A sample project charter is shown in Figure 3-8.

Project charter
A short, high-level document prepared for both internal and external stakeholders to formally announce the establishment of the project and to briefly describe its objective, key assumptions, and stakeholders.