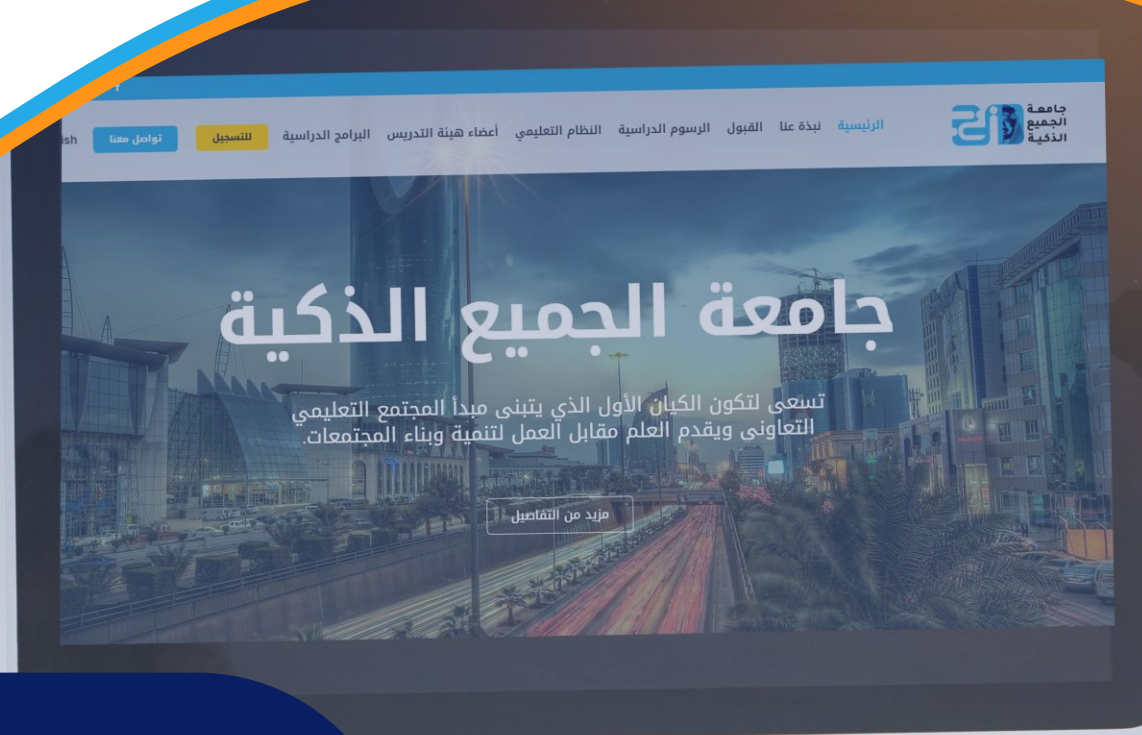




جامعة الجميع الذكية  
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# Project Management Technologies

Prepared by Lecturer Waseem Tabbaa

## Chapter 1

PMG 312  
Role of the project



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- Foundation Award in Asset Management
- TOGAF® Certification Program
- Certified Asset Management Professional
- Master Scuba Diver Trainer
- ITIL Foundation Level
- CompTIA Project+
- International Computer Drivers License (ICDL)

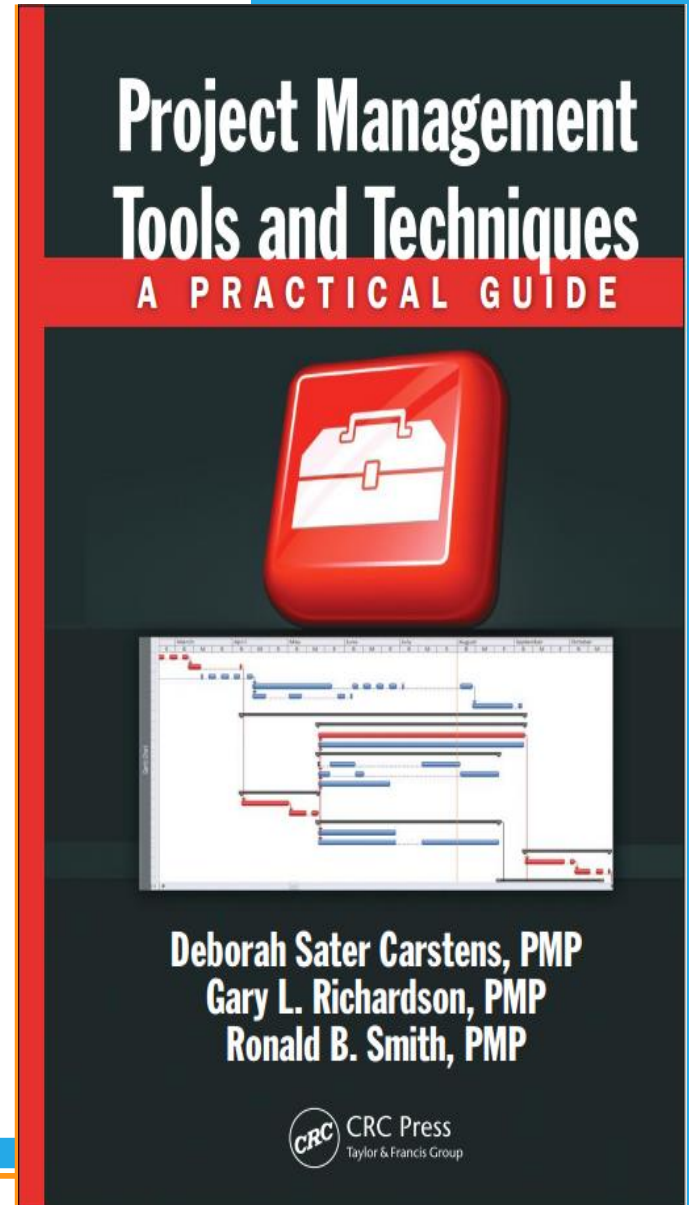


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# Chapter 01

## Project Management Technologies

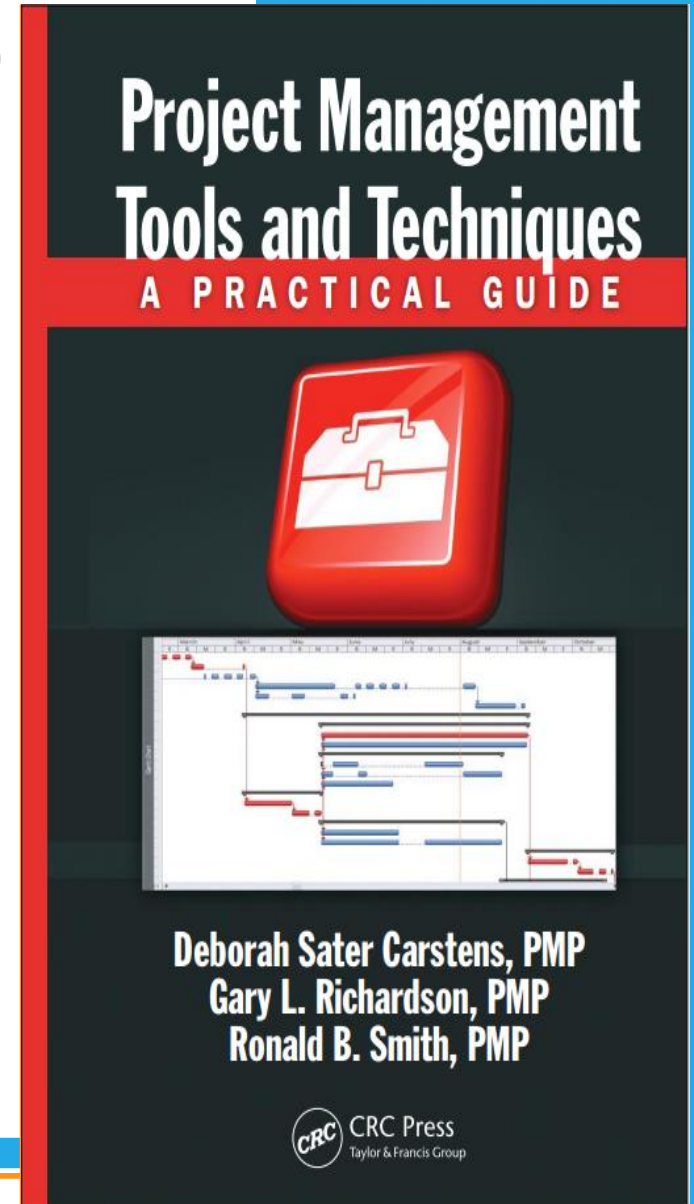
In this course, you will learn how to use a variety of project management tools and data collection tools including check sheets, histograms, performance charts, and process definition tools such as work breakdown structure (WBS) and flowcharts. After you master these tools, you will be able to increase your project management effectiveness by leaps and bounds.



# Chapter 01

## Project Management Technologies

- Credit Hours: 3 credit hours
- The main material and reference for this course will be the textbook.
- Lecture notes and slides are additional resources.
- Required Textbook: Project Management Tools And Techniques by Sater Carstens; Gary L. Richardson; Ronald B. Smith



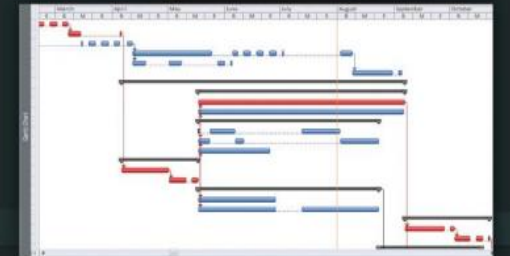
# Chapter 01

## Topics

- Project life cycle
- Project Execution and Control
- Project Management Integration
- Common IT tools for business
- Project management tools to manage documentation, resource pools, and project costs and schedules
- Software for supporting stakeholder and team's communications

## Project Management Tools and Techniques

A PRACTICAL GUIDE



Deborah Sater Carstens, PMP  
Gary L. Richardson, PMP  
Ronald B. Smith, PMP

 CRC Press  
Taylor & Francis Group

# Chapter 01

## Learning Outcomes

- This course will provide you with a complete overview and a basic understanding of the Project Management Cycle.
- Understand different common tools for project management.
- Appraise the features, advantages, and disadvantages of typical information systems, from simple spreadsheets to enterprise systems, and demonstrate which project contexts may be best suited for certain types of PMIS and why.
- Given a complex project context and its plan, use one or more information systems to recommend a suite of tools, and demonstrate how the information systems will be used to monitor and control project deliverables.
- Demonstrate how collaboration and communication tools that are provided in a PMIS can be used in various types of projects and defend the best practices in the use of these tools.
- Use a step-by-step process to manage projects faster while using fewer resources.
- Avoid common pitfalls and mistakes in managing projects.
- Explore different online tools that can be incorporated in the project management tasks.

# Chapter 01

## Introduction

This textbook is dedicated to the notion that project managers (PMs) use many tools and techniques. The text is organized and designed essentially around the life cycle of the project. It provides PMs with a toolkit needed to successfully carry out and lead projects. The amount of theory discussed is minimized as the primary focus is a how-to book but with a theoretical project management model as a basis. Therefore, it is a mechanics-oriented approach versus a theoretical one.

The textbook is divided into six different sections, along with a support content appendices.

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# Chapter 01

## Section I—Role of the project

**This section** consists of three chapters that focus on:

1. The operational role of a project consisting of good project management tools and techniques to help eliminate the negative effects of developing systems,
2. Using a formal methodology to increase an organization's chances of success, and
3. Showing how power and politics affect the performance of a project.

**Chapter 1**, Role of the Project, is an introduction to the project management tools and techniques. Having good tools and techniques is an excellent supporting strategy for managing and running projects effectively and helps the project team and stakeholders to be more successful.

**Chapter 2**, PM in a Nutshell, looks at the bigger picture of project management and how to get projects started by using a process methodology. A good starting point to develop a methodology is to review the Project Management Body of Knowledge (PMBOK) from the PMI. Many organizations use this model methodology as a starting point and modify it to meet their unique needs. A key step in any management methodology involves some process to define the project's requirements and evaluate its value to the organization through a formal business case. When seeking executive approval for a new project, most organizations build a case around objectives, benefits, and value (return on investment). Rarely, though, do they evaluate the project requirements and goals against recently approved or current projects. New project requests should, in fact, have a strong relationship with projects in the queue or in progress, as well as with the organization's strategic plan. Use of a weighted project ranking matrix will highlight the interconnectedness of the company's current and potential projects and will help determine whether to red light (stop) or green light (approve) proposals. Ranking a project in terms of urgency and likelihood of success along with its financial prospects can help make the selection process more global and aligned with organizational goals. In doing so, the selection process is shifted to the value a project deliverable can bring to the company, its partners, and users, rather than just the estimated return on investment, which is often divorced from true business gains.



# Chapter 01

## Section I—Role of the project

This chapter also addresses the role of gathering project requirements, which are the further breakdown of the client's deliverables described in more technical detail. This process cannot be done in a vacuum, and the requirements collection process heavily relies on various business and user groups. It is the responsibility of the PM to facilitate this requirements collection process and there are many techniques for doing this.

One typical requirement-gathering process is a group brainstorming exercise that is facilitated by the project team. This subject matter group consists mostly of organizational stakeholders. Brainstorming should also include the recognized assumptions, constraints, and potential risks.

Tools for evaluating and prioritizing among all the potential projects for an organization is also discussed in this chapter.

**Chapter 3**, Power and Politics, looks at various organizational dynamics regarding how this plays out in different situations. Projects are natural breeding grounds for conflict that creates ineffective human behavior that must be dealt with effectively for the overall success and health of a project (Richardson 2010). Every organization, regardless of how small or large it is, has political and power situations that affect project performance. These struggles are unique to each project environment with different changing parameters of project resources, environments, goals, and deliverables (Vidal and Marle 2008). Politics can be in terms of which projects the senior management support and are committed to bringing to fruition (Maddalena 2012). Trust between the stakeholders and project team is a powerful asset as it can foster loyalty from key stakeholders and result in a positive project environment (Brewer and Strahorn 2012).

It is necessary to identify and manage stakeholders to help in selling and continuing to sell the project throughout its life cycle (Little 2011). Another important aspect of the project is assembling the right team of individuals (Clark and Colling 2005; Maddalena 2012). These struggles root from resources being in short supply. In most cases, this manifests itself in terms of labor, monetary, facility (space), and equipment resources.

# Chapter 01

## Section I—Role of the project

Six different types of organizational structures are described in this chapter:

1. **Centralized structures**
2. **Functional structures**
3. **Projectized structure**
4. **Matrix**
5. **Virtual structure**
6. **Composite systems**



Each of these structures has distinct characteristics. There are benefits and challenges for each of these structures that must be understood to use them effectively or manage their shortcomings if the choice is dictated.

**Section II** is about Project Formulation Using Tools and Techniques.

This section consists of two chapters that focus on the early stage of a project:

1. Specific concepts at this stage are selecting the right projects for an organization that is in alignment with the business objectives, obtaining organizational support for the project.
2. The role of a formal project charter in the initiation process.

**Chapter 4**, Picking the Right Project, describes a significant set of common business factors and priorities to consider when approving a new project. Most organizations have many new project requests and not enough money, time, equipment, or resources available to implement all of them, so they need a consistent selection process. Also, competing demands across the organization create complex resource allocation issues that are difficult to optimally satisfy. This requires a process for allocating resources across competing demands based on organizational priorities.

## Section II—Project formulation using tools

Creation of a project review board with diverse backgrounds and skills is a desirable way to help the organization in picking the right projects. Other approving entities could include the board of directors to approve a large project that implements some of the organization's more strategic goals, or an activation group that deals with the smaller initiatives (e.g., under 400 hours). If an organization wants to be successful and stay in business, there must be a consistent preassessment project evaluation process to build valid and understandable business cases for the decision process.

**Chapter 5**, Gaining Support for a Project, addresses how support for the project is gained, which includes the management approach to officially launch a new project and the purpose of a project charter. Producing a successful project takes an enormous degree of planning and skilled leadership and some would even argue that it also takes a little bit of luck (Little 2011). Organizations have different ways of approaching the official launch of a project. However, the core process should result in a formal management “contract” to explicitly approve the project and establish ground rules for its execution. The first element of this usually revolves around the details of the project (Little 2011; Anonymous 2002). This involves identification of the skills needed to carry out the project. Some of these details may be in the project proposal. However, it is necessary to expand the level of understanding related to technical work details and resources required.



# Chapter 01

## Section II—and techniques

Teamwork is a vital ingredient of success for the project team (Swan and Khalfan 2007). This initial step involves establishing an understanding between the project team and the project sponsor (Miller 2001). The project charter is the formal document that lays the groundwork for this relationship and represents the formal creation of the project in the organization. PMI (2008) defines the charter as a document that formally authorizes a project and documents the stakeholder's needs and expectations. Also, it should clearly define lines of authority to include an accountability framework (Maddalena 2012).



**Section III** is about Developing Project Scope consisting of three chapters.

This section focuses on:

1. Translating the original project goal into a work unit-oriented structure with initial time and cost estimates.
2. Outlines the processes for defining project scope and techniques for estimating the defined work.

**Chapter 6**, Defining a Project, addresses the next step in the launch process. The launch process involves the development of the project scope definition that yields a scope management plan. It also involves the development of the scope definition that is outlined in an updated scope management plan, scope statement, and requested changes to the project scope (PMI 2008). Before reading this chapter, it is important to have an understanding of the definitions for a scope management plan and scope statement. PMI (2008) describes a scope management plan as a description outlining how the project scope will be defined, developed, and verified. It will also describe how the WBS will be created and defined. Therefore, the scope management plan provides guidance on how the project scope will be managed and controlled by the PM and team.



It is contained within or is a subsidiary of the project management plan. A project scope statement contains a description of the project scope that consists of information such as the deliverables, assumptions, constraints, and a description of the work that is to be accomplished by the project. The scope statement for the project is documented, so it will be the basis for making future project decisions and for confirming or developing a common understanding of the project scope among the stakeholders.

The creation of the scope management plan and scope statement establishes the foundation for the WBS development, which is discussed in the next chapter.

**Chapter 7**, Developing the Work Breakdown Structure, focuses on showing how the WBS model has a broad impact on various aspects of project management. The initial view of this concept as presented in this chapter is to produce a clear technical deliverable and work definition of project scope; however, threads related to other WBS usage will appear throughout much of this textbook. Many view the WBS as one of the most valuable management artifacts produced in the project life cycle. This chapter will show that there are multiple ways to structure a project WBS, but the key is to organize it “logically” as defined by the individuals who are involved with the effort. In some cases, this structure will mirror the target physical product, or alternatively may divide the high-level box structure into logical work phases.



Regardless of its high-level structure view, the WBS creation process moves iteratively to increasingly more detailed views from this level. This creation process is called decomposition, or by the fancier title of progressive elaboration. The top levels of this structure focus more on the major deliverables or process components, whereas the lower-level units describe specific work required to achieve those deliverables.

**Chapter 8**, Activity Estimating, explores some of the typical procedural approaches for creating a project time and cost estimate, but be aware that estimating is an art form as much as a mechanical process or scientific formula. Every industry has its unique methods to produce their project estimates. It is also important to point out that the large majority of projects do not meet their original estimates, so this suggests that the typical processes utilized have shortcomings. In reality, most estimates are overrun (Verzuh 2005). Some of this is caused by a poor process to start with and some is related to subsequent poor management of the project. As project management methods have evolved and matured, estimates can be compared more closely to the actual outcome, yet significant variances still remain.

# Chapter 01

## Section IV—Tools and techniques for developing the project plan

**Section IV** builds from the content of Section II with Tools for Developing the Project Plan and consists of five chapters. These five chapters focus on the basic processes and mechanics required to develop a viable project plan based on the project deliverables as defined in the work breakdown structure (WBS).

In this textbook, Sections III and IV represent:

- the core mechanics that every PM should follow and generally in the sequence described.
- Scope definition is considered to be the prerequisite management event because it is difficult to execute a project if there is not a clear definition of its goals and work requirement.
- Many projects fail because this step is not done well.
- The main artifact to support this goal is the WBS, which is considered to 4 Project management tools and techniques be one of the most important project artifacts.
- Much of the following text material uses this definition to bridge over into various other management processes.

# Chapter 01

## Section IV—Tools and techniques for developing the project plan

**Chapter 9**, Creating the Project Schedule, focuses on the development of the first cut schedule to match the scope identified for the project. There is a direct relationship between the WBS boxes and the resulting project schedule. The primary scope-to-schedule linkages are the work packages (WP) and other elements outlined in the WBS. As discussed earlier, the WBS and its associated dictionary of lower-level data contain the primary support data for creating the project schedule (PMI 2008). In a properly defined WBS, the project work unit requirements will pass through into the subsequent initial schedule. In this regard, it is important to emphasize that if the work is not reflected in the WBS, “it is not considered to be in the project scope, schedule, or budget.” For this model view, there will be clear tracking visibility of WBS scope boxes in the plan and identified by their WBS IDs. This schedule translation process is the main goal of this chapter.

# Chapter 01

## Section IV—Tools and techniques for developing the project plan

**Chapter 10**, Creating Project Cost, introduces the resource aspect of resource management leading to a view that shows the total direct cost picture. The intent of a project WBS is to define all project work elements into which these various resource elements will be utilized. Using this approach, direct project costs can be derived using defined resource rates for the allocated resources. This process simply aggregates the resource cost for each work unit based on its internal resource allocation into individual work units. Later, as the project unfolds, planned versus actual comparisons can be made as part of the control process. Even though the goal is to evaluate status at the work unit level, it is important to recognize that some compromise to this mapping goal will be necessary. For example, expenses related to a vehicle used by the entire project team may be difficult to track to a single work unit. Other costing anomalies will also be described.

# Chapter 01

## Section IV—Tools and techniques for developing the project plan

**Chapter 11**, Introduction to Risk, provides a way to reduce project outcome uncertainty through providing awareness of risks that are present, thereby minimizing future threats, seizing business opportunities, and achieving more predictable results. It also identifies the degree to which a risk may occur and the outcome it could have in terms of impacting the project's success. There are many uncertainties with everything in life, but planning for uncertainties can prevent or reduce negative outcomes, thus bringing about the term risk management. Risk can be thought of as positive or negative events in the future that could occur. Risk planning begins with a series of steps designed to help approach, plan, and execute the risk management activities, which constitute the first major step in risk management. The second process step involves identification of risks through looking at a company's historical records and other techniques to identify risks that should be reviewed and managed. From this review, risks are dealt with in various ways and project contingency strategies are developed. Chapter 22 further expands the introductory view of this topic by going into more detail regarding the overall risk management model.

# Chapter 01

## Section IV—Tools and techniques for developing the project plan

**Chapter 12**, Creating a Viable Project Plan, illustrates various “tweaking” strategies that the PM has to embrace in customizing the initial plan to fit various constraints or views, while keeping the bulk structure somewhat intact. One of the frequent decision scenarios that occur in the project, especially at the end of the first cut plan phase, is the need to change some aspect of the plan to fit stated constraints such as time, budget, or resource requirements. Based on these constraints, the original plan cannot be approved. Techniques to resolve such issues without destroying the integrity of the original plan are a project management art. Each technique takes some aspect of the project work units and moves them around in some manner to eliminate or minimize the constraint. This chapter will view these processes as the PM’s magic tool box of tricks to tweak a plan and attempt to satisfy various scope, time, cost, and resource constraint issues. Common decision scenarios are discussed as examples of this process.

# Chapter 01

## Section IV—Tools and techniques for developing the project plan

**Chapter 13**, Finalizing the Project Plan, focuses on the key processes to finalize the “tweaked” project plan and move the process into the execution stage. At this point, the plan is in synchronization with all internal components and is designed to serve as a road map for subsequent steps. A viable project plan serves as a road map for the execution process in the same way that a highway road map serves to guide a planned trip. In both cases, we realize that the resulting map may not have identified all turns along the way, but hopefully the detours encountered will be minor and we will always be close to the defined target areas and can use that base to help move back in the desired direction if an interim target is missed.

**Section V** is Project Execution consisting of six chapters.

This section focuses on the tools and techniques discussed to better equip a PM with managing project performance, cost, schedule, outcome, scope, and resources.

**Chapter 14**, Key Performance Indicators, provides the PM with different metrics and measures used to track project performance. This chapter provides specifically the PM with an understanding of key performance indicators (KPIs) used to track project performance and the difference in KPIs, metrics, and measures. A simple example of a metric is the speed of the car, while the measure for this metric is the actual value of that metric. In this example, the metric is speed and the measure is actual miles per hour. The important management concept for this area is that you cannot manage what you cannot measure. Therefore, defined performance indicators provide the PM with specific indication regarding how the project is performing. KPIs are designed to drive the project to the specified metric direction.

**Chapter 15**, Earned Value Management, focuses on using the EV model to produce effective and meaningful project status analysis measures. From these parameters, cost, schedule, and project performance can be reported. EV is a contemporary project management analysis technique that has gained broad industry acceptance over the past few years. Originally introduced into the project management sphere in the late 1960s, this topic lay essentially dormant for over 40 years before the commercial world began to embrace its usage. EV has the unique ability to combine cost, time, and scope completion measurements within a single integrated methodology. EV analysis is based on comparing actual project work unit performance to a fixed project baseline. To accurately evaluate project performance, the PM must understand not only what created past variances, but also the underlying assumptions regarding what will drive future predictions and challenges. One objective of earned value management (EVM) is to assist in the process of understanding project quantitative variances; however, strictly focusing on past performance does not yield a complete picture. The EV model defines key data elements needed to evaluate aggregate project performance, but more granularities of these evaluation parameters are often needed for detailed root cause analysis. In addition to the historical evaluation role, derived EV status parameters can be used to create completion forecasts. A third phase of the chapter's discussion illustrates how to use work unit data for analyzing rate and work efficiency.



**Chapter 16**, Status Tracking, focuses on communications management as a guideline on how PMs intend to manage communications of project progress. Project status tracking reporting specifics should be defined at the start of any project through the development of a communications plan, which describes the information needs of the stakeholders and the project team. This overall plan should cover who needs to know, what and when they need to know it, and how they should receive it. There are different formats and technologies for reporting status of a project (i.e., Microsoft Project 2010, Excel, Visio, web systems, and others). This chapter will cover some sample project status report approaches that can be utilized for tracking progress. It is now recognized that the communication aspect of project management is one of the most common gaps in the management process.

**Chapter 17**, Techniques to Influence the Project Outcome, summarizes various management techniques that can positively affect and influence the outcome of projects. Projects that are completed often end up having fewer features and functions than originally planned to save development time and/or costs. Therefore, PMs need to be equipped with many techniques in their toolbox to help them influence the outcome of their projects in a positive manner. The examples discussed represent techniques to accomplish some specific planning or control aspect for the project and these are broken down into three major areas—scope, project execution, and schedule management. All PMs should understand each of these areas and be proficient in their application to the project plan. A PM should never work in a vacuum and always be on the lookout to accept other stakeholder's ideas (and give credit where due) that could have a positive outcome on the project.

**Chapter 18**, Integrated Change Control, focuses on managing the project scope as changes are requested or needed during the life cycle. This chapter discusses the purpose of change requests (CRs) and change boards, explanation of configuration management (CM) system and its relationship to the integrated change control (ICC) process, understanding of the ICC process, and the importance of tracking and documentation of all CRs and associated activity throughout the project life cycle. A CR is the name given to the form used to formally submit a change. The purpose of submitting a CR is to either prevent something negative from occurring or to fix something negative that has occurred. The project charter can be viewed as a control envelope within which the defined objectives must be contained. A formal change management process is required to handle this aspect of the project and these are under the purview of a project change control board. This board is a delegated authority to make any changes that fall within that control envelope. However, if a change falls outside the envelope, the board will have to escalate the approval decision to the project sponsor (PMI 2008). CRs often result in a cost increase to the project. If the project budget can not handle the cost increase due to any scope changes, management will need to identify how to seek out additional funding for the project.

**Chapter 19**, Resource Leveling, demonstrates mechanics related to matching available resources to the plan requirement. In some cases, overtime is used to bridge the gap between the plan and actual resource availability. This is actually a common way to stretch resources, but there are negatives related to what looks like a universal solution. In most situations, excessive overtime is not a long-term solution. There are several other techniques that can be brought to bear on this subject and these will be summarized.

The area of resource leveling represents a common gap in the planning process and one that can crater the project outcome value if not recognized. Poor capacity planning and lack of available capacity are core causes of poor project outcomes (Ashayeri and Selen 2005). Given current software tools, it is now possible to obtain more control of this situation through computer-driven analysis of available resources mapped to the plan (Porter et al. 1996). For instance, the manager of this process area needs to have immense experience in understanding that a particular resource may not be able to take on the extra work that a mechanic may have. In other words, skill limitations mean that a resource may not be able to be assigned to all tasks. Essentially everything within the project is dependent on availability of adequate quantity and quality resources (Kalyani and Sahoo 2011).

**The sixth section** is Advanced Tools and Techniques consisting of five chapters. This section of the textbook contains a collection of material that would be categorized as both contemporary and advanced. Each of these topics represents an important aspect of the project life cycle that, if utilized, can improve the overall chance of success. In each case, the method described in these chapters focuses on a different aspect of project decision-making from early in the project selection process through the execution phase. Each of the sections is discussed further below to help the reader regarding how each tool fits into the life cycle.



**Chapter 20**, Variable Time Analysis, focuses on the classical PERT model to represent a fundamental level of understanding related to variable time scheduling. This classic network-based model uses three time estimates for task durations to represent a probabilistic task estimate. In this manner, the PERT model establishes a method for looking at project completion range times through the manipulation of a scheduling network and empirical probability functions. A major goal of this chapter is to show how viewing project time estimates as variables rather than single-valued estimates can bring improved insights to project schedule and cost planning. The first step in this culture change is to understand the logic of multiple time estimates. Once these are translated into a median schedule, the next question that arises is how to define the overall variability of the project. The mechanics represented by this model will yield a probabilistic-type distribution of the project schedule and provide a confidence range for the outcome.

**Chapter 21**, Simulation Modeling, describes the contemporary method for variable time and cost modeling. This technique is more easily understood and rich in content than offered by the PERT model. Based on the availability of modern computing technology, the use of simulation modeling is recommended to evaluate potential project variance. For this reason, simulation is the focus of this chapter. The goal here is to describe modeling and simulation as it pertains to the project model. Specific mechanics and benefits will be shown in the examples.

**Chapter 22**, Risk Mechanics, outlines the basic mechanics of the risk model to illustrate how simulation tools can help with the evaluation aspect of the life cycle. This chapter expands the introduction to risk provided in Chapter 11 through a discussion specific to the analysis of risks, risk response planning, and monitoring and controlling risks. Risk analysis in the form of qualitative and quantitative analyses takes place after all the risks affiliated with a project have been identified. Risk management should be performed throughout the life cycle in recognition of the everchanging business environment (Benta et al. 2011).

## Section VI—Advanced tools and techniques

Once a risk event is identified, the next step is risk response planning, which is designed to develop action plans to reduce or mitigate the exposure. Lastly, risk monitoring and control tracks ongoing performance of the project with careful attention to the potential events that could lead to a risk occurring. This section discusses the core tools and techniques in risk management, which the modern PM must understand and use.

**Chapter 23, Team Tools**, discusses many aspects of management of the human element, providing tools and techniques for the PM. Different tools that help a PM and project team to be organized will maximize team performance in terms of efficiency. This chapter addresses the importance of an organizational chart as it provides all team members with an understanding of how each member fits into the overall project. It also provides internal and external team members with information regarding the different levels of authority individuals on the project team have. Different roles and responsibilities are discussed as a means for the PM and team members to specifically identify different tasks that individuals have and which team members work together on specific tasks. Tracking tools are also discussed to help a PM and the team member track how often meetings or assignments are due internally and commitments made to individuals outside the team.



The tracking tools also help the PM and the team track all the team documentation that exists and revisions made to the different documents. A staff management plan also provides information defining skill requirements needed throughout the life cycle of a project. Lastly, the area of project close-out will be discussed to identify tasks that a project team needs to complete prior to officially ending a project.

**Chapter 24**, Enterprise Project Management Office (EPMO), focuses on the main reasons why the majority of today's PMOs have mediocre success and what can be done to improve the situation. The chapter also covers project, program, and portfolio management and how to move wisely to an enterprise PMO. The process of starting a PMO in an organization is quite complex and this would generally suggest a modest beginning step. It is best to start small, evolve, and mature at least 2–3 years before expanding to an enterprise view. An EPMO organization should report to the business side of the organization (e.g., CFO or CEO) and not to a functional department. The mature EPMO must have established standard information technology (IT) policies, processes, procedures, change control, and a scalable project methodology for developing new systems that can be easily updated for small and large projects when the times change.

The standard project methodology must cover the project phases described in this textbook. Internally, all required tasks and activities within the project plan need appropriate tools and techniques to support these work activities. Moving from a more local PMO to an EPMO will be a significant culture change for the organization and it will require top management support and commitment.



**The appendices section** consists of the following six different technical support groupings:

1. The first appendix provides supplemental information for the different end-of-the-chapter student lab exercises.
2. The second appendix provides a condensed summary of MS Project 2010 commands and reference materials.
3. The third appendix consists of reference sources for different templates to assist in developing formal project management artifacts.
4. The fourth appendix contains information on various supporting add-in tools for Microsoft Project.
5. The fifth appendix provides the variable time macro for conducting PERT calculations.
6. The sixth appendix contains text support information on supplementary web-based support systems for this textbook.
  - a) The ProjectNMotion site contains custom audio–video tutorials related to MS Project processes.
  - b) The Taylor & Francis website provides additional problem supporting material described in this textbook.

# Chapter 01

## Summary

This textbook contains many tools and techniques that are fundamental to managing projects. Examples illustrating how to use these tools are covered along with various supplemental materials such as templates, video tutorials, add-in Microsoft Project tools, and web links. Collectively, this collection of material provides a very respectable toolkit needed to successfully plan and manage project execution. Even though accepted project management theory underlies all of this material, the primary focus is to show the how-to aspect of managing projects.

# Chapter 01

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The End..  
Thank You