

# PROJECT MANAGEMENT

## “Keeping It Together When Everything Is Falling Apart”

### DEFINITIONS

**Management** characterizes the process of leading and directing all or part of an organization (often a business) through the deployment and manipulation of resources (human, financial, material, intellectual or intangible).

The word "**manage**" comes from the Italian *maneggiare*, which in turn derives from the Latin *manus*, meaning **hand**. Mary Parker Follett, who wrote on the topic in the early twentieth-century, defined management as "**the art of getting things done through people**".

Management consists of five functions:

1. **Planning**
2. **Organizing**
3. **Leading**
4. **Coordinating**
5. **Controlling**

A **Project** is a temporary and one-time endeavour undertaken to create a unique product or service. This property of being a temporary and a one-time undertaking contrast with processes, or operations, which are permanent or semi-permanent ongoing functional work to create the same product or service over-and-over again. The management of these two systems is often very different and requires varying technical skills and philosophy, hence requiring the development of **project management**.

The project, therefore, **is a carefully selected set of activities chosen to use resources (time, money, people, materials, energy, space, provisions, communication, quality, risk, etc.) to meet the pre-defined objectives**

The word **project** comes from the Latin word *projectum* from *projicere*, "**to throw something forwards**" which in turn comes from pro-, which denotes something that precedes the action of the next part of the word in time and jacere, "to throw". The word "project" thus actually originally meant "**something that comes before anything else is done**".

**Project Management** is the discipline of organizing and managing resources in such a way that these resources deliver all the work required to complete a project within **defined scope, time, and cost constraints**.

## THE PROJECT MANAGER

Project Management is quite often the province and responsibility of an individual Project Manager. This individual seldom participates directly in the activities that produce the end result, but rather strives to maintain the progress and productive mutual interaction of various parties in such a way that overall risk of failure is reduced. A Project Manager is often a client representative and has to determine and implement the exact needs of the client based on knowledge of the firm he/she is representing. The ability to adapt to the various internal procedures of the contracting party, and to form close links with the nominated representatives, is essential in ensuring that the key issues of **cost, time, quality and above all client satisfaction**, can be realized.

## CHALLENGES/CONSTRAINTS

Like any human undertaking, projects need to be performed and delivered under certain constraints. Traditionally, these constraints have been listed as: **scope, time, and cost**.

1. The first challenge of project management is ensuring that a project is **delivered within the defined constraints**.
2. The second, more ambitious, challenge is the **optimized allocation** and integration of the inputs needed to meet those pre-defined objectives.
  - ✓ The time constraint refers to the amount of time available to complete a project.
  - ✓ The cost constraint refers to the budgeted amount available for the project.
  - ✓ The scope constraint refers to what must be done to produce the project's end result.

These three constraints are often competing constraints: increased scope typically means increased time and increased cost, a tight time constraint could mean increased costs and reduced scope, and a tight budget could mean increased time and reduced scope.

### **Time**

Broken down for analytical purposes into the time required to complete the components of the project, which is then further broken down into the time required to complete each task contributing to the completion of each component

### **Cost**

Cost to develop a project depends on several variables including (chiefly): labour rates, material rates, risk management, plant (buildings, machines, etc.), equipment, and profit. When hiring an independent consultant for a project, cost will typically be determined by the consultant's or firm's per diem rate multiplied by an estimated quantity for completion.

### **Scope**

Requirements specified for the end result - the overall definition of what the project is supposed to accomplish, and a specific description of what the end result should be or accomplish.

## **Project control variables**

Project Management tries to gain control over variables such as risk - potential points of failure: Most negative risks; "**positive--**" meaning that there is a potential opportunity, e.g., completes the project faster than expected.

The remaining variable (risk) is managed by the project team, ideally based on solid estimation and response planning techniques. Through a negotiation process among project stakeholders, an agreement defines the final objectives, in terms of time, cost, scope, and risk, usually in the form of a charter or contract.

To properly control these variables a good project manager has a depth of knowledge and experience in these four areas (**time, cost, scope, and risk**), and in six other areas as well: **integration, communication, human resources, quality assurance, schedule development, and procurement**

## **APPROACHES**

There are several approaches that can be taken to managing project activities including **agile, iterative, incremental, and phased approaches**. Regardless of the approach employed, careful consideration needs to be given to clarify surrounding **project objectives, goals, and importantly, the roles and responsibilities of all participants and stakeholders**.

## **THE TRADITIONAL APPROACH**

A traditional phased approach identifies a sequence of steps to be completed. In the traditional approach, we can distinguish 5 components of a project (4 stages plus control) in the development of a project:

1. Project initiation stage;
2. Project planning or design stage;
3. Project execution or production stage;
4. Project monitoring and controlling systems;
5. Project completion stage.

## **Project Development Stages**

Regardless of the methodology used, the project development process will have the same major stages: **initiation, development, production or execution, (project monitoring and controlling systems) and closing/maintenance**.

### **1. Initiation**

The initiation stage determines the nature and scope of the development. If this stage is not performed well, it is unlikely that the project will be successful in meeting the

business's needs. The key project controls needed here is an understanding of the business environment and making sure that all necessary controls are incorporated into the project. Any deficiencies should be reported and a recommendation should be made to fix them.

The initiation stage should include a cohesive plan that encompasses the following areas:

- (a) A Study, analyzing the business needs in measurable goals.
- (b) Review of the current operations.
- (c) Conceptual design of the operation of the final product.
- (d) Equipment requirement.
- (e) Financial analysis of the costs and benefits including a budget.
- (f) Select stake holders, including users, and support personnel for the project.
- (g) Project charter including costs, tasks, deliverables, and schedule.

## 2. Planning and design

After the initiation stage, the system is designed; occasionally a small prototype of the final product is built and tested. Testing is generally performed by a combination of testers and end users, and can occur after the prototype is built or concurrently. Controls should be in place that ensures that the final product will meet the specifications of the project charter. The results of the design stage should include:

- (a) A product that satisfies the project sponsor, end user, and business requirements.
- (b) Functions as it was intended.
- (c) Can be produced within quality standards.
- (d) Can be produced with time and budget.

Project planning is part of project management, which relates to the use of **schedules** such as **Gantt charts** to plan and subsequently report progress within the project environment.

Initially, the **project scope** is defined and the appropriate methods for completing the project are determined. Following this step, the **durations** for the various **tasks** necessary to complete the **work** are listed and grouped into a **work breakdown structure**. The logical **dependencies** between tasks are defined using an **activity network diagram** that enables identification of the **critical path**.

Analyzing progress compared to the baseline is known as **earned value management**.

## 3. Production or execution

The execution stage includes the actual implementation of the design or plan. This includes documentation and training. Training is also important **to build capacity and transfer knowledge and skills**. The bulk of the project's work and largest capital expenditure is realized in this stage.

#### 4. Project Monitoring and controlling systems

Project control is that element of a project that keeps it on-track, on-time, and within budget. Project control begins early in the project with planning and ends late in the project with post-implementation review, having a thorough involvement of each step in the process. Each project should be assessed for the appropriate level of control needed; too much control is too time-consuming, too little control is too costly.

**The Program Evaluation and Review Technique** commonly abbreviated **PERT** is a model for project management invented by United States Department of Defense's US Navy Special Projects Office in 1958 as part of the Polaris mobile submarine-launched ballistic missile project. This project was a direct response to the Sputnik crisis.

PERT is basically a method for analyzing the tasks involved in completing a given project, especially the time needed to complete each task, and identifying the minimum time needed to complete the total project.

#### 5. Closing and Maintenance

Closing includes the formal acceptance of the project and the ending thereof. Administrative activities include the archiving of the files and documenting lessons learned.

Maintenance is an ongoing process, and it includes:

- (a) Continuing support of end users
- (b) Correction of errors
- (c) Updates of the software over time

In this stage, auditors should pay attention to how effectively and quickly user problems are resolved

#### Other Approaches

##### **Critical chain**

Critical chain is an extension to the traditional **critical path method**. In critical studies of project management, it has been noted that several of these fundamentally **PERT-based** models are not well suited for the multi-project company environment of today. Most of them are aimed at very large-scale, one-time, non-routine projects, and nowadays all kinds of management are expressed in terms of projects. Using complex models for "projects" (or rather "tasks") spanning a few weeks has been proven to cause unnecessary costs and low manoeuvrability in several cases.

##### **Project systems**

Businesses sometimes use formal systems development processes. These help assure that systems are developed successfully. A formal process is more effective in creating strong

controls, and auditors should review this process to confirm that it is well designed and is followed in practice. A good formal systems development plan outlines:

- (a) A strategy to align development with the organization’s broader objectives
- (b) Standards for new systems
- (c) Project management policies for timing and budgeting
- (d) Procedures describing the process

**RACI diagram**

The RACI diagram splits project tasks down to four participatory responsibility types that are then assigned to different roles in the project. These responsibilities types make up the acronym RACI:

- ✓ **R**esponsible (Those who do work to achieve the task, there can be multiple resources responsible).
- ✓ **A**ccountable (The resource ultimately accountable for the completion of the task- there must be exactly one A specified for each task)
- ✓ **C**onsulted (Those whose opinions are sought. 2 way communication)
- ✓ **I**nformed (Those that are kept up-to-date on progress. One-way communication)

The following is an example of a **RACI Diagram**, showing how individual tasks are assigned to different roles.

Task Description	Sponsor	Business Owner	Business Program Mgr	Process Manager
Identify missing or incomplete policies		R	A	R
Establish Policies as necessary and ensure adoption globally		A	R	R
Completion of necessary Policies		R	A	R
Document Policies as appropriate		R	R	A
Approve Policies	A	C	I	I
Communicate Policies as required		A	I	I
Ensure Policies are compatible with standards and best practice		R	R	A
Escalate non standard or missing policies	R	R	R	A
BP Sponsor with agreement from BPB colleagues decides on exception or not	A	I	I	I

So in the example the Business Owner is Accountable in communicating Business Policy and must inform the Business Program Manager and Business Process Manager. Responsibility assignment matrix (RAM) is typically used to link activities to resources to ensure that the scope's components are each assigned to an individual or team.

A table is drawn, usually with Activities on the vertical edge (Work Breakdown Structure or WBS) and Resources on the horizontal edge (Organization Breakdown Structure). Not every resource will have an entry for every activity. As an illustration, please consider this simple chart:

<b>ACTIVITIES</b>	<b>George</b>	<b>Glenda</b>	<b>Tom</b>	<b>Susan</b>	<b>Mary</b>	<b>Craig</b>
Investigate	R	A	I	C	C	
Design SW	I	A	C			R
UAT Plan	R	A	I			C
Phase Signoff	R	A	I	C	C	C
For more information on RAM, visit <a href="http://www.pmi.org">http://www.pmi.org</a>						

### **Work Breakdown Structure (WBS)**

In project management, a **Work Breakdown Structure (WBS)** is an exhaustive, hierarchical (from general to specific) tree structure of **deliverables and tasks** that need to be performed to complete a **project**. The Work Breakdown Structure is a very common and critical project management tool. It is considered such a key part of project management that many United States government **statements of work** require a WBS.

### **The Critical Path Method**

The Critical Path Method, abbreviated CPM, is a mathematically based for scheduling a set of project activities. It is a very important tool for effective project management. It was developed in the 1950's in a joint venture between DuPont Corporation and Remington Rand Corporation for managing plant maintenance projects.

Today, it is commonly used with all forms of projects, including construction, software development, research projects, products development, engineering, and plant maintenance, among others. Any project with interdependent activities can apply this method of scheduling.

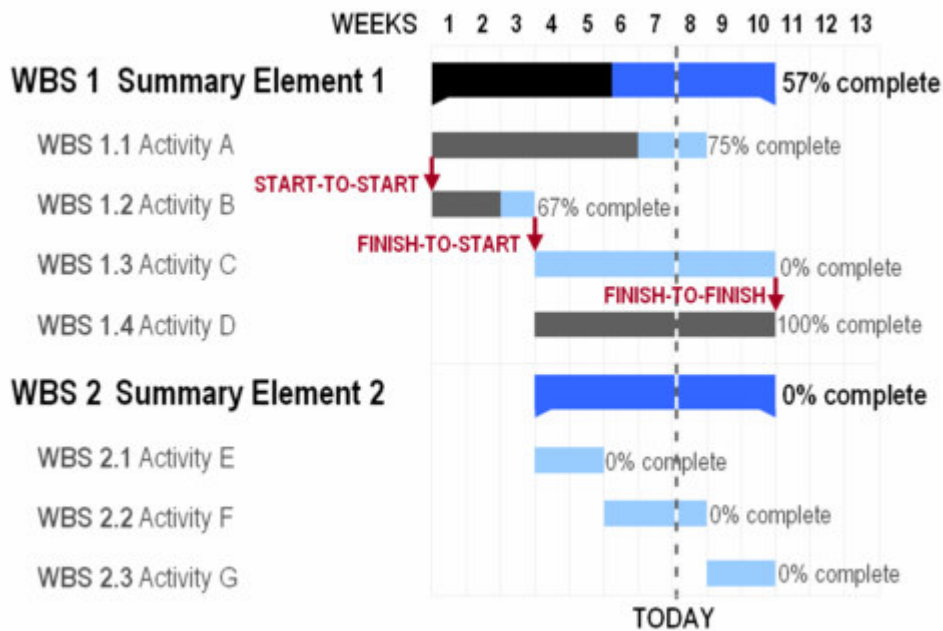
The essential technique for using CPM is to construct a model of the project that includes the following:

- (a) A list of all activities required to complete the project,
- (b) The time (duration) that each activity will take to completion, and
- (c) The dependencies between the activities.

**Note:** In an operation which consists of a sequence of activities, the **critical path** is the one sequence which cannot afford any delays without prolonging the operation.

## Gantt Chart

A Gantt chart is a popular type of bar chart that illustrates a project schedule. Gantt charts illustrate the start and finish dates of the terminal elements and summary elements of a project



Gantt chart showing three kinds of schedule dependencies (in red) and percent complete indications.

## SOCIAL INNOVATION

Social Innovation is comprised of new strategies, concepts, or ideas that transform policy and practices especially as they relate to the development or extension of civil society.

Such actions may be new responses to unmet needs for products and services or better ways of meeting existing needs (**social entrepreneurship**). In other forms, or they may result in incremental changes in practice or they may bring about large scale changes in policy.

Social innovation concerns improved quality of life, and may relate to social welfare, working conditions, employment, or community development. It can take place within government, within companies, or within the non-profit (also known as the third sector) sector

## GOVERNANCE

The term governance deals with the processes and systems by which an organization or society operates. Frequently a government or organizational governance system is established to administer these processes and systems.

The word derives from Latin origins that suggest the notion of '**steering**'. This sense of '**steering**' a society can be contrasted with the traditional '**top-down**' approach of governments '**driving**' society or the distinction between '**power to**' in contrast to governments '**power over**'.

The World Bank defines governance as “**the exercise of political authority and the use of institutional resources to manage society's problems and affairs**”. An alternate definition suggests that governance is “**the use of institutions, structures of authority and even collaboration to allocate resources and coordinate or control activity in society or the economy**”.

### **Corporate Governance**

The fundamental concerns of corporate governance include:

1. Ensuring that conditions apply whereby a firm's directors and managers act in the interests of the firm and of its shareholders and even of its workers
2. Ensuring the means exist to hold managers accountable to investors and employees for the use of assets

Corporate governance specifies the relationships between, and the distribution of rights and responsibilities among, the main groups of participants:

1. The shareholders or owners
2. The board of directors
3. The managers (if any)
4. The workers
5. The regulators
6. The customers
7. The community (people affected by the actions of the organisation)
8. The suppliers

The individuals within the above groups transact with the firm for their own individual purposes, so as the entire group can achieve more mutual benefit than any individual can alone. For instance, directors, workers and management receive salaries, benefits and reputation; whilst shareholders receive capital return. Customers receive goods and services; and suppliers receive compensation for their goods or services. In return, these individuals provide the **time, labour, expertise, capital, goods, services, consent**, etc required for the organisation to pursue its purpose.

The edifice of corporate governance includes:

- (a) The national/regional laws governing the formation of corporate bodies;
- (b) The bylaws established by the corporate body itself; and
- (c) The organisational structure of the corporate body

Corporate governance aims to:

1. Align the actions of the individual parts of an organisation toward aggregate mutual benefit;
2. Provide the means by which each individual part of the organisation can trust that the other parts each make their contribution to the mutual benefit of the organisation and that none gain unfairly at the expense of others; and
3. Provide a means by which information can quickly flow between the various stakeholders to ensure that the changing nature of both the stakeholder needs and desires and the environment in which the organisation operates get effectively factored into decision processes

The term Project governance is used in industry, especially in the information technology (IT) sector, to describe the processes that need to exist for a successful project.

Project governance will:

1. Outline the relationships between all internal and external groups involved in the project;
2. Describe the proper flow of information regarding the project to all stakeholders;
3. Ensure the appropriate review of issues encountered within each project; and
4. Ensure that required approvals and direction for the project is obtained at each appropriate stage of the project.

**Important specific elements of good project governance include:**

1. A compelling business case, stating the objects of the project and specifying the in-scope and out-of-scope aspects;
2. A mechanism to assess the compliance of the completed project to its original objectives;
3. Identifying all stakeholders with an interest in the project;
4. A defined method of communication to each stakeholder;
5. A set of business-level requirements as agreed by all stakeholders;
6. An agreed specification for the project deliverables;
7. The appointment of a project manager;
8. Clear assignment of project roles and responsibilities;
9. A current, published project plan that spans all project stages from project initiation through development to the transition to operations;
10. A system of accurate upward status- and progress-reporting including time records;
11. A central document repository for the project;

12. A centrally-held glossary of project terms;
13. A process for the management and resolution of issues that arise during the project;
14. A process for the recording and communication of risks identified during the project (often used in an iterative way); and
15. A standard for quality review of the key governance documents and of the project deliverables

In **for-profit work**, management has as its primary function **the satisfaction of a range of stakeholders**. This typically involves making a profit (for the shareholders), creating valued products at a reasonable cost (for customers), and providing rewarding employment opportunities (for employees).

**Non-profit** management add the importance of keeping the faith of donors. In most models of management/governance, shareholders vote for the board of directors, and the board then hires senior management. Some organizations have experiment with other methods (such as employee-voting models) of selecting or reviewing managers; but this occurs only very rarely.

In the **public sector** of countries constituted as **representative democracies**, voters elect politicians to public office. Such politicians hire many managers and administrators, and in some countries like the United States or Jamaica, political appointees lose their jobs on the election of a new leader. (Some 2500 people serve at the pleasure of the United States Chief Executive, including all of the top US government executives).

Civil society comprises the totality of voluntary civic and social organizations and institutions that form the basis of a functioning society as opposed to the force-backed structures of a state (regardless of that state's political system)

Social entrepreneurship is the act of a social entrepreneur. A social entrepreneur is someone who recognizes a social problem and uses traditional entrepreneurial principles to organize, create, and manage a venture to make social change. Whereas business entrepreneurs typically measure performance in profit and return, social entrepreneurs often start nonprofits and citizen groups

## **SUMMARY**

Project Management is composed of several different types of activities such as:

1. Planning the work or objectives
2. Analysis & Design of objectives
3. Assessing and mitigating risk
4. Estimating resources
5. Allocation of resources
6. Organizing the work
7. Acquiring human and material resources

8. Assigning tasks
9. Directing activities
10. Controlling project execution
11. Tracking and Reporting progress
12. Analyzing the results based on the facts achieved
13. Defining the products of the project
14. Forecasting future trends in the project
15. Quality Management
16. Issues Management
17. All successful projects adequately document objectives and deliverables. These documents are a mechanism to align sponsors, clients, and project team's expectations.
18. Project Charter
19. Business case/Feasibility Study
20. Scope Statement / Terms of reference
21. Work Breakdown Structure
22. Change Control Plan
23. Risk Management Plan
24. Communications Plan
25. Governance Model
26. Risk Register
27. Issue Log
28. Resource Management Plan
29. Project Schedule
30. Status Report
31. Responsibility assignment matrix
32. Database of risks
33. Database of lessons learned
34. Stakeholder Analysis

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