

PROJECT MANAGEMENT FUNDAMENTALS

Timeframe:	8 hours
Learning Outcome:	<ul style="list-style-type: none">• Explain project management terminology, concepts, and definitions• Analyse problems which could be addressed through projects
Recommended reading:	<ul style="list-style-type: none">• Choudhuri, N.M. n.d., 'Project Management Fundamentals', http://www.giorgiogiussani.it/project-managemet_EN.pdf (accessed 19 September 2012).
Multimedia:	<ul style="list-style-type: none">• Mir, H. 2010, 'Project management PMP – Skills Project manager should possess' [video clip], http://www.youtube.com/watch?v=HTOx07IP_QI (accessed 16 September 2012).
Section overview	The first section of this Study Guide provides an overview of project management by introducing you to the key concepts with which you should be familiar. The more you internalise these concepts, the easier it will be for you to manage projects effectively

Project Management Concepts

Understanding the concept of project management requires an explanation of the word “project”. A project is temporary which means that it has a definite beginning and an end. These are described by the project scope, which is discussed later in the Study Guide. A project is also unique as it has its processes and activities, which are negotiated and are based on the output requirements of the project (Project Management Institute, 2012). Project management can therefore be defined as:



The application of knowledge, skills and techniques to execute projects effectively and efficiently. It's a strategic competency for organizations, enabling them to tie project results to business goals — and thus, better compete in their markets”.

(Project Management Institute, 2012)

Haughey (2011) uses a list to define project management:



- Project management is no small task.
- Project management has a definite beginning and end. It is not a continuous process.
- Project management uses various tools to measure accomplishments and track project tasks. These include Work Breakdown Structures, Gantt charts and PERT charts.
- Projects frequently need resources on an ad-hoc basis as opposed to organisations that have only dedicated full-time positions.
- Project management reduces risk and increases the chance of success.

From the definitions above, it is clear that, to manage a project, you need specific skills and techniques linked to the goals of a project to achieve the strategic objective of the organisation within a specific timeframe.

Linked to the understanding of project management, is the Project Management Triangle. Initially, the triangle consisted of three factors: time, cost and scope. These factors are pinnacles, with quality at the centre of the triangle. **Figure 1** illustrates the concept.

FIGURE 1: PROJECT MANAGEMENT TRIANGLE

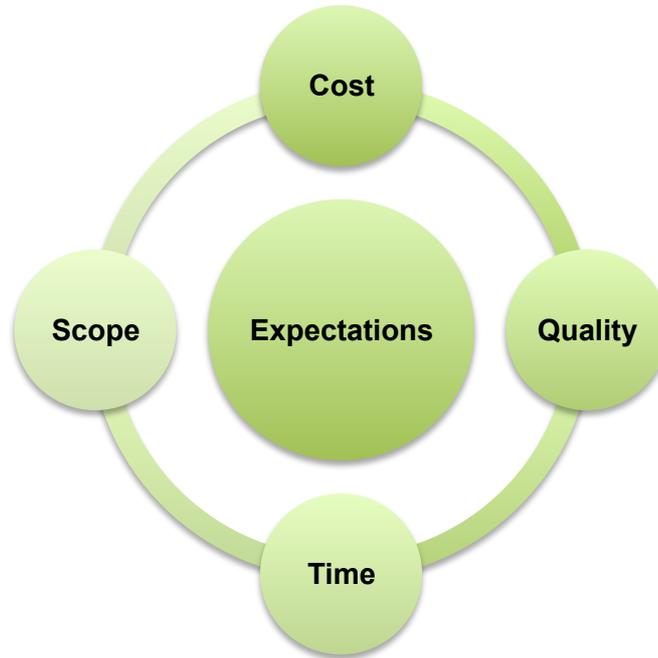


(Source: Haughey, 2011)

More recently, a new model for project management has emerged. This model is called the Diamond approach and was developed by Aaron Shenhar and Dvir Dov from Harvard Business School in their book *Reinventing project management: The Diamond approach to successful growth and innovation* (published in 2007 and distributed by Harvard Business School Press).

The Diamond approach to project management has four vertices and customer expectations are the central factor. The model is presented in **Figure 2** overleaf.

FIGURE 2: DIAMOND APPROACH TO PROJECT MANAGEMENT



(Source: Haughey, 2011)

Project Management Glossary

A project manager often assumes that project team members understand the terminology of the science. **Table 1** provides an overview of terminology used in project management. Although these words are not all described and discussed in this Study Guide, you will come across them throughout your studies.

TABLE 1: PROJECT MANAGEMENT GLOSSARY

Activities:	The jobs, tasks, events, steps, or sub-processes involved in completing a work package. Activities require time and resources.
Actual Cost of Work Performed (ACWP):	Actual cost of each task at the current time.
Architect and Engineering Contractor (A&E):	The organisation responsible for incorporating process and manufacturing technology requirements into the design of facilities.
Assumptions:	Statements taken for granted or truth
Baseline:	A snapshot in time of a project plan against which project progress can be measured.
Bottom Up Cost Estimating:	The method of making detailed estimates for every activity in the work breakdown structure and summing them to provide a total project cost estimate.
Budget:	A planned allocation of resources.
Budget and Reporting (B&R) Codes:	Codes, related to the Work Breakdown Structure, assigned to cost data for cost monitoring, control, reporting, and forecasting purposes.

Budget At Completion (BAC):	Planned cost for a task.
Budgeted Cost of Work Scheduled (BCWS):	BCWS equals the planned percent complete, (based on the planned date and the current date) multiplied by the planned cost for each task at the current time. BCWS is also known as the planned value.
Budgeted Cost of Work Performed (BCWP):	BCWP equals the percent completed multiplied by the planned cost for each task at the current time. BCWP is also known as the earned value.
Case Structure:	The Case Structure is a breakdown of the project budget. Case numbers can be subdivided only twice to produce three levels: Case, Sub-Case, and Sub-Sub-Case.
Charter:	See Project Team Charter.
Chunk Chart:	List of prioritised projected work areas for a given case number and fiscal year as part of a programme's sector project data document.
Concurrent Engineering:	A systematic approach to the integrated, simultaneous design of products and their related processes, including manufacture, test, and support.
Contingencies:	Specific provision for unforeseeable elements of cost within the defined project scope.
Constraints:	Applicable restrictions that will affect the scope.
Cost Breakdown Structure (CBS):	A hierarchical system for linking project costs to either the work breakdown structure or the organisation breakdown structure.
Cost Estimating:	The process of assembling and predicting the costs of a project.
Cost Management:	The function required maintaining effective financial control of the project through the processes of evaluating, estimating, budgeting, monitoring, analysing, forecasting, and reporting the cost information.
Cost Plan:	Resource needs (spending projections), by the month and total, for a fiscal year including number of Full Time Equivalent, labour, direct charges (travel, purchases, stores—just in time, and transfers), service centre charges, and assessments. Cost plans are made for each sub-case number.
Cost Variance (CV):	CV equals the difference between Budgeted Cost of Work Performed (BCWP) and actual cost or Actual Cost of Work Performed (ACWP).
Critical Activities:	Activities for which an increase in their duration is likely to affect the duration of the entire project.
Critical Path:	The sequence of interdependent activities of a project, connected end-to-end, that takes more time than any other sequence in the project, determines the minimum time for completion of the project, and any delay in this sequence of activities will delay the entire project.
Customer:	Anyone who defines needs or wants, justifies or pays for the project, or evaluates or uses the results.
Delegating:	The process by which authority and responsibility are distributed from the project manager to an individual working on the project.
Deliverables:	A report or product of one or more tasks that must be delivered to satisfy contractual requirements.

Design and development phase:	The phase in which production processes are developed, and facility and production processes are designed.
Duration:	The total amount of calendar time required to accomplish a task.
Earned Value:	A method of reporting project status in terms of both cost and time, comparing the progress to date to the original estimates; the budgeted cost of work actually performed.
Effort:	The work hours needed to complete the work.
Enterprise-wide:	Across an entire sector of technology, business area, etc.
ES&H Plan:	A plan to assure compliance with all applicable Environmental, Safety, and Health requirements for the project, including Preliminary Hazards Assessment, Operations, Standard Operating Procedures, and safety assessments.
File Guide:	A hierarchical listing of records retained for a project in a project file.
Financial Information System (FIS):	The FIS tracks funding for only one fiscal year at a time.
Fixed Date:	A calendar date associated with an event in a plan that cannot be moved or changed during scheduling.
Fixed-duration Scheduling:	A scheduling method in which the duration for a task remains the same regardless of the number of resources assigned to the task.
Forecast At Completion (FAC):	Scheduled cost for a task. This is also known as Estimate at Completion (EAC).
Gantt Chart Format:	A bar chart graphical presentation of work activities shown by a time-scaled bar line.
Goal:	Definition, in one sentence, of specifically what will be accomplished, incorporating an event signifying completion.
Hypercritical Activities:	Activities on the critical path that have already slipped.
Milestones:	Meaningful interim achievements in a project life cycle with a task duration of zero.
Vision:	The purpose or reason for being. The positioning of the enterprise.
Mission Statement:	Background, purposes, and benefits of the project.
Network:	An illustration of the work involved in a project that shows the logical flow of events.
Objectives:	Predetermined results, the end toward which effort is directed, and the sum of which accomplish the goal.
Organisational Breakdown Structure (OBS):	A hierarchical system for organising pools and resources to provide data roll-up for planning, reporting, and what-if analysis for participating organisations in a project.
Plan:	An intended future course of action. (PMBOK) A frozen project schedule; i.e., a baseline schedule. An indication of the end of the project planning process. A plan is the basis of the project controls.
Planned Cost:	Planned costs are set when the schedule is frozen; i.e. becomes the plan or baseline plan
Precedence Diagram Method (PDM):	A method of constructing a logic network using nodes to represent the activities and connecting them by lines that show dependencies.

Predecessor:	The first of two activities in a relationship between tasks in a project.
Preliminary Hazards Assessment (PHA):	A document identifying possible hazards and required training from the project's materials, processes, and testing.
Process:	A set of interrelated work activities in which value is added to the inputs to provide a set of specific outputs.
Product Realization Team (PRT):	A multi-disciplinary team that is responsible for the definition, development, delivery, and support of a product through concurrent engineering methods.
Program:	An endeavour of considerable scope, encompassing a number of projects.
Program Evaluation and Review Technique (PERT) Chart:	A chart that illustrates task relationships and dependencies for a project graphically.
Program Manager:	An individual responsible for the management of a related series of projects executed over a broad period of time, and that are designed to accomplish broad goals, to which the individual projects contribute.
Project:	Any undertaking with an established starting point and defined objectives, the achievement of which clearly signify the conclusion of the project.
Project Data Document (PDD):	A summary of the project plan, basically for the business office.
Project Data Interface System (PDI):	An electronic tool to store project processes and templates.
Project Life Cycle:	The cumulative events, from start to end, necessary to carry out a project.
Project Management:	The approach used to manage non-repetitive work with the constraints of time, cost, and performance targets.
Project Manager:	The individual appointed within responsibility for project management of the project.
Project Plan:	A management summary document that gives the essentials of a project in terms of its objectives, justification, and how the objectives are to be achieved.
Project Risk Management:	The art and science of identifying, assessing, and responding to project risk factors throughout the life of a project and in the best interests of its objectives.
Project Status Report:	A report to provide the current status of accomplishments and variance to the spend plan and schedule plan.
Project Team Charter:	A Project Team Charter clearly defines a project definition and consists of a mission statement, including background, purpose, and benefits, a goal, objectives, scope, and assumptions and constraints. The purpose is to bring a project team into necessary agreement in order to accomplish the project goal.
Public:	All those that are not directly involved in the project, but who have an interest in its outcome.
Public Relations:	An activity designed to improve the environment in which a project organization operates in order to improve project performance and reception.

QC-1: DOE-AL Quality Criteria (QC-1):	Prescribes the basic quality principles and requirements for nuclear weapons research, design, development, production, dismantlement, maintenance, stockpile evaluation, and disassembly/disposal.
Quality:	Consistently meets or exceeds customer requirements with respect to cost, schedule, and performance; ultimately determined by the customer.
Quality Assurance Plan:	A plan that assures a quality approach and conformance to all customer requirements—performance, schedule, and cost, for all activities in the project.
Quality Function Deployment (QFD):	An approach to product definition that helps translate customer needs into appropriate technical requirements without losing the fidelity of what the customer originally requested.
Requirements:	A negotiated set of measurable customer wants and needs.
Resource:	Any factors, except time, that are required or consumed to accomplish an activity.
Resource Driven Task Durations:	Task durations that are driven by the availability of scarce resources and by task priorities.
Responsibility:	One charged personally with performing the physical and mental effort (work) necessary to fulfill the requirements of a position in an organisation.
Responsibility Assignment Matrix (RAM):	A structure that assures that each element of the project scope of work is assigned to a responsible individual.
Schedule Variance (SV):	SV equals the difference between Budgeted Cost of Work Performed (BCWP) and Budgeted Cost of Work Scheduled (BCWS).
Scope:	The work content and products of a project.
Scope of Work:	A narrative description of the work to be accomplished or resource to be supplied.
Security Plan:	A plan to comply with security measures applying to the project, including classification guidance.
Spending Plan:	The total budgeted funds, based on the same sub-categories as the cost plan, for a given task area over a given fiscal period.
Spending Plan Adjustments Form:	A form used to change and authorize a spending plan adjustment during a fiscal year. This form is used to explain why the spending plan and the cost plan do not match.
Status Reporting:	The regularly scheduled written reports of the status of an activity, work package, or whole project to both the project team and to a responsible person. Written status reports should be used to 1) control the project and to 2) keep management informed of the project status; these are two separate status reports on different time intervals.
Stakeholder:	A person or party who has a vested interest or “takes” in the outcome of the process.
Successor:	The second of two activities in a relationship between tasks in a project.
Task:	An activity or event that has a defined start, end, and/or duration and produces a measurable result or end product.
Team:	A team is a group (two or more people) working together with a common goal, acknowledged interdependency, acceptance of a common code of conduct, and a shared reward.

Team Members:	Individuals, reporting either part-time or full-time to the project manager, who are responsible for some aspect of the project's activities.
Top Down Cost Estimating:	The total project cost subdivided for individual activities, based on statistical relationships between historical costs and other project variables.
Total Quality Management (TQM):	A strategic, integrated management system for achieving customer satisfaction that guides all employees in every aspect of their work.
Triple Constraint:	Three project requirements that must be simultaneously accomplished—the performance specification, the time schedule, and the monetary budget.
Value:	A principle, standard, or quality considered inherently worthwhile or desirable.
Variance:	Any actual or potential deviation from an intended or budgeted figure or plan (PMBOK).
Variance at Completion (VAC):	The planned cost minus the total cost.
Vision:	A powerful mental image of what we want to create in the future.
Work:	The effort, number of hours or people, required to accomplish a task.
Work Breakdown Structure (WBS):	A task-oriented “family tree” of activities that organizes, defines, and graphically displays the total work to be accomplished in order to achieve the final objectives of a project.
Work Packages:	WBS elements of the project isolated for assignment to “work centres” for accomplishment. (PMBOK) Work packages should contain a statement of the work to be performed, an estimate of the resources to be required, and a schedule.

(Source: Project smart, 2012)