**CHAPTER 1**

**Introduction to Project Management**

**LEARNING OBJECTIVES**

This chapter presents a broad introduction to project management. After completing this chapter, each student should be able to perform the following:

* Define a project in your own words using characteristics that are common to most projects and describe reasons why more organizations are using project management.
* Describe major activities and deliverables at each project life cycle stage.
* List and define the nine knowledge areas and five process groups of the project management body of knowledge (PMBOK®).
* Delineate measures of project success and failure and reasons for both.
* Identify project roles and distinguish key responsibilities for each.

**TEACHING STRATEGIES**

* Each chapter starts with learning objectives stated in measurable form as shown above. If you start with slides that list the objectives, you can emphasize that the students need to be able to accomplish each. I find it helpful to paraphrase a few of them and pick one to ask the students why they think it is included.
* Many students will not have read the first chapter before the first class. Mike’s introductory essay on how he successfully climbed Mount Aconcagua (second highest of the Seven Summits after Mount Everest) whereas others died in the attempt is a great attention getter.
* I believe in active learning, so I include at least one breakout session every hour. These are often preceded by an introduction of the material and I pose at least one question or framework for the students to follow. I find a few simple rules are fun for the students and encourage participation. I always ask one person to record what the group discussed/decided. I ask a different person to be the group’s spokesperson – that way at least two people stay alert. I also always ask the spokesperson to state what they learned from the exercise and “ditto” does not count. That means they cannot take the easy way out and say another group took their idea. This encourages volunteers to report first and forces teams to think beyond the obvious lesson and think creatively. If there are points I especially want to emphasize, I will summarize by repeating the points (and crediting the groups who made them) or introducing them if no group mentioned them. The first example breakout session follows.
* Once we briefly cover what a project is (students in discussion will provide examples) and why project management is important, I ask the students to work in groups of four or five with large paper or sections of a chalk board. I ask them to describe project success and reasons for each for about 10 minutes. Alternatively, you can ask the students to describe project failure and the causes of it. Either way, you set the expectation that students will actively participate in every class. It also serves as in introduction to the need to develop both soft and hard skills.
* I like to cover the concept of project life cycles. It is easy to use a house-building project as an example since the walk-through to inspect the project result helps students envision the idea of an approval to pass from one stage to the next.
* An introduction to PMI® is useful. It sets the stage for discussing accreditation, process groups, knowledge areas, glossary terms, and special interest groups. I take this opportunity to encourage students to become student members at a greatly reduced cost.
* The Project Customer Tradeoff Matrix gives the opportunity to discuss how a project manager can make consistently better decisions by fully understanding the customer. It also is an early opportunity to discuss the challenges of honest, open communications and ethical challenges that can arise. I like to use two different projects in the same industry that made different trade-off decisions as an example. For me it is easy since we built our on-campus arena with a strong emphasis on cost control and had to play one more season in our old facility while one of the professional teams in town placed so much emphasis on playing their entire season in their new stadium that their overrun cost more than our entire arena!
* I like to use real projects as teaching vehicles. The end of Chapter 1 is a good place to introduce the projects. See specific ideas in example project section below.

**LECTURE AND WORKSHOP OUTLINE**

* 1. **What is a project?**

**Project** -“a temporary endeavor undertaken to create a unique product, service, or result” *PMBOK*®*Guide 442*.

Each project has unique **stakeholders** “persons or organizations … that are actively involved in the project, or whose interests may be positively or negatively affected by execution or completion of the project. A stakeholder may also exert

influence over the project and its deliverables” *PMBOK*®*Guide* 450.

**Project management** “the application of knowledge, skills, tools and techniques to project activities to meet project requirements” *PMBOK*®*Guide 443*.

* 1. **History of Project Management**

All through history projects have been conducted

Formal discipline starting 1950s – scheduling and control

Recent years – more focus on communications and leadership

* 1. **How Can Project Work be Described?**

Projects vs. operations

Soft skills and hard skills

Authority and responsibility

Project life cycle

Initiating, planning, executing, closing

* 1. **Understanding projects**

Project Management Institute (PMI)

Project Management Body of Knowledge (PMBOK*®*)

Process groups

Knowledge areas

Selecting and Prioritizing Projects

Project Goals and constraints

Defining Project Success and Failure

Using Microsoft Project to Help Plan and Measure Projects

Types of projects

Industry – PMI Special Interest Groups (SIGs)

Size

When project manager is able to clearly determine scope

Application – organizational change, quality improvement, R&D, Information Systems (IS), construction

Scalability of project tools

**1.5 Project roles**

Executive roles

Steering Team, Chief Projects Officer, Sponsor

Managerial roles

Project Manager, Functional Manager, Facilitator, Customer

Associate roles

Core Team Member, Subject Matter Expert

**1.6 Overview of book**

**PART 1 ORGANIZING AND INITIATING PROJECTS**

Chapter 1: Introduction to Project Management

Chapter 2: Project Selection and Prioritization

Chapter 3: Organizational Capability: Structure, Culture, and Roles

Chapter 4: Chartering Projects

**PART 2 PLANNING PROJECTS**

Chapter 5: Stakeholder Analysis and Communication Planning

Chapter 6: Scope Planning

## Chapter 7: Scheduling Projects

## Chapter 8: Resourcing Projects

## Chapter 9: Budgeting Projects

## Chapter 10: Project Risk Planning

Chapter 11: Project Quality Planning and Project Kick-Off

**PART 3 PERFORMING PROJECTS**

Chapter 12: Project Supply Chain Management

Chapter 13: Leading and Managing Project Teams

Chapter 14: Determining Project Progress and Results

Chapter 15: Finishing Projects and Realizing the Benefits

**SPECIFIC QUESTIONS**

1. What is a project?

The narrow answer is: a **project** is “a temporary endeavor undertaken to create a unique product, service, or result” *PMBOK*®*Guide* 442.

The broader answer is: a project is an endeavor that requires an organized set of work efforts that are planned in a level of detail that is progressively elaborated as more information is discovered. Projects are subject to limitations of time and resources such as money and people. Projects should follow a planned and organized approach with a defined beginning and ending. Project plans and goals become more specific as early work is completed. The output often is a collection of a primary deliverable along with supporting deliverables such as a house as the primary deliverable and warranties and instructions for use as supporting deliverables. Each project typically has a unique combination of **stakeholders** – “persons or organizations … that are actively involved in the project, or whose interests may be positively or negatively affected by execution or completion of the project. A stakeholder may also exert

influence over the project and its deliverables” *PMBOK*®*Guide* 450. Projects often require a variety of people to work together for a limited time and each needs to understand that completing the project will require effort in addition to their other assigned work.

2. How are projects different than ongoing operations?

Projects are temporary while operations are ongoing.

3. What is project management?

**Project management** is “the application of knowledge, skills, tools and techniques to project activities to meet project requirements” *PMBOK*®*Guide 443*. This includes work processes that initiate, plan, execute, control, and close work.

Project management includes both administrative tasks for planning, documenting, and controlling work and leadership tasks for visioning, motivating, and promoting work associates.

4. What tradeoffs need to be made when managing a project?

Tradeoffs must be made among the scope (size), quality (acceptability of the results), cost, and schedule.

5. Why are more people spending more of their work time on projects?

With increased international competition, customers are demanding to have their products and services developed and delivered better, faster, and cheaper. Since project management techniques are designed to manage scope, quality, cost and schedule, they are ideally suited to this purpose.

6. How do you define project success?

Project success is creating deliverables that include all of the agreed upon features (meet scope goals). The outputs should satisfy all specifications and please the project’s customers. The customers need to use the outputs effectively as they do their work (meet quality goals). The project should be completed on schedule and on budget (meet time and cost constraints).

Project success also includes other considerations. A successful project is one that is completed without heroics – that is, people should not burn themselves out to complete the project. Those people who work on the project should either learn new skills and/or refine existing skills. Organizational learning should take place and be captured for future projects. Finally, the parent organization should reap business level benefits such as development of new products, increased market share, increased profitability, decreased cost, etc.

Project success as summarized in Exhibit 1.4 include the following: ESS

• Meeting Agreements

– Cost, schedule, and specifications met

• Customer’ Success

– Needs met, deliverables used, customer satisfied

• Performing Organization’s Success

– Market share, new products, new technology

• Project Team’s Success

– Loyalty, development, satisfaction

7. How do you define project failure?

Project failure is not meeting all of the success criteria listed above. Serious project failure is when some of the success criteria are missed by a large amount and/or when several of the success criteria are missed by even a small margin.

8. What are the nine project management knowledge areas?

The nine knowledge areas as paraphrased from the *PMBOK*®*Guide*, pages 9 and 10 are: scope, time, cost, quality, human resources, communications, risk, procurement, and integration.

9. What forces are contributing to the importance of project management?

* Rapid growth and changes in industries – particularly information and communications technology.
* Increasing customer demands for rapid introduction of new products and technologies.
* Global competition driving down prices.
* Increasingly complex products and services.

10. At what stage of a project life cycle are the majority of the “hands-on” tasks completed?

Executing.

11. At what stage of a project life cycle does the project become officially sanctioned?

Initiating.

12. What two project dimensions are components of project performance?

Scope and quality.

13. What types of constraints are common to most projects?

Time and cost.

14. List at least four common causes of project failure.

* Not enough resources are available for project completion,
* Not enough time has been given to the project,
* Project expectations are unclear,
* Changes in the scope are not understood or agreed upon by all parties involved,
* Stakeholders disagree regarding expectations for the project, and
* Adequate project planning is not done.

15. What are three common means of classifying projects?

Projects can be classified by industry, size, when scope can be determined with confidence, and type such as organizational change, quality and productivity improvement, R&D, information systems (IS), and construction.

16. List and describe each of the project executive, managerial, and associate roles.

There are three project executive level roles: the steering team, the chief projects officer, and the project sponsor. A steering or leadership team for an organization is often the top leader (CEO or other) and his or her direct reports. The chief projects officer is the keeper, facilitator, and improver of the project management system. The sponsor has a financial stake in the project, charters the project, reviews project progress, is often part of the steering team, and often mentors the project manager.

The four project managerial level roles are the project manager, functional manager, facilitator, and senior customer representative. The project manager: is directly accountable for the project results, schedule, and budget; is the main communicator; and often must get things done through the power of influence since his or her formal power may be limited. The functional managers are department heads that determine how the work of the project gets accomplished; often supervise that work and often negotiate with the project manager regarding which workers are assigned to the project. A facilitator is sometimes assigned to complex or controversial projects to assist the project manager with the process of running meetings and making decisions. The senior customer representative ensures that the needs and wants of the various constituents in the customer’s organization are identified and prioritized and that project progress and decisions continually support the customer’s desires.

The two associate level project roles are core team members and subject matter experts. Core team members are assigned to the project for its entire duration if possible and jointly make decisions with the project manager. Subject matter experts are brought in as needed to help with specific project activities.

17. What is a challenge in managing subject matter experts?

A challenge with these subject matter experts is they were not present during the charter development and signing and, therefore, may have neither the dedication to nor detailed knowledge of the project.

18. What document is critical because most other planning is based upon it?

The project charter.

19. What needs must a project manager simultaneously champion?

The project manager needs to simultaneously champion the needs of the project, the team, and the parent organization.

20. What makes a person or group a project stakeholder?

Stakeholders are people or organizations that are actively involved in the project, or whose interests may be positively or negatively affected by either the process of performing the project or the project results.

**DISCUSSION QUESTIONS**

1. Using an example, describe a project in terms that are common to most projects.

Answers vary. The example should include some reference to project goals (scope and quality), project constraints (budget and schedule), stakeholders, communication needs, and the project life cycle.

2. Describe the general project life cycle model including each stage.

The general project life cycle model includes typical project stages such as initiating – when a project becomes official, planning – when the details are determined, executing – when much of the hands-on work is accomplished, and closing – when the project is formally completed.

3. List and describe several issues that pertain to each stage of the project life cycle.

* **Initiating** – when a project is proposed, planned at a high level, and key participants commit to it in broad terms;
* **Planning** – starts after the initial commitment, includes detailed planning, and ends when all stakeholders accept the entire detailed plan;
* **Executing** – includes authorizing, executing, monitoring, and controlling work until the customer accepts the project deliverables; and
* **Closing** – all activities after customer acceptance to ensure project is completed, lessons are learned, resources are reassigned, and contributions are recognized.

4. Name and describe each of the nine project management knowledge areas.

* **Scope management** – determining all the work that is necessary for project completion;
* **Time management** – defining, sequencing, and estimating duration, and resourcing work activities as well as developing and controlling the schedule;
* **Cost management** – planning, estimating, budgeting, and controlling costs;
* **Quality management** – quality planning, assurance, and control;
* **Human Resource management** – acquiring, developing, and managing the project team;
* **Communications management** – generating, collecting, disseminating, storing, and disposing of timely and appropriate project information;
* **Risk management** – risk identification, analysis, response planning, and monitoring and control;
* **Procurement management** – purchasing or acquiring product and services as well as contract management; and
* **Integration management** – unifying and coordinating the other knowledge areas by creating and using tools such as charters, project plans, and change control.

5. Name and describe the five project management process groups.

* **Initiating** – defines and authorizes a project or a project phase;
* **Planning** – defines and refines objectives and plans actions to achieve objectives;
* **Executing** – directs, and manages people and other resources to accomplish project work;
* **Monitoring and controlling** – collects data and checks progress to determine any needed corrective actions; and
* **Closing** – formalizes acceptance of project outcomes and the project is brought to a conclusion.

6. List and describe several issues that pertain to each of the nine project knowledge areas.

**Scope:** making sure all of the project work but nothing extra is included in planning, and controlling changes as the project progresses.

**Time:** determining accurately how long each aspect of the project should take and then staying on that schedule.

**Cost:** determining an accurate and low cost budget and then not exceeding it.

**Quality:** determining appropriate quality standards and ensuring both that the standards are used and the results are acceptable.

**Human resources:** determining who will be needed for the project, securing their services, building the project team, and helping team members find suitable post project work.

**Communications:** determining all communication needs and then making sure those needs are fulfilled.

**Risk:** determining risks, deciding which are major, creating contingency plans, monitoring risks, and carrying out responses.

**Procurement:** securing goods and services needed to perform the project in a timely and cost effective manner.

**Integration:** ensuring all sections of project planning and execution work together.

7. Explain how to scale up or down the complexity of project planning and management tools with examples.

A very small project might be to build a garage. This could be accomplished with very simple description of the resulting garage (scope), a firm fixed price contract with few provisions, a schedule for construction, and exchange of contact information. All of the planning might be accomplished with a very few short, simple documents. A much larger and more complex project might use many more documents for planning and control and many of the documents could have considerably more detail.

8. List and describe “soft skills” needed in managing projects. Why are each important?

Soft skills include communication and leadership – often seeking to understand various stakeholders’ needs and persuading people to do work. Projects are often conducted in an interdisciplinary situation in which no one person knows everything and the project manager does not have the formal authority to order people to perform.

9. List and describe “hard skills” needed in managing projects. Why are each important?

Hard skills can include risk analysis, quality control, scheduling, and budgeting work. Most projects have unknowns and, therefore, risks. Projects are subject to quality expectations – often formal standards, but at least expectations. Projects almost always have limits of time and money.

10. What is the best way for an organization to prioritize among potential projects?

The executives in charge of selecting projects need to ensure that overall organizational priorities are understood, communicated, and accepted. These organizational priorities should then be used to prioritize among competing projects.

11. Tell what programs and portfolios are and how they are different.

A **portfolio** is “a collection of projects or programs and other work that are grouped together to facilitate effective management of that work to meet strategic business objectives. The projects or programs of the portfolio may not necessarily be interdependent or directly related.” – *PMBOK*®*Guide* 367*.*

A **program** is “a group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually. Programs may include elements of work outside of the scope of discrete projects in the program.”– *PMBOK*®*Guide* 368*.*

The key difference is that all work in a program is usually related, whereas a portfolio may include a wider assortment of work.

12. Describe a subproject and tell why it might be useful.

A **subproject** is “a smaller portion of the overall project created when a project is subdivided into more manageable components or pieces”– *PMBOK*®*Guide* 377*.* A subproject may be planned and managed as a project. If it is a large and complex enough section of a project that might be a useful approach to planning and controlling it.

13. Contrast project managers from functional managers.

The project manager is normally directly accountable for the project results, schedule, and budget. This is the person who is the main communicator, who is responsible for the planning and execution of the project, and who has to be working on the project from start to finish. The project manager often must get things done through the power of influence since his or her formal power may be limited

Functional managers are the department heads – the ongoing managers of the organization. They will normally determine how the work of the project gets accomplished; often directly supervising that work and they are likely to negotiate with the project manager regarding which workers are assigned to the project.

14. Contrast core team members from subject matter experts.

Core team members are ideally assigned to the project for its entire duration. They work with the project manager to make decisions, perform hands-on work, and sometimes supervise the work of subject matter experts.

Subject matter experts are brought onto the project when needed to perform specific activities. They are not normally involved in making project-wide decisions or in supervising the work of others.

***PMBOK ® Guide* Questions**

The purpose of these questions is to help visualize the type of questions on PMP and CAPM exams. The correct answer is shown in bold and the *PMBOK ® Guide* page references as well as page references from this book are shown below each question.

1. Each project management process can be described to include all of the following except:

a. inputs

**b. knowledge areas**

c. outputs

d. tools and techniques.

*PMBOK ® Guide* pp. 37 and 38. *Contemporary Project Management* (*CPM)* p. 8.

2. Which role describes someone as having authority over a group that actually makes a product or performs a service?

**a. functional manager**

b. project manager

c. project team member

d. sponsor.

*PMBOK ® Guide* p. 436. *CPM* p.

3. Work activities aimed to ensure that the project includes all the work required, and only the work required are part of which knowledge area?

a. cost management

b. quality management

c. risk management

**d. scope management.**

*PMBOK ® Guide* p. 103. *CPM* p. 8.

4. A logical grouping of the project management inputs, tools and techniques, and outputs is a project:

a. governance system,

b. life cycle,

c. knowledge area,

**d. process group.**

*PMBOK ® Guide* p. 443. *CPM* p. 8.

5. The process that defines and authorizes a project or a project phase is:

a. budgeting,

b. closing,

c. executing,

**d. initiating.**

*PMBOK ® Guide* p. 44. *CPM* p. 8.

**EXAMPLE PROJECT**

I like to use real projects as teaching vehicles. The end of Chapter 1 is a good place to introduce the projects. On a two or three days a week schedule, this can be the last day. On a one day per week schedule, this can be the last hour. I cover this in three parts. I ask a person from each agency that will have a student project to attend this. That person can be called the project sponsor.

First, I tell the students a tiny bit about each project such as it is a fund raising or information systems project. I like to ask the students what criteria will be useful in deciding on project teams. This operationalizes the need for both soft and hard skills. It also gets the students thinking about practical issues of meetings (available time and locations). Once we have brainstormed a few ideas for team assignments, I ask the students to provide me with brief inputs regarding their background on those ideas. The students can also list a preference for which project – but I tell them if they list one preferred project; they must list at least a first and second choice. It is easy to give most students first or second choice, but difficult to give all students first choice.

Second, I spend about 10 minutes communicating common expectations to the student teams as well as the project sponsors. I tell both that I want them to initiate an effective working relationship and then I itemize the student assignments with due dates. I give everyone a hard copy. I spend a bit more time explaining the charter since that is the first deliverable.

Third, I ask each sponsor to give an elevator speech (a very brief introduction to their organization and then tell very briefly what their project is and why it is important). While these sponsors are talking, I make project assignments. I base these on a combination of their preferences and the information they tell me about themselves. I try to make diverse teams when possible. Once all have been presented, I tell the student who will be on which project. I allow them the opportunity to trade projects if they wish, but very few do. I ask the students to exchange information with their sponsors and arrange for their first meeting.