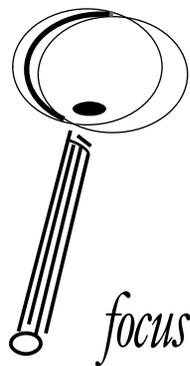# 1

Understanding Project Management

focus

Learning Objectives

By the end of this chapter, you should be able to:

- Identify the differences between functional and project management.
- Explain why project management is necessary in business today.
- Name the major organizational structures and explain the advantages and disadvantages of each.
- Identify the requirements of an effective project management system.

Many people become project managers by accident. Someone names you to manage a project because of your areas of expertise, not because you have any project management training. However, even if you *become* a project manager by accident, managing a project by accident is an invitation to disaster!

Learning project management skills can help you complete projects on time, on budget, and on target. The discipline of project management includes proven strategies for clarifying project objectives, avoiding serious errors of omission, and eliminating costly mistakes. It also addresses the necessary interpersonal skills for acquiring the cooperation, support, and resources to get the job done.

Project management is not just for project managers. Team members need to know how to carry out their parts of the project, and business executives need to understand how to support project management efforts in the organization.

WHAT IS PROJECT MANAGEMENT?

Project management consists of the knowledge, skills, methods, techniques, and tools used to plan and manage project work. It establishes a sound basis for effective planning, scheduling, resourcing, decision making, management, and plan revision.

Project management skills help complete projects on schedule, within budget, and in full accordance with project specifications. At the same time, they help achieve the other goals of the organization, such as productivity, quality, and cost-effectiveness. The objective of project management is to ensure that projects meet agreed goals of time, cost, and scope.

tHE HISTOR yOF PROJECT MANAGEMENT

Project management has been around since the beginning of time. Noah was a project manager. It took careful planning and execution to construct the ark and gather two of every animal on earth, including all the necessary food and water. The pyramids of Egypt stand today because of countless successful projects and project managers.

Although there have been brilliant project managers over the years, project management was not recognized as a formal management concept until operations research in the 1950s and 1960s pioneered methods and specialized tools to manage expensive, high-profile aerospace projects such as Polaris and Apollo. NASA and the U.S. Department of Defense established project management standards that they expected their contractors to follow. In the middle and late 1960s, business managers began searching for new techniques and organizational structures that would help them adapt quickly to changing environments. The 1970s and 1980s brought more published data on project management, leading to the development of theories, methods, and standards. The construction industry, for example, saw the potential benefits of formal project management and began to adopt standards and develop new techniques. Large-scale initiatives such as quality improvement and reengineering provided data, analysis, and problem-solving techniques, but no structured discipline to implement them. Therefore, managers turned to project management for direction in implementing and tracking such large-scale projects.

By the 1990s, industries in both profit and nonprofit sectors realized that the size and complexity of their activities were unmanageable without formal project management processes and tools.

PROJECT MANAGEMENT tODAY

Today, modern project management is a premier solution in business operations. Large and small organizations recognize that a structured approach to planning and managing projects is a necessary core competency for success.

International organizations such as the Project Management Institute (PMI[®]) and the International Project Management Association (IPMA) promote

project management by providing professional development programs. (Appendix C has contact information for these and other organizations.) PMI offers credentialed certifications (such as the PMP® Project Management Professional) to those who demonstrate competency in the field of project management through education and experience—and by passing rigorous certification exams. PMI sets standards and accredits degree-granting educational programs in project management. In 1987, PMI published the first *Project Management Body of Knowledge* (*PMBOK®*) to document and standardize generally accepted project management information and practices. The current edition, *A Guide to the Project Management Body of Knowledge* (*PMBOK® Guide*), is a basic reference for anyone interested in project management. It provides a common lexicon and consistent structure for the field of project management. The *PMBOK® Guide*, which is studied and cited by thousands of project managers, is updated regularly.

Universities offer undergraduate and graduate degree programs in project management. Organizations such as PMI and ProjectWorld hold symposia and seminars throughout the year, which are great opportunities to increase skills, pick up new ideas from others' success stories, and network with other professionals. (See Appendix C for a list of organizations and websites.)

? Think About It . . .

Would applying project management standards in your organization produce benefits? How?

_____

_____

_____

_____

FUNCTIONAL WORK VS. PROJECT WORK

Project work and traditional functional work differ in significant ways. It is important to understand the differences.

Functional Work

Functional work is routine, ongoing work. Each day, secretaries, financial analysts, and car salespeople perform functional work that is mostly repetitive, even if their activities vary somewhat from day to day. A manager assigned to the specific function provides training and supervision, and manages them according to standards of productivity, such as quantity of work performed or number of sales.

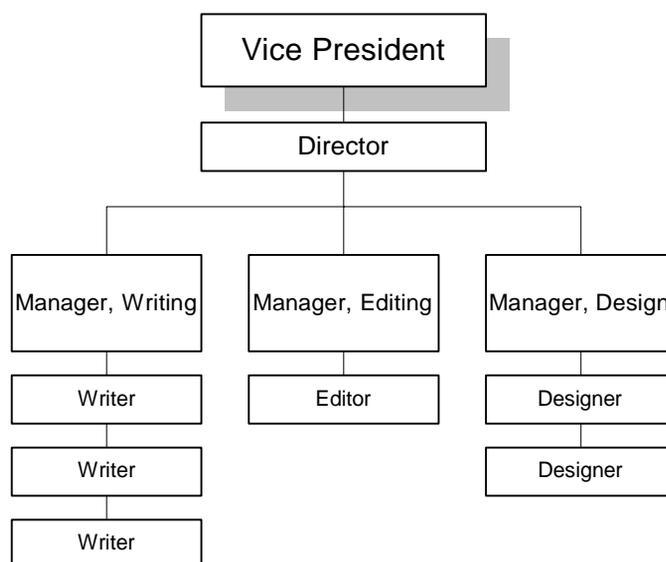The following are distinguishing characteristics of functional work:

• Functional work is ongoing, routine work.
• Managers manage the specific function and provide technical direction.
• People and other resources are assigned to the functional department.
• Functional departments are responsible for the approved objectives of the function, such as technical competency, standards of performance and quality, and efficient use of resources.

Functional work is typically structured as a hierarchical organization with traditional formal lines of authority, as shown in Exhibit 1-1.

Project Work

In contrast to ongoing, functional work, a project is "a temporary endeavor undertaken to create a unique product, service, or result" (*A Guide to the Project Management Body of Knowledge* (*PMBOK® Guide*), Project Management Institute, 2008, p. 5). Projects are *temporary* because they have a defined beginning and end. They are *unique* because the product, service, or result is different in some distinguishing way from similar products, services, or results. The construction of a headquarters building for ABC Industries is an example of a project. The unique work is defined by the building plans and has a specific beginning and end. A project manager is responsible for the project, overseeing the contractors, and managing the schedule and budget.

Exhibit 1-1
Functional Organizational Structure

The following are distinguishing characteristics of project work:

- Project work is a unique endeavor that has a defined beginning and end.
- A project manager manages a specific project or projects.
- People and other resources are typically not assigned to project managers on an ongoing basis, except for project management support.
- A project manager is responsible for the approved objectives of a project, such as budget, schedule, and scope.
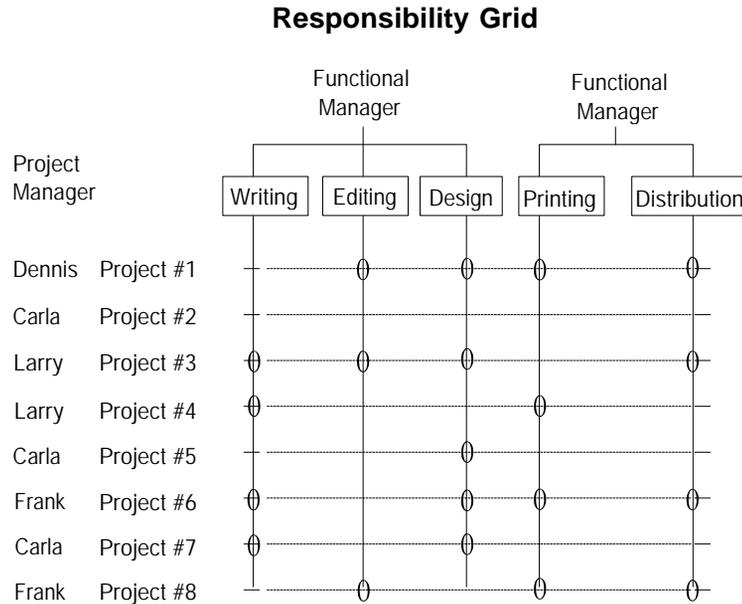
In mature organizations, multiple projects may be grouped and managed together in a *program* to obtain benefits and control not available from managing them individually. Multiple programs may be grouped and prioritized into *portfolios* aligned around larger strategic organizational objectives. *Portfolio management* is the "centralized management of one or more portfolios, which includes identifying, prioritizing, authorizing, managing, and controlling projects, programs, and other related work, to achieve specific strategic business objectives" *(A Guide to the Project Management Body of Knowledge (PMBOK® Guide)—Fourth Edition,* Project Management Institute, 2008, p. 9).

Project teams typically are not organized in the same hierarchical structure as that used by traditional functional groups. Project teams are organized in various ways, which are described later in this chapter.

Exhibit 1-2 illustrates how functional and project responsibility fit together, using the functional departments in a publishing company, with project managers assigned to accomplish specific publication projects. Solid vertical lines show the functional responsibilities of the writing, editing, design, printing, and distribution departments. Broken horizontal lines show the project responsibilities of specific project managers assigned to given publications (projects). Because not all projects require the services of every functional department, circles indicate where people are assigned to a project. Project #2 uses outsourced resources. Project #3 is a video that uses an external video duplication company rather than the internal printing facility.

A project manager manages horizontally via projects rather than vertically via functional experts. Exhibit 1-2 shows that Dennis is responsible for Project #1. To get the job done, he must enlist the help of editors and designers from one functional manager, and printers and distributors from another functional manager. In some organizations, functional managers are called *resource managers* because they are responsible for assigning resources to the project.

In the real world, there are at times overlaps between project and functional managers. If functional resources (other than a project management staff) are assigned to a project manager, then the manager has functional responsibility and is acting as both project manager and functional manager.

Exhibit 1-2
Functional and Project Responsibilities

Responsibility Grid

		Functional Manager		Functional Manager	
Project Manager	Writing	Editing	Design	Printing	Distribution
Dennis Project #1		○	○	○	○
Carla Project #2					
Larry Project #3	○	○	○		○
Larry Project #4	○			○	
Carla Project #5			○		
Frank Project #6	○		○	○	○
Carla Project #7	○		○		
Frank Project #8		○		○	○

If projects are assigned to a functional manager, then the functional manager also has project responsibility and is acting in both roles. Exhibit 1-3 compares functional and project work.

The traditional functional approach is not adequate in a project environment and does not promote quality work on time and within budget. The project approach promotes the innovation, experimentation, and entrepreneurship needed in the workplace today.

Exhibit 1-3
Comparison of Project and Functional Work

	Functional	**Project**
Type of work	Repeated, ongoing.	Unique, no rehearsal. Often involves change.
Focus	Operations, accomplishing effective work.	Completing the project.
Management responsibility	Managing people.	Managing work.
Budgets	Ongoing operational budgets.	Project budgets to fund specific projects.

Exhibit 1-3 continues on next page.

Exhibit 1-3 **continued from previous page.**

	Functional	**Project**
Responsiveness to customers and changing environments	Less responsive. Longer response time.	More responsive. Shorter response time.
Consistency and standards	Industry standards.	May have fewer standards because work is unique.
Cross-cultural relevance	Varies across cultures.	More constant across cultures.
Risk	Ongoing work is stable and less risky.	Higher risk because work is unique and unknown.
Visibility	May have little visibility if standards are not met.	Obviously noted when project objectives are not met.

? Think About It . . .

Think of two examples of functional work:

_____

_____

Think of two examples of project work:

_____

_____

Does your organization understand the difference between project and functional work?

_____

_____

How can you help coworkers and management implement project management philosophies?

_____

_____

Think About It continued from previous page.

Draw a diagram showing how your organization manages projects.

WHY PROJECT MANAGEMENT IS NECESSARy IN tODAY'S WORLD

The need for project management is becoming increasingly apparent in the world today. Speed, quality, and cost management are taking on increased significance in business, government, and nonprofit sectors. Project management allows managers to plan and manage strategic initiatives that generate new revenue in expanding sectors of the market. Project management tools decrease time to market, manage expenses, ensure quality products, and enhance profitability. Project management helps sell products and services by positively differentiating them from their competitors. Project management is one of the most important management techniques for ensuring the success of an organization.

The global marketplace and e-commerce are forcing organizations to change. Consider the business trends in the next section.

today's Business trends

- The focus is on high quality, speed to market, and superior customer satisfaction. This can be accomplished only across functional lines of authority in a project environment. With the shift from mass production to custom production of goods and services, project management is an increasingly important aspect of a responsive management style. Businesses are shifting from traditional hierarchical management to project management. Organizational charts are changing from vertical structures to team-centered project structures.
- The traditional job, which consisted of doing the same tasks every day, is disappearing as routine office and factory work become automated. Middle management is also disappearing as companies rely on computers to gather and analyze information. The new focus is on projects and project teams assigned to solve specific problems. Teams might be set up to design a new product or reengineer the ordering process. Projects are conceived, staffed,

completed, then shut down. Project teams come and go as new problems and opportunities arise.

- The traditional career path is changing (Exhibit 1-4). Companies offer less job security as they refocus on core competencies and outsource noncore work. They teach marketable skills but do not promise a job tomorrow. People define their careers less by companies ("I work for Microsoft") and more by professions ("I design computer programs"). Personal success is measured by the value of the projects on which a person works. The goal is growth in the profession, not movement up the corporate ladder into management.
- Pay is determined by skill level and the marketability of a person's services rather than by managerial hierarchy.
- The typical company of tomorrow has four basic careers, as illustrated in Exhibit 1-4. This has been the norm for decades in Hollywood, where casting agents match actors with projects. In the entertainment industry, producers are the top-level management, casting and talent agents are the resource providers, movie directors are the project managers, and actors and crew are the talent.

A Proactive Management Style

Today's trends mean that management expects more with less. There is more pressure with less time, more work with less staff, and more cost management with less tolerance for mistakes. The solution to this dilemma lies in a proactive rather than reactive management style. Systematic project management is a proactive style. Exhibit 1-5 compares reactive and proactive styles.

Many companies conduct business as a series of projects. Each project is justified because it creates a product or service that the company can sell or because it reduces or controls costs. As the number of potential projects increases, there is a greater need to choose the right projects and execute them

---

Exhibit 1-4
Careers in the Typical Company of Tomorrow

Career	Title	Function
Top-level management	CEO, president, executive VP	sets strategy
Resource provider	CFO, CIO, HR manager, VP of marketing, engineering, etc.	provides budget; develops and manages expert staffs
Project manager	project manager	uses money and people from the resource providers
Talent	chemist, engineer, accountant, programmer	reports to resource provider but spends much time on project teams

E xhibit 1-5
Comparison of Reactive and Proactive Management Styles

Reactive	Proactive
Fire fighting	Planning and control

Managing by:
    instinct
    gut feel
    notes on a napkin
	Managing by:
	    information
	    analysis
	    control system

Speaking in generalizations	Using charts and graphs
Not seeing the big picture	Seeing the big picture
Not planning because it is a waste of time Not anticipating changes	Planning thoroughly on the front end with contingency plans for potential problems
Solving problems when they arise	Managing risk by identifying and avoiding problems rather than having to solve them

more efficiently. As competition between vendors increases, the winning company is the one with superior project management processes, reports, tools, and organization.

Organizations that were once hierarchical and bureaucratic now realize that success requires internal and external networking. Functional departments are no longer self-sufficient, but interdependent. Teams are formed from various functional departments to accomplish project work. When one project is complete, individuals are reassembled into another team to take on another project.

Exercise 1-1
Project Management in Today's World

Why is project management a sound strategy in today's business world?

How could you benefit from using more project management principles?

Exercise 1-1 continued from previous page.

List projects you manage or would like to manage in the future. What problems do you see in managing the projects you have listed? As you read subsequent chapters, try to identify ways you can address these problems.

_____

_____

_____

_____

(Suggested answers are given in Appendix A.)

ORGANIZING FOR PROJECT MANAGEMENT EFFICIENCY

Smaller organizations may not have a formal project management structure. When a project is conceived, management might appoint a project manager and team members with little attention to the skills needed for the job. They take people from their regular jobs to work on the project, or worse yet, they ask team members to do the project in addition to their regular work.

This section discusses the need for an organization to formally adopt project management methodologies. It presents the major organizational structures and discusses the advantages and disadvantages of each. Finally, it gives some considerations on how to organize for greater efficiency and continuity in projects.

ADOPTING A PROJECT MANAGEMENT PHILOSOPHY

Many organizations have no formal project management system. They operate using rationalizations:

"We have a set delivery date, so the project has to be completed by then."
"Budget as much as you think will be approved, then don't spend any more than that."
"Since the project must fit into our current environment, estimate its size to be no larger than we can handle."

People throughout the organization must understand and implement common project management principles. Everyone must recognize project manage-

ment as a professional discipline with specific skills and tools.

Senior management must recognize the need for project management and be willing to establish a formal project management system. Managing projects is considerably different from managing functional groups. Senior executives need to recognize that project management requires special concepts, skills, and tools. Managers schooled in traditional concepts of business management might find this difficult to understand. Also, functional line managers might have difficulty understanding the difference between functional and project responsibilities.

Implementing a project management system requires more than lip service; senior management must provide the time, budget, and resources to do it. The entire organization must have a long-term commitment to the project management process and support it without constantly shifting priorities.

The role and authority of the project managers must be clearly defined and supported. Project managers are not simply people selected from among the project teams; they need to have project management skills. If management simply assigns a technical person to be the project manager, the organization loses in two ways. First, if the person does not also have project management skills, the project might fail. Second, the organization loses a good technical person from the project team.

Also, the organization must be willing to change. Functional departments with a strong and unique sense of identity might feel that project managers cannot fully understand or correct their problems. Functional managers who have been unable to solve problems might work against the project manager's success. In some cases, people resist the project manager's tools (such as network planning and computerized tracking) because they represent change, which takes time and is often painful.

Your project management system needs to be adapted to your organization's specific corporate culture and needs. No one system works equally well in all organizations. Be willing to adapt the system as you experience successes or failures, so the system can operate at optimum efficiency in your organization. You may need to be patient in helping your organization adopt a project management system because it will take time to implement.

For project management to be effective in any organization, there should be formal, written policies and procedures that explain the role and authority of project managers and how project management functions in the organization. Exhibit 1-6 is an example of such a written policy statement.

E xhibit 1-6
Example of a Project Management Policy Statement

Project Management Division
Subject: Project Management System   Policy 5
Date of Origin: 15 December 2010   Revised 16 January 2011

Policy
　　The company manages projects according to the project management system outlined in this policy.

Definition of a project
　　A temporary endeavor undertaken to create a unique product, service, or result.

Responsibility
　　The director of the Project Management Division is responsible for the operation of the project management system. The director prepares policy statements and maintains the policy and procedure manual. The director tracks all approved projects and reports project status to senior management.

Project objectives
　　All projects are defined in terms of (1) cost, (2) time, and (3) project scope. These objectives are the basis for project approval, budgeting, tracking, and reporting.

Project managers
　　A project manager is assigned to each project when it is approved. The manager may be from the Project Management Division or from another functional division as needed. The project manager is responsible to see that the project accomplishes its objectives of cost, time, and project scope. The lines of responsibility and communication with senior management will be identified as needed with each project.

? Think About It . . .

Does your organization have written statements like Exhibit 1-6? Could it benefit from such a statement?

ORGANIZATIONAL STRUCTURES

The organizational structure strongly influences how efficiently project management operates. It often constrains the availability of resources or the terms under which resources are available to the project. Organizational structures typically span the spectrum from functional to project, with a variety of matrix structures in between. The next sections describe the characteristics, advantages, and disadvantages of functional, project, and matrix organizational structures. It is important to understand how your organization is structured so you can decide how to use project management techniques within that context.

Functional Organization

The classic functional organization is a hierarchy in which people are grouped into functional divisions, such as marketing or production. Each employee has one clear superior. In functional organizations, the scope of projects is typically limited to the boundaries of the functional division. Each division has its own project managers who report to the head of the division, as illustrated in Exhibit 1-7. These project managers operate independently from project managers in other divisions.

CHARACTERISTICS

- Project managers operate within the division and have a level of expertise within their areas of responsibility. For example, project managers in the marketing division come from the ranks of salespeople.
- Directors of the functional divisions manage both project and functional personnel. They are responsible for defining requirements, scheduling work, setting priorities, providing facilities, acquiring and managing resources, adhering to company policies, and ensuring quality.
- People are assigned to work on projects for which their skills and services are needed. They might be moved around within the division as needed.

Exhibit 1-7
Functional Organizational Structure
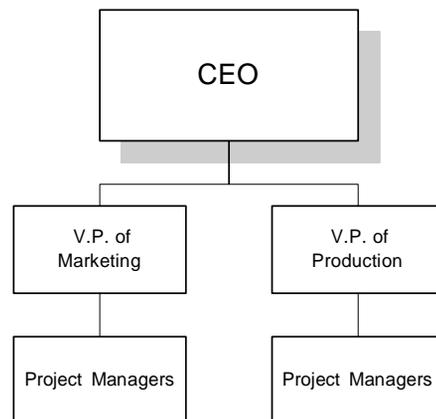
ADVANTAGES

- Projects can be completed more accurately. Because project managers and team members have expertise in the functional area, project requirements can be defined and challenged intelligently. This means that fewer changes will be made and that a more practical end product can result.
- Project personnel are accountable for their work. Since they must live with the end result of the project, they are committed to it.
- Because personnel have functional expertise, learning time is reduced. Problem situations can be identified and corrected quickly.

DISADVANTAGES

- The focus on the needs of the functional division might make it difficult to see and respond to the needs of the organization as a whole. Enterprise policies and practices might not be enforced uniformly across divisions.
- Project management and status reporting to upper management is not standardized across the organization. It might be difficult for senior executives to manage the various projects within the organization.
- Project costs tend to have little or no accounting. Many aspects of a project are handled as ongoing functional work of the division, so it might be difficult to identify and account for the true cost of a project.
- The distinction between project and functional roles might be vague, and projects might be lost in routine work.
- It is more difficult to staff and run projects that span divisions.
- Good project managers cannot easily be moved across divisions to more critical projects.

Project Organization

In a project organization, projects are centralized in a separate division of skilled project managers that serves the project management needs of all divisions of the company (see Exhibit 1-8). This is often referred to as a *project management office (PMO)*. A centralized project management office is responsible for the direct management of all the projects in an organization.

E xhibit 1-8
Project Organizational Structure
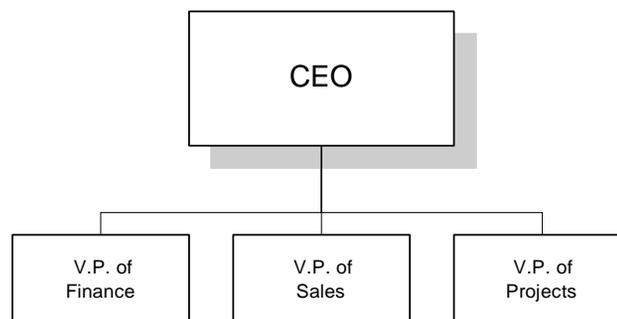
Typical responsibilities of a project management office include the following:

- Enterprise policies, processes, methodologies, and templates.
- Resourcing and training of project managers.
- Project support services, including project management computer systems.

CHARACTERISTICS

- A central group is responsible for planning, managing, and reporting the progress of all projects under its domain.
- This centralized project office develops and refines project management processes, practices, and standards and implements them uniformly throughout the organization.
- Project managers typically manage shared resources across all projects.

ADVANTAGES

- Common standards of planning, managing, and reporting exist throughout the life of each project and are applied across all projects. These common standards aid communication and provide efficiency.
- Highly skilled project managers can be available for the benefit of all.
- Refined project management processes usually result in projects being completed more often on time, within budget, and in accordance with project scope.
- Costs can be reduced by using common tools (such as project management software) to manage all projects.
- Centralized data from all projects can be analyzed and applied to future projects to improve the accuracy of estimates and practices. A centralized organizational structure makes it easier to see productivity trends and take steps to improve processes in the organization.
- All projects of the organization can be managed as a whole. Enterprise portfolio management allows senior management to set priorities across projects and allocate resources for the overall good of the organization.

DISADVANTAGES

- Standards and documentation can become excessive, and without careful vigilance, the centralization of project managers and practices can become self-serving. Rather than serving the needs of the project office, careful focus must be given to the needs of the project and the people it benefits.
- If processes become excessive, the total cost to manage a project under a centralized organizational structure can be higher than under other structures. The project office must constantly assess the value they provide to ensure that the value exceeds the cost.
- Project managers might not have the technical background needed for a project, and might have little access to people with the appropriate knowledge and skills.
- Project managers might seem unresponsive to the needs of people who request their time and skills. Because project managers are located in a sep-

arate project office, they might become out of touch with the needs and practices of individual departments.

Matrix Organizations

Matrix organizations are a blend of functional and project organizations. A weak matrix (see Exhibit 1-9) has many of the characteristics of a functional organization, and the project manager role is more of a coordinator or expediter with limited authority. A strong matrix organization (see Exhibit 1-10) has many of the characteristics of a project organization, with a full-time project manager who has significant authority and a project administrative staff. In a matrix organization, the project team has a dual reporting role to a project manager, coordinator, or expediter (who provides project management skills) and a functional manager (who provides technical and functional skills).

CHARACTERISTICS

- Because a matrix organization has characteristics of both the project and functional organizations, project personnel report to both functional and project lines.
- Project personnel report to a functional manager for definition of requirements, feasibility and economic evaluation, changes in priorities, allocation of work, and ultimate success or failure in meeting their goals.
- Project personnel report to a project manager for refining tasks and assignments, planning and budgets, and project schedules.

In a strong matrix organizational structure, the project manager has more power than the functional manager. In a weak matrix structure, the balance of power leans toward the functional manager.
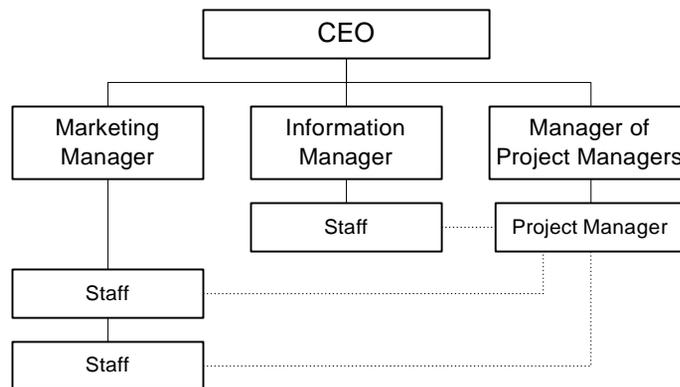

E xhibit 1-9
Weak Matrix Organization
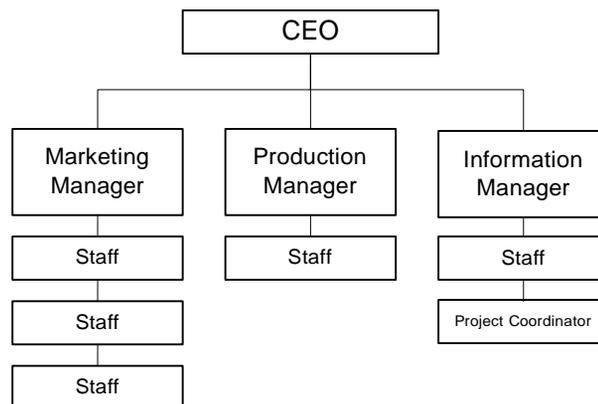
Staff from different functional departments are assigned to a project.
One staff member is assigned to coordinate the project.

Exhibit 1-10
Strong Matrix Organization

Project Manager is assigned to manage the project and staff from different functional departments are assigned to work on the project.

ADVANTAGES

- A matrix structure combines a project structure (project office) and a functional structure. Personnel and skills are less redundant, and when expertise is scarce, it may be applied more flexibly to different projects.
- The focus on teamwork accommodates changes in personnel requirements. Conflicts between project requirements and functional organization policies may be perceived and resolved readily.
- The expertise of both project and functional management is available to assist in the project, and both can be applied to handle complex issues and coordinate various tasks.

DISADVANTAGES

- Dual management lines make communications more difficult to manage. When team members receive conflicting instructions from project and functional managers, time and effort are wasted clarifying the communication. The team might be unable to react fast enough to meet changing project requirements.
- Conflicts and competition can exist between project and functional management. In the process of resolving conflicting priorities, project personnel can become confused and demoralized.
- If conflicting priorities and personal power struggles are not quickly resolved, it can be damaging—or fatal—to the project.
- Projects are influenced by the organizational structure under which they operate. The chart in Exhibit 1-11 shows project manager authority in each of the organizational types.

E xhibit 1-11
Project Manager Authority by Organizational Type

Organizational Structure	Project Manager Authority	Percent of Personnel Assigned Full-Time to Project Work	Project Manager's Role	Common Titles for Project Manager	Project Management Staff
Functional	little or none	none	part-time	Project Facilitator or Coordinator	part-time
Weak matrix	limited	0–25%	part-time	Project Coordinator or Leader	part-time
Balanced matrix	low	15–60%	part-time or full-time	Project Coordinator or Manager	part-time
Strong matrix	moderate	50–95%	full-time	Project or Program Manager	full-time
Project	high to almost total	85–100%	full-time	Project or Program Manager	full-time

FUNCTIONING EFFECTIVELY

Now that you understand the basic organizational structures, compare them with your organization and identify your current structure. Reread the advantages and disadvantages of your organizational structure and keep them in mind as you operate within that structure.

When faced with difficulties, many project managers jump to the conclusion that restructuring the organization will solve all the problems. Although it is important to have the right organizational structure, it is unhealthy to reorganize too often. Petronius Arbeiter illustrated this fallacy about two thousand years ago (Townsend, 1970):

> We trained hard, but it seemed that every time we were beginning to form up into teams we would be reorganized. I was to learn later in life that we tend to meet any new situation by reorganizing, and a wonderful method it can be for producing the illusion of progress while creating confusion, inefficiency, and demoralization.

As you have seen, each possible organizational structure has both advan-

tages and disadvantages. Before your organization considers reorganizing, be sure that the advantages outweigh the disadvantages to your organization. The advantages must be significant enough to make up for the confusion and pain of making the change. Reorganizing has a significant impact on any organization. Do not underestimate the lost productivity during the time it takes to make the change. It will take time for people to function efficiently under the new structure.

Exercise 1-2
Organizational Types

Determine which of the basic organizational types describes your current organization. Draw a chart of your current organizational structure, using solid lines to show formal reporting relationships and broken lines to show lines of communication.

Review the characteristics, advantages, and disadvantages listed in this chapter for your organizational type. List the things you need to do to work effectively within this structure.

_____

_____

_____

How often does your organization follow effective project management processes? Score your responses in the appropriate spaces on a scale of 0 to 10 as indicated below:

0	1	2	3	4	5	6	7	8	9	10
Never		Almost never			Sometimes		Almost always			Always

What can you do to better implement project management?

_____

_____

_____

PROJECT LIFE CYCLE

A good project management system follows a standard project life cycle with defined project phases. *A Guide to the Project Management Body of Knowledge* (*PMBOK® Guide*) draws from best practices in the project management profession to provide a general framework for starting projects, organizing and preparing, carrying out the project work, and closing projects. Although this generic life cycle may be adapted to the specific needs of your organization, it is important to have a structure in place to provide a common reference for comparing projects and communicating throughout the organization. The

PMBOK® *Guide* defines five general process groups:

1. *Initiating:* Defining and authorizing the project.

2. *Planning:* Establishing the project scope, refining the objectives, and defining the course of action to attain the objectives.

3. *Executing:* Integrating people and other resources to carry out the work defined in the project plan.

4. *Monitoring and Controlling:* Tracking, reviewing, and regulating the progress and performance of the project plan, identifying where changes to the plan are required, and taking corrective action.

5. *Closing:* Finalizing all activities across all the process groups to formally close the project.

Although it is important to understand these general processes and learn the skills needed to execute each process, in practice, these processes overlap and interact in iterative ways, and many processes are repeated during the project. More detail about each of these processes is found in chapters throughout this course.

Exercise 1-3
Project Life Cycle

Consider how you or others in your organization initiate, plan, execute, monitor, control, and close projects. Rate the current effectiveness according to the following statements.

Project plans are in sufficient detail to effectively manage projects.

0	1	2	3	4	5	6	7	8	9	10
Strongly disagree			Disagree		Neutral		Agree			Strongly agree

The level of management is at the same level of detail as the plan.

0	1	2	3	4	5	6	7	8	9	10
Strongly disagree			Disagree		Neutral		Agree			Strongly agree

My organization is able to respond to changes during the life of a project.

0	1	2	3	4	5	6	7	8	9	10
Strongly disagree			Disagree		Neutral		Agree			Strongly agree

As you read subsequent chapters in this course, consider things you could do to improve the above scores.

Exercise 1-4
CXI Cellular Case Study

CXI Cellular of Salt Lake City, Utah, is an innovative manufacturer of cellular phone products. One of their bright, young engineers has designed a new cellular phone that is 25 percent smaller and lighter than any competitor's phone. The vice president of marketing has named Robert, her top salesman, to manage a project to engineer and manufacture the new product. She asks Robert to develop a schedule and budget and present it to the executive management team the following week.

When Robert presents his plans to the executive management team, there is considerable discussion about whether the company should begin manufacturing the new phone. After the meeting, the chief operations officer (COO) of the company approaches Robert and asks him to move forward with the project and report directly to him. The COO asks to personally approve each project expense. In the meantime, the COO will work on getting the approval of the executive team.

Based on the concepts presented in this chapter, what steps should Robert take to ensure the success of the project? Consider the following in your answer:

• Have project management principles been followed?
• Have roles and responsibilities been properly defined?
• Is Robert qualified to be a project manager?
• Has there been proper management approval?

(Suggested answers are in Appendix A.)

recap

Project management is a set of knowledge, skills, methods, techniques, and tools that people use to effectively plan and manage project work. It establishes a sound basis for effective planning, scheduling, resourcing, decision making, managing, and plan revision. The objective of project management is to ensure that projects meet agreed goals of time, cost, and scope.

Today, modern project management is a premier solution in business operations. Large and small organizations recognize that a structured approach to planning and managing projects is a necessary core competency for success.

Project work and traditional functional work differ in significant ways. Functional work is routine, ongoing work. A manager is assigned to the specific function and provides worker training and supervision. In contrast, a project is "a temporary endeavor undertaken to create a unique product, service, or result." A project manager is responsible for the approved objectives of a project, such as budget, schedule, and scope.

The need for project management is apparent in the world today as speed, quality, and cost management are becoming increasingly important. Implementing a project management system requires a long-term commitment and management support. It is important to understand how your organization is structured so you can decide how to fit project management

techniques into it. Organizational structures typically span the spectrum from functional to project types, with a variety of matrix structures in between. A functional organization is a hierarchy in which people are grouped into functional divisions, such as marketing or production. Each employee has one clear superior. In a project organization, projects are centralized in a separate division of skilled project managers that serves the project management needs of all divisions of the company. This is often referred to as a *project management office.*

Matrix organizations are a blend of functional and project structures. A weak matrix has many of the characteristics of a functional organization and the project manager role is more that of a coordinator or expediter with limited authority. A strong matrix organization has many of the characteristics of a project organization, with a full-time project manager who has significant authority and a project administrative staff. In a matrix organization, the project team has a dual reporting role to a project manager, coordinator, or expediter (who provides project management skills) and a functional manager (who provides technical and functional skills). In a strong matrix organizational structure, the project manager has more power than the functional manager. In a weak matrix structure, the balance of power leans toward the functional manager.

It is important to set up a formal planning and management system that is flexible enough to operate in the real world, but still rigorous enough to provide control. A project management system must allow for adjustments to the plan as needed throughout the project's life. The system helps you define the problem or opportunity, establish project objectives, develop the project plan, begin project work, monitor and manage the work, and then close the project.

?₂? Review Questions

INSTRUCTIONS: Here is the first set of review questions in this course. Answering the questions following each chapter will give you a chance to check your comprehension of the concepts as they are presented and will reinforce your understanding of them.

As you can see below, the answer to each numbered question is printed to the side of the question. Before beginning, you should conceal the answers by placing a sheet of paper over the answers as you work down the page. Then read and answer each question. Compare your answers with those given. For any questions you answer incorrectly, make an effort to understand why the answer given is the correct one. You may find it helpful to turn back to the appropriate section of the chapter and review the material of which you were unsure. Questions are also available on line.

1. Which of the following is true of a matrix organization?   1. (b)
   (a) In a strong matrix, the functional manager has more power than the project manager.
   (b) Conflicts between project requirements and functional organization policies are perceived and resolved more readily.
   (c) A matrix reduces conflicts and competition between project and functional management.
   (d) Dual management lines facilitate communication.

2. Which of the following is true of project and functional work?   2. (a)
   (a) Secretaries, financial analysts, and car salespeople are examples of those who perform functional work.
   (b) Project managers are responsible to deliver the agreed-upon outcomes of a project.
   (c) The focus of project work is accomplishing effective, ongoing work.
   (d) Functional managers are responsible for achieving the approved objectives of a project.

3. Which of the following is true of project planning?   3. (c)
   (a) Planning must be completed before any project work begins.
   (b) Since things invariably change during the life of the project, you should spend no more than 5 percent of the project on planning.
   (c) You cannot manage without a plan.
   (d) Once you develop a plan, it is important to stick with it throughout the life of the project.

4. Which of the following describes the proper sequence of elements in   4. (d)
a planning and management system?
   (a) Establish project objectives, define the problem or opportunity, develop
       the plan, begin project work, monitor, manage, close the project.
   (b) Establish project objectives, develop the plan, define the problem or
       opportunity, begin project work, monitor, manage, close the project.
   (c) Define the problem or opportunity, develop the plan, establish project
       objectives, begin project work, monitor, manage, close the project.
   (d) Define the problem or opportunity, establish project objectives,
       develop the plan, begin project work, monitor, manage, close the
       project.

5. All of the following are true of project management *except:*   5. (c)
   (a) projects and project teams help an organization solve specific problems.
   (b) project management can help deliver projects on time and decrease
       time to market.
   (c) project management works best in a functional organizational
       structure.
   (d) project management tools help manage expenses and ensure quality
       products.