

CHAPTER 1

Introduction

The Project Management Body of Knowledge is the sum of knowledge within the profession of project management. As with other professions such as law, medicine, and accounting, the body of knowledge rests with the practitioners and academics who apply and advance it. The complete Project Management Body of Knowledge includes proven traditional practices that are widely applied, as well as innovative practices that are emerging in the profession, including published and unpublished material. As a result, the Project Management Body of Knowledge is constantly evolving.

This chapter defines several key terms and provides an overview of the rest of *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* in the following major sections:

- 1.1 Purpose of the *PMBOK® Guide*
- 1.2 What Is a Project?
- 1.3 What Is Project Management?
- 1.4 The *PMBOK® Guide* Structure
- 1.5 Areas of Expertise
- 1.6 Project Management Context

1.1 Purpose of the *PMBOK® GUIDE*

The primary purpose of the *PMBOK® Guide* is to identify that subset of the Project Management Body of Knowledge that is generally recognized as good practice. "Identify" means to provide a general overview as opposed to an exhaustive description. "Generally recognized" means that the knowledge and practices described are applicable to most projects most of the time, and that there is widespread consensus about their value and usefulness. "Good practice" means that there is general agreement that the correct application of these skills, tools, and techniques can enhance the chances of success over a wide range of different projects. Good practice does not mean that the knowledge described should always be applied uniformly on all projects; the project management team is responsible for determining what is appropriate for any given project.

The *PMBOK® Guide* also provides and discusses, writing, and applying project management. Such a standard is an essential element of a profession.

The Project Management Institute uses this document as a foundational, but not the sole, project management reference for its professional development programs including:

- Project Management Professional (PMP®) certification
- Project management education and training offered by PMI Registered Education Providers (R.E.P.s)
- Accreditation of educational programs in project management.

As a foundational reference, this standard is neither comprehensive nor all-inclusive. Appendix D discusses application area extensions, while Appendix E lists sources of further information on project management.

This standard addresses only single projects and the project management processes that are generally recognized as good practice. There are other standards on organizational project management maturity, project manager competency, and other topics that address what is generally recognized as good practices in those areas. Some of the material in those other standards impacts single projects. The other standards should be consulted for additional information and understanding of the broader context in which projects are accomplished.

Project management standards do not address all details of every topic. Topics that are not mentioned should not be considered unimportant. There are several reasons why a topic may not be included in a standard: it may be included within some other related standard; it may be so general that there is nothing uniquely applicable to project management; or there is insufficient consensus on a topic. The lack of consensus means there are variations in the profession regarding how, when or where within the organization, as well as who within the organization, should perform that specific project management activity. The organization or the project management team must decide how those activities are going to be addressed in the context and the circumstances of the project for which the *PMBOK® Guide* is being used.

1.1.1 Audience for the *PMBOK® Guide*

This standard provides a foundational reference for anyone interested in the profession of project management. This includes, but is not limited to:

- Senior executives
- Program managers and managers of project managers
- Project managers and other project team members
- Members of a project management office
- Customers and other stakeholders
- Functional managers with employees assigned to project teams
- Educators teaching project management and related subjects
- Consultants and other specialists in project management and related fields
- Trainers developing project management educational programs
- Researchers analyzing project management.

1.2 What is a Project?

1.2.1 Project Characteristics

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

.1 Temporary

Temporary means that every project has a definite beginning and a definite end. The end is reached when the project's objectives have been achieved, or it becomes clear that the project objectives will not or cannot be met, or the need for the project no longer exists and the project is terminated. Temporary does not necessarily mean short in duration; many projects last for several years. In every case, however, the duration of a project is finite. Projects are not ongoing efforts.

In addition, temporary does not generally apply to the product, service or result created by the project. Most projects are undertaken to create a lasting outcome. For example, a project to erect a national monument will create a result expected to last centuries. Projects also may often have intended and unintended social, economic and environmental impacts that far outlast the projects themselves.

The temporary nature of projects may apply to other aspects of the endeavor as well:

- The opportunity or market window is usually temporary—some projects have a limited time frame in which to produce their product or service.
- The project team, as a working unit, seldom outlives the project—a team created for the sole purpose of performing the project will perform that project, and then the team is disbanded and the team members reassigned when the project ends.

.2 Unique Products, Services, or Results

A project creates unique deliverables, which are products, services, or results. Projects can create:

- A product or artifact that is produced, is quantifiable, and can be either an end item in itself or a component item
- A capability to perform a service, such as business functions supporting production or distribution
- A result, such as outcomes or documents. For example, a research project develops knowledge that can be used to determine whether or not a trend is present or a new process will benefit society.

Uniqueness is an important characteristic of project deliverables. For example, many thousands of office buildings have been developed, but each individual facility is unique—different owner, different design, different location, different contractors, and so on. The presence of repetitive elements does not change the fundamental uniqueness of the project work.

Progressive elaboration of temporary and unique. Progressive continuing by increments¹. For example, the project scope will be broadly described early in the project and made more explicit and detailed as the project team develops a better and more complete understanding of the objectives and deliverables. Progressive elaboration should not be confused with scope creep (Section 5.5).

Progressive elaboration of a project's specifications needs to be carefully coordinated with proper project scope definition, particularly if the project is performed under contract. When properly defined, the scope of the project—the work to be done—should be controlled as the project and product specifications are progressively elaborated. The relationship between product scope and project scope is discussed further in the Chapter 5 introductory material.

The following examples illustrate progressive elaboration in two different application areas:

- Development of a chemical processing plant begins with process engineering to define the characteristics of the process. These characteristics are used to design the major processing units. This information becomes the basis for engineering design, which defines both the detailed plant layout and the mechanical characteristics of the process units and ancillary facilities. All of this results in design drawings that are elaborated to produce fabrication and construction drawings. During construction, interpretations and adaptations are made as needed and are subject to proper approval. This further elaboration of the deliverables is captured in as-built drawings, and final operating adjustments are made during testing and turnover.
- The product of an economic development project may initially be defined as: "Improve the quality of life of the lowest income residents of community X." As the project proceeds, the products may be described more specifically as, for example: "Provide access to food and water to 500 low-income residents in community X." The next round of progressive elaboration might focus exclusively on increasing agriculture production and marketing, with provision of water deemed to be a secondary priority to be initiated once the agricultural component is well under way.

1.2.2 Projects vs. Operational Work

Organizations perform work to achieve a set of objectives. Generally, work can be categorized as either projects or operations, although the two sometimes overlap. They share many of the following characteristics:

- Performed by people
- Constrained by limited resources
- Planned, executed, and controlled.

Projects and operations differ primarily in that operations are ongoing and repetitive, while projects are temporary and unique.

The objectives of projects and operations are fundamentally different. The purpose of a project is to attain its objective and then terminate. Conversely, the objective of an ongoing operation is to sustain the business. Projects are different because the project concludes when its specific objectives have been attained, while operations adopt a new set of objectives and the work continues.

Projects are undertaken at all levels of the organization and they can involve a single person or many thousands. Their duration ranges from a few weeks to several years. Projects can involve one or many organizational units, such as joint ventures and partnerships. Examples of projects include, but are not limited to:

- Developing a new product or service
- Effecting a change in structure, staffing, or style of an organization
- Designing a new transportation vehicle
- Developing or acquiring a new or modified information system
- Constructing a building or facility
- Building a water system for a community
- Running a campaign for political office
- Implementing a new business procedure or process
- Responding to a contract solicitation.

1.2.3 Projects and Strategic Planning

Projects are a means of organizing activities that cannot be addressed within the organization's normal operational limits. Projects are, therefore, often utilized as a means of achieving an organization's strategic plan, whether the project team is employed by the organization or is a contracted service provider.

Projects are typically authorized as a result of one or more of the following strategic considerations:

- A market demand (e.g., an oil company authorizes a project to build a new refinery in response to chronic gasoline shortages)
- An organizational need (e.g., a training company authorizes a project to create a new course in order to increase its revenues)
- A customer request (e.g., an electric utility authorizes a project to build a new substation to serve a new industrial park)
- A technological advance (e.g., a software firm authorizes a new project to develop a new generation of video games after the introduction of new game-playing equipment by electronics firms)
- A legal requirement (e.g., a paint manufacturer authorizes a project to establish guidelines for the handling of a new toxic material).

1.6 Project Management Context

Project management exists in a broader context that includes program management, portfolio management and project management office. Frequently, there is a hierarchy of strategic plan, portfolio, program, project and subproject, in which a program consisting of several associated projects will contribute to the achievement of a strategic plan.

1.6.1 Programs and Program Management

A program is a group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually³. Programs include elements of related work outside of the scope of the discrete projects in the program. For example:

- A new car model program can be broken up into projects for the design and upgrades of each major component (for example, transmission, engine, interior, exterior) while the ongoing manufacturing occurs on the assembly line
- Many electronics firms have program managers who are responsible for both individual product releases (projects) and the coordination of multiple releases over a period of time (an ongoing operation).

Programs also involve a series of repetitive or cyclical undertakings. For example:

- Utilities often speak of an annual "construction program," a series of projects built on previous efforts
- Many nonprofit organizations have a "fundraising program," to obtain financial support involving a series of discrete projects, such as a membership drive or an auction
- Publishing a newspaper or magazine is also a program with each individual issue managed as a project. This is an example of where general operations become "management by projects" (Section 1.3).

In contrast with project management, program management is the centralized, coordinated management of a group of projects to achieve the program's strategic objectives and benefits.

1.6.2 Portfolios and Portfolio Management

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 in the portfolio may not necessarily be interdependent or directly related. Funding and support can be assigned on the basis of risk/reward categories, specific lines of business, or general types of projects, such as infrastructure and internal process improvement.

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements through the application and integration of the project management processes: initiating, planning, executing, monitoring and controlling, and closing. The project manager is the person responsible for accomplishing the project objectives.

Managing a project includes:

- Identifying requirements
- Establishing clear and achievable objectives
- Balancing the competing demands for quality, scope, time and cost
- Adapting the specifications, plans, and approach to the different concerns and expectations of the various stakeholders.

Project managers often talk of a “triple constraint”—project scope, time and cost—in managing competing project requirements. Project quality is affected by balancing these three factors (Chapters 5 through 7). High quality projects deliver the required product, service or result within scope, on time, and within budget. The relationship among these factors is such that if any one of the three factors changes, at least one other factor is likely to be affected. Project managers also manage projects in response to uncertainty. Project risk is an uncertain event or condition that, if it occurs, has a positive or negative effect on at least one project objective.

The project management team has a professional responsibility to its stakeholders including customers, the performing organization, and the public. PMI members adhere to a “Code of Ethics” and those with the Project Management Professional (PMP®) certification adhere to a “Code of Professional Conduct.” Project team members who are PMI members and/or PMPs are obligated to adhere to the current versions of these codes.

It is important to note that many of the processes within project management are iterative because of the existence of, and necessity for, progressive elaboration in a project throughout the project’s life cycle. That is, as a project management team learns more about a project, the team can then manage to a greater level of detail.

The term “project management” is sometimes used to describe an organizational or managerial approach to the management of projects and some ongoing operations, which can be redefined as projects, that is also referred to as “management by projects.” An organization that adopts this approach defines its activities as projects in a way that is consistent with the definition of a project provided in Section 1.2.2. There has been a tendency in recent years to manage more activities in more application areas using project management. More organizations are using “management by project.” This is not to say that all operations can or should be organized into projects. The adoption of “management by project” is also related to the adoption of an organizational culture that is close to the project management culture described in Section 2.3. Although, an understanding of project management is critical to an organization, a detailed discussion of project management is beyond the scope of this book.

Organizations manage their portfolios based on specific goals. One goal of portfolio management is to maximize the value of the portfolio by careful examination of candidate projects and programs for inclusion in the portfolio and the timely exclusion of projects not meeting the portfolio's strategic objectives. Other goals are to balance the portfolio among incremental and radical investments and for efficient use of resources. Senior managers or senior management teams typically take on the responsibility of portfolio management for an organization.

1.6.3 Subprojects

Projects are frequently divided into more manageable components or subprojects, although the individual subprojects can be referred to as projects and managed as such. Subprojects are often contracted to an external enterprise or to another functional unit in the performing organization. Examples include:

- Subprojects based on the project process, such as a single phase in the project life cycle
- Subprojects according to human resource skill requirements, such as plumbers or electricians needed on a construction project
- Subprojects involving specialized technology, such as the automated testing of computer programs on a software development project.

On very large projects, the subprojects can consist of a series of even smaller subprojects.

1.6.4 Project Management Office

A project management office (PMO) is an organizational unit to centralize and coordinate the management of projects under its domain. A PMO can also be referred to as a "program management office," "project office," or "program office." A PMO oversees the management of projects, programs, or a combination of both. The projects supported or administered by the PMO may not be related other than by being managed together. Some PMOs, however, do coordinate and manage related projects. In many organizations, those projects are indeed grouped or are related in some manner based on the way the PMO will coordinate and manage those projects. The PMO focuses on the coordinated planning, prioritization and execution of projects and subprojects that are tied to the parent organization's or client's overall business objectives.

PMOs can operate on a continuum, from providing project management support functions in the form of training, software, standardized policies, and procedures, to actual direct management and responsibility for achieving the project objectives. A specific PMO can receive delegated authority to act as an integral stakeholder and a key decision-maker during the initiation stage of each project, can have the authority to make recommendations, or can terminate projects to keep the business objectives consistent. In addition, the PMO can be involved in the selection, management, and redeployment, if necessary, of shared project personnel and, where possible, dedicated project personnel.

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- Shared and coordinated practices, and standards
- Clearinghouse and management for project policies, procedures, templates, and other shared documentation
- Centralized configuration management for all projects administered by the PMO
- Centralized repository and management for both shared and unique risks for all projects
- Central office for operation and management of project tools, such as enterprise-wide project management software
- Central coordination of communication management across projects
- A mentoring platform for project managers
- Central monitoring of all PMO project timelines and budgets, usually at the enterprise level
- Coordination of overall project quality standards between the project manager and any internal or external quality personnel or standards organization.

Differences between project managers and a PMO may include the following:

- Project managers and PMOs pursue different objectives and, as such, are driven by different requirements. All of these efforts, however, are aligned with the strategic needs of the organization.
- A project manager is responsible for delivering specific project objectives within the constraints of the project, while a PMO is an organizational structure with specific mandates that can include an enterprisewide perspective.
- The project manager focuses on the specified project objectives, while the PMO manages major program scope changes and can view them as potential opportunities to better achieve business objectives.
- The project manager controls the assigned project resources to best meet project objectives, while the PMO optimizes the use of shared organizational resources across all projects.
- The project manager manages the scope, schedule, cost, and quality of the products of the work packages, while the PMO manages overall risk, overall opportunity, and the interdependencies among projects.
- The project manager reports on project progress and provides specific information...