Chapter 2 explains how to analyze a business case. This chapter also explains why it is important to understand business operations and requirements, how IT projects support a company’s overall strategic plan, how systems projects get started, and how systems analysts conduct a preliminary investigation and feasibility study.

INTRODUCTION

During the systems planning phase, the IT team reviews a proposal to determine if it presents a strong business case. The term business case refers to the reasons, or justification, for a proposal. A strong business case suggests that the company should pursue the alternative, above other options, because it would be in the firm’s best interest to do so. To analyze the business case for a specific proposal, the analyst must consider the company’s overall mission, objectives, and IT needs.

This chapter begins with a discussion of strategic planning, because the IT team must understand, support, and help plan long-term strategic goals. Along with financial, marketing, and human resources, companies need information technology to achieve growth and success.

Systems development typically starts with a systems request, followed by a preliminary investigation, which includes a feasibility study. You will learn how systems requests originate, how they are evaluated, and how to conduct a preliminary investigation. You also will learn about fact-finding techniques that begin at this point and carry over into later development phases. Finally, you will examine the report to management, which concludes the systems planning phase.
CHAPTER INTRODUCTION CASE: Mountain View College Bookstore

Background: Wendy Lee, manager of college services at Mountain View College, wants a new information system that will improve efficiency and service at the three college bookstores.

In this part of the case, Tina Allen (systems analyst) and David Conroe (student intern) are talking about justification for the new system and the project’s feasibility.

Participants: Tina and David
Location: Mountain View College cafeteria, Tuesday afternoon, September 6, 2011.
Project status: Tina has received a systems request from Wendy Lee for a new bookstore information system.
Discussion topics: Analysis of business justification and project feasibility

Tina: Hi, David. Are you ready to get started?
David: Sure. What’s our next step?
Tina: Well, when we analyze a specific systems request, we need to see how the proposal fits into the overall picture at the college. In other words, we have to analyze the business case for the request.
David: What’s a business case?
Tina: A business case is the justification for a project. A strong business case means that a proposal will add substantial value to the organization and support our strategic plan.
David: What’s a strategic plan?
Tina: A strategic plan is like a road map for the future. Without a long-range plan, it’s hard to know if you’re heading in the right direction. Our plan starts with a mission statement, which reflects our purpose, our vision, and our values.
David: I see what you mean. I read the mission statement this morning. It says that we will strive to be an efficient, customer-friendly bookstore that uses a mix of interpersonal skills and technology to serve our students and support the overall objectives of the college. That says a lot in just one sentence.
Tina: It sure does. Now, let’s get to the specifics. I just received a systems request from the college business manager. She wants us to develop a new information system for the bookstore.
David: Do we have a green light to get started?
Tina: Yes and no. Mountain View College doesn’t have a formal procedure for evaluating IT requests, and we don’t have a systems review committee. Maybe that’s something we should consider for the future. Meanwhile, we need to conduct a preliminary investigation to see whether this request is feasible.
David: What do you mean by “feasible”?
Tina: To see if a systems request is feasible, we have to look at four separate yardsticks: operational feasibility, technical feasibility, economic feasibility, and schedule feasibility. If the request passes all the tests, we continue working on the system. If not, we stop.
David: How will we know if the request passes the tests?
Tina: That’s our next step. Here’s a task list to get us started:

![Image of task list](image)

FIGURE 2-1 Typical business case analysis task list.
Strategic Planning — A Framework for IT Systems Development

Companies develop and maintain IT systems to support their current and future business operations. Some IT needs are immediate, such as fixing a logic problem in a payroll system. Other needs might be on the horizon, such as planning IT support for a new factory, a future merger, or a corporate restructuring. In most companies, the IT team reviews each IT-related proposal, project, and systems request to determine if it presents a strong business case, or justification.

Most successful IT managers engage in long-range planning, even as they handle day-to-day maintenance and support. To carry out this task effectively, they must understand and participate in the firm’s strategic planning process. Strategic planning is the process of identifying long-term organizational goals, strategies, and resources. Strategic planning looks beyond day-to-day activities and focuses on a horizon that is 3, 5, 10, or more years in the future.

Strategic Planning Overview

Why does a systems analyst need to know about strategic planning? The answer might be found in an old story about two stonecutters who were hard at work when a passerby asked them what they were doing. “I am cutting stones,” said the first worker. The second worker replied, “I am building a cathedral.” So it is with information technology: One analyst might say, “I am using a CASE tool,” whereas another might say, “I am helping the company succeed in a major new business venture.” Systems analysts should focus on the larger, strategic role of IT as they carry out their day-to-day responsibilities.

Strategic planning starts with a management review called a SWOT analysis. The letters stand for strengths, weaknesses, opportunities, and threats. A SWOT analysis usually starts with a broad overview. The first step is for top management to respond to questions like these:

- What are our strengths, and how can we use them to achieve our business goals?
- What are our weaknesses, and how can we reduce or eliminate them?
- What are our opportunities, and how do we plan to take advantage of them?
- What are our threats, and how can we assess, manage, and respond to the possible risks?

A SWOT analysis is a solid foundation for the strategic planning process, because it examines a firm’s technical, human, and financial resources. In Figure 2-2, the bulleted lists show samples of typical strengths, weaknesses, opportunities, and threats.

As the SWOT process continues, management reviews specific resources and business operations. For example,
Strategic Planning — A Framework for IT Systems Development

There is no standard approach to strategic planning. Some managers believe that a firm’s mission statement should contain an inspirational message to its stakeholders. Others feel that unless a firm starts with a realistic SWOT assessment, it might develop a mission statement that is unachievable. The majority of companies view the strategic planning process as a dynamic interaction, similar to the diagram in Figure 2-4, where the company’s mission statement reflects a long-term horizon, but sets forth goals that are achievable and consistent with real-world conditions. Figure 2-5 on the next page shows how purpose, vision, and values are revealed in one company’s Web site.

There is no standard approach to strategic planning. Some managers believe that a firm’s **mission statement** should contain an inspirational message to its stakeholders. Others feel that unless a firm starts with a realistic SWOT assessment, it might develop a mission statement that is unachievable. The majority of companies view the strategic planning process as a dynamic interaction, similar to the diagram in Figure 2-4, where the company’s mission statement reflects a long-term horizon, but sets forth goals that are achievable and consistent with real-world conditions. Figure 2-5 on the next page shows how purpose, vision, and values are revealed in one company’s Web site.
A mission statement is just the starting point. Next, the company identifies a set of goals that will accomplish the mission. For example, the company might establish one-year, three-year, and five-year goals for expanding market share. To achieve those goals, the company develops a list of shorter-term objectives. For example, if a goal is to increase Web-based orders by 30% next year, a company might set quarterly objectives with monthly milestones. Objectives also might include tactical plans, such as creating a new Web site and training a special customer support group to answer e-mail inquiries. Finally, the objectives translate into day-to-day business operations, supported by IT and other corporate resources. The outcome is a set of business results that affect company stakeholders.

CASE IN POINT 2.1: LO CARB MEALS

Lo Carb is a successful new company that has published several cookbooks, and marketed its own line of low-carbohydrate meals. Joe Turner, Lo Carb’s president, has asked your opinion. He wants to know whether a mission statement really is necessary. After you review the chapter material, write a brief memo with your views. Be sure to include good (and not-so-good) examples of actual mission statements that you find on the Web.
A CASE Tool Example

You are a systems analyst working for Sally, the IT manager for a large hotel chain. Sally is working with top management to develop a strategic plan, and she asked you to assist her. The plan will guide future company goals and objectives, including IT projects.

Sally has experience with the Visible Analyst CASE tool, but she has never used it for strategic planning, so she asked you to do some research. First, you navigate to the strategic planning section, where you can enter planning statements such as assumptions, goals, objectives, critical success factors, and others. Planning statements also can document strengths, weaknesses, opportunities, and threats, as shown in Figure 2-6. After you visit the Help section to learn more about the strategic planning features, you feel confident that you can work effectively with this powerful tool.

When you present your results to Sally, she seems pleased. Because the term is new to you, you ask her what critical success factors are, and she replies that critical success factors are vital objectives that must be achieved for the company to fulfill its mission.
The Role of the IT Department in Project Evaluation

Management leadership and information technology are linked closely, and remarkable changes have occurred in both areas. Ten years ago, a typical IT department handled all aspects of systems development and consulted users only when, and if, the department wanted user input. Today, systems development is much more team-oriented. New approaches to systems development, such as joint application development (JAD) and rapid application development (RAD), typically involve groups of users, managers, and IT staff working together right from the start.

Although team-oriented development is the norm, some companies see the role of the IT department as a gatekeeper, responsible for screening and evaluating systems requests. Should the IT department perform the initial evaluation, or should a cross-functional team do it? The answer depends on the company’s size and organization, and whether IT is tightly integrated into business operations. In smaller companies or firms where only one person has IT skills, that person acts as a coordinator and consults closely with users and managers to evaluate systems requests. Larger firms are more likely to use an evaluation team or systems review committee.

The Future

If you could look into the future, here is what you might see: new industries, products, and services emerging from amazing advances in information technology, customers who expect world-class IT support, a surge in Internet-based commerce, and a global business environment that is dynamic and incredibly challenging. To some firms, these changes will be threatening; other companies will see opportunities and take advantage of them by creating and following a strategic plan.

CASE IN POINT 2.2: ATTAWAY AIRLINES, PART ONE

You are the IT director at Attaway Airlines, a small regional air carrier. You chair the company’s systems review committee, and you currently are dealing with strong disagreements about two key projects. Dan Esposito, the marketing manager, says it is vital to have a new computerized reservation system that can provide better customer service and reduce operational costs. Molly Kinnon, vice president of finance, is equally adamant that a new accounting system is needed immediately, because it will be very expensive to adjust the current system to new federal reporting requirements. Molly outranks Dan, and she is your boss. The next meeting, which promises to be a real showdown, is set for 9:00 a.m. tomorrow. How will you prepare for the meeting? What questions and issues should be discussed?

WHAT IS A BUSINESS CASE?

As mentioned earlier, the term business case refers to the reasons, or justification, for a proposal. A business case should be comprehensive, yet easy to understand. It should describe the project clearly, provide the justification to proceed, and estimate the project’s financial impact. ProSci’s BPR Online Learning Center, as shown in Figure 2-7, offers a Business Case Tutorial Series. According to ProSci, the business case should answer questions such as the following:

- Why are we doing this project?
- What is the project about?
- How does this solution address key business issues?
• How much will it cost and how long will it take?
• Will we suffer a productivity loss during the transition?
• What is the return on investment and payback period?
• What are the risks of doing the project? What are the risks of not doing the project?
• How will we measure success?
• What alternatives exist?

Information Systems Projects

This section discusses reasons for systems projects and the internal and external factors that affect systems projects. The section also includes a preview of project management, which is discussed in detail in Chapter 3.

Main Reasons for Systems Projects

The starting point for most projects is called a systems request, which is a formal way of asking for IT support. A systems request might propose enhancements for an existing system, the correction of problems, the replacement of an older system, or the development of an entirely new information system that is needed to support a company’s current and future business needs.

As Figure 2-8 shows, the main reasons for systems requests are improved service to customers, better performance, support for new products and services, more information, stronger controls, and reduced cost.

FIGURE 2-7 ProSci’s BPR Online Learning Center offers a Business Case Tutorial Series that focuses on how to write a business case.

FIGURE 2-8 Six main reasons for systems requests.
IMPROVED SERVICE Systems requests often are aimed at improving service to customers or users within the company. Allowing mutual fund investors to check their account balances on a Web site, storing data on rental car customer preferences, or creating an online college registration system are examples that provide valuable services and increased customer satisfaction.

SUPPORT FOR NEW PRODUCTS AND SERVICES New products and services often require new types or levels of IT support. For example, a software vendor might offer an automatic upgrade service for subscribers; or a package delivery company might add a special service for RFID-tagged shipments. In situations like these, it is most likely that additional IT support will be required. At the other end of the spectrum, product obsolescence can also be an important factor in IT planning. As new products enter the marketplace, vendors often announce that they will no longer provide support for older versions. A lack of vendor support would be an important consideration in deciding whether or not to upgrade.

BETTER PERFORMANCE The current system might not meet performance requirements. For example, it might respond slowly to data inquiries at certain times, or it might be unable to support company growth. Performance limitations also result when a system that was designed for a specific hardware configuration becomes obsolete when new hardware is introduced.

MORE INFORMATION The system might produce information that is insufficient, incomplete, or unable to support the company’s changing information needs. For example, a system that tracks customer orders might not be capable of analyzing and predicting marketing trends. In the face of intense competition and rapid product development cycles, managers need the best possible information to make major decisions on planning, designing, and marketing new products and services.

STRONGER CONTROLS A system must have effective controls to ensure that data is secure and accurate. Some common security controls include passwords, various levels of user access, and encryption, or coding of data to keep it safe from unauthorized users. Hardware-based security controls include biometric devices that can identify a person by a retina scan or by mapping a facial pattern. A new biometric tool scans hands, rather than faces. The technology uses infrared scanners that create images with thousands of measurements of hand and finger characteristics, as shown in Figure 2-9.

In addition to being secure, data also must be accurate. Controls should minimize data entry errors whenever possible. For example, if a user enters an invalid customer number, the order processing system should reject the entry immediately and prompt the user to enter a valid number. Data entry controls must be effective without being excessive. If a system requires users to confirm every item with an “Are you sure? Y/N” message, internal users and customers might complain that the system is not user-friendly.
REDUCED COST The current system could be expensive to operate or maintain as a result of technical problems, design weaknesses, or the changing demands of the business. It might be possible to adapt the system to newer technology or upgrade it. On the other hand, cost-benefit analysis might show that a new system would be more cost effective and provide better support for long-term objectives.

CASE IN POINT 2.3: TRENT COLLEGE

Trent College is a private school in a small Maryland town. The college has outgrown its computerized registration system and is considering a new system. Althea Riddick, the college president, has asked you to list the reasons for systems projects, which are described on pages 59–61, and assign a relative weight to each reason, using a scale of 1 – 10, low to high. She said to use your best judgment, and support your conclusions in a brief memo to her. She also wants you to create a Microsoft Excel spreadsheet that will calculate the weighted values automatically for each reason.

Factors that Affect Systems Projects

Internal and external factors affect every business decision that a company makes, and IT systems projects are no exception. Figure 2-10 shows the main internal and external factors.
Internal Factors

Internal factors include the strategic plan, top managers, user requests, information technology department, and existing systems and data.

STRATEGIC PLAN A company’s strategic plan sets the overall direction for the firm and has an important impact on IT projects. Company goals and objectives that need IT support will generate systems requests and influence IT priorities. A strategic plan that stresses technology tends to create a favorable climate for IT projects that extends throughout the organization.

TOP MANAGERS Directives from top managers are a prime source of large-scale systems projects. Those directives often result from strategic business decisions that require new IT systems, more information for decision making, or better support for mission-critical information systems.

USER REQUESTS As users rely more heavily on information systems to perform their jobs, they are likely to request even more IT services and support. For example, sales reps might request improvements to the company’s Web site, a more powerful sales analysis report, a network to link all sales locations, or an online system that allows customers to obtain the status of their orders instantly. Or, users might not be satisfied with the current system because it is difficult to learn or lacks flexibility. They might want information systems support for business requirements that did not even exist when the system was developed.

INFORMATION TECHNOLOGY DEPARTMENT Many systems project requests come from the IT department. IT staff members often make recommendations based on their knowledge of business operations and technology trends. IT proposals might be strictly technical matters, such as replacement of certain network components, or suggestions might be more business oriented, such as proposing a new reporting or data collection system.

EXISTING SYSTEMS AND DATA Errors or problems in existing systems can trigger requests for systems projects. When dealing with older systems, analysts sometimes spend too much time reacting to day-to-day problems without looking at underlying causes. This approach can turn an information system into a patchwork of corrections and changes that cannot support the company’s overall business needs. This problem typically occurs with legacy systems, which are older systems that are less technologically advanced. When migrating to a new system, IT planners must plan the conversion of existing data, which is described in detail in Chapter 11, Managing Systems Implementation.

External Factors

External factors include technology, suppliers, customers, competitors, the economy, and government.

TECHNOLOGY Changing technology is a major force affecting business and society in general. For example, the rapid growth of telecommunications has created entire new industries and technologies. Technology also dramatically reshapes existing business operations. The success of scanner technology resulted in universal bar coding that now affects virtually all products.

Some industry experts predict that bar code technology will be overshadowed in the future by electronic product code (EPC) technology that uses RFID tags to identify and monitor the movement of each individual product, from the factory floor to the retail checkout counter.
SUPPLIERS  With the growth of electronic data interchange (EDI), relationships with suppliers are critically important. For example, an automobile company might require that suppliers code their parts in a certain manner to match the auto company’s inventory control system. EDI also enables just-in-time (JIT) inventory systems, as shown in Figure 2-11, which rely on computer-to-computer data exchange to minimize unnecessary inventory. The purpose of a JIT system is to provide the right product at the right place at the right time.

CUSTOMERS  Customers are vitally important to any business. Information systems that interact with customers usually receive top priority. Many companies implement customer relationship management (CRM) systems that integrate all customer-related events and transactions, including marketing, sales, and customer service activities. Vendor-oriented CRM systems often interconnect with supplier relationship management (SRM) systems, which were discussed in Chapter 1. CRM components can provide automated responses to sales inquiries, Web-based order processing, and online inventory tracking. Because an efficient warehouse is just as important as a successful Web site, suppliers use smart forklifts that can read RFID tags or UPC numbers and transmit data to a CRM system, as shown in Figure 2-12.

One of the newest RFID applications is called electronic proof of delivery (EPOD). Using EPOD, a supplier uses RFID tags on each crate, case, or shipping unit to create a digital shipping list. The customer receives the list and scans the incoming shipment. If a discrepancy is detected, it is reported and adjusted automatically. Because they would be expensive to investigate manually, small shipping inconsistencies might not otherwise be traced. This is an example of technology-related cost control.

COMPETITORS  Competition drives many information systems decisions. For example, if one cellular telephone provider offers a new type of digital service, other firms must match the plan in order to remain competitive. New product research and development, marketing, sales, and service all require IT support.
THE ECONOMY Economic activity has a powerful influence on corporate information management. In a period of economic expansion, firms need to be ready with scalable systems that can handle additional volume and growth. Predicting the business cycle is not an exact science, and careful research and planning is critically important.

GOVERNMENT Federal, state, and local government regulations affect the design of corporate information systems. For example, income tax reporting requirements must be designed into a payroll package. The debate about Internet sales tax issues could profoundly affect e-commerce, as well as traditional retail businesses.

Project Management
As mentioned earlier, business case analysis involves consideration of project reasons, costs, benefits, and risks. At the end of the preliminary investigation, if the project is approved, it can be planned, scheduled, monitored and controlled, and reported upon. Individual analysts or IT staff members often handle small projects, but companies usually designate a project manager to coordinate the overall effort for complex projects.

In Chapter 3, you will study project management concepts, skills, tools, and techniques. You also will learn about project risk management, and how to perform the following tasks:

- Develop a project risk management plan
- Identify the risks
- Analyze the risks
- Create a risk response plan
- Monitor and respond to risks

Figure 2-13 shows the latest version of Microsoft Project, a popular project management tool. Using this program, a project manager can define project tasks, list activities and participants, plan the sequence of work, estimate milestone dates, and track costs.

FIGURE 2-13 Microsoft Project is a powerful, popular software tool for project management.
EVALUATION OF SYSTEMS REQUESTS

In most organizations, the IT department receives more systems requests than it can handle. Many organizations assign responsibility for evaluating systems requests to a group of key managers and users. Many companies call this group a systems review committee or a computer resources committee. Regardless of the name, the objective is to use the combined judgment and experience of several managers to evaluate systems projects.

Systems Request Forms

Many organizations use a special form for systems requests, similar to the online sample shown in Figure 2-14. A properly designed form streamlines the request process and ensures consistency. The form must be easy to understand and include clear instructions. It should include enough space for all required information and should indicate what supporting documents are needed. Many companies use online systems request forms that can be filled in and submitted electronically.

When a systems request form is received, a systems analyst or IT manager examines it to determine what IT resources are required for the preliminary investigation. A designated person or a committee then decides whether to proceed with a preliminary investigation. Occasionally a situation will arise that requires an immediate response. For example, if the problem involves a mission-critical system, an IT maintenance team would attempt to restore normal operations. When the system is functioning properly, the team conducts a review and prepares a systems request to cover the work that was performed.
Systems Review Committee

Most large companies use a systems review committee to evaluate systems requests. Instead of relying on a single individual, a committee approach provides a variety of experience and knowledge. With a broader viewpoint, a committee can establish priorities more effectively than an individual, and one person’s bias is less likely to affect the decisions. A typical committee consists of the IT director and several managers from other departments. The IT director usually serves as a technical consultant to ensure that committee members are aware of crucial issues, problems, and opportunities.

Although a committee offers many advantages, some disadvantages exist. For example, action on requests must wait until the committee meets. To avoid delay, committee members typically use e-mail and teleconferencing to communicate. Another potential disadvantage of a committee is that members might favor projects requested by their own departments, and internal political differences could delay important decisions.

Many smaller companies rely on one person to evaluate system requests instead of a committee. If only one person has the necessary IT skills and experience, that person must consult closely with users and managers throughout the company to ensure that business and operational needs are considered carefully.

Whether one person or a committee is responsible, the goal is to evaluate the requests and set priorities. Suppose four requests must be reviewed: the marketing group wants to analyze current customer spending habits and forecast future trends; the technical support group wants a cellular link so service representatives can download technical data instantly; the accounting department wants to redesign customer statements and allow Internet access; and the production staff wants an inventory control system that can exchange data with major suppliers. Which projects should the firm pursue? What criteria should be applied? How should priorities be determined? To answer those questions, the individual or the committee must assess the feasibility of each request.

Overview of Feasibility

As you learned in Chapter 1, a systems request must pass several tests, called a feasibility study, to see whether it is worthwhile to proceed further. As shown in Figure 2-15, a feasibility study uses four main yardsticks to measure a proposal: operational feasibility, technical feasibility, economic feasibility, and schedule feasibility.

Sometimes a feasibility study is quite simple and can be done in a few hours. If the request involves a new system or a major change, however, extensive fact-finding and investigation is required.

How much effort needs to go into a feasibility study? That depends on the

FIGURE 2-15 A feasibility study includes tests for operational, technical, economic, and schedule feasibility.
request. For example, if a department wants an existing report sorted in a different order, the analyst can decide quickly whether the request is feasible. On the other hand, a proposal by the marketing department for a new market research system to predict sales trends requires more effort. In both cases, the systems analyst asks these important questions:

- Is the proposal desirable in an operational sense? Is it a practical approach that will solve a problem or take advantage of an opportunity to achieve company goals?
- Is the proposal technically feasible? Are the necessary technical resources and people available for the project?
- Is the proposal economically desirable? What are the projected savings and costs? Are other intangible factors involved, such as customer satisfaction or company image? Is the problem worth solving, and will the request result in a sound business investment?
- Can the proposal be accomplished within an acceptable time frame?

To obtain more information about a systems request, you might perform initial fact-finding by studying organization charts, performing interviews, reviewing current documentation, observing operations, and surveying users. If the systems request is approved, more intensive fact-finding will continue during the systems analysis phase.

**Operational Feasibility**

Operational feasibility means that a proposed system will be used effectively after it has been developed. If users have difficulty with a new system, it will not produce the expected benefits. Operational feasibility depends on several vital issues. For example, consider the following questions:

- Does management support the project? Do users support the project? Is the current system well liked and effectively used? Do users see the need for change?
- Will the new system result in a workforce reduction? If so, what will happen to affected employees?
- Will the new system require training for users? If so, is the company prepared to provide the necessary resources for training current employees?
- Will users be involved in planning the new system right from the start?
- Will the new system place any new demands on users or require any operating changes? For example, will any information be less accessible or produced less frequently? Will performance decline in any way? If so, will an overall gain to the organization outweigh individual losses?
- Will customers experience adverse effects in any way, either temporarily or permanently?
- Will any risk to the company’s image or goodwill result?
- Does the development schedule conflict with other company priorities?
- Do legal or ethical issues need to be considered?

**Technical Feasibility**

Technical feasibility refers to the technical resources needed to develop, purchase, install, or operate the system. When assessing technical feasibility, an analyst must consider the following points:

- Does the company have the necessary hardware, software, and network resources? If not, can those resources be acquired without difficulty?
• Does the company have the needed technical expertise? If not, can it be acquired?
• Does the proposed platform have sufficient capacity for future needs? If not, can it be expanded?
• Will a prototype be required?
• Will the hardware and software environment be reliable? Will it integrate with other company information systems, both now and in the future? Will it interface properly with external systems operated by customers and suppliers?
• Will the combination of hardware and software supply adequate performance? Do clear expectations and performance specifications exist?
• Will the system be able to handle future transaction volume and company growth?

Economic Feasibility

Economic feasibility means that the projected benefits of the proposed system outweigh the estimated costs usually considered the total cost of ownership (TCO), which includes ongoing support and maintenance costs, as well as acquisition costs. To determine TCO, the analyst must estimate costs in each of the following areas:

- People, including IT staff and users
- Hardware and equipment
- Software, including in-house development as well as purchases from vendors
- Formal and informal training
- Licenses and fees
- Consulting expenses
- Facility costs
- The estimated cost of not developing the system or postponing the project

In addition to costs, you need to assess tangible and intangible benefits to the company. The systems review committee will use those figures, along with your cost estimates, to decide whether to pursue the project beyond the preliminary investigation phase.

Tangible benefits are benefits that can be measured in dollars. Tangible benefits result from a decrease in expenses, an increase in revenues, or both. Examples of tangible benefits include the following:

- A new scheduling system that reduces overtime
- An online package tracking system that improves service and decreases the need for clerical staff
- A sophisticated inventory control system that cuts excess inventory and eliminates production delays

Intangible benefits are advantages that are difficult to measure in dollars but are important to the company. Examples of intangible benefits include the following:

- A user-friendly system that improves employee job satisfaction
- A sales tracking system that supplies better information for marketing decisions
- A new Web site that enhances the company’s image

You also must consider the development timetable, because some benefits might occur as soon as the system is operational, but others might not take place until later.
Schedule Feasibility

Schedule feasibility means that a project can be implemented in an acceptable time frame. When assessing schedule feasibility, a systems analyst must consider the interaction between time and costs. For example, speeding up a project schedule might make a project feasible, but much more expensive.

Other issues that relate to schedule feasibility include the following:

- Can the company or the IT team control the factors that affect schedule feasibility?
- Has management established a firm timetable for the project?
- What conditions must be satisfied during the development of the system?
- Will an accelerated schedule pose any risks? If so, are the risks acceptable?
- Will project management techniques be available to coordinate and control the project?
- Will a project manager be appointed?

Chapter 3 describes various project management tools and techniques.

Evaluating Feasibility

The first step in evaluating feasibility is to identify and weed out systems requests that are not feasible. For example, a request would not be feasible if it required hardware or software that the company already had rejected.

Even if the request is feasible, it might not be necessary. For example, a request for multiple versions of a report could require considerable design and programming effort. A better alternative might be to download the server data to a personal computer-based software package and show users how to produce their own reports. In this case, training users would be a better investment than producing reports for them.

Also keep in mind that systems requests that are not currently feasible can be resubmitted as new hardware, software, or expertise becomes available. Development costs might decrease, or the value of benefits might increase enough that a systems request eventually becomes feasible. Conversely, an initially feasible project can be rejected later. As the project progresses, conditions often change. Acquisition costs might increase, and the project might become more expensive than anticipated. In addition, managers and users sometimes lose confidence in a project. For all those reasons, feasibility analysis is an ongoing task that must be performed throughout the systems development process.

Setting Priorities

After rejecting systems requests that are not feasible, the systems review committee must establish priorities for the remaining items. The highest priority goes to projects that provide the greatest benefit, at the lowest cost, in the shortest period of time. Many factors, however, influence project evaluation.
Factors that Affect Priority

When assessing a project’s priority, a systems analyst should consider the following:

- Will the proposed system reduce costs? Where? When? How? How much?
- Will the system increase revenue for the company? Where? When? How? How much?
- Will the systems project result in more information or produce better results? How? Are the results measurable?
- Will the system serve customers better?
- Will the system serve the organization better?
- Can the project be implemented in a reasonable time period? How long will the results last?
- Are the necessary financial, human, and technical resources available?

Very few projects will score high in all areas. Some proposed systems might not reduce costs but will provide important new features. Other systems might reduce operating costs substantially but require the purchase or lease of additional hardware. Some systems might be very desirable but require several years of development before producing significant benefits.

Whenever possible, the analyst should evaluate a proposed project based on tangible costs and benefits that represent actual (or approximate) dollar values. For example, a reduction of $8,000 in network maintenance is an example of a tangible benefit.

Often, the evaluation involves intangible costs or benefits, as described in the section on economic feasibility. In contrast to tangible benefits, such as the network cost reduction example, it is more difficult to assign dollar values to intangible benefits such as enhancing the organization’s image, raising employee morale, or improving customer service. Intangible costs and benefits often influence systems decisions and priorities and must be considered carefully.

Discretionary and Nondiscretionary Projects

Is the project absolutely necessary? Projects where management has a choice in implementing them are called discretionary projects. Projects where no choice exists are called nondiscretionary projects. Creating a new report for a user is an example of a discretionary project; adding a report required by a new federal law is an example of a nondiscretionary project.

If a particular project is not discretionary, is it really necessary for the systems review committee to evaluate it? Some people believe that waiting for committee approval delays critical nondiscretionary projects unnecessarily. Others believe that by submitting all systems requests to the systems review committee, the committee is kept aware of all projects that compete for the resources of the IT department. As a result, the committee assesses the priority of discretionary projects and can schedule them more realistically. Additionally, the committee might need to prioritize nondiscretionary projects when funds or staff are limited.

Many nondiscretionary projects are predictable. Examples include annual updates to payroll, tax percentages, or quarterly changes in reporting requirements for an insurance processing system. By planning ahead for predictable projects, the IT department manages its resources better and keeps the systems review committee fully informed without needing prior approval in every case.
CASE IN POINT 2.4: ATTAWAY AIRLINES, PART TWO

Back at Attaway Airlines, the morning meeting ended with no agreement between Dan Esposito and Molly Kinnon. In fact, a new issue arose. Molly now says that the new accounting system is entitled to the highest priority because the federal government soon will require the reporting of certain types of company-paid health insurance premiums. Because the current system will not handle this report, she insists that the entire accounting system is a nondiscretionary project. As you might expect, Dan is upset. Can part of a project be nondiscretionary? What issues need to be discussed? The committee meets again tomorrow, and the members will look to you, as the IT director, for guidance.

PRELIMINARY INVESTIGATION OVERVIEW

A systems analyst conducts a **preliminary investigation** to study the systems request and recommend specific action. After obtaining an authorization to proceed, the analyst interacts with managers and users, as shown in the model in Figure 2-16. The analyst gathers facts about the problem or opportunity, project scope and constraints, project benefits, and estimated development time and costs. The end product of the preliminary investigation is a report to management.

Interaction with Managers and Users

Before beginning a preliminary investigation, a memo or an e-mail message should let people know about the investigation and explain your role. You should meet with key managers, users, and IT staff to describe the project, explain your responsibilities, answer questions, and invite comments. This starts an important dialogue with users that will continue throughout the entire development process.

A systems project often produces significant changes in company operations. Employees may be curious, concerned, or even opposed to those changes. It is not surprising to encounter some user resistance during a preliminary investigation. Employee attitudes and reactions are important and must be considered.

When interacting with users, you should be careful in your use of the word **problem**, because generally it has a negative meaning. When you ask users about **problems**, some will stress current system limitations rather than desirable new features or enhancements. Instead of focusing on difficulties, you should question users about additional capability.
they would like to have. Using this approach, you highlight ways to improve the user’s job, you get a better understanding of operations, and you build better, more positive relationships with users.

**Planning the Preliminary Investigation**

During a preliminary investigation, a systems analyst typically follows a series of steps, as shown in Figure 2-17. The exact procedure depends on the nature of the request, the size of the project, and the degree of urgency.

**FIGURE 2-17** Six steps in a preliminary investigation.

1. **Step 1** Understand the problem or opportunity.
2. **Step 2** Define the project scope and constraints.
   - Perform fact-finding.
     - Analyze organizational charts.
     - Conduct interviews.
     - Review documentation.
     - Observe operations.
     - Conduct a user survey.
3. **Step 3** Analyze project usability, cost, benefit, and schedule data.
4. **Step 4** Evaluate feasibility
   - Operational
   - Technical
   - Economic
   - Schedule
5. **Step 5** Present results and recommendations to management.
Figure 2-18 shows how a systems analyst might use Microsoft Project to plan and manage the preliminary investigation. Notice that the analyst has listed the tasks, estimated the duration of each task, and designated a specific order in which the tasks must be performed.

**Step 1: Understand the Problem or Opportunity**

If the systems request involves a new information system or a substantial change in an existing system, systems analysts might need to develop a business profile that describes business processes and functions, as explained in Chapter 1. Even where the request involves relatively minor changes or enhancements, you need to understand how those modifications will affect business operations and other information systems. Often a change in one system has an unexpected effect on another system. When you analyze a systems request, you need to determine which departments, users, and business processes are involved.

In many cases, the systems request does not reveal the underlying problem, but only a symptom. For example, a request to investigate mainframe processing delays might reveal improper scheduling practices rather than hardware problems. Similarly, a request for analysis of customer complaints might disclose a lack of sales representative training, rather than problems with the product.

A popular technique for investigating causes and effects is called a fishbone diagram, or Ishikawa diagram, as shown in Figure 2-19. A fishbone diagram is an analysis tool that represents the possible causes of a problem as a graphical outline. When using a fishbone diagram, an analyst first states the problem and draws a main bone with sub-bones that represent possible causes of the problem. In the example shown in Figure 2-19, the problem is unhappy workers, and the analyst has identified four areas to investigate: environment, workers, management, and machines. In each area, the analyst identifies possible causes and draws them as horizontal sub-bones. For example, too hot is a possible cause in the environment bone. For each cause, the analyst must dig deeper and ask the question: What could be causing this symptom to occur? For example, why is it too hot? If the answer is...
insufficient air conditioning capacity, the analyst indicates this as a sub-bone to the *too hot* cause. In this manner, the analyst adds additional sub-bones to the diagram, until he or she uncovers root causes of a problem, rather than just the symptoms.

**Step 2: Define the Project Scope and Constraints**

Determining the **project scope** means defining the specific boundaries, or extent, of the project. For example, a statement that, *payroll is not being produced accurately* is very general, compared with the statement *overtime pay is not being calculated correctly for production workers on the second shift at the Yorktown plant.* Similarly, the statement, *the project scope is to modify the accounts receivable system,* is not as specific as the statement, *the project scope is to allow customers to inquire online about account balances and recent transactions.*

Some analysts find it helpful to define project scope by creating a list with sections called *Must Do, Should Do, Could Do,* and *Won’t Do.* This list can be reviewed later, during the systems analysis phase, when the systems requirements document is developed.

Projects with very general scope definitions are at risk of expanding gradually, without specific authorization, in a process called **project creep.** To avoid this problem, you should define project scope as clearly as possible. You might want to use a graphical model that shows the systems, people, and business processes that will be affected. The scope of the project also establishes the boundaries of the preliminary investigation itself. A systems analyst should limit the focus to the problem at hand and avoid unnecessary expenditure of time and money.

Along with defining the scope of the project, you need to identify any constraints on the system. A **constraint** is a requirement or condition that the system must satisfy or an outcome that the system must achieve. A constraint can involve hardware, software, time, policy, law, or cost. System constraints also define project scope. For example, if the system must operate with existing hardware, that is a constraint that affects potential solutions. Other examples of constraints are: The order entry system must accept input from 15 remote sites; the human resources information system must produce statistics on hiring practices; and the new Web site must be operational by March 1. When examining constraints, you should identify their characteristics.

**PRESENT VERSUS FUTURE** Is the constraint something that must be met as soon as the system is developed or modified, or is the constraint necessary at some future time?

**INTERNAL VERSUS EXTERNAL** Is the constraint due to a requirement within the organization or does some external force, such as government regulation, impose it?

**MANDATORY VERSUS DESIRABLE** Is the constraint mandatory? Is it absolutely essential to meet the constraint, or is it merely desirable?

Figure 2-20 shows five examples of constraints. Notice that each constraint has three characteristics, which are indicated by its position in the figure and by the symbol that represents the constraint. The constraint in Example A is present, external, and mandatory. The constraint in Example B is future, external, and mandatory. The constraint in Example C is present, internal, and desirable. The constraint in Example D is present, internal, and mandatory. The constraint in Example E is future, internal, and desirable.
Regardless of the type, all constraints should be identified as early as possible to avoid future problems and surprises. A clear definition of project scope and constraints avoids misunderstandings that arise when managers assume that the system will have a certain feature or support for a project, but later find that the feature is not included.

### Step 3: Perform Fact-Finding

The objective of fact-finding is to gather data about project usability, costs, benefits, and schedules. Fact-finding involves various techniques, which are described below. Depending on what information is needed to investigate the systems request, fact-finding might consume several hours, days, or weeks. For example, a change in a report format or data entry screen might require a single telephone call or e-mail message to a user, whereas a new inventory system would involve a series of interviews. During fact-finding, you might analyze organization charts, conduct interviews, review current documentation, observe operations, and carry out a user survey.
ANALYZE ORGANIZATION CHARTS  In many instances, you will not know the organizational structure of departments involved in the study. You should obtain organization charts to understand how the department functions and identify individuals you might want to interview. Organization charts often can be obtained from the company’s human resources department. If such charts are unavailable, you should obtain the necessary information directly from department personnel and then construct your own charts, as shown in Figure 2-21.

When organization charts are available, you should verify their accuracy. Keep in mind that organization charts show formal reporting relationships but not the informal alignment of a group, which also is important.

CONDUCT INTERVIEWS  The primary method of obtaining information during the preliminary investigation is the interview. The interviewing process involves a series of steps:

1. Determine the people to interview.
2. Establish objectives for the interview.
3. Develop interview questions.
4. Prepare for the interview.
5. Conduct the interview.
6. Document the interview.
7. Evaluate the interview.
Preliminary Investigation Overview

These seven steps are discussed in detail in Chapter 4, which describes fact-finding techniques that occur during the systems analysis phase of the SDLC.

Remember that the purpose of the interview, and of the preliminary investigation itself, is to uncover facts, not to convince others that the project is justified. Your primary role in an interview is to ask effective questions and listen carefully. If you plan to talk to several people about the same topic, you should prepare a standard set of questions for all the interviews. Also be sure to include open-ended questions, such as “What else do you think I should know about the system?” or “Is there any other relevant information that we have not discussed?”

When conducting interviews during the preliminary investigation, you should interview managers and supervisors who have a broad knowledge of the system and can give you an overview of the business processes involved. Depending on the situation, you might talk to operational personnel to learn how the system functions on a day-to-day basis.

REVIEW DOCUMENTATION Although interviews are an extremely important method of obtaining information, you also might want to investigate the current system documentation. The documentation might not be up to date, so you should check with users to confirm that you are receiving accurate and complete information.

OBSERVE OPERATIONS Another fact-finding method is to observe the current system in operation, as shown in Figure 2-22. You might see how workers carry out typical tasks. You might choose to trace or follow the actual paths taken by input source documents or output reports. In addition to observing operations, you might want to sample the inputs or outputs of the system. Using sampling techniques described in Chapter 4, you can obtain valuable information about the nature and frequency of the problem.

FIGURE 2-22 Sometimes, an analyst can get a better understanding of a system by watching actual operations.
CONDUCT A USER SURVEY Interviews can be time consuming. Sometimes you can obtain information from a larger group by conducting a user survey. In this case, you design a form that users complete and return to you for tabulation. A survey is not as flexible as a series of interviews, but it is less expensive, generally takes less time, and can involve a broad cross-section of people.

ANALYZE THE DATA Systems analysts use many techniques to locate the source of a problem. For example, the Pareto chart is a widely used tool for visualizing issues that need attention. Named for a nineteenth century economist, a Pareto chart is drawn as a vertical bar graph, as shown in Figure 2-23. The bars, which represent various causes of a problem, are arranged in descending order, so the team can focus on the most important causes. In the example shown, a systems analyst might use a Pareto chart to learn more about the causes of inventory system problems, so that necessary improvements can be made. Creating Pareto charts with Excel is a simple process.

The XY chart, sometimes called a scatter diagram, is another problem-solving tool. Often, an analyst looks for a correlation between two variables. For example, suppose you are getting complaints about network response time, and you want to determine the cause. You would try to identify variables, such as the number of users, to see whether
there is a correlation, or pattern. Figure 2-24 shows two XY charts with data samples. The first chart sample would suggest that there is no correlation between the delays and the number of users, and you would look elsewhere for the source of the problem. However, if the data resembles the second XY sample, it indicates a strong relationship between the number of users and the longer response times. That information would be extremely valuable in the problem-solving process.

**FIGURE 2-24** An XY chart shows correlation between variables, which is very important in problem-solving. Conversely, a lack of correlation suggests that the variables are independent, and that you should look elsewhere for the cause.
Step 4: Analyze Project Usability, Cost, Benefit, and Schedule Data

During fact-finding, you gathered data about the project’s predicted costs, anticipated benefits, and schedule issues that could affect implementation. Before you can evaluate feasibility, you must analyze this data carefully. If you conducted interviews or used surveys, you should tabulate the data to make it easier to understand. If you observed current operations, you should review the results and highlight key facts that will be useful in the feasibility analysis. If you gathered cost and benefit data, you should be able to prepare financial analysis and impact statements using spreadsheets and other decision support tools.

Also, you should develop time and cost estimates for the requirements modeling tasks for the next SDLC phase, systems analysis. Specifically, you should consider the following:

- What information must you obtain, and how will you gather and analyze the information?
- Will you conduct interviews? How many people will you interview, and how much time will you need to meet with the people and summarize their responses?
- Will you conduct a survey? Who will be involved? How much time will it take people to complete it? How much time will it take to tabulate the results?
- How much will it cost to analyze the information and prepare a report with findings and recommendations?

Step 5: Evaluate Feasibility

You have analyzed the problem or opportunity, defined the project scope and constraints, and performed fact-finding to evaluate project usability, costs, benefits, and time constraints. Now you are ready to evaluate the project’s feasibility. You should start by reviewing the answers to the questions listed on pages 67–69. Also consider the following guidelines:

OPERATIONAL FEASIBILITY Your fact-finding should have included a review of user needs, requirements, and expectations. When you analyze this data, you should look for areas that might present problems for system users and how they might be resolved. Because operational feasibility means that a system will be used effectively, this is a vital area of concern.

TECHNICAL FEASIBILITY The fact-finding data should identify the hardware, software, and network resources needed to develop, install, and operate the system. With this data, you can develop a checklist that will highlight technical costs and concerns, if any.

ECONOMIC FEASIBILITY Using the fact-finding data, you can apply the financial analysis tools described in Part C of the Systems Analyst’s Toolkit to assess feasibility. The cost-benefit data will be an important factor for management to consider. Also, a cost estimate for the project development team will be built into the project management plan.

SCHEDULE FEASIBILITY The fact-finding data should include stakeholder expectations regarding acceptable timing and completion dates. As mentioned previously, often a trade-off exists between a project’s schedule and its costs. For example, compressing a project schedule might be possible, but only if the budget is increased accordingly. The schedule data will be incorporated into the project plan in the form of task durations and milestones.
Step 6: Present Results and Recommendations to Management

At this stage, you have several alternatives. You might find that no action is necessary or that some other strategy, such as additional training, is needed. To solve a minor problem, you might implement a simple solution without performing further analysis. In other situations, you will recommend that the project proceed to the next development phase, which is systems analysis.

The final task in the preliminary investigation is to prepare a report to management, and possibly deliver a presentation, as shown in Figure 2-25. The report includes an evaluation of the systems request, an estimate of costs and benefits, and a case for action, which is a summary of the project request and a specific recommendation.

The format of a preliminary investigation report varies from one company to another. A typical report might consist of the following sections:

- **Introduction** — the first section is an overview of the report. The introduction contains a brief description of the system, the name of the person or group who performed the investigation, and the name of the person or group who initiated the investigation.

- **Systems Request Summary** — the summary describes the basis of the systems request.

- **Findings** — the findings section contains the results of your preliminary investigation, including a description of the project’s scope, constraints, and feasibility.

- **Case for Action** — a summary of the project request and a specific recommendation. Management will make the final decision, but the IT department’s input is an important factor.

- **Project Roles** — this section lists the people who will participate in the project, and describes each person’s role.

- **Time and Cost Estimates** — this section describes the cost of acquiring and installing the system, and the total cost of ownership during the system’s useful life.

- **Expected Benefits** — this section includes anticipated tangible and intangible benefits and a timetable that shows when they are to occur.

- **Appendix** — an appendix is included in the report if you need to attach supporting information. For example, you might list the interviews you conducted, the documentation you reviewed, and other sources for the information you obtained. You do not need detailed reports of the interviews or other lengthy documentation. It is critical that you retain those documents to support your findings and for future reference.
As a new systems analyst at Premier Financial Services, you are getting quite an education. You report to Mary, the IT manager, who also chairs the systems review committee. Several months ago, the committee rejected a request from Jack, the finance director, for an expensive new accounts payable system, because the benefits did not appear to outweigh the costs.

Yesterday, Mary's boss called her in and asked her to reconsider Jack's request, and to persuade the other members to approve it. Mary wanted to discuss the merits of the request, but he cut her off rather abruptly. Mary happens to know that Jack and her boss are longtime friends.

Mary has confided in you. She is very uncomfortable about the meeting with her boss, and she believes that his request would undermine the integrity of the systems review process. Mary feels it would be unethical to grant preferred treatment just because a friendship is involved. She is thinking of submitting a request to step down as review committee chair, even though that might harm her career at the company.

Is this an ethical question, or just a matter of office politics? What would you say to Mary?

**Chapter Summary**

Systems planning is the first phase of the systems development life cycle. Effective information systems help an organization support its business processes, carry out its mission, and serve its stakeholders. Strategic planning allows a company to examine its purpose, vision, and values and develops a mission statement, which leads to goals, objectives, day-to-day operations, and business results that affect company stakeholders.

During the systems planning phase, an analyst reviews the business case, which is the basis, or reason, for a proposed system. A business case should describe the project clearly, provide the justification to proceed, and estimate the project's financial impact. Systems projects are initiated to improve performance, provide more information, reduce costs, strengthen controls, or provide better service. Various internal and external factors affect systems projects, such as user requests, top management directives, existing systems, the IT department, software and hardware vendors, technology, customers, competitors, the economy, and government.

During the preliminary investigation, the analyst evaluates the systems request and determines whether the project is feasible from an operation, technical, economic, and schedule standpoint. Analysts evaluate systems requests on the basis of their expected costs and benefits, both tangible and intangible.

The steps in the preliminary investigation are to understand the problem or opportunity; define the project scope and constraints; perform fact-finding; analyze project usability, cost, benefit, and schedule data; evaluate feasibility; and present results and recommendations to management. During the preliminary investigation, analysts often use investigative tools such as fishbone or Ishikawa diagrams, Pareto charts, and XY charts. The last task in a preliminary investigation is to prepare a report to management. The report must include an estimate of time, staffing requirements, costs, benefits, and expected results for the next phase of the SDLC.
Key Terms and Phrases

biometric devices 60
business case 52
case for action 81
computer resources committee 65
constraint 74
critical success factors 57
customer relationship management (CRM) 63
discretionary projects 70
economic feasibility 68
electronic product code (EPC) 62
electronic proof of delivery (EPOD) 63
encryption 60
fishbone diagram 73
intangible benefits 68
Ishikawa diagram 73
just-in-time (JIT) 63
mission statement 55
nondiscretionary projects 70
operational feasibility 67
Pareto chart 78
preliminary investigation 71
project creep 74
project scope 74
scatter diagram, 78
schedule feasibility 69
strategic planning 54
SWOT analysis 54
systems request 59
systems review committee 65
tangible benefits 68
technical feasibility 67
total cost of ownership (TCO) 68
XY chart 78
Instructions: To complete the Learn It Online exercises, visit the Management Information Systems CourseMate Web site at www.cengagebrain.com, navigate to the resources for this chapter, and click the link for the exercise you want to complete.

1. Chapter Reinforcement
   TF, MC, and SA
   Click the Chapter Reinforcement link. Print the quiz by clicking Print on the File menu for each page. Answer each question.

2. Flash Cards
   Click the Flash Cards link and read the instructions. Type 20 (or a number specified by your instructor) in the Number of playing cards text box, type your name in the Enter your Name text box, and then click the Flip Card button. When the flash card is displayed, read the question and then click the ANSWER box arrow to select an answer. Flip through the Flash Cards. If your score is 15 (75%) correct or greater, click Print on the File menu to print your results. If your score is less than 15 (75%) correct, then redo this exercise by clicking the Replay button.

3. Practice Test
   Click the Practice Test link. Answer each question, enter your first and last name at the bottom of the page, and then click the Grade Test button. When the graded practice test is displayed on your screen, click Print on the File menu to print a hard copy. Continue to take practice tests until you score 80% or better.

4. Who Wants To Be a Computer Genius?
   Click the Computer Genius link. Read the instructions, enter your first and last name at the bottom of the page, and then click the Play button. When your score is displayed, click the PRINT RESULTS link to print a hard copy.

5. Wheel of Terms
   Click the Wheel of Terms link. Read the instructions, and then enter your first and last name and your school name. Click the PLAY button. When your score is displayed on the screen, right-click the score and then click Print on the shortcut menu to print a hard copy.

6. Crossword Puzzle Challenge
   Click the Crossword Puzzle Challenge link. Read the instructions, and then enter your first and last name. Click the SUBMIT button. Work the crossword puzzle. When you are finished, click the Submit button. When the crossword puzzle is displayed, click the Print Puzzle button to print a hard copy.
Case-Sim: SCR Associates

Overview
The SCR Associates case study is a Web-based simulation that allows you to practice your skills in a real-world environment. The case study transports you to SCR’s intranet, where you complete 12 work sessions, each aligning with a chapter. As you work on the case, you will receive e-mail and voice mail messages, obtain information from SCR’s online libraries, and perform various tasks.

How do I use the case?
- Review the SCR background material in Chapter 1.
- Read the Preview for this session and study the Task List.
- Visit the Management Information Systems CourseMate Web site at www.cengagebrain.com, navigate to the SCR Case Simulation, and locate the intranet link.
- Enter your name and the password sad9e. An opening screen will display the 12 sessions.
- Select this session. Check your e-mail and voice mail carefully, and then work on the tasks.

Preview: Session 2
During your orientation, you found your way around the office and had a chance to explore the SCR Internet site. Now, after a week on the job, your supervisor, Jesse Baker, has explained the new TIMS system and asked you to lead the systems development effort. She suggested that you review SCR’s mission statement, think about a systems review committee, draft a project scope statement, and prepare to interview people to learn more about the new system.

Task List

1. **We need a corporate goal for SCR that refers to our new training activity.**
   Prepare a draft to show Jesse.

2. **Jesse wants my opinion on whether or not SCR needs a system review committee.**
   Need to prepare a recommendation and reasons.

3. **Draft a project scope statement for the TIMS system and describe the constraints.**
   She said be specific.

4. **Need to identify the people I want to interview to learn more about the new training activity, and prepare a list of the questions I will ask.**

**FIGURE 2-26** Task list: Session 2.
Chapter Exercises

Review Questions

1. What is a business case? How does a business case affect an IT project?
2. What is a SWOT analysis and why is it important?
3. What are five common reasons for systems projects?
4. What are some internal and external factors that affect systems projects?
5. What are some advantages and disadvantages of a systems review committee?
6. What is feasibility? List and briefly discuss four feasibility tests.
7. How do tangible benefits differ from intangible benefits?
8. What are the steps in a preliminary investigation?
9. What is project scope? What is a constraint? In what three ways are constraints classified?
10. Explain how you might use fishbone diagrams, Pareto charts, and XY charts in problem-solving. Be specific, and describe the advantages of each tool.

Discussion Topics

1. Directives from top management often trigger IT projects. Suppose that the vice president of marketing tells you to write a program to create mailing labels for a one-time advertising promotion. As the IT manager, you know that the labels can be prepared more efficiently by simply exporting the data to a word processing program with a mail merge feature. How would you handle this situation?
2. The vice president of accounting says to you, the IT director, “This systems development life cycle stuff takes too long.” She tells you that her people know what they are doing and that all systems requests coming from her department are necessary and important to the organization. She suggests that the IT department bypass the initial steps for any accounting department request and immediately get to work at the solution. What would you say to her?
3. One of your coworkers says, “Mission statements are nice, but they really don’t change things down here where the work gets done.” How would you reply?
4. Would you continue to work for a company if you disagreed with the firm’s mission statement? Why or why not?

Projects

1. Use the Internet to find an example of a corporate mission statement.
2. Many articles have been written on how to develop, understand, and evaluate a business case. Visit the Web sites for TechRepublic, CIO, or another IT magazine, and find one or more articles that might be of interest to your class. For more information, you can visit the Resources Library at the online SCR Associates case, which lists more than a dozen IT news sources. To view these sources, go to the SCR Case Simulation at the MIS CourseMate Web site at www.cengagebrain.com, log on to the SCR intranet, and navigate to the library. When your research is done, write a brief summary of what you learned.
3. Suppose you own a travel agency in a large city. You have many corporate clients, but growth has slowed somewhat. Some long-term employees are getting discouraged, but you feel that there might be a way to make technology work in your favor. Use your imagination and suggest at least one strength, weakness, opportunity, and threat that your business faces.
4. Write a mission statement and at least three goals for the travel agency described in Project 3.
Apply Your Knowledge

The section contains four mini-cases. Each case describes a situation, explains your role in the case, and asks you to respond to questions. You can answer the questions by applying knowledge you learned in the chapter.

1. **Last Chance Securities**
   **Situation:**
   The IT director opened the department staff meeting today by saying “I’ve got some good news and some bad news. The good news is that management approved the payroll system project this morning. The new system will reduce clerical time and errors, improve morale in the payroll department, and avoid possible fines and penalties for noncompliance. The bad news is that the system must be installed by the end of December in order to meet new federal reporting rules, costs must be within the budgeted amount, the new system must interact with existing systems, and the vice president of finance insists on approving the final design.”
   1. Name the constraints and indicate whether each is present, future, internal, external, mandatory, or desirable.
   2. Explain why it is important to define the payroll project’s scope. Explain how to define project scope.
   3. Identify tangible and intangible benefits of the new payroll system.
   4. What topics should be included in a report to management at the end of the preliminary investigation?

2. **Way Out Bikes**
   **Situation:**
   The owner of Way Out Bikes asked you for advice about acquiring an information system for her business. The company specializes in helping customers select exactly the right bicycle for their needs and lifestyles. Way Out cannot compete on price with mass merchandisers, but it seeks to offer value and expertise for which customers are willing to pay. You ask the owner whether she has long-range plans for the company, and she replies that she has not really thought beyond a one-year time frame.
   1. Explain the concept of strategic planning to Way Out’s owner.
   2. Decide what else you might want to know about Way Out. Consider the internal and external factors described on pages 59 to 61, and make a list of questions to ask the owner.
   4. Make a list of Way Out’s stakeholders.
The Monday IT Department Staff Meeting

Situation:
Your boss, the IT manager, was ready to explode. “Why can’t we get our priorities straight?” he fumed. “Here we go again, working on a low-value project, just because it’s a favorite of the marketing group. I wish we could get away from departmental politics! I want you to draft a memo that proposes a systems review committee for this company. Explain the advantages, but don’t step on anyone’s toes!”

1. Write a draft of the proposal, as your boss requested.
2. Write a memo to your boss explaining potential disadvantages of the committee approach.
3. Draft a set of ground rules for committee meetings. Try to suggest rules that will minimize political differences and focus on the overall benefit to the company.
4. Most people serve on a committee at some point in their lives. Write a brief memo describing your committee experiences, good or bad.

The Friday IT Department Staff Meeting

Situation:
By the end of the week, things quieted down. The IT staff discussed how to prioritize IT project requests, taking into account technical, operational, economic, and schedule feasibility. The IT manager asked for suggestions from the group.

1. Provide three examples of why a project might lack technical feasibility.
2. Provide three examples of why a project might lack operational feasibility.
3. Provide three examples of why a project might lack economic feasibility.
4. Provide three examples of why a project might lack schedule feasibility.
Case Studies

Case studies allow you to practice specific skills learned in the chapter. Each chapter contains several case studies that continue throughout the textbook, and a chapter capstone case.

NEW CENTURY HEALTH CLINIC

New Century Health Clinic offers preventive medicine and traditional medical care. In your role as an IT consultant, you will help New Century develop a new information system.

Background

New Century Health Clinic’s office manager, Anita Davenport, recently asked permission to hire an additional office clerk because she feels the current staff can no longer handle the growing workload. The associates discussed Anita’s request during a recent meeting. They were not surprised that the office staff was feeling overwhelmed by the constantly growing workload.

Because the clinic was busier and more profitable than ever, they all agreed that New Century could afford to hire another office worker. Dr. Jones then came up with another idea. He suggested that they investigate the possibility of computerizing New Century’s office systems. Dr. Jones said that a computerized system could keep track of patients, appointments, charges, and insurance claim processing and reduce paperwork. All the associates were enthusiastic about the possibilities and voted to follow up on the suggestion. Dr. Jones agreed to direct the project.

Because no member of the staff had computer experience, Dr. Jones decided to hire a consultant to study the current office systems and recommend a course of action. Several friends recommended you as a person who has considerable experience with computerized business applications.

Assignments

1. Dr. Jones has arranged an introductory meeting between the associates of New Century Health Clinic and you to determine if mutual interest exists in pursuing the project. What should the associates try to learn about you? What should you try to learn in this meeting?
2. Does the proposed system present a strong business case? Why or why not?
3. For each type of feasibility, prepare at least two questions that will help you reach a feasibility determination.
4. You begin the preliminary investigation. What information is needed? From whom will you obtain it? What techniques will you use in your fact-finding?

PERSONAL TRAINER, INC.

Personal Trainer, Inc., owns and operates fitness centers in a dozen midwestern cities. The centers have done well, and the company is planning an international expansion by opening a new “supercenter” in the Toronto area. Personal Trainer’s president, Cassia Umi, hired an IT consultant, Susan Park, to help develop an information system for the new facility. During the project, Susan will work closely with Gray Lewis, who will manage the new operation.

Background

At their initial meeting, Susan and Gray discussed some initial steps in planning a new information system for the new facility. The next morning, they worked together on a business profile, drew an organization chart, discussed feasibility issues, and talked about
various types of information systems that would provide the best support for the supercenter’s operations. Their main objective was to carry out a preliminary investigation of the new system and report their recommendations to Personal Trainer’s top managers.

After the working session with Gray, Susan returned to her office and reviewed her notes. She knew that Personal Trainer’s president, Cassia Umi, wanted the supercenter to become a model for the company’s future growth, but she did not remember any mention of an overall strategic plan for the company. Susan also wondered whether the firm had done a SWOT analysis or analyzed the internal and external factors that might affect an information system for the supercenter.

Because the new operation would be so important to the company, Susan believed that Personal Trainer should consider an enterprise resource planning strategy that could provide a company-wide framework for information management. After she finished compiling her notes, Susan listed several topics that might need more study and called Gray to arrange another meeting the following day.

Assignments
1. Based on the background facts described in Chapter 1, draft a mission statement for Personal Trainer. Consider the firm’s overall direction, and the services, products, and experiences the company might want to offer its customers in the future. In your statement, consider all the stakeholders affected by Personal Trainer’s operations.
2. Susan and Gray probably will need more information about the proposed system. Make a list of people whom they might want to interview. Also, suggest other fact-finding techniques they should consider.
3. Consider the internal and external factors that affect information systems. Which factors, in your opinion, will have the greatest impact on the system proposed for the new supercenter? Explain your answer.
4. At the conclusion of the preliminary investigation, Susan and Gray will deliver a written summary of the results and deliver a brief presentation to Personal Trainer’s management team. Prepare a list of recommendations that will help make their written and oral communications more effective. Put your list in priority order, starting with what you consider to be the most important suggestions. Before you complete this task, you should review Part A of the Systems Analyst’s Toolkit, which provides suggestions for oral and written presentations.

ORIGINAL KAYAK ADVENTURES

Original Kayak Adventures (OKA) offers guided eco-tours and kayak rentals along the Hudson River.

Background
In Chapter 1, you learned that John and Edie Caputo founded OKA two years ago. Now John and Edie are thinking about replacing their current system, which is a mix of manual and computer-based techniques, with a new information system that would meet their current and future needs. Before you answer the following questions, you should review the fact statement in Chapter 1.

Assignments
1. Does a strong business case exist for developing an information system to support the Caputos’ business? Explain your answer.
2. In a small- to medium-sized business, such as OKA, is it really important to use a structured approach for information systems development? Why or why not?
3. Based on the facts provided, draft a mission statement for OKA. In your statement, consider all the stakeholders who might be affected by OKA operations.
4. What internal and external factors might affect OKA’s business success?
TOWN OF EDEN BAY

The town of Eden Bay owns and maintains a fleet of vehicles. You are a systems analyst reporting to Dawn, the town’s IT manager.

Background

Eden Bay is a medium-sized municipality. The town has grown rapidly, and so has the demand for town services. Eden Bay currently owns 90 vehicles, which the town’s equipment department maintains. The fleet includes police cars, sanitation trucks, fire trucks, and other vehicles assigned to town employees. The maintenance budget has risen sharply in recent years, and people are asking whether the town should continue to perform its own maintenance or outsource it to private firms.

This morning, Dawn called you into her office to discuss the situation. A summary of her comments follows.

Dawn (IT manager): When I came here two years ago, I was told that Eden Bay had a computerized information system for vehicle maintenance. What I found was a spreadsheet application designed by a part-time employee as a quick answer to a much more complex problem. It’s probably better than no system at all, but I can’t justify spending any time on it. The system should never have been designed as a spreadsheet in the first place.

I’ve discussed the situation with the equipment department people. Rather than tinker with the current system, I think we should press for a new information system project, and I’ve developed an initial proposal. I’ve code-named the new system RAVE, which stands for Repair Analysis for Vehicular Equipment. I know that commercial fleet maintenance packages exist, but they are very expensive.

I did some fact-finding, and I want you to start by reading the interview summaries I prepared.

Before You Begin …

Review the following interview summaries from Marie (town manager), Martin (equipment department manager), Phil (maintenance supervisor), Alice (maintenance clerk), and Joe (mechanic).

Marie (town manager): Maintenance costs have risen 14 to 16% annually. I’m not sure that we have any real control over these costs. Some members of the town council think we should get out of the maintenance business and contract it out to a private firm. That might mean laying off current employees, and I’m not sure whether outsourcing is the right way to go.

Both the equipment department manager and the IT manager tell me that our current record-keeping system is outdated, and I wonder if a new information system would give us a better handle on the problem. My own view is that if there’s a way we can become more efficient, we should continue to perform our own maintenance.

Dawn, our IT manager, tells me that she has developed a proposal for a maintenance information system. I plan to bring it up at the next council meeting.

Martin (equipment department manager): I hear a lot of criticism about the maintenance budget, but I’m doing the best I can. We operate from one budget year to the next, without a long-term plan. I belong to a professional association of fleet maintenance managers, and I know that we should be developing a strategic plan instead of juggling annual budget figures.

I’d like to build this department into a first-class organization. Our people are great, but they could use more technical training. Our shop and equipment are generally adequate for what we do, but we haven’t kept up with some of the newer diagnostic equipment. We have a real problem in record keeping. Instead of a short-term solution, Eden Bay should have developed a maintenance information system years ago. Prior to taking this position, I was assistant maintenance manager in a medium-sized city, and they had developed a system that handled scheduling and cost analysis, in addition to day-to-day maintenance operations.
Phil (maintenance supervisor): I’m in the middle — I get pressure from above to cut costs, and I get complaints from below that management doesn’t know what it’s doing. One thing for sure — short-term solutions are not the answer. I hope they don’t ask me to cut back on preventive maintenance. The last time we did that, we extended routine oil changes and servicing, and we ended up with even more repairs than we had previously.

My mechanics are capable people, and they’re doing the best they can. One problem I see is that it’s hard to pull up a history for a particular vehicle. We keep the data on a computer, but different people used different codes and procedures over the years, and the system probably needs a good overhaul.

Alice (maintenance clerk): I’m in charge of maintenance record keeping. We use a spreadsheet system that was designed by a part-time employee who is no longer around. Because we work on a monthly budget, the spreadsheet has a separate page for each month. When the year is over, we start a new set of monthly pages. The spreadsheet is supposed to record labor and parts used, and assign the cost to a specific vehicle, but it doesn’t always work out that way.

I also use a notebook to keep track of vehicle mileage and scheduled service intervals, so I can let the department heads know when a vehicle needs to come in for service. I write up work orders for scheduled service or necessary repairs, but often a mechanic finds other problems and has to write up an additional charges form.

Each time a vehicle comes into the shop, I start a new row on the spreadsheet. I enter the vehicle number, mileage, and date. Then I enter the rest of the data into the columns for parts, labor hours, job code, shop supplies, and miscellaneous charges. At the end of the month, I calculate total costs from the spreadsheet, and we compare these with actual payroll and parts vouchers for the month. If the totals are close, everyone is happy. If not, we try to figure out what work didn’t get reported and entered into the spreadsheet.

The labor codes also are a problem. Specific codes are assigned for certain types of shop labor, but these were changed three years ago when the new Director arrived. Also, about half the labor can be coded, but the rest has to be entered manually — and there are no standards. Two mechanics might do the same job, and one records four specific tasks, while the other calls it a tune-up.

I know the mechanics don’t like paperwork, but what can I do? I asked the IT manager if she could do anything to help, but she says that it isn’t worthwhile to update the current system. She says she has heard some talk about developing a new information system specifically designed for vehicle fleet maintenance. It can’t be soon enough for me.

Joe (mechanic): I love my job, but I hate the paperwork. We get a work order from the clerk for all scheduled maintenance, but if we find other problems, we have to handwrite an additional work ticket. Personally, I think some of these vehicles should be retired before they get too expensive to maintain.

I would hate to see the town contract out the maintenance. I’ve put in 17 years here, and I don’t want to lose my job, but I know that some specialized repairs would be less expensive on the outside. Most of the mechanics realize this, but let management figure it out — they’re the ones with the fancy computer system.

Assignments

1. Upon investigation, you learn that the town does not have a strategic plan or a mission statement. In your view, does this affect the current situation? Why or why not?
2. Based on the fact statements provided, summarize the maintenance department’s most important strengths, weaknesses, opportunities, and threats.
3. Describe the specific steps you will follow during a preliminary investigation, including any fact-finding techniques you will use. Be sure to include the tools mentioned in this chapter.
4. Of the four tests of feasibility — operational, technical, economic, and schedule — which would you perform first to measure the system project’s feasibility? Why?
SoftWear, Limited (SWL), is a continuing case study that illustrates the knowledge and skills described in each chapter. In this case study, the student acts as a member of the SWL systems development team and performs various tasks.

**Background**

SWL outsources the company’s payroll processing to an outside firm called Business Information Systems (BIS). SWL’s payroll department submits data to BIS, which uses its own hardware and software to produce employee paychecks and generate payroll reports. BIS performs payroll processing for dozens of companies. Contractual agreements between BIS and its customers identify specific information processing services and prices.

SWL’s information technology department is located at the company headquarters in Raleigh and reports to the vice president of finance. The IT staff is responsible for SWL’s mainframe computer and supports the company’s Web site and the inventory, marketing, customer order entry, and accounting systems.

Robert Lansing, SWL’s president, believes that IT support is vital to the company’s strategic long-range plans and has approved increased IT budgets and expansion of the IT staff. In addition to the mainframe, the company networked personal computers in all offices and many shop floor locations and implemented a company intranet linking all SWL locations.

Even though it could handle its own payroll processing, SWL continues to use BIS for payroll services because BIS does a good job at a reasonable cost, and it relieves SWL of this responsibility. Recently, problems with the payroll system developed, and SWL’s payroll department employees had to work overtime to correct errors involving employee deductions.

SWL employees can make two types of voluntary payroll deductions. Starting in 2007, employees could contribute to the newly formed SWL credit union. To enroll or make changes, an employee must complete a deduction form. In 2009, the company gave employees an opportunity to purchase SWL company stock through payroll deductions. Employees enroll in the stock purchase plan or change their deductions by visiting the human resources department, which then sends a weekly list of transactions to SWL’s payroll department.

In addition to the credit union and stock purchase deductions, SWL employees soon may have other savings and investment choices. SWL’s top management, with strong support from the vice president of human resources, may consider a new Employee Savings and Investment Plan (ESIP) that allows employees to purchase mutual funds, stocks, and other investments through regular payroll deductions. Under this new 401(k) plan, an outside investment firm, Court Street Securities, manages tax-sheltered deductions and services the individual accounts. Each employee maintains direct control over his or her investments using a 24-hour toll-free number or accessing the Court Street Securities Web site.

Management expects to make a final decision about the new ESIP in several months.

**Request for Information Technology Services**

Rob King, vice president of human resources, learned that a number of SWL employees had complained about improper paycheck deductions, and he became concerned about employee morale. He decided to discuss the subject with Michael Jeremy, vice president of finance. After the meeting, Mr. Jeremy met with Amy Calico, director of payroll, to ask her about the problem — and a recent increase in overtime pay in her group. Amy stated that the overtime became necessary because payroll operations recently required more time and effort. She also noted that, because this workload increase came about recently, she lacked the money in her budget to hire any additional people. She did not provide any specific explanation for the payroll deduction errors.
Mr. Jeremy then decided to ask the IT department to investigate the payroll system. He prepared a systems request, as shown in Figure 2-27, and sent it to the IT department for action. In the request, he mentioned problems with the payroll system and requested help but did not identify the causes of the problems or propose a solution.

Jane Rossman, manager of applications, normally receives systems requests and does an initial review. After a quick look at Mr. Jeremy’s request, Jane decided to contact her boss, Ann Hon, director of information technology. After discussing the proposal, Jane and Ann decided that a preliminary investigation should start right away. Given that the system was eight years old and had never received a major update, it seemed likely that they would find some problems. Jane assigned Rick Williams, a systems analyst, to conduct the preliminary investigation.

Payroll Department Organization

Rick’s first meeting was with Rob King, vice president of human resources. He gave Rick copies of job descriptions for all payroll department positions but did not have a current organization chart for that group.

After reviewing the descriptions, Rick visited Amy Calico, director of payroll. She explained how the payroll department was organized. She explained that two people report directly to her: Nelson White, payroll manager, and Nancy Farmer, administrative assistant. Two payroll technicians, Britton Ellis and Debra Williams, report to Nelson White.

Interviews

Rick next decided to interview Michael Jeremy, Amy Calico, and Mike Feiner, director of human resources.

Mr. Jeremy provided an overview of the recent problems within the payroll system, including the costs of the current system. He had no specific data, but he thought that the majority of the errors involved stock purchases rather than credit union deductions.

Later that day, in his meeting with Mike Feiner, Rick found out more about the reported deduction errors. He learned that stock purchase enrollments and changes are handled differently from credit union deductions. For legal reasons, Mike explained, employees must complete a special form for stock purchase plan transactions. When enrolling or making changes, an employee visits the human resources department for a brochure and an information package called a prospectus, which also includes the form required to enroll. At the end of each week, the human resources department prepares a summary of deduction requests and sends it to the payroll department. Payroll clerks then file the changes with the employee’s master record.
The next morning, Rick again met with Amy Calico. In the interview, Amy told Rick that some problems with deductions existed, but she did not feel that the payroll clerks were at fault. She suggested that he look elsewhere for the source of the problem. Amy stated that the payroll process generally works well, although it requires a substantial amount of manual effort. She said that if she could hire two additional clerks, it would resolve any remaining problems. During the course of the meeting, Rick began to feel that Amy’s opinion might be somewhat biased. As payroll director, she might not want to call attention to problems in her department, and Rick guessed, that some other issues might be involved. He decided to keep this possibility in mind as the investigation continued.

Current Documentation

After completing the three interviews, Rick reviewed his notes and decided to find out more about the actual sequence of operations in the current system. He studied the documentation and found that it provided step-by-step procedures for preparing the payroll. When he asked the payroll clerks about those procedures, he learned that some sections were outdated. The actual sequence of events is shown in Figure 2-28.

Step 1: A new SWL employee completes an employee master sheet and a W-4 form. The human resources department then enters the employee’s status and pay rate. Copies of these forms are sent to the payroll department. The payroll department updates the employee master sheet whenever changes are received from the employee or the human resources department. Updates are made with various forms, including forms for credit union and employee stock purchase plan enrollment and changes.

Step 2: On the last day of a weekly pay period, the payroll department prepares and distributes time sheets to all SWL departments. The time sheets list each employee, with codes for various status items such as regular pay, overtime, sick leave, vacation, jury duty, and personal leave.

Step 3: Department heads complete the time sheets on the first business day after the end of a pay period. The sheets then go to the payroll department, where they are reviewed. A payroll clerk enters pay rates and deduction information and forwards the time sheets to the BIS service bureau.

Step 4: BIS enters and processes the time sheet data, prints SWL paychecks, and prepares a payroll register.

Step 5: The checks, time sheets, and payroll register are returned to SWL. The payroll department distributes checks to each department, creates reports for credit union and stock purchase plan deductions, and then transfers necessary funds.

FIGURE 2-28 Sequence of events in payroll processing at SoftWear, Limited.

Rick also discovered that the payroll department never sees a copy of the form that an employee fills out in the human resources department when joining the stock purchase plan or changing deductions. Rick obtained a copy of the SWL stock purchase form from the human resources department and copies of several forms from the payroll department — including employee master sheets, employee time sheets, and credit union deduction forms. Rick put them in a file for later review.

During the preliminary investigation, Rick did not show concern with the detailed information on each form. He would review that information only after management authorized the IT department to continue with the systems analysis phase.
Presentation to Management

After Rick finished his investigation, he analyzed his findings, prepared a preliminary investigation report, and met with Jane and Ann to plan the presentation to management. Ann sent an advance copy of the report to Mr. Jeremy with an e-mail that announced the time and location of the presentation.

Figure 2-29 shows the preliminary investigation report. Following the presentation to SWL’s top managers and department heads, a question-and-answer session took place. The management group discussed the findings and recommendations and decided that the payroll system needed further analysis. The group also wanted to know if the BIS service bureau could handle the ESIP using their current arrangement. Ann replied that no clear answer could be given, and everyone agreed that the project scope should be broadened to include that question.

**Preliminary Investigation Report: SWL Payroll System**

**October 10, 2011**

**Introduction**

The IT department completed a preliminary investigation of the payroll system on October 8. This investigation was the result of a systems request submitted by Michael Jeremy, vice president, finance, on September 17.

**Systems Request Summary**

Two problems were mentioned in the request: incorrect deductions from employee paychecks, and excessive payroll department overtime to perform manual processing tasks and make corrections.

**Preliminary Investigation Findings**

1. The human resources department sends a summary of employee stock purchase deductions to the payroll department. It is likely that data errors occur during this process. Although the errors are corrected, we believe that incorrect payroll information adversely affects employee morale.

2. The payroll processing arrangement with Business Information Systems (BIS) requires considerable manual effort. BIS does not provide summary reports that SWL needs to verify and apply credit union and stock purchase deductions. Currently, the payroll department handles these tasks manually at the end of each pay period.

3. Payroll department overtime averages about eight hours per week, plus an additional eight hours at the end of the month, when stock purchase deductions are applied. Total annual overtime is about 512 hours. The average hourly base rate for payroll staff is $16.00, with an overtime rate of $24.00 per hour. The additional expense is about $12,288 per year.

4. SWL developed its current payroll procedures 10 years ago, when the company had only 75 employees. At that time, the only payroll deductions were legally required tax items. Today, the payroll system handles over 450 people and many deduction options that must be verified and applied manually.

**Recommendations**

The current problems will intensify as SWL continues to grow. At this point, it is unclear whether the current system can be modified to handle tasks that are being done manually. Accordingly, the IT department recommends a full analysis of the current system and possible solutions. The project should focus on two main areas: manual processing at SWL and computer-based payroll processing at BIS.

**Time and Cost Estimates**

We can perform a study during a two-week period. In addition to the time spent by IT staff, we will conduct about 20 hours of interviews with people outside the IT department. The following is a rough estimate of costs through the systems analysis phase:

- Systems analyst: 2.0 weeks @ $1,400 per week = $2,800
- Other SWL staff: 0.5 weeks @ $1,000 per week (average) = 500
- Total: $3,300

If the project continues beyond the systems analysis phase, total cost will depend on what development strategy is followed. If the current system can be modified, we estimate a total project effort of $20,000 to $30,000 over a four-month period. If modification is not feasible, a revised cost estimate will be submitted.

**Expected Benefits**

A sharp reduction in overtime costs and processing errors will avoid unnecessary expense and improve employee morale. During the systems analysis phase, the IT department will investigate various strategies and solutions to address current problems and strengthen SWL’s ability to handle payroll-related IT issues in the future.

**FIGURE 2-29**

A typical preliminary investigation report includes findings, recommendations, and estimated costs and benefits.
SWL Team Tasks

1. You have been assigned to write a formal mission statement for SWL. Start by reviewing SWL's background in Chapter 1, then do Internet research to find mission statements that seem clear, focused, and easy to understand. Pay special attention to Web-based and catalog retail firms to see how they approach the issue.

2. Review the preliminary investigation report to see whether all four feasibility tests were discussed in the report. Write a brief summary of your findings.

3. Review the payroll department organization information on page nn. Using this information, prepare an organization chart for this group. In Word 2010 and Word 2007, click the Insert tab on the Ribbon, then SmartArt, then Hierarchy.

4. Rick asked you to investigate other firms that offer payroll processing services. Perform an Internet search using the term “payroll processing services.” Try your search both with and without placing quotes around the phrase and notice what happens. Based on your search results, select an example of a payroll processing firm and write a brief report to Rick. Include the firm’s name, Web address, and services offered.

Manage the SWL Project

You have been asked to manage SWL’s new information system project. One of your most important activities will be to identify project tasks and determine when they will be performed. Before you begin, you should review the SWL case in this chapter. Then list and analyze the tasks, as follows:

LIST THE TASKS Start by listing and numbering at least 10 tasks that the SWL team needs to perform to fulfill the objectives of this chapter. Your list can include SWL Team Tasks and any other tasks that are described in this chapter. For example, Task 3 might be to Prepare a payroll department organization chart, and Task 6 might be to Review payroll department job descriptions.

ANALYZE THE TASKS Now study the tasks to determine the order in which they should be performed. First identify all concurrent tasks, which are not dependent on other tasks. In the example shown in Figure 2-30, Tasks 1, 2, 3, 4, and 5 are concurrent tasks, and could begin at the same time if resources were available.

Other tasks are called dependent tasks, because they cannot be performed until one or more earlier tasks have been completed. For each dependent task, you must identify specific tasks that need to be completed before this task can begin. For example, you would want an organization chart to help you identify the payroll department positions, so Task 6 cannot begin until Task 3 is completed, as Figure 2-30 shows.
Chapter Capstone Case: SoftWear, Limited (continued)

Chapter 3 describes project management tools, techniques, and software. To learn more, you can use the Features section on your Student Study Tool CD-ROM, or visit the Management Information Systems CourseMate Web site at www.cengagebrain.com and locate the project management resources library for this book. On the Web, Microsoft offers demo versions, training, and tips for using Project 2010 and 2007. You also can visit the OpenWorkbench.org site to learn more about this free, open-source software.
Ready for a Challenge?

As an IT intern at Game Technology, you often assist analysts with feasibility studies. The work can include intense fact-finding and tight deadlines. You decide to add a new section to your journal to describe the four different types of feasibility. In your journal, you want to include a definition of each feasibility type, and a sample statement that would indicate a lack of feasibility.

For example:
- The hardware has limited capacity for future needs.
- Our users will resist the new system because it is the third change in 18 months.
- The project will take too long to pay for itself.
- Development cannot begin until next year, which is too late.

You also want to learn more about project constraints. You know that constraints can be grouped into various categories: present vs. future, internal vs. external, and mandatory vs. desirable. You plan to use a grid chart like the one in Figure 2-20 on page 75 to show the constraints. To get started, you come up with three sample constraints:
- The new IRS tax rates must go into effect as soon as possible.
- From now on, we should try to hire technicians with A+ certifications.
- Starting next year, government regulations will require a detailed security analysis.

Practice Tasks
A. Define each feasibility type and include an example that shows a lack of feasibility.
B. Create a grid chart that shows the sample constraints. Use Figure 2-20 as a model.

After you complete the Practice Tasks, to check your work and view sample answers, visit the Management Information Systems CourseMate Web site at www.cengagebrain.com, navigate to the resources for this chapter, and locate Ready for a Challenge?.

The Challenge
It’s fortunate that you studied various feasibility types. Felisia Stukes, the IT director, wants you to review the following statements and decide which type of feasibility applies:
- Based on the future cost of support and maintenance, TCO will be very high.
- The network will not be ready until next year, which might be too late.
- Expensive training will be required.
- The current system is well liked and effective, and users see no need for change.
- The hardware is unreliable and will not integrate with other company systems.
- The new system will cause a workforce reduction, and employees are very concerned.
- The platform does not have capacity for future needs, and cannot be expanded.
- The project does not meet the company policy for acceptable return on investment.
- The projected benefits do not outweigh the estimated costs.
- The software will not be available until May, and that will cause an unacceptable delay.

Felisia wants to see a grid chart that will properly show the following constraints:
- Management told all departments to include “green” goals in next year’s plan.
- The inventory system would be more effective if we add RFID capability next year.
- Management just announced a change in travel policy: No more first class air travel!
- Effective immediately, our products must meet all government standards.

Challenge Tasks
A. Reply to Felisia and indicate the type of feasibility for each statement.
B. Draw a grid chart that shows the constraints. Use Figure 2–20 as a model.