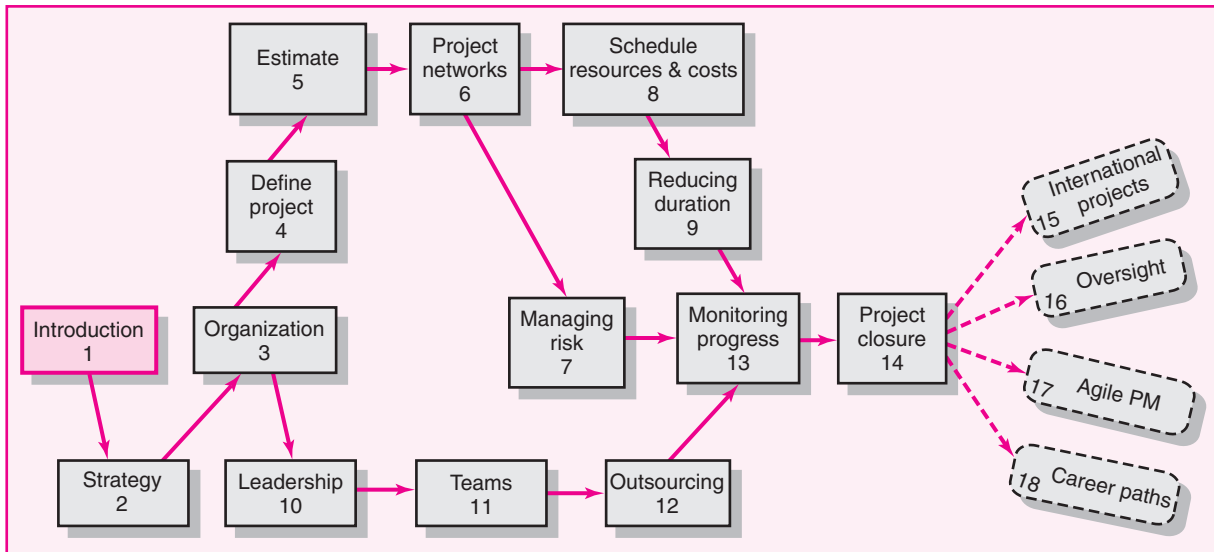


Modern Project Management



Modern Project Management

What Is a Project?

The Importance of Project Management

Project Management Today—An Integrative Approach

Summary

Text Overview

All of mankind's greatest accomplishments—from building the great pyramids to discovering a cure for polio to putting a man on the moon—began as a project.

This is a good time to be reading a book about project management. Business leaders and experts have proclaimed that project management is a strategic imperative. Project management provides people with a powerful set of tools that improves their ability to plan, implement, and manage activities to accomplish specific organizational objectives. But project management is more than just a set of tools; it is a results-oriented management style that places a premium on building collaborative relationships among a diverse cast of characters. Exciting opportunities await people skilled in project management.

The project approach has long been the style of doing business in the construction industry, U.S. Department of Defense contracts, and Hollywood as well as big consulting firms. Now project management has spread to all avenues of work. Today, project teams carry out everything from port expansions to hospital restructuring to upgrading information systems. They are creating next generation, fuel efficient vehicles, developing sustainable sources of energy, and exploring the farthest reaches of outer space. The impact of project management is most profound in the electronics industry, where the new folk heroes are young professionals whose Herculean efforts lead to the constant flow of new hardware and software products.

Project management is not limited to the private sector. Project management is also a vehicle for doing good deeds and solving social problems. Endeavors such as providing emergency aid to the Gulf Coast devastated by hurricane Katrina, devising a strategy for reducing crime and drug abuse within a city, or organizing a community effort to renovate a public playground would and do benefit from the application of modern project management skills and techniques.

Perhaps the best indicator of demand for project management can be seen in the rapid expansion of the Project Management Institute (PMI), a professional organization for project managers. PMI membership has grown from 93,000 in 2002 to more than 270,000 currently. See the PMI Snapshot from Practice for information regarding professional certification in project management.

It's nearly impossible to pick up a newspaper or business periodical and not find something about projects. This is no surprise! Approximately \$2.5 trillion (about 25 percent of the U.S. gross national product) are spent on projects each year in the United States alone. Other countries are increasingly spending more on projects. Millions of people around the world consider project management the major task in their profession.

Project management is not without problems. The Standish Group has tracked the management of information technology (IT) projects since 1994. This firm's periodic landmark reports summarize the continued need for improved project management. For over a decade the Standish Reports of management of IT projects showed improvements. In 1994 approximately 16 percent of IT projects were completed on time, on budget; in 2004 the success rate moved up to 29 percent.

SNAPSHOT FROM PRACTICE

The Project Management Institute



The Project Management Institute (PMI) was founded in 1969 as an international society for project managers. Today PMI has members from more than 125 countries and more than 270,000 members. PMI professionals come from virtually every major industry, including aerospace, automotive, business management, construction, engineering, financial services, information technology, pharmaceuticals, health care, and telecommunications.

PMI provides certification as a **Project Management Professional (PMP)**—someone who has documented sufficient project experience, agreed to follow the PMI code of professional conduct, and demonstrated mastery of the field of project management by passing a comprehensive examination. The number of people earning PMP status has grown dramatically in recent years. In 1996 there were fewer than 3,000 certified project management professionals. By the end of 2009 there were more than 350,000 PMPs!

Just as the CPA exam is a standard for accountants, passing the PMP exam may become the standard for project managers. Some companies are requiring that all their project managers be PMP certified. Moreover, many job postings are restricted to PMPs. Job seekers, in general, are finding that being PMP certified is an advantage in the marketplace.

PMI recently added a certification as a *Certified Associate in Project Management (CAPM)*. CAPM is designed for project team members and entry-level project managers, as well as qualified undergraduate and graduate students who want a credential to recognize their mastery of the project management body of knowledge. CAPM does not require the extensive project management experience associated with the PMP. For more details on PMP and CAPM, “google” PMI to find the current Web site for the Project Management Institute.

Failed projects also declined from 31 percent in 1994 to 18 percent in 2004. However, the CHAOS Summary 2009 report shows a small decrease in the numbers. This survey report shows only 32 percent of IT projects were delivered on time and within budget. However, 44 percent were “challenged,” which means they were late, over budget, and/or missed meeting performance requirements. In addition, 24 percent failed, were cancelled, or never used. Jim Crear, Standish Group CIO, notes this is the highest failure rate in over a decade.

The need for elevating performance continues to challenge the project management profession. The waste on failed projects and cost overruns is estimated in the neighborhood of over \$150 billion!

Most of the people who excel at managing projects never have the title of project manager. They include accountants, lawyers, administrators, scientists, contractors, public health officials, teachers, and community advocates whose success depends upon being able to lead and manage project work. For them project management is not a title but a critical job requirement. It is hard to think of a profession or a career path that would not benefit from being good at managing projects.

Not only is project management critical to most careers, the skill set is transferable across most businesses and professions. At its core, project management fundamentals are universal. The same project management methodology that is used to develop a new product can be adapted to create new services, organize events, refurbish aging operations, and so forth. In a world where it is estimated that each person is likely to experience three to four career changes, managing projects is a talent worthy of development.

The significance of project management can also be seen in the classroom. Twenty years ago major universities offered one or two classes in project management, primarily for engineers. Today, most universities offer multiple sections of project management classes, with the core group of engineers being supplemented by business students majoring in marketing, management information systems (MIS), and finance, as well as students from other disciplines such as oceanography, health sciences, computer sciences, and liberal arts. These students are finding that their

exposure to project management is providing them with distinct advantages when it comes time to look for jobs. More and more employers are looking for graduates with project management skills. The logical starting point for developing these skills is understanding the uniqueness of a project and of project managers.

What Is a Project?

What do the following headlines have in common?

Superbowl half-time show scores a touchdown

Citywide WiFi system set to go live

1000 acre Wind Farm turns on the juice

Apple's new iPhone hits the market

City receives stimulus funds to expand light rail system

All of these events represent projects.



Superbowl halftime show.

The Project Management Institute provides the following definition of a project:

A **project** is a temporary endeavor undertaken to create a unique product, service, or result.

Like most organizational effort, the major goal of a project is to satisfy a customer's need. Beyond this fundamental similarity, the characteristics of a project help differentiate it from other endeavors of the organization. The major characteristics of a project are as follows:

1. An established objective.
2. A defined life span with a beginning and an end.
3. Usually, the involvement of several departments and professionals.
4. Typically, doing something that has never been done before.
5. Specific time, cost, and performance requirements.

First, projects have a defined objective—whether it is constructing a 12-story apartment complex by January 1 or releasing version 2.0 of a specific software

package as quickly as possible. This singular purpose is often lacking in daily organizational life in which workers perform repetitive operations each day.

Second, because there is a specified objective, projects have a defined endpoint, which is contrary to the ongoing duties and responsibilities of traditional jobs. In many cases, individuals move from one project to the next as opposed to staying in one job. After helping to install a security system, an IT engineer may be assigned to develop a database for a different client.

Third, unlike much organizational work that is segmented according to functional specialty, projects typically require the combined efforts of a variety of specialists. Instead of working in separate offices under separate managers, project participants, whether they be engineers, financial analysts, marketing professionals, or quality control specialists, work closely together under the guidance of a project manager to complete a project.

The fourth characteristic of a project is that it is nonroutine and has some unique elements. This is not an either/or issue but a matter of degree. Obviously, accomplishing something that has never been done before, such as building a hybrid (electric/gas) automobile or landing two mechanical rovers on Mars, requires solving previously unsolved problems and breakthrough technology. On the other hand, even basic construction projects that involve established sets of routines and procedures require some degree of customization that makes them unique.

Finally, specific time, cost, and performance requirements bind projects. Projects are evaluated according to accomplishment, cost, and time spent. These triple constraints impose a higher degree of accountability than you typically find in most jobs. These three also highlight one of the primary functions of project management, which is balancing the trade-offs between time, cost, and performance while ultimately satisfying the customer.

What a Project Is Not Projects should not be confused with everyday work. A project is not routine, repetitive work! Ordinary daily work typically requires doing the same or similar work over and over, while a project is done only once; a new product or service exists when the project is completed. Examine the list in Table 1.1 that compares routine, repetitive work and projects. Recognizing the difference is important because too often resources can be used up on daily operations which may not contribute to longer range organization strategies that require innovative new products.

Program versus Project In practice the terms project and program cause confusion. They are often used synonymously. A **program** is a group of related projects designed to accomplish a common goal over an extended period of time. Each project within a program has a project manager. The major differences lie in scale and time span.

Program management is the process of *managing* a group of ongoing, interdependent, related *projects* in a coordinated way to achieve strategic objectives. For

TABLE 1.1
Comparison of
Routine Work with
Projects

Routine, Repetitive Work	Projects
Taking class notes	Writing a term paper
Daily entering sales receipts into the accounting ledger	Setting up a sales kiosk for a professional accounting meeting
Responding to a supply-chain request	Developing a supply-chain information system
Practicing scales on the piano	Writing a new piano piece
Routine manufacture of an Apple iPod	Designing an iPod that is approximately 2 × 4 inches, interfaces with PC, and stores 10,000 songs
Attaching tags on a manufactured product	Wire-tag projects for GE and Wal-Mart

example, a pharmaceutical organization could have a program for curing cancer. The cancer program includes and coordinates *all* cancer projects that continue over an extended time horizon. Coordinating all cancer projects under the oversight of a cancer team provides benefits not available from managing them individually. This cancer team also oversees the selection and prioritizing of cancer projects that are included in their special “Cancer” portfolio. Although each project retains its own goals and scope, the project manager and team are also motivated by the higher program goal. Program goals are closely related to broad strategic organization goals.

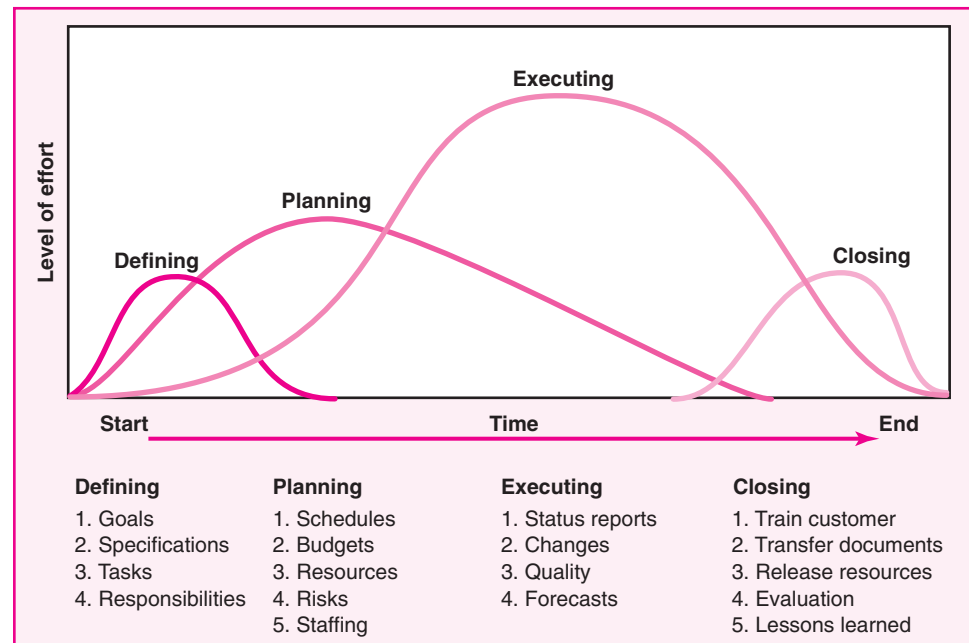
The Project Life Cycle

Another way of illustrating the unique nature of project work is in terms of the **project life cycle**. Some project managers find it useful to use the project life cycle as the cornerstone for managing projects. The life cycle recognizes that projects have a limited life span and that there are predictable changes in level of effort and focus over the life of the project. There are a number of different life-cycle models in project management literature. Many are unique to a specific industry or type of project. For example, a new software development project may consist of five phases: definition, design, code, integration/test, and maintenance. A generic cycle is depicted in Figure 1.1.

The project life cycle typically passes sequentially through four stages: defining, planning, executing, and delivering. The starting point begins the moment the project is given the go-ahead. Project effort starts slowly, builds to a peak, and then declines to delivery of the project to the customer.

1. **Defining stage:** Specifications of the project are defined; project objectives are established; teams are formed; major responsibilities are assigned.
2. **Planning stage:** The level of effort increases, and plans are developed to determine what the project will entail, when it will be scheduled, whom it will benefit, what quality level should be maintained, and what the budget will be.

FIGURE 1.1
Project Life Cycle



SNAPSHOT FROM PRACTICE

Project Management in Action: 2009



Businesses thrive and survive based on their ability to manage projects that produce products and services that meet market needs. Below is a small sample of projects that are important to their company's future.

COMPANY: NINTENDO

Project: Next Generation Nintendo Wii Game Console

According to Internet rumors, the new console will be based on entirely new hardware that will pump out HD visuals, contain expanded storage, and run using digitally distributed content rather than physical discs. The new console will expand the capability of Wii's revolutionary handheld pointer device that detects movement in three dimensions. At stake is Nintendo's position in the \$10 billion plus gaming industry.

—C. Faylor, 2008

COMPANY: OAKLAND A'S BASEBALL TEAM

Project: Cisco Stadium

In November 2006, the future of the Oakland A's looked bright as the team announced plans to build a new ballpark in Fremont, CA. Upon announcing plans to build a ballpark, the Oakland A's sold the naming rights to the ballpark to Cisco Systems for \$4 million/year over 30 years. The ballpark design mimicked classic ballparks of the past, while combining the most advanced technology in the world. Those plans have since been derailed as opposition increased from major retailers and homeowners near the stadium site. It now appears that the A's will have to develop a plan that may lead the team to building the ballpark in Oakland, near the coliseum, or possibly in San Jose, CA. The A's need the new stadium to turn around lagging attendance, which has been at or near the bottom among major league baseball clubs.

—BBoA, 2009

3. **Executing stage:** A major portion of the project work takes place—both physical and mental. The physical product is produced (a bridge, a report, a software program). Time, cost, and specification measures are used for control. Is the project on schedule, on budget, and meeting specifications? What are the forecasts of each of these measures? What revisions/changes are necessary?

COMPANY: GENERAL MOTORS**Project: Chevrolet Volt**

The Chevrolet Volt is a plug-in hybrid electric vehicle to go on sale in 2011. Unlike most currently available hybrids, the actual propulsion of the Volt is accomplished exclusively by the electric motor, and the internal combustion engine is used as another charging method. What's at stake is the future of GM. With the company's recent emergence from bankruptcy protection, the chief of GM product development, Tom Stephens, pronounced, "We cannot afford to have anything but a hit . . . every launch . . . has to be a home-run."

—T. Krisher, 2009

COMPANY: KOREAN MIDLAND POWER CO**Project: World's Largest Tidal Turbine Farm**

Korean Midland Power Co. has signed an agreement with Lunar Energy, Britain's leading tidal power company, to build a colossal 300 turbine field in the Wando Hoenggan WaterWay off the South Korean coast by 2015. The \$800 million plus project is expected to provide 300MW of renewable energy, enough to power 200,000 homes. The project entails installing a series of 60 ft-high tidal turbines in deep ocean water. A 1MW pilot plant would be installed first to evaluate the environmental impact before the full-blown is allowed. If successful, the ecological impact is expected to be much less than conventional tidal barges which destroy bird habitats and hinder the passage of migratory fish such as salmon and eels.

—Lunar Energy, 2008

COMPANY: MOTOROLA**Project: Google Android Smart Phones**

Motorola is set to release multiple Google Android smart phones at several different price points. According to chief executive Sanjay Jha, Android has over 3,000 third-party

applications available and "significant developer interest" making it a "large enough eco-system" to become a successful platform. Motorola has seen its phone sales plummet in recent years. The company's global market share has declined to 6 percent after commanding 23 percent in 2006. The new phones are seen as a key to Motorola re-establishing itself in the booming smart phone business.

—S. Segan, 2009

COMPANY: WARNER BROTHERS**Project: *Harry Potter and the Deathly Hallows Part I and Part II***

The *Harry Potter* film franchise is the second highest grossing film franchise of all time, with the five films released to date only slightly behind the 22 *James Bond* films. The adaptation of the final novel in the series, *Harry Potter and the Deathly Hallows*, will be split into two films, with Part I scheduled to be released in 2010 and Part II in 2011. The Harry Potter franchise is seen by movie insiders as critical to staving off the general decline in movie attendance due to economic woes and home entertainment systems.

—J. Kay, 2009

COMPANY: HUMAN GENOMIC SCIENCES**Project: Benlysta**

The new drug, Benlysta, is the first treatment for lupus in decades to show potential far into the testing phase. Lupus is a chronic autoimmune disease in which the body attacks its own healthy tissue. Symptoms include fatigue, headaches, joint pain, light sensitivity, and rashes. Benlysta targets the specific protein that becomes overactive, causing the body to attack its own organs. At stake is relief for the millions of sufferers of lupus worldwide.

—C. Rothman, 2009

4. **Closing stage:** Closing includes three activities: delivering the project product to the customer, redeploying project resources, and post-project review. Delivery of the project might include customer training and transferring documents. Redeployment usually involves releasing project equipment/materials to other projects and finding new assignments for team members. Post-project reviews include not only assessing performance but also capturing lessons learned.

In practice, the project life cycle is used by some project groups to depict the timing of major tasks over the life of the project. For example, the design team might plan a major commitment of resources in the defining stage, while the quality team would expect their major effort to increase in the latter stages of the project life cycle. Because most organizations have a portfolio of projects going on

concurrently, each at a different stage of each project's life cycle, careful planning and management at the organization and project levels are imperative.

The Project Manager

In a small sense project managers perform the same functions as other managers. That is, they plan, schedule, motivate, and control. However, what makes them unique is that they manage temporary, nonrepetitive activities, to complete a fixed life project. Unlike functional managers, who take over existing operations, project managers create a project team and organization where none existed before. They must decide what and how things should be done instead of simply managing set processes. They must meet the challenges of each phase of the project life cycle, and even oversee the dissolution of their operation when the project is completed.

Project managers must work with a diverse troupe of characters to complete projects. They are typically the direct link to the customer and must manage the tension between customer expectations and what is feasible and reasonable. Project managers provide direction, coordination, and integration to the project team, which is often made up of part-time participants loyal to their functional departments. They often must work with a cadre of outsiders—vendors, suppliers, subcontractors—who do not necessarily share their project allegiance.

Project managers are ultimately responsible for performance (frequently with too little authority). They must ensure that appropriate trade-offs are made between the time, cost, and performance requirements of the project. At the same time, unlike their functional counterparts, project managers generally possess only rudimentary technical knowledge to make such decisions. Instead, they must orchestrate the completion of the project by inducing the right people, at the right time, to address the right issues and make the right decisions.

While project management is not for the timid, working on projects can be an extremely rewarding experience. Life on projects is rarely boring; each day is different from the last. Since most projects are directed at solving some tangible problem or pursuing some useful opportunity, project managers find their work personally meaningful and satisfying. They enjoy the act of creating something new and innovative. Project managers and team members can feel immense pride in their accomplishment, whether it is a new bridge, a new product, or needed service. Project managers are often stars in their organization and well compensated.

Good project managers are always in demand. Every industry is looking for effective people who can get the right things done on time. Clearly, project management is a challenging and exciting profession. This text is intended to provide the necessary knowledge, perspective, and tools to enable students to accept the challenge.

The Importance of Project Management

Project management is no longer a special-need management. It is rapidly becoming a standard way of doing business. See Snapshot from Practice: Project Management in Action: 2009. An increasing percentage of the typical firm's effort is being devoted to projects. The future promises an increase in the importance and the role of projects in contributing to the strategic direction of organizations. Several reasons why this is the case are briefly discussed below.

Compression of the Product Life Cycle

One of the most significant driving forces behind the demand for project management is the shortening of the product life cycle. For example, today in high-tech

industries the product life cycle is averaging 1 to 3 years. Only 30 years ago, life cycles of 10 to 15 years were not uncommon. *Time to market* for new products with short life cycles has become increasingly important. A common rule of thumb in the world of high-tech product development is that a six-month project delay can result in a 33 percent loss in product revenue share. Speed, therefore, becomes a competitive advantage; more and more organizations are relying on cross-functional project teams to get new products and services to the market as quickly as possible.

Knowledge Explosion

The growth in new knowledge has increased the complexity of projects because projects encompass the latest advances. For example, building a road 30 years ago was a somewhat simple process. Today, each area has increased in complexity, including materials, specifications, codes, aesthetics, equipment, and required specialists. Similarly, in today's digital, electronic age it is becoming hard to find a new product that does not contain at least one microchip. Product complexity has increased the need to integrate divergent technologies. Project management has emerged as an important discipline for achieving this task.

Triple Bottom Line (planet, people, profit)

The threat of global warming has brought sustainable business practices to the forefront. Businesses can no longer simply focus on maximizing profit to the detriment of the environment and society. Efforts to reduce carbon imprint and utilize renewable resources are realized through effective project management. The impact of this movement towards sustainability can be seen in changes in the objectives and techniques used to complete projects. See Snapshot from Practice: Dell's Children Becomes World's First "Green" Hospital.

Corporate Downsizing

The last decade has seen a dramatic restructuring of organizational life. Downsizing (or rightsizing if you are still employed) and sticking to core competencies have become necessary for survival for many firms. Middle management is a mere skeleton of the past. In today's flatter and leaner organizations, where change is a constant, project management is replacing middle management as a way of ensuring that things get done. Corporate downsizing has also led to a change in the way organizations approach projects. Companies outsource significant segments of project work, and project managers have to manage not only their own people but also their counterparts in different organizations.

Increased Customer Focus

Increased competition has placed a premium on customer satisfaction. Customers no longer simply settle for generic products and services. They want customized products and services that cater to their specific needs. This mandate requires a much closer working relationship between the provider and the receiver. Account executives and sales representatives are assuming more of a project manager's role as they work with their organization to satisfy the unique needs and requests of clients.

Increased customer attention has also prompted the development of customized products and services. For example, 10 years ago buying a set of golf clubs was a relatively simple process: You picked out a set based on price and feel. Today, there are golf clubs for tall players and short players, clubs for players who tend to slice the ball and clubs for those who hook the ball, high-tech clubs with the latest metallurgic discovery guaranteed to add distance, and so forth. Project management is critical both to development of customized products and services and to sustaining lucrative relationships with customers.

SNAPSHOT FROM PRACTICE

Dell Children's Becomes World's First "Green" Hospital*



Dateline 1/7/2009, Austin Texas: Dell Children's Medical Center becomes the first hospital in the world to receive platinum LEED (Leadership in Energy & Environmental Design) certification. Platinum certification is the highest award granted by the U.S. Green Building Council.

Dell Children's occupies nearly one-half million square feet on 32 acres that were once part of Austin's old Mueller Airport. Its environmentally sensitive design not only conserves water and electricity, but positively impacts the hospital's clinical environment by improving air quality, making natural sunlight readily available, and reducing a wide range of pollutants.

In order to receive LEED certification, buildings are rated in five key areas: sustainable site development, water savings, energy efficiency, materials selection, and environmental quality. Listed below are some of the accomplishments in each LEED category:

Sustainable Site

- 47,000 tons of Mueller Airport runway material was reused on site.
- About 40 percent fly ash instead of Portland cement in concrete yields a drop in carbon dioxide emissions equivalent to taking 450 cars off the road.
- 925 tons of construction waste was recycled on site.

Water Efficiency and Water Conservation

- Reclaimed water is used for irrigation; xeriscaped landscaping uses native plants, which require less water.
- Low-flow plumbing fixtures.

Energy Efficiency and Energy Conservation

- An on-site natural gas turbine supplies all electricity, which is 75 percent more efficient than coal-fired plants.
- Converted steam energy from a heating/cooling plant supplies all chilled water needs.

Indoor Environment Quality and Lighting

- Most interior spaces are within 32 feet of a window.
- Motion and natural light sensors shut off unneeded lights.

Conservation of Materials and Resources

- Use of local and regional materials saves fuel for shipping.
- Special paints and flooring emit low levels of volatile organic compounds (VOCs).

"Even before the first plans were drawn up, we set our sight on creating a world-class children's hospital, and becoming the first LEED Platinum hospital in the world was definitely part of that," said Robert Bonar, president and CEO, Dell Children's Medical Center of Central Texas. "Our motivation to pursue LEED Platinum was not just environmental. Being a 'green' hospital has profound, measurable effect on healing. What's good for the environment and good for our neighbors is also good for our patients."

* *Austin Business Journal*, 1-11-2009; www.dellchildrens.net/about_us/news/2009/01/08

Small Projects Represent Big Problems

The velocity of change required to remain competitive or simply keep up has created an organizational climate in which hundreds of projects are implemented concurrently. This climate has created a multiproject environment and a plethora of new problems. Sharing and prioritizing resources across a portfolio of projects is a major challenge for senior management. Many firms have no idea of the problems involved with inefficient management of small projects. Small projects typically carry the same or more risk as do large projects. Small projects are perceived as having little impact on the bottom line because they do not demand large amounts of scarce resources and/or money. Because so many small projects are going on concurrently and because the perception of the inefficiency impact is small, measuring inefficiency is usually nonexistent. Unfortunately, many small projects soon add up to large sums of money. Many customers and millions of dollars are lost each year on small projects in product and service organizations. Small projects can represent hidden costs not measured in the accounting system.

Organizations with many small projects going on concurrently face the most difficult project management problems. A key question becomes one of how to create an organizational environment that supports multiproject management. A process is needed to prioritize and develop a portfolio of small projects that supports the mission of the organization.

In summary, there are a variety of environmental forces interacting in today's business world that contribute to the increased demand for good project management across all industries and sectors. Project management appears to be ideally suited for a business environment requiring accountability, flexibility, innovation, speed, and continuous improvement.

Project Management Today—An Integrative Approach

Competing in a global market influenced by rapid change, innovation, and time to market means organizations manage more and more projects. Some means for coordinating and managing projects in this changing environment is needed. Centralization of project management processes and practices has been the practical outcome. For example, Dell, IBM, Hewlett-Packard, and Intel all have over 1,000 projects being implemented concurrently every day of the year across borders and differing cultures. *Questions: How do these organizations oversee the management of all these projects? How were these projects selected? How do they ensure performance measurement and accountability? How can project management continually improve?* Centralization entails integration of all project processes and practices to improve project management.

Integration is designed to improve project management in the whole organization over the long haul. The rationale for integration of project management was to provide senior management with:

- An overview of all project management activities;
- A big picture of how organizational resources are being used;
- An assessment of the risk their portfolio of projects represents;
- A rough metric for measuring the improvement of managing projects relative to others in the industry;
- Linkages of senior management with actual project execution management.

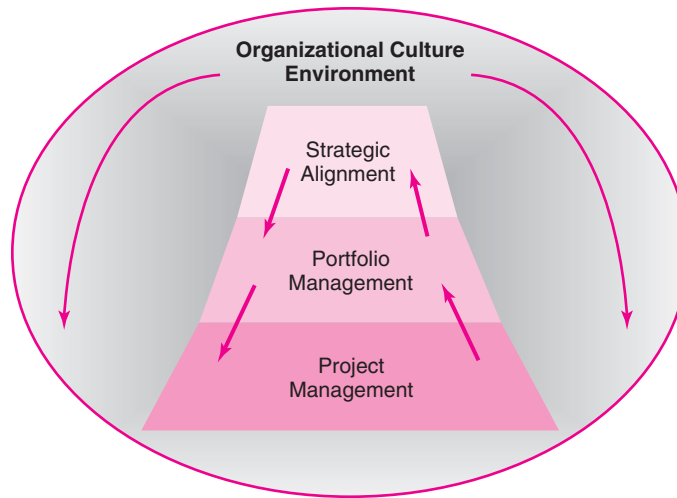
Full insight of all components of the organization is crucial for aligning internal business resources with the requirements of the changing environment. Integration enables management to have greater flexibility and better control of all project management activities.

Operationally, what does project management integration mean? It necessitates combining all of the major dimensions of project management under one umbrella. Each dimension is connected in one seamless, integrated domain. Integration means applying a set of knowledge, skills, tools, and techniques to a collection of projects in order to move the organization toward its strategic goals. This integration movement represents a major thrust of project driven organizations across all industries. See Figure 1.2, Integrated Management of Projects.

Integration of Projects with Organizational Strategy

Today, projects are the *modus operandi* for implementing strategy. Yet in some organizations, selection and management of projects often fail to support the strategic

FIGURE 1.2
Integrated
Management of
Projects



plan of the organization. Strategic plans are written by one group of managers, projects selected by another group, and projects implemented by another. These independent decisions by different groups of managers create a set of conditions leading to conflict, confusion, and frequently an unsatisfied customer. Under these conditions, resources of the organization are wasted in non-value-added activities/projects.

Since projects are the *modus operandi*, strategic alignment of projects is of major importance to conserving and effective use of organization resources. Selection criteria need to ensure each project is prioritized and contributes to strategic goals. Anything less is a waste of scarce organizational resources—people, capital, and equipment. Ensuring alignment requires a selection process that is systematic, open, consistent, and balanced. All of the projects selected become part of a project portfolio that balances the total risk for the organization. Management of the project portfolio ensures that only the most valuable projects are approved and managed across the entire organization.

Integration of Projects through Portfolio Management

The portfolio management domain encompasses project management oversight at the organization level through the project level. Management has the capability to zoom to a wide-angle view or zoom in to a very specific element of a specific project activity or process. Full insight of all components of the organization is crucial for aligning internal business resources with the requirements of the changing environment. Project portfolios are frequently managed by a project office that serves as a bridge between senior management and project managers and teams. The major functions of portfolio management are to

- Oversee project selection.
- Monitor aggregate resource levels and skills.
- Encourage use of best practices.
- Balance projects in the portfolio in order to represent a risk level appropriate to the organization.
- Improve communication among all stakeholders.
- Create a total organization perspective that goes beyond silo thinking.
- Improve the overall management of projects over time.

Portfolio management manages the integration of elements of organizational strategy with projects, along with their interdependencies. At the project level, the management of the portfolio is directed toward creation and use of best practices.

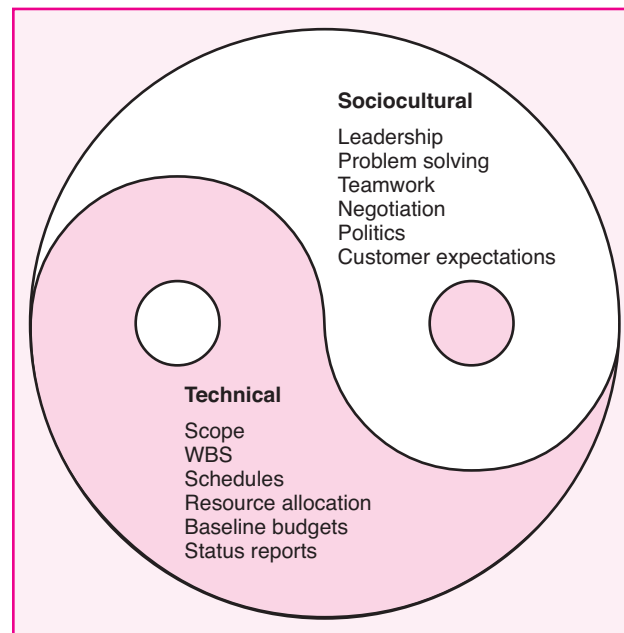
Integration of the Processes of Implementing Actual Projects

Senior management is often involved in selecting projects but seldom involved in implementing them. Implementing the project is the challenge.

There are two dimensions within the actual execution of projects (see Figure 1.3, The Technical and Sociocultural Dimensions of the Project Management Process). The first dimension is the technical side of the management process, which consists of the formal, disciplined, purely logical parts of the process. This technical dimension includes planning, scheduling, and controlling projects. Clear project scope statements are written to link the project and customer and to facilitate planning and control. Creation of the deliverables and work breakdown structures facilitates planning and monitoring the progress of the project. The work breakdown structure serves as a database that links all levels in the organization, major deliverables, and all work—right down to the tasks in a work package. Effects of project changes are documented and traceable. Thus, any change in one part of the project is traceable to the source by the integrated linkages of the system. This integrated information approach can provide all project managers and the customer with decision information appropriate to their level and needs. A successful project manager will be well trained in the technical side of managing projects.

The second and opposing dimension is the sociocultural side of project management. In contrast to the orderly world of project planning, this dimension involves the much messier, often contradictory and paradoxical world of implementation. It centers on creating a temporary social system within a larger organizational environment that combines the talents of a divergent set of professionals working to

FIGURE 1.3
The Technical and Sociocultural Dimensions of the Project Management Process



Research Highlight

Works Well with Others*



The phrase “works well with others” has long been a staple on grade school report cards; now, in the IT world, it’s the No. 1 criterion for management candidates. In a nationwide survey conducted in 1999, 27 percent of chief information officers (CIOs) cited strong interpersonal skills as

the single most important quality for reaching management levels. Advanced technical skills came in second, receiving 23 percent of the response.

The project was sponsored by RHI Consulting, which provides information technology professionals on a project basis. An independent research firm was hired to administer the survey. Over 1,400 CIOs responded to the questionnaire.

Survey respondents were also asked:

In 2005, how frequently will employees in your IT department work on project-based teams with members of other departments throughout the company?

Very frequently	57%
Somewhat frequently	26%
Somewhat infrequently	10%
Very infrequently	6%
Never	1%

Greg Scileppi, RHI Consulting’s executive director, recommends that IT professionals develop their interpersonal skills. “The predominance of project teams has created a corresponding need for strong communication and team-player abilities. Technical staff put these skills to test daily as they work with employees at all levels to create and implement IT solutions ranging from simple troubleshooting to corporate web initiatives and system wide upgrades.”

* Joanita M. Nellenbach, “People Skills Top Technical Knowledge, CIOs Insist,” *PMNetwork* (August 1999), pp. 7–8.

complete the project. See Research Highlight: Works Well with Others. Project managers must shape a project culture that stimulates teamwork and high levels of personal motivation as well as a capacity to quickly identify and resolve problems that threaten project work. This dimension also involves managing the interface between the project and external environment. Project managers have to assuage and shape expectations of customers, sustain the political support of top management, negotiate with their functional counterparts, monitor subcontractors, and so on. Overall, the manager must build a cooperative social network among a divergent set of allies with different standards, commitments, and perspectives.

Some suggest that the technical dimension represents the “science” of project management while the sociocultural dimension represents the “art” of managing a project. To be successful, a manager must be a master of both. Unfortunately, some project managers become preoccupied with the planning and technical dimension of project management. Often their first real exposure to project management is through project management software, and they become infatuated with network charts, Gantt diagrams, and performance variances; they attempt to manage a project from a distance. Conversely, there are other managers who manage projects by the “seat of their pants,” relying heavily on team dynamics and organizational politics to complete a project. Good project managers balance their attention to both the technical and sociocultural aspects of project management.

Summary

There are powerful environmental forces contributing to the rapid expansion of project management approaches to business problems and opportunities. A project is defined as a nonroutine, one-time effort limited by time, resources, and performance specifications designed to meet customer needs. One of the distinguishing characteristics of project management is that it has both a beginning and an end and typically consists of four phases: defining, planning, executing, and closing.

Effective project management begins with selecting and prioritizing projects that support the firm's mission and strategy. Successful implementation requires both technical and social skills. Project managers have to plan and budget projects as well as orchestrate the contributions of others.

Text Overview

This text is written to provide the reader with a comprehensive, integrative understanding of the project management process. The text focuses both on the science of project management and the art of managing projects. Following this introductory chapter, Chapter 2 focuses on how organizations go about evaluating and selecting projects. Special attention is devoted to the importance of linking project selection to the mission and strategy of the firm. The organizational environment in which projects are implemented is the focus of Chapter 3. The discussion of matrix management and other organizational forms is augmented by a discussion of the role the culture of an organization plays in the implementation of projects.

The next six chapters focus on developing a plan for the project; after all, project success begins with a good plan. Chapter 4 deals with defining the scope of the project and developing a work breakdown structure (WBS). The challenge of formulating cost and time estimates is the subject of Chapter 5. Chapter 6 focuses on utilizing the information from the WBS to create a project plan in the form of a timed and sequenced network of activities.

Risks are a potential threat to project management, and Chapter 7 examines how organizations and managers identify and manage risks associated with project work. Resource allocation is added to the plan in Chapter 8 with special attention devoted to how resource limitations impact the project schedule. After a resource schedule is established, a project time-phased budget is developed. Finally, Chapter 9 examines strategies for reducing ("crashing") project time either prior to the initiation of the project or in response to problems or new demands placed on the project.

Chapters 10 through 12 focus on project implementation and the sociocultural side of project management, beginning with Chapter 10, which focuses on the role of the project manager as a leader and stresses the importance of managing project stakeholders within the organization. Chapter 11 focuses on the core project team; it combines the latest information on team dynamics with leadership skills/techniques for developing a high-performance project team. Chapter 12 continues the theme of managing project stakeholders by discussing how to outsource project work and negotiate with contractors, customers, and suppliers.

Chapter 13 focuses on the kinds of information managers use to monitor project progress, with special attention devoted to the key concept of earned value. The project life cycle is completed with Chapter 14, which covers closing out a project and the important assessment of performance and lessons learned. Four "supplemental" chapters are included to augment the project management core. Implementation of project management in multicultural, international environments is the subject of Chapter 15. Chapter 16 focuses the need for organizational oversight and how it impacts the management of projects. The emergence of agile project management, a more flexible approach to managing complex projects, is the subject of Chapter 17. Finally, Chapter 18 concludes with coverage of career issues in the field of project management.

Throughout this text you will be exposed to the major aspects of the project management system. However, a true understanding of project management comes not from knowing what a scope statement is, or the critical path, or partnering with contractors, but from comprehending how the different elements of the project management system interact to determine the fate of a project. If, by the end of this text, you come to appreciate and begin to master both the technical and sociocultural dimensions of project management, you should have a distinct competitive advantage over others aspiring to work in the field of project management.

Key Terms

Program, 6	Project Management
Project, 5	Professional (PMP), 4
Project life cycle, 6	

Review Questions

1. Define a project. What are five characteristics that help differentiate projects from other functions carried out in the daily operations of the organization?
2. What are some of the key environmental forces that have changed the way projects are managed? What has been the effect of these forces on the management of projects?
3. Why is the implementation of projects important to strategic planning and the project manager?
4. The technical and sociocultural dimensions of project management are two sides to the same coin. Explain.
5. What is meant by an integrative approach to project management? Why is this approach important in today's environment?

Exercises

1. Review the front page of your local newspaper, and try to identify all the projects contained in the articles. How many were you able to find?
2. Individually identify what you consider to be the greatest achievements accomplished by mankind in the last five decades. Now share your list with three to five other students in the class, and come up with an expanded list. Review these accomplishments in terms of the definition of a project. What does your review suggest about the importance of project management?
3. Individually identify projects assigned in previous terms. Were both sociocultural and technical elements factors in the success or difficulties in the projects?
4. Check out the Project Management Institute's home page at www.pmi.org.
 - a. Review general information about PMI as well as membership information.
 - b. See if there is a PMI chapter in your state. If not, where is the closest one?
 - c. Use the search function at the PMI home page to find information on Project Management Body of Knowledge (PMBOK). What are the major knowledge areas of PMBOK?
 - d. Explore other links that PMI provides. What do these links tell you about the nature and future of project management?

Note: If you have any difficulty accessing any of the Web addresses listed here or elsewhere in the text, you can find up-to-date addresses on the home page of Dr. Erik Larson, coauthor of this text: <http://www.bus.oregonstate.edu/faculty/bio.htm?UserName=Larson>

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Case

A Day in the Life

Rachel, the project manager of a large information systems project, arrives at her office early to get caught up with work before her co-workers and project team arrive. However, as she enters the office she meets Neil, one of her fellow project managers, who also wants to get an early start on the day. Neil has just completed a project overseas. They spend 10 minutes socializing and catching up on personal news.

It takes Rachel 10 minutes to get to her office and settle in. She then checks her voice mail and turns on her computer. She was at her client’s site the day

before until 7:30 P.M. and has not checked her e-mail or voice mail since 3:30 P.M. the previous day. There are 7 phone messages, 16 e-mails, and 4 notes left on her desk. She spends 15 minutes reviewing her schedule and “to do” lists for the day before responding to messages that require immediate attention.

Rachel spends the next 25 minutes going over project reports and preparing for the weekly status meeting. Her boss, who just arrived at the office, interrupts her. They spend 20 minutes discussing the project. He shares a rumor that a team member is using stimulants on the job. She tells him that she has not seen anything suspicious but will keep an eye on the team member.

The 9:00 A.M. project status meeting starts 15 minutes late because two of the team members have to finish a job for a client. Several people go to the cafeteria to get coffee and doughnuts while others discuss last night’s baseball game. The team members arrive, and the remaining 45 minutes of the progress review meeting surface project issues that have to be addressed and assigned for action.

After the meeting Rachel goes down the hallway to meet with Victoria, another IS project manager. They spend 30 minutes reviewing project assignments since the two of them share personnel. Victoria’s project is behind schedule and in need of help. They broker a deal that should get Victoria’s project back on track.

She returns to her office and makes several phone calls and returns several e-mails before walking downstairs to visit with members of her project team. Her intent is to follow up on an issue that had surfaced in the status report meeting. However, her simple, “Hi guys, how are things going?” elicits a stream of disgruntled responses from the “troops.” After listening patiently for over 20 minutes, she realizes that among other things several of the client’s managers are beginning to request features that were not in the original project scope statement. She tells her people that she will get on this right away.

Returning to her office she tries to call her counterpart John at the client firm but is told that he is not expected back from lunch for another hour. At this time, Eddie drops by and says, “How about lunch?” Eddie works in the finance office and they spend the next half hour in the company cafeteria gossiping about internal politics. She is surprised to hear that Jonah Johnson, the director of systems projects, may join another firm. Jonah has always been a powerful ally.

She returns to her office, answers a few more e-mails, and finally gets through to John. They spend 30 minutes going over the problem. The conversation ends with John promising to do some investigating and to get back to her as soon as possible.

Rachel puts a “Do not disturb” sign on her door, and lies down in her office. She listens to the third and fourth movement of Ravel’s string quartet in F on headphones.

Rachel then takes the elevator down to the third floor and talks to the purchasing agent assigned to her project. They spend the next 30 minutes exploring ways of getting necessary equipment to the project site earlier than planned. She finally authorizes express delivery.

When she returns to her office, her calendar reminds her that she is scheduled to participate in a conference call at 2:30. It takes 15 minutes for everyone to get online. During this time, Rachel catches up on some e-mail. The next hour is spent exchanging information about the technical requirements associated with a new version of a software package they are using on systems projects like hers.

Rachel decides to stretch her legs and goes on a walk down the hallway where she engages in brief conversations with various co-workers. She goes out of her

way to thank Chandra for his thoughtful analysis at the status report meeting. She returns to find that John has left a message for her to call him back ASAP. She contacts John, who informs her that, according to his people, her firm's marketing rep had made certain promises about specific features her system would provide. He doesn't know how this communication breakdown occurred, but his people are pretty upset over the situation. Rachel thanks John for the information and immediately takes the stairs to where the marketing group resides.

She asks to see Mary, a senior marketing manager. She waits 10 minutes before being invited into her office. After a heated discussion, she leaves 40 minutes later with Mary agreeing to talk to her people about what was promised and what was not promised.

She goes downstairs to her people to give them an update on what is happening. They spend 30 minutes reviewing the impact the client's requests could have on the project schedule. She also shares with them the schedule changes she and Victoria had agreed to. After she says good night to her team, she heads upstairs to her boss's office and spends 20 minutes updating him on key events of the day. She returns to her office and spends 30 minutes reviewing e-mails and project documents. She logs on to the MS project schedule of her project and spends the next 30 minutes working with "what-if" scenarios. She reviews tomorrow's schedule and writes some personal reminders before starting off on her 30-minute commute home.

1. How effectively do you think Rachel spent her day?
2. What does the case tell you about what it is like to be a project manager?