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## Introduction to Construction Project Management

### ❖ *What is Construction Project Management?*

It is the overall planning, coordination, and control of a project from beginning to completion. It is aimed at meeting a client's requirement in order to produce a functionally and financially viable project. The management of construction projects requires knowledge of modern management principles as well as an understanding of the design and construction process.

### ❖ *Who does hold the responsibility of Construction Project Management?*

The Project Manager has the primary responsibility of Construction Management, which is planning a particular construction job and overseeing its progress along the way. A Project Manager is responsible for accomplishing the stated project objectives. Key project management responsibilities include creating clear and attainable project objectives, building the project requirements, and managing the constraints of the project management triangle, which are cost, time, scope, and quality.

### ❖ *What is a Project?*

“A project is a unique set of co-ordinated activities with definite starting and finishing points, undertaken by an individual or organisation to meet specific objectives within defined time schedule, cost and performance” (BSI, 1996)

Every project is unique in its own way; there are certain basics which define most project work. These are: objectives, constraints, lifecycle.

### ❖ *Project Objectives*

Objectives are describing what the project is trying to accomplish, or what business value the project will achieve. Generally, any project objectives can be described as follows:

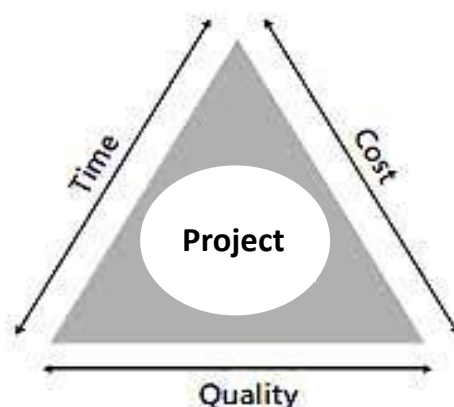
- To ensure finishing and delivering the project on time
- To ensure the delivery of the project within budget.
- To ensure reaching the required level of quality, through reducing errors, improving effectiveness, and applying the appropriate control.

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### ❖ *Project Constraints*

Each project needs to be performed and delivered under certain constraints. These constraints are typically as shown below:



Mainly, project management wishes to provide at the end of the project a product which is delivered on Time with a high Quality and minimum Cost. However, it is practically difficult to achieve this.

The reduction of project's time involves increasing cost (this could mean using extra labour and equipment), or reducing quality of work.

### ❖ *Project Lifecycle (Project Development Stages)*

As shown below, Initiation, Planning & Design, Execution, and Closing & Maintenance are any project's development stages, whatever is its type.

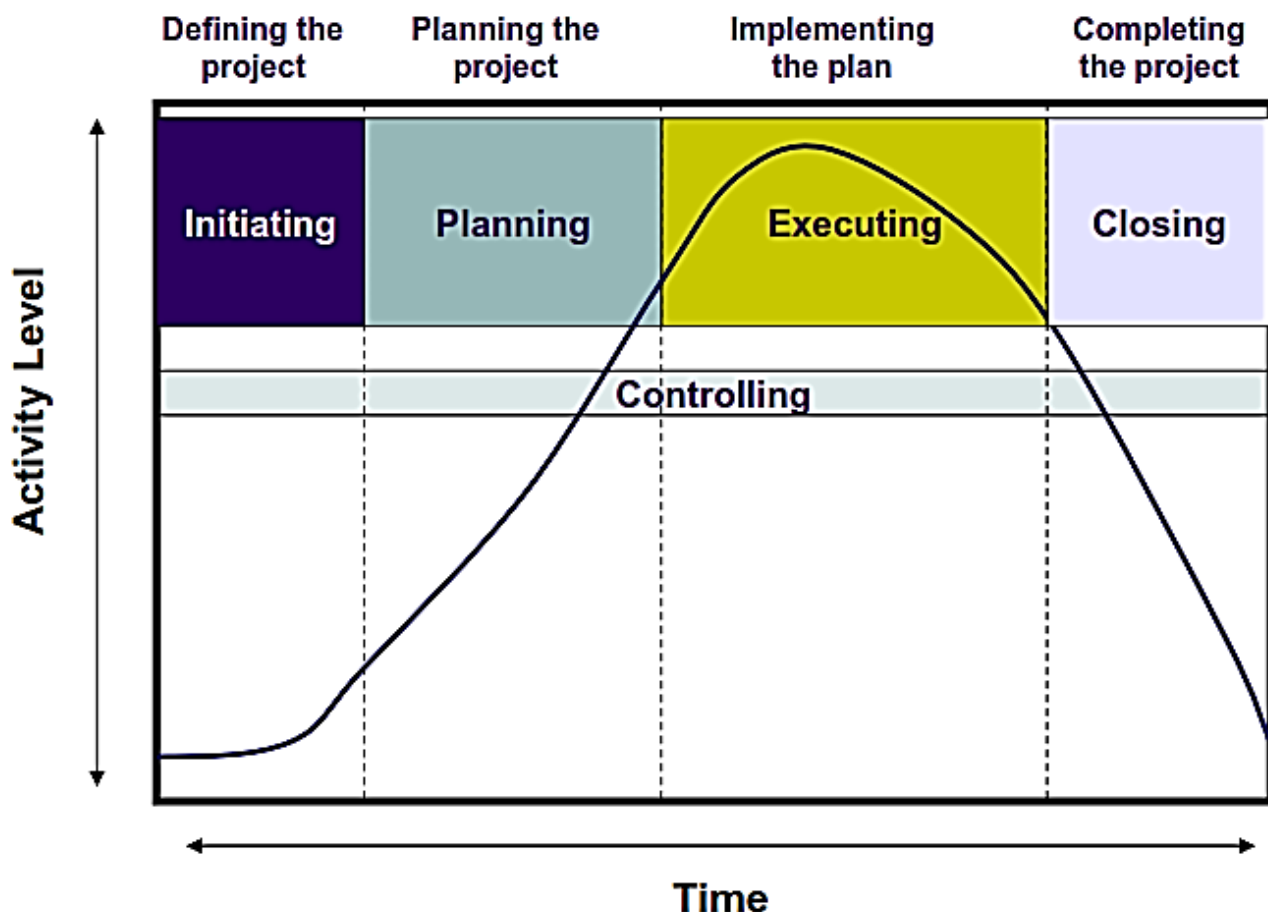


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- **Initiation:** At this stage, project's scope is determined. An understanding of the business environment to make sure that all the project's key controls are fully addressed and incorporated into the project. If this stage is not performed well, it is unlikely that the project is going to be successful in meeting the needs for which it was undertaken.
- **Panning & Design:** After the initiation stage is performed, the project's WBS is designed in addition to all other project's documents which are prepared pre-construction. Occasionally, a prototype of the final project's product is built and tested.
- **Execution:** This stage includes the actual procurement of the project's set plan or design.
- **Closing & Maintenance:** The Closing includes handing the final product over to the owner after the project is finished and the formal acceptance is signed and published. The Maintenance, which is an ongoing process, includes the correction of any errors have ever been made during the project's execution.

The figure shown below describes the activity of work during the project lifecycle:



#### ❖ *Project Resources*

Any project's resources can be classified as follows:

- Time
- Cost (Money)
- Labour (Man-power)
- Materials
- Equipment (Machines)

In order to improve the application of any of the 4Ms (Money, Man-power, Materials, and Machines), so that they become more efficient and productive and therefore finishing the project

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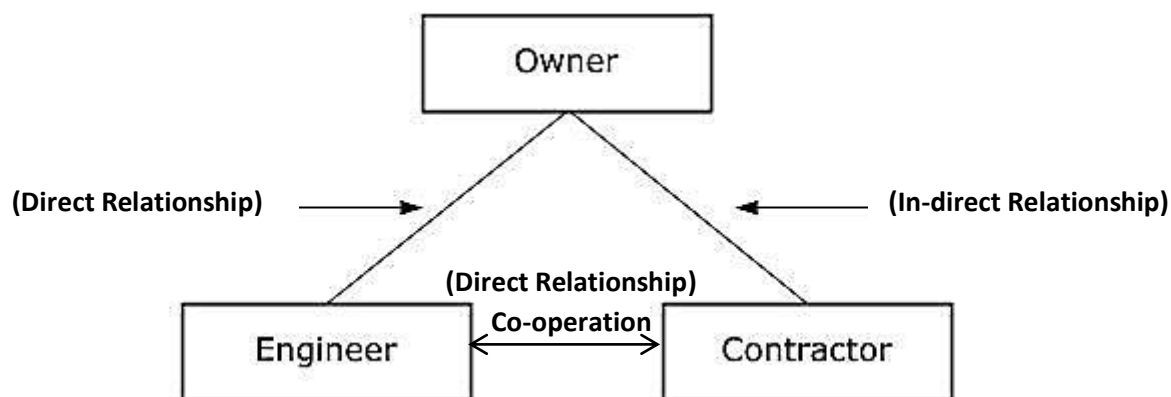
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on Time and at the required level of Quality, a control system of each resource should be prepared. For example:

- To improve Man-power, (motivation, leadership, safety, productivity, and scheduling) should be improved.
- To improve the application of Machines, (productivity, Scheduling, construction method, and contracts) should be improved.
- To improve the use of Materials, (scheduling, quality, chemical, suitability, and purchasing/hiring) should be improved.
- To improve the application of Money, (sources of funds, scheduling, estimating, and cash-flow) should be improved.

#### ❖ *Project Participants*

Each project, whatever is its type or what kind of construction involves, requires the participation of three main parties. These participants are the Owner, Engineer/Designer, and Contract. The figure shown below displays the relationship between each of these participants:



In addition to these main participants, there are other sub-players, such as Consultants, Suppliers, Sub-contractors, and many others. They are working together under the role of the Project Manager in order to deliver the project's final product.

#### ❖ *Types of Construction Projects*

Construction work mainly includes anything is built and permanently attached to the ground. This includes different kinds of structures such as, multi-storey buildings, bridges, dams, roads, etc.

Generally, construction work is classified under one of the following categories:

- Building construction work. [For example, residential complex, commercial towers, hospitals, malls, etc.]
- Engineering construction work. [For example, dams, bridges, airports, highways, etc.]
- Industrial construction work. [For example, petroleum structures, electric-power plant, water plants, etc.]
- Specialised construction work. [For example, deep tunnels, wind turbines, etc.]