INTRODUCTION

Most IT departments face a demand for IT projects that far exceeds the department's ability to supply them. In the past 10 years, business application growth has exploded, and *chief information officers* (CIOs) are challenged to select projects that will provide the highest possible return on IT investments while managing project risk. In a recent analysis, AMR Research Inc. found that 2%–15% of projects taken on by IT departments are not strategic to the business.[1] In today's globally competitive business environment, the corporate IT department needs to carefully prioritize, select, and manage its portfolio of development projects.

Historically, IT departments have tended to select projects by ad hoc methods: first-in, first-out; political clout; or the squeaky wheel getting the grease. In recent years, IT departments have collected project information and mapped the projects' contributions to business goals, using a project portfolio perspective.[2] *Project portfolio management*, a process of selecting, prioritizing, and monitoring project results, has become a critical success factor for IT departments facing too many potential projects with too few resources.[3] Software for project portfolio management, such as Hewlett Packard's *Project and Portfolio Management*, Primavera Systems' *ProSight*, and open-source *Project.net*, has become a valuable tool for IT organizations.

Once selected, a systems development project undergoes a thorough process of *project management*, the process of planning and controlling the project within a specified time frame, at minimum cost, with the desired outcomes.[4] A *project manager* has the primary responsibility for managing the hundreds of tasks and roles that need to be carefully coordinated. Project management has evolved into an actual profession with many training options and professional certification (e.g., Project Management Professional, or PMP) available through the Project Management Institute (www.pmi.org). Dozens of software products are available to support project management activities.

Although training and software are available to help project managers, unreasonable demands set by project sponsors and business managers can make project management very difficult. Too often, the approach of the holiday season, the chance at winning a proposal with a low bid, or a funding opportunity pressures project managers to promise systems long before they are realistically able to deliver them. These overly optimistic timetables are thought to be one of the biggest problems that projects face; instead of pushing a project forward faster, they result in delays.

Thus, a critical success factor for project management is to start with a realistic assessment of the work that needs to be accomplished and then manage the project according to the plan. This can be accomplished by carefully following the basic steps of project management as outlined in this chapter. First, the project manager chooses a system development methodology that fits the characteristics of the project. Based on the size of the system, estimates of a time frame are made. Then, a list of tasks to be performed is created that forms the basis of the project work plan. Staffing needs are determined, and the project manager sets in place mechanisms to coordinate the project team throughout the project. Finally, the project manager monitors the project and refines estimates as work proceeds.

[1] Tucci, Linda, "PPM Strategy a CIO's Must-Have in Hard Times," *SearchCIO.com*, March 5, 2008.

[2] Ibid.

[3] Tucci, Linda, "Project portfolio management takes flight at Sabre," *SearchCIO.com,* November 28, 2007.

[4] A good book on project management is by Robert K. Wysocki, *Effective Project Management: Traditional, Adaptive, Extreme,* 5th Ed., New York: John Wiley & Sons, 2009. Also, the Project Management Institute (www.pmi.org) and the Information Systems Special Interest Group of the Project Management Institute (www.pmi-issig.org) have valuable resources on project management in information systems.

CONCEPTS IN ACTION

2-A Project Portfolio Management: An Essential Tool for IT Departments

Information systems are at the core of Sabre Holdings Corporation. The Sabre reservation system is the booking system of choice for travel agencies worldwide. Sabre is also the parent company of Travelocity.com, the second largest online travel agency in the United States.

Like many companies, Sabre's IT department struggles with many more project requests than it has resources to accomplish—as many as 1500 proposals for 600 funded projects annually. Because of the volatile, competitive nature of the travel industry, Sabre is especially challenged to be certain that IT is doing the right projects under constantly changing conditions. While traditional project management techniques focus on getting individual projects done, Sabre needs to be able to rapidly change the entire set of projects it's working on as market conditions shift.

Project portfolio management software collects and manages information about all projects—those that are underway and those that are awaiting approval. The software helps prioritize projects, allocate employees, monitor projects in real time, flag cost and time variances, measure the ROI, and help the IT department objectively measure the efficiency and efficacy of IT investments.

Primavera Systems' PPM software has enabled Sabre Holdings to update its queue of projects regularly, and projects are now prioritized quarterly instead of annually. A study of users of Hewlett Packard's PPM Center software found that in all cases, the investment in the software paid for itself in a year. Other findings were an average 30% increase in on-time projects, a 12% reduction in budget variance, and a 30% reduction in the amount of time IT spent on project reporting.

Sources: Tucci, Linda, "Project portfolio management takes flight at Sabre," SearchCIO.com, November 28, 2007.

Tucci, Linda, "PPM strategy a CIO's must-have in hard times," SearchCIO.com, March 5, 2008.

PROJECT SELECTION

Many IT organizations tackle a number of important initiatives simultaneously. For example, new software applications may be under development; new business models may be under consideration; organizational structures may be revised; new technical infrastructures may be evaluated. Collectively, these endeavors are managed as a *program* by the IT steering committee. The steering committee must provide oversight and governance to the entire set of projects that are undertaken by the IT organization. The individual projects that are accepted by the steering committee are temporary endeavors undertaken to create a unique product or service.

Investments in information systems projects today are evaluated in the context of an entire portfolio of projects. Decision makers look beyond project cost and consider a project's anticipated risks and returns in relation to other projects. Companies prioritize their business strategies and then assemble and assess project portfolios on the basis of how they meet those strategic needs.

The focus on a project's contribution to an entire portfolio of projects reinforces the need for the feasibility study as described in Chapter 1. The approval committee has the responsibility to evaluate not only the project's costs and expected benefits, but also the technical and organizational risks associated with the project. The feasibility analysis is submitted back to the approval committee, along with an updated system request. Using this information, the approval committee can examine the business need (found in the system request) and the project risks (described in the feasibility analysis).

Portfolio management takes into consideration the different kinds of projects that exist in an organization—large and small, high risk and low risk, strategic and tactical.

Size	What is the size? How many people are needed to work on the project?
Cost	How much will the project cost the organization?
Purpose	What is the purpose of the project? Is it meant to improve the technical infrastructure? support a current business strategy? improve operations? demonstrate a new innovation?
Length	How long will the project take before completion? How much time will go by before value is delivered to the business?
Risk	How likely is it that the project will succeed or fail?
Scope	How much of the organization is affected by the system? a department? a division? the entire corporation?
Economic Value	How much money does the organization expect to receive in return for the amount the project costs?

FIGURE 2-1
Ways to Classify Projects

(See Figure 2-1 for different ways of classifying projects.) A good project portfolio will have the most appropriate mix of projects for the organization's needs. The committee acts as a portfolio manager, with the goal of maximizing benefits versus costs and balancing other important factors of the portfolio. For example, an organization may want to keep high-risk projects to a level less than 20% of its total project portfolio.

The approval committee must be selective about where to allocate resources, because the organization has limited funds. This involves *trade-offs* in which the organization must give up something in return for something else in order to keep its portfolio well balanced. If there are three potentially high-payoff projects, yet all have very high risk, then maybe only one of the projects will be selected. Also, there are times when a system at the project level makes good business sense, but it does not at the organization level. Thus, a project may show a very strong economic feasibility and support important business needs for a part of the company; however, it is not selected. This could happen for many reasons—because there is no money in the budget for another system, the organization is about to go through some kind of change (e.g., a merger, an implementation of a company-wide system like an ERP), projects that meet the same business requirements already are underway, or the system does not align well with current or future corporate strategy.

Applying the Concepts at Tune Source

The approval committee met and reviewed the Digital Music Download project along with two other projects—one that called for a new supply-chain portal and another that involved the enhancement of Tune Source's data warehouse. Unfortunately, the budget would allow for only one project to be approved, so the committee carefully examined

YOUR TURN

2-1 To Select or Not to Select

It seems hard to believe that an approval committee would not select a project that meets real business needs, has a high potential ROI, and has a positive feasibility analysis. Think of a company that you have worked for or know about. Describe a scenario in which a project may be very attractive at the project level, but not at the organization level.

YOUR TURN

2-2 Project Selection

In April 1999, one of Capital Blue Cross' health-care insurance plans had been in the field for three years, but hadn't performed as well as expected. The ratio of premiums to claims payments wasn't meeting historic norms. In order to revamp the product features or pricing to boost performance, the company needed to understand why it was underperforming. The stakeholders came to the discussion already knowing they needed better extraction and analysis of usage data in order to understand product shortcomings and recommend improvements.

After listening to input from the user teams, the stakeholders proposed three options. One was to persevere with the current manual method of pulling data from flat files via ad hoc reports and retyping it into spreadsheets.

The second option was to write a program to dynamically mine the needed data from Capital's customer information control system (CICS). While the system was processing claims, for instance, the program would pull out up-to-the-minute data at a given point in time for users to analyze.

The third alternative was to develop a decision-support system to allow users to make relational queries from a data mart containing a replication of the relevant claims and customer data.

Each of these alternatives was evaluated on cost, benefits, risks, and intangibles.

Question:

1. What are three costs, benefits, risks, and intangibles associated with each project?
2. Based on your answer to question 1, which project would you choose?

Source: "Capital Blue Cross," *CIO Magazine,* February 15, 2000, by Richard Pastore.

the costs, expected benefits, risks, and strategic alignment of all three projects. Currently, top management is anxious to bring the digital music download capability to market in order to satisfy the demands of its existing customers and potentially expand its customer base. The Digital Music Download project is best aligned with that goal. Therefore, the committee decided to fund the Digital Music Download project.

CONCEPTS IN ACTION

2-B Interview with Lyn McDermid, CIO, Dominion Virginia Power

A CIO needs to have a global view when identifying and selecting projects for her organization. I would get lost in the trees if I were to manage on a project-by-project basis. Given this, I categorize my projects according to my three roles as a CIO, and the mix of my project portfolio changes depending on the current business environment.

My primary role is to **keep the business running**. That means every day when each person comes to work, they can perform his or her job efficiently. I measure this using various service level, cost, and productivity measures. Projects that keep the business running could have a high priority if the business were in the middle of a merger, or a low priority if things were running smoothly, and it were "business as usual."

My second role is to push **innovation that creates value for the business**. I manage this by looking at our lines of business and asking which lines of business create the most value for the company. These are the areas for which I should be providing the most value. For example, if we had a highly innovative marketing strategy, I would push for innovation there. If operations were running smoothly, I would push less for innovation in that area.

My third role is strategic, to look beyond today and find **new opportunities** for both IT and the business of providing energy. This may include investigating process systems, such as automated meter reading or looking into the possibilities of wireless technologies.

Lyn McDermid

CONCEPTS IN ACTION

2-C Interview with Carl Wilson, CIO, Marriott Corporation

At Marriott, we don't have IT projects—we have business initiatives and strategies that are enabled by IT. As a result the only time a traditional "IT project" occurs is when we have an infrastructure upgrade that will lower costs or leverage better functioning technology. In this case, IT has to make a business case for the upgrade and prove its value to the company.

The way IT is involved in business projects in the organization is twofold. First, senior IT positions are filled by people with good business understanding. Second, these people are placed on key business committees and forums where the real business happens, such as finding ways to satisfy guests. Because IT has a seat at the table, we are able to spot opportunities to support business strategy. We look for ways in which IT can enable or better support business initiatives as they arise.

Therefore, business projects are proposed, and IT is one component of them. These projects are then evaluated the same as any other business proposal, such as a new resort—by examining the return on investment and other financial measures.

At the organizational level, I think of projects as must-do's, should-do's, and nice-to-do's. The "must-do's" are required to achieve core business strategy, such as guest preference. The "should-do's" help grow the business and enhance the functionality of the enterprise. These can be somewhat untested, but good drivers of growth. The "nice-to-do's" are more experimental and look further out into the future.

The organization's project portfolio should have a mix of all three kinds of projects, with a much greater proportion devoted to the "must-do's." *Carl Wilson*

CONCEPTS IN ACTION

2-D A Project That Does Not Get Selected

Hygeia Travel Health is a Toronto-based health insurance company whose clients are the insurers of foreign tourists to the United States and Canada. Its project selection process is relatively straightforward. The project evaluation committee, consisting of six senior executives, splits into two groups. One group includes the CIO, along with the heads of operations and research and development, and it analyzes the costs of every project. The other group consists of the two chief marketing officers and the head of business development, and they analyze the expected benefits. The groups are permanent, and to stay objective, they don't discuss a project until both sides have evaluated it. The results are then shared, both on a spreadsheet and in conversation. Projects are then approved, passed over, or tabled for future consideration.

Last year, the marketing department proposed purchasing a claims database filled with detailed information on the costs of treating different conditions at different facilities. Hygeia was to use this information to estimate how much money insurance providers were likely to owe on a given claim if a patient was treated at a certain hospital as opposed to any other. For example, a 45-year-old man suffering a heart attack may accrue $5000 in treatment costs at hospital A, but only $4000 at hospital B. This information would allow Hygeia to recommend the less expensive hospital to its customer. That would save the customer money and help differentiate Hygeia from its competitors.

The benefits team used the same three-meeting process to discuss all the possible benefits of implementing the claims database. Members of the team talked to customers and made a projection by using Hygeia's past experience and expectations about future business trends. The verdict: The benefits team projected a revenue increase of $210,000. Client retention would rise by 2%, and overall, profits would increase by 0.25%.

The costs team, meanwhile, came up with large estimates: $250,000 annually to purchase the database and an additional $71,000 worth of internal time to make the information usable. Put it all together and it was a financial loss of $111,000 in the first year.

The project still could have been good for marketing—maybe even good enough to make the loss acceptable. But some of Hygeia's clients were also in the claims information business and, therefore, potential competitors. This, combined with the financial loss, was enough to make the company reject the project.

Source: "Two Teams Are Better Than One," *CIO Magazine,* July 15, 2001, by Ben Worthen.

CREATING THE PROJECT PLAN

Once the project is launched by being selected by the approval committee, it is time to carefully plan the project. The project manager will follow a set of project management guidelines, sometimes referred to as the project management life cycle, as he or she organizes, guides, and directs the project from inception to completion. Generally speaking, the project management phases consist of initiation, planning, execution, control, and closure.

In large organizations or on large projects, the role of project manager is commonly filled by a professional specialist in project management. In smaller organizations or on smaller projects, the systems analyst may fill this role. The project manager must make a myriad of decisions regarding the project, including determining the best project methodology, developing a work plan for the project, determining a staffing plan, and establishing mechanisms to coordinate and control the project.

Project Methodology Options

As we discussed in Chapter 1, the Systems Development Life Cycle (SDLC) provides the foundation for the processes used to develop an information system. A *methodology* is a formalized approach to implementing the SDLC (i.e., it is a list of steps and deliverables). There are many different systems development methodologies, and they vary in terms of the progression that is followed through the phases of the SDLC. Some methodologies are formal standards used by government agencies, while others have been developed by consulting firms to sell to clients. Many organizations have their own internal methodologies that have been refined over the years, and they explain exactly how each phase of the SDLC is to be performed in that company. Here we will review several of the predominant methodologies that have evolved over time.

Waterfall Development With *waterfall development*, analysts and users proceed sequentially from one phase to the next. (See Figure 2-2.) The key deliverables for each phase are typically voluminous (often, hundreds of pages) and are presented

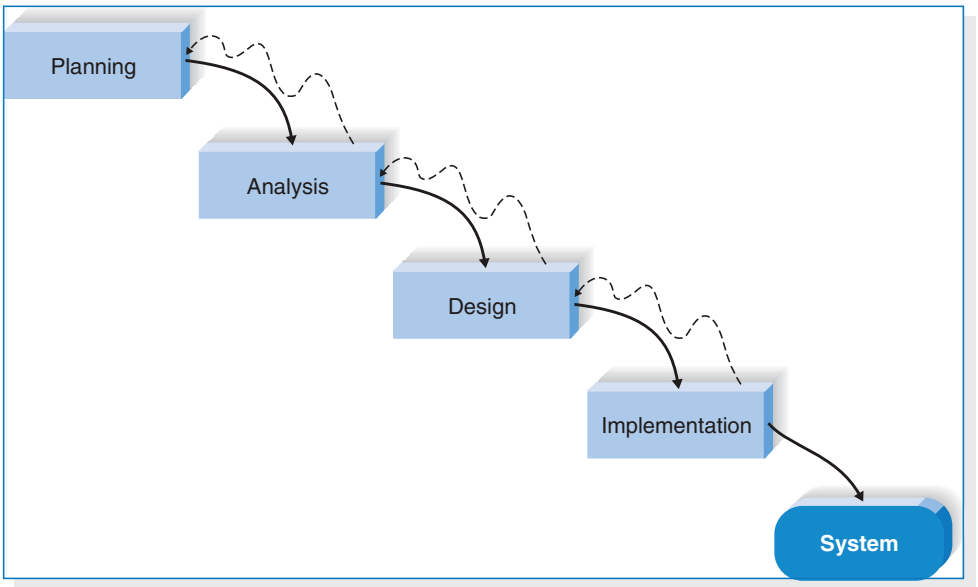

FIGURE 2-2
Waterfall Development