
THE PROJECT MANAGEMENT FRAMEWORK

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INTRODUCTION



Course Agenda

- Module 1 : Overview
- Module 2 : Project Management Framework
- Module 3 : Project Management Process
- Module 4 : Project Integration Management
- Module 5 : Project Scope Management
- Module 6 : Project Time Management
- Module 7 : Project Cost Management

Agenda (Cont)

- Module 8 : Project Quality Management
- Module 9 : Project HR Management
- Module 10 : Project Communications Management
- Module 11 : Project Risk Management
- Module 12 : Project Procurement Management
- Module 13 : Project Stakeholders Management

Learning Outcomes

- Develop a Project Charter document for any project
- Develop Project Management Plan document
- Understand and practice the process of project management groups
- Acquire 10 knowledge area and its application in delivering a projects;
- Evaluate a project to develop the scope of work, provide accurate cost estimates and to plan the various activities;
- Understand and use risk management analysis techniques that identify the factors that put a project at risk and to quantify the likely effect of risk on project timescales;
- Prepare a project document that they have undertaken as a learning tool
- Qualify PMP certification offered by PMI

Pedagogy

- Course shall be delivered through Live Projects assigned to all students in group followed by lecture, interaction, presentation and case discussion.
- Students will get opportunity to learn from Crossword, Quizzes and field projects.

Evaluation Components

Components of Course Evaluation	Percentage Distribution
Case study and Assignments	10%
Quizzes (After completion of each chapter quiz (Multiple choices) will be conducted	20%
Project Charter and periodic progress report (In Group of 4/5 members)	10%
Project Presentation(In Group of 4/5 members)	20%
End Term Examination	40%
Total	100

Key Concepts

- What is a project ?
- What is project management ?
- The project manager
- Triple constraints
- The value of project management
- Projects and the business strategy
- Project Vs. Operations

What is a project?

Definition

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

- ❖ Temporary endeavor with a definite beginning and end.

- ❖ The **end** is reached when
 - the project's objectives have been achieved or
 - when the project is terminated because its objectives will not or cannot be met, or
 - when the need for the project no longer exists.

What is a project?

Definition – Misconceptions:

- ❖ Temporary does not necessarily mean **short in duration**.
- ❖ Temporary does not generally apply to output of the project (the product, service, or result created by the project); most projects are undertaken to create a lasting outcome. [and lasting impact.]

Definition: “create”:

- A product that can be either a component of another item or an end item in itself,
- A capability to perform a service (e.g., a business function that supports production or distribution), or
- A result such as an outcome or document (e.g., a research project that develops knowledge that can be used to determine whether a trend is present or a new process will benefit society).

What is a project?

Definition – “unique”

Every project creates a unique product, service, or result.

Although repetitive elements may be present in some project deliverables, this repetition does not change the fundamental uniqueness of the project work.

- ❖ An ongoing work effort is generally a repetitive process because it follows an organization's existing procedures.

What is a project?

Differences from routine repetitive work

In contrast, because of the unique nature of projects, there may be **uncertainties** about the products, services, or results that the project creates.

Project tasks can be **new to a project team**, which necessitates more dedicated planning than other routine work.

In addition, projects are undertaken **at all organizational levels**.

A project can involve a single person, a single organizational unit, or multiple organizational units.

What is a project?

Examples of Projects

Examples of projects include, but are not limited to:

- ✓ Developing a new product or service,
- ✓ Effecting a change in the structure, staffing, or style of an organization,
- ✓ developing or acquiring a new or modified information system,
- ✓ Constructing a building or infrastructure, or
- ✓ Implementing a new business process or procedure.

What is a project?

Project Exist in All Organizations

- Public Sector Organization
- Business Organization
- Non Governmental Organizations etc

Why?

- ✓ Because organizations are open systems. They have to respond to both internal and external changes
- ✓ To meet their development agenda
- ✓ To satisfy customers
- ✓ To survive
- ✓ To solve problems and grab opportunities

What is project management?

What is Project Management?

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.

What is project management?

How is project Management accomplished?

Project management is accomplished through the **appropriate application and integration** of the **42** logically grouped **project management processes**.

The 42 project management processes are logically grouped in to five “Process Groups”.

These Process Groups are:

- Initiating,
- Planning,
- Executing,
- Monitoring and Controlling, and
- Closing.

What is project management?

What does a project typically include?

- ❖ Identifying requirements

- ❖ Addressing the various needs, concerns, & expectations of stakeholders as the project is planned & carried out,

- ❖ Balancing the competing project constraints including, but not limited to:
 - Scope,
 - Quality,
 - Schedule,
 - Budget,
 - Resources, and
 - Risk.

What is project management?

What is interdependency of constraints?

The relationship among these factors [**the constraints**] is such that if any one factor changes, at least one other factor is likely to be affected.

Example:

For example, if the schedule is shortened, often the budget needs to be increased to add additional resources to complete the same amount of work in less time. If a budget increase is not possible, the scope or quality may be reduced to deliver a product in less time for the same budget.

What is project management?

Constraints – Key points

- ❖ Project stakeholders may have differing ideas as to which factors are the most important, creating an even greater challenge.
- ❖ Changing the project requirements may create additional risks.
- ❖ The project team must be able to assess the situation and balance the demands in order to deliver a successful project.

What is project management?

Because of the potential for change, the **project management plan** is **iterative** and goes through **progressive elaboration** throughout the project's life cycle.

What is iteration?

What is progressive elaboration?

Progressive elaboration involves

continuously improving and **detailing** a plan

as more-detailed and specific information and more accurate estimates become available.

Progressive elaboration allows a project management team to manage to a greater level of detail as the project evolves.

Approach Towards Studying Project Management

Views of Project Management Process

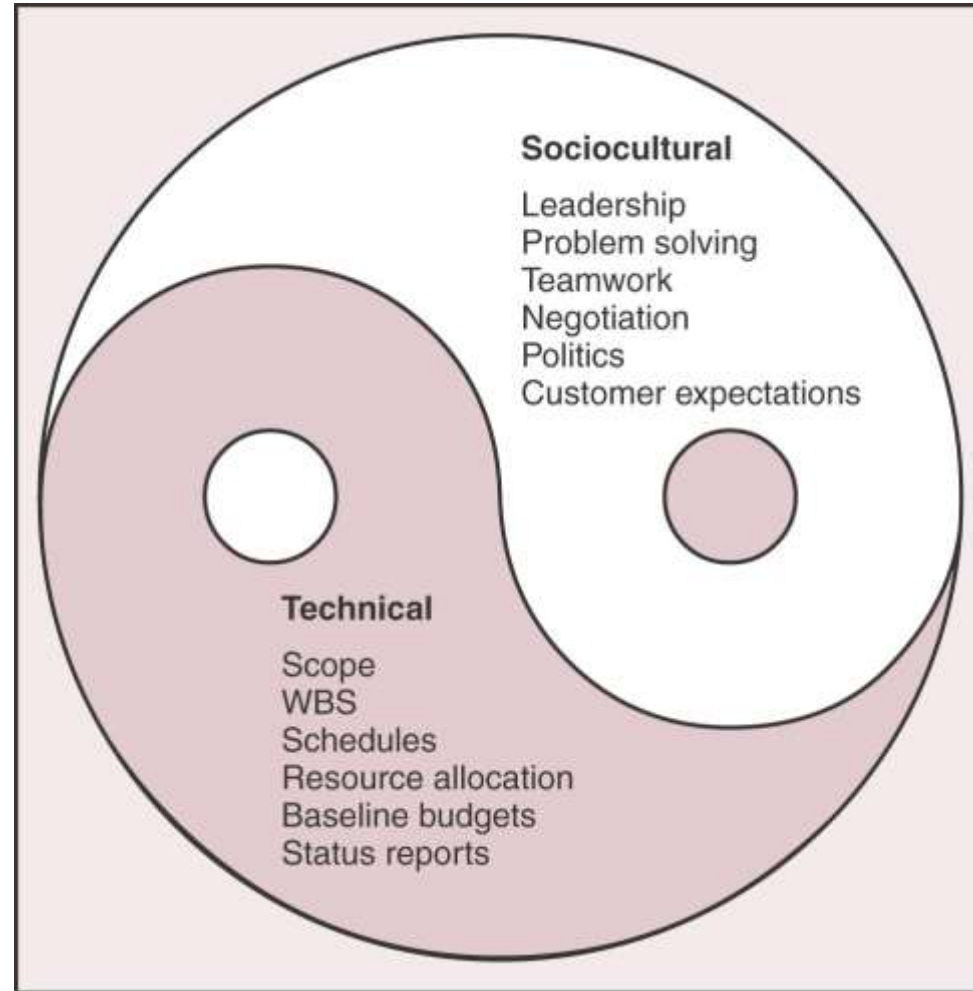
- ❖ Atomistic View
- ❖ Holistic View – Integrated Project Management

Dimensions of Project Management Process

- ❖ Technical
- ❖ Sociocultural

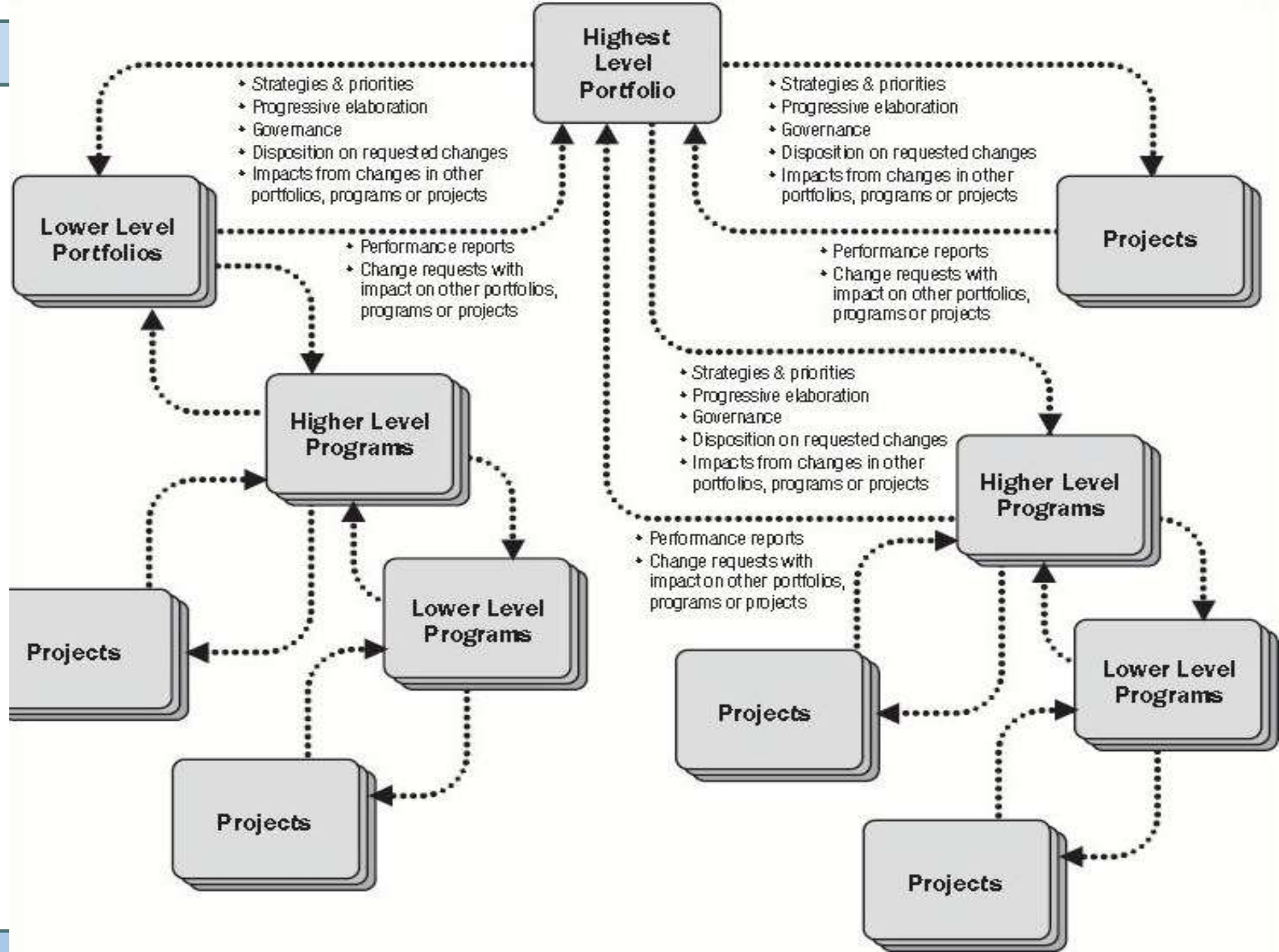
Approach Towards Studying Project Management

Dimensions of Project Management Process



Broader Context of Project Management

In **mature project management organizations**,
project management exists in a **broader context**
governed by
program management and portfolio management.



Relationships B/W Project, Program, & Portfolio Mgt.

The Figure focuses/shows that,

- ❖ organizational strategies and priorities are linked, and
- ❖ there is relationships between portfolios and programs, and
- ❖ there is relationship between programs and individual projects.

Relationships B/W Project, Program, & Portfolio Mgt.

Key points:

- ❖ **Organizational planning** impacts the projects by means of project prioritization based on risk, funding, and the organization's strategic plan.
- ❖ Organizational planning can direct the **funding** and **support** for the component projects on the basis of risk categories, specific lines of business, or general types of projects, such as infrastructure and internal process improvement.

1.4.1 Portfolio Management

What is 'portfolio'?

A portfolio refers to 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 of the portfolio **may not necessarily be interdependent** or directly related.

1.4.1 Portfolio Management

- ❖ The projects or programs of the portfolio **may not necessarily be interdependent** or directly related.

For example, an infrastructure firm that has the **strategic objective of “maximizing the return on its investments”** may put together a portfolio that includes a mix of projects in oil and gas, power, water, roads, rail, and airports.

From this mix, the firm may choose to manage related projects as one program. All of the power projects may be grouped together as a power program. Similarly, all of the water projects may be grouped together as a water program.

Relationships B/W Project, Program, & Portfolio Mgt.

1.4.1 Portfolio Management

What is portfolio management?

It refers to the **centralized management** of **one or more** portfolios.

What is portfolio management involve?

It includes identifying, prioritizing, authorizing, managing, and controlling projects, programs, and **other related work**, to achieve specific strategic business objectives.

What does portfolio management focus on?

It focuses on ensuring that projects and programs are reviewed to **prioritize resource allocation**, and that the management of the portfolio is **consistent with and aligned to organizational strategies**.

1.4.2 Program Management

Definition of 'Program'

A program is defined as a **group of related** projects **managed in a coordinated way** to obtain benefits and control not available from managing them individually.

Key Points:

- ❖ Programs may include elements of related work outside the scope of the discrete projects in the program.
- ❖ A project may or may not be part of a program but a program will always have projects.

1.4.2 Program Management

Definition of 'Program management'

Program management is defined as the **centralized coordinated management of a program** to achieve the **program's strategic objectives** and benefits.

Key Point:

- ❖ Projects within a program are related through the common outcome or collective capability.
- ❖ If the relationship between projects is only that of a shared client, seller, technology, or resource, the effort should be managed as a portfolio of projects rather than as a program.

1.4.2 Program Management

Focus of Program Management:

It focuses on the project interdependencies and helps to determine the optimal approach for managing them.

Actions related to these interdependencies may include:

- Resolving resource constraints and/or conflicts that affect multiple projects within the program;
- Aligning organizational/strategic direction that affects project and program goals and objectives; and
- Resolving issues and change management within a shared governance structure.

1.4.2 Program Management

An Example of a Program :

An example of a program would be a

new communications satellite system

with projects for

design of the satellite and of the ground stations,

construction of each,

integration of the system, and

launch of the satellite.

Relationships B/W Project, Program, & Portfolio Mgt.

Difference in approaches

Projects, programs, and portfolios have different approaches.

Table 1-1

shows the

comparison of project, program, and portfolio views

across several domains including

change,

leadership,

management, and

others.

	PROJECTS	PROGRAMS	PORTFOLIOS
Scope	Projects have defined objectives. Scope is progressively elaborated throughout the project life cycle.	Programs have a larger scope and provide more significant benefits.	Portfolios have a business scope that changes with the strategic goals of the organization.
Change	Project managers expect change and implement processes to keep change managed and controlled.	The program manager must expect change from both inside and outside the program and be prepared to manage it.	Portfolio managers continually monitor changes in the broad environment.
Planning	Project managers progressively elaborate high-level information into detailed plans throughout the project life cycle.	Program managers develop the overall program plan and create high-level plans to guide detailed planning at the component level.	Portfolio managers create and maintain necessary processes and communication relative to the aggregate portfolio.
Management	Project managers manage the project team to meet the project objectives.	Program managers manage the program staff and the project managers; they provide vision and overall leadership.	Portfolio managers may manage or coordinate portfolio management staff.
Success	Success is measured by product and project quality, timeliness, budget compliance, and degree of customer satisfaction.	Success is measured by the degree to which the program satisfies the needs and benefits for which it was undertaken.	Success is measured in terms of aggregate performance of portfolio components.
Monitoring	Project managers monitor and control the work of producing the products, services or results that the project was undertaken to produce.	Program managers monitor the progress of program components to ensure the overall goals, schedules, budget, and benefits of the program will be met.	Portfolio managers monitor aggregate performance and value indicators.

1.4.3 Projects and Strategic Planning

Projects are often utilized as a means of achieving an organization's strategic plan.

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

- Market demand
- Strategic opportunity/business need
- Customer request
- Technological advance
- Legal requirements

1.4.3 Projects and Strategic Planning

Key Points

- ❖ Projects, within programs or portfolios, are a **means of achieving organizational goals and objectives**, often in the context of a strategic plan.
- ❖ Although a group of projects within a program can have discrete **benefits**, they can also contribute to the benefits of the program, to the objectives of the portfolio, and to the strategic plan of the organization.
- ❖ Organizations manage portfolios based on their strategic plan, which may dictate a **hierarchy** to the portfolio, program, or projects involved.

1.4.3 Projects and Strategic Planning

Key Points

- ❖ One goal of portfolio management is **to maximize the value of the portfolio by the careful examination of its components**—the constituent programs, projects, and other related work.

Those components contributing the least to the portfolio's strategic objectives may be excluded. In this way, an organization's strategic plan becomes the primary factor guiding investments in projects.

- ❖ At the same time, projects provide feedback to programs and portfolios by means of status reports and change requests that may impact other projects, programs, or portfolios. The needs of the projects, including the resource needs, are rolled up and communicated back to the portfolio level, which in turn **sets the direction for organizational planning**.

1.4.4 Project Management Office (PMO)

Definition:

PMO is an organizational body or entity assigned various responsibilities related to the centralized and coordinated management of those projects under its domain.

Responsibility of PMO:

The responsibilities of a PMO can range from providing project management **support functions** to actually being responsible for the **direct management of a project**.

Key Point:

The projects supported or administered by the PMO may not be related, other than by being managed together.

1.4.4 Project Management Office

Key Points:

- ❖ The **specific form**, **function**, and **structure** of a PMO is dependent upon the needs of the organization that it supports.
- ❖ A PMO may be delegated the authority to act as **an integral stakeholder and a key decision maker** during the beginning of each project, to make recommendations, or to terminate projects or take other actions as required to keep business objectives consistent.
- ❖ In addition, the PMO may be involved in the selection, management, and deployment of shared or dedicated project **resources**.

1.4.4 Project Management Office

Primary Function:

To **support project managers** in a variety of ways which may include, but are not limited to:

- ❖ **Managing shared resources** across all projects administered by PMO
- ❖ Identifying & developing project mgt. **methodology, best practices, & standards**
- ❖ **Coaching, mentoring, training, and oversight;**
- ❖ Monitoring **compliance** with project management standards, policies, procedures, and templates via project audits;
- ❖ Developing and managing **project policies, procedures, templates, and other shared documentation** , and
- ❖ Coordinating **communication** across projects.

1.4.4 Project Management Office

PMO and Project Managers Pursue Different Objectives:

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.

1.4.4 Project Management Office

PMO and Project Managers have Different Roles:

- ❖ The project manager focuses on the specified **project objectives**, while the PMO manages major program scope changes which may be seen 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 **constraints** (scope, schedule, cost, and quality, etc.) of the individual projects while the **PMO manages the methodologies, standards, overall risk/opportunity, and interdependencies among projects at the enterprise level**.

Project Management and Operations Management

Definition:

Operations are an organizational function performing the ongoing execution of activities that produce the same product or provide a repetitive service.

Examples:

Production operations, manufacturing operations, and accounting operations, etc.

Key Points:

- ❖ Though temporary in nature, projects can help achieve the organizational goals when they are aligned with the organization's strategy.
- ❖ Organizations sometimes change their operations, products, or systems by creating strategic business initiatives.

Project Management and Operations Management

Projects require **project management** while operations require business process mgt. or **operations management**.

Projects can intersect with operations at various points during the product life cycle, such as:

- ❖ At each closeout phase;
- ❖ When developing a new product, upgrading a product, or expanding outputs;
- ❖ Improvement of operations or the product development process; or
- ❖ Until the divestment of the operations at the end of the product life cycle.

Project Management and Operations Management

Key Points:

At each point, **deliverables and knowledge** are transferred between the project and operations for implementation of the delivered work.

This occurs through a transfer of project resources to operations toward the end of the project, or through a transfer of operational resources to the project at the start.

Operations are **permanent endeavors** that produce repetitive outputs, with resources assigned to do basically the same set of tasks according to the standards institutionalized in a product life cycle. Unlike the ongoing nature of operations, projects are **temporary endeavors**.

Enterprise Environmental Factors

Definition:

Enterprise environmental factors refer to both internal and external environmental factors that surround or influence a project's success.

These factors may come from any or all of the enterprises involved in the project.

Enterprise environmental factors may **enhance or constrain** project management options and may have a **positive or negative influence** on the outcome.

They are considered as inputs to most planning processes.

Enterprise Environmental Factors

Enterprise environmental factors include, but are not limited to:

- ❖ Organizational culture, structure, and processes;
- ❖ Government or industry standards (e.g., regulatory agency regulations, codes of conduct, product standards, quality standards, and workmanship standards);
- ❖ Infrastructure (e.g., existing facilities and capital equipment);
- ❖ Existing human resources (e.g., skills, disciplines, and knowledge, such as design, development, law, contracting, and purchasing)
- ❖ Personnel administration (e.g., staffing and retention guidelines, employee performance reviews and training records, overtime policy, and time tracking);

Enterprise Environmental Factors

- Company work authorization systems;
- Marketplace conditions;
- Stakeholder risk tolerances;
- Political climate;
- Organization's established communications channels;
- Commercial databases (e.g., standardized cost estimating data, industry risk study information, and risk databases); and
- Project management information systems (e.g., an automated tool, such as a scheduling software tool, a configuration management system, an information collection and distribution system, or web interfaces to other online automated systems).

Project Life Cycle and Organisation

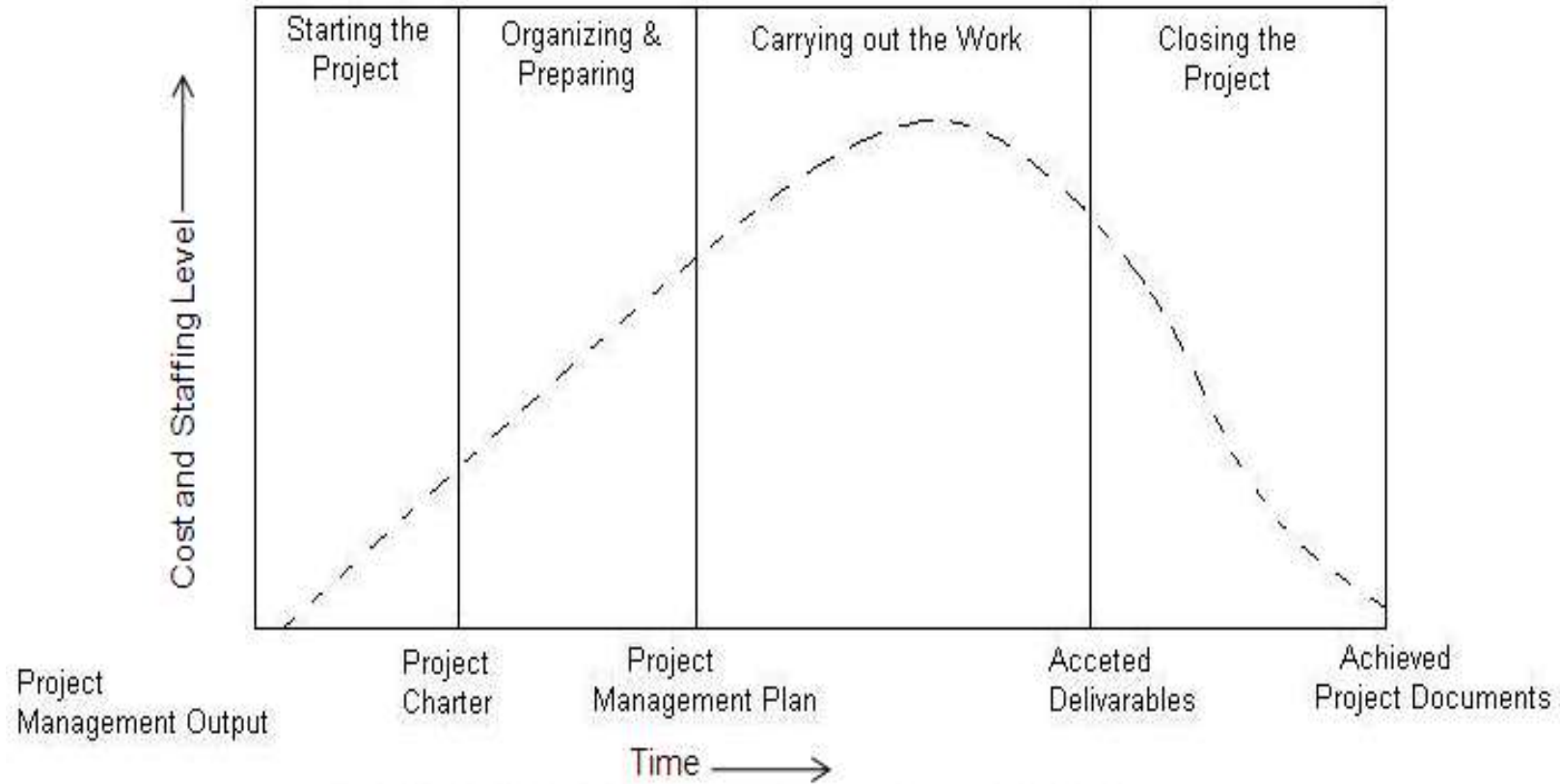
Project Phases

- Projects are divided into smaller, more manageable components.
- Usually, deliverables of a phase (output) are used as inputs to the next phase.
- Each project phase completion is marked by one or more deliverables and their review.
 - Deliverables- a tangible, verifiable work product

Project Life cycle

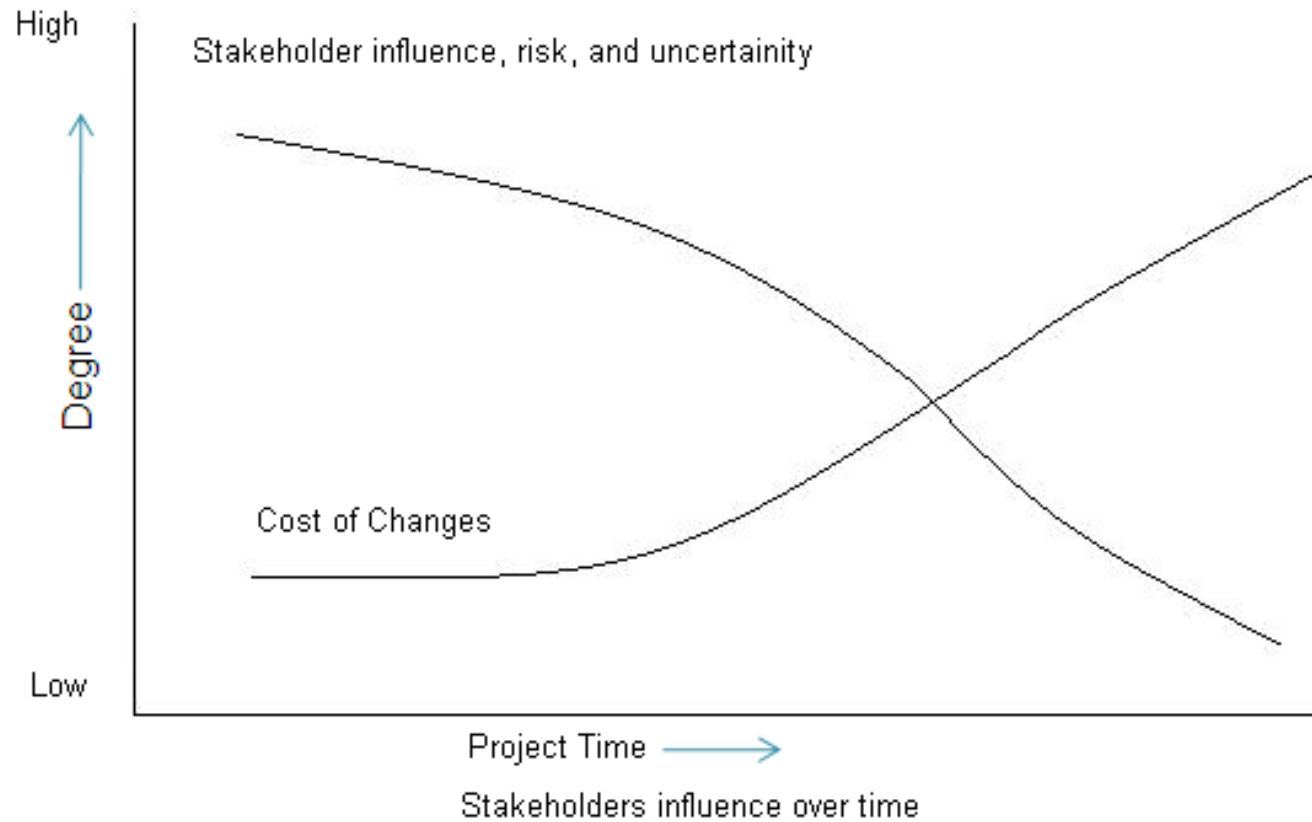
- The sum of all project phases and their sequence.
- Project life cycle defines
 - The technical work to be done
 - The sequence
 - The technical competencies needed.
- Project lifecycle is application area specific
 - E.g. Software Development Lifecycle
 - E.g. Construction
 - Feasibility, Planning, design, build, turnover, startup

Characteristics Of Project Lifecycle

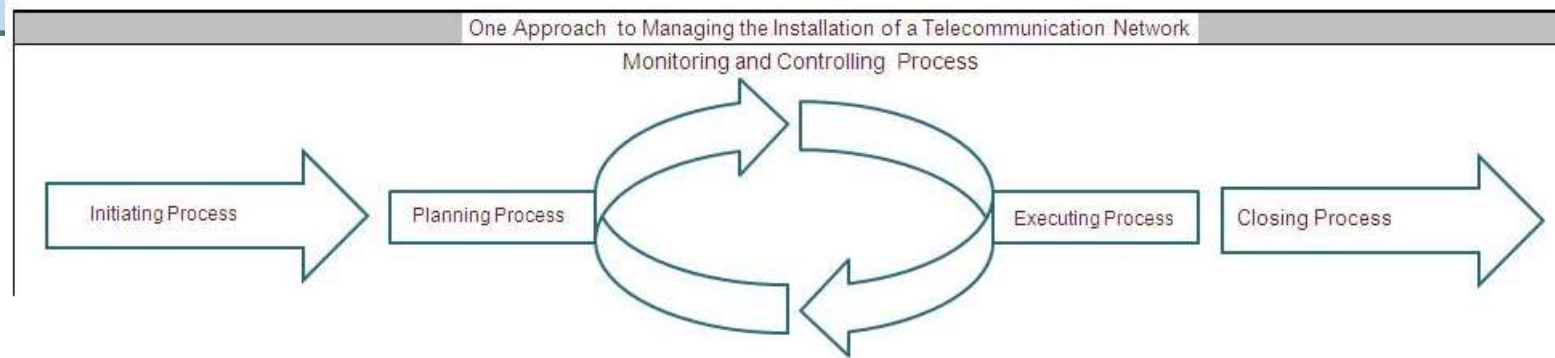


Typical Project Cost and Staffing Level across the project lifecycle

Characteristics of Project Lifecycle

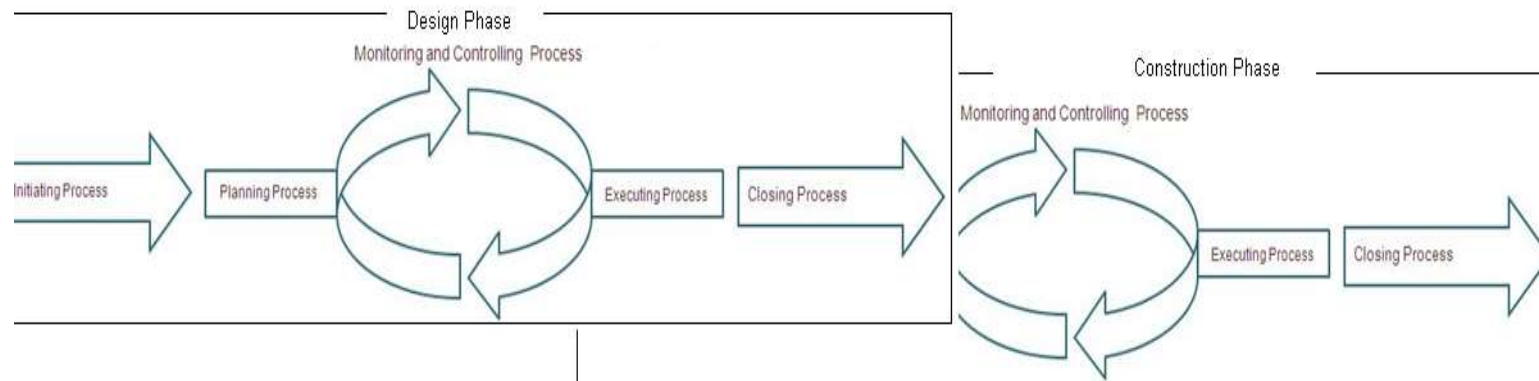


Impact of Variable based on project time



Example of Single Phase Project

Potential Approach to Building a New Factory



Example of Project with Overlapping Phase

Elements of a Project's Life Cycle



Software Development Life Cycle

IDEATION

Brainstorming ideas that solve a particular problem faced by target users.



REQUIREMENTS

Interacting with stakeholders and users to collect and document project requirements.



DESIGN

Creating the architecture of a software system and its elements.



DEVELOPMENT

Building the software using a programming language by the development team.



MAINTENANCE

Updating and supporting the software after it has been delivered to the market.



Deployment

Preparing the software to run and operate in a specific environment.



TESTING

Evaluating the quality of software with the aim of finding and fixing defects.



Construction Project Life Cycle



These are the typical stages in any construction project. Good planning at the beginning and anticipation of contingencies will help the entire process go much more smoothly.

Product Vs. Project Life Cycle

- Product Life Cycle : generally sequential, non overlapping product phases (eg, manufacturing)
- Last product life cycle phase is usually the products retirement.
- Project life cycle is contained within more or more product life cycles.
- Multiple separate projects could be related to a product development (eg, a new car)

Project Stakeholders

- **Individuals and Organizations**
 - Interested in the projects
 - May be affected by the project execution
 - May exert influence on project (positive & negative)
- **Project Management team must**
 - Identify stake holders
 - Determine their requirements and expectations
 - Assess their knowledge and skills
 - Manage their expectation and their influences
 - Conflicting expectations should be resolved in favor of customer.

Key Stakeholders

Customer / User	Person or Organization that will use the result of the project. Customer and users may be different entities.
Sponsor	The person or group that provides financial resources for the project
Portfolio Managers/Portfolio Review board	Responsible for governing the project within the portfolio. Review the projects return on investment, value, alignment, etc.
Program Managers	Responsible for managing related projects in coordinated manner to obtain benefits. Provide guidance and support to the project managers within their program
Project Management Office	PMO can be a stakeholder if it has direct or indirect responsibility for the outcome of the project.

Key Stakeholders

Project Manager	The person responsible for managing the project.
Project Team	Individuals from different groups with specific subject matter knowledge or skill who carry out the work of the project.
Functional Managers	May provide the subject matter expertise to the project
Operation Management	Involved in the handoff of the project deliverables to ongoing operations.
Sellers/ Business Partners	Have a contractual arrangement to provide a service related to the project.

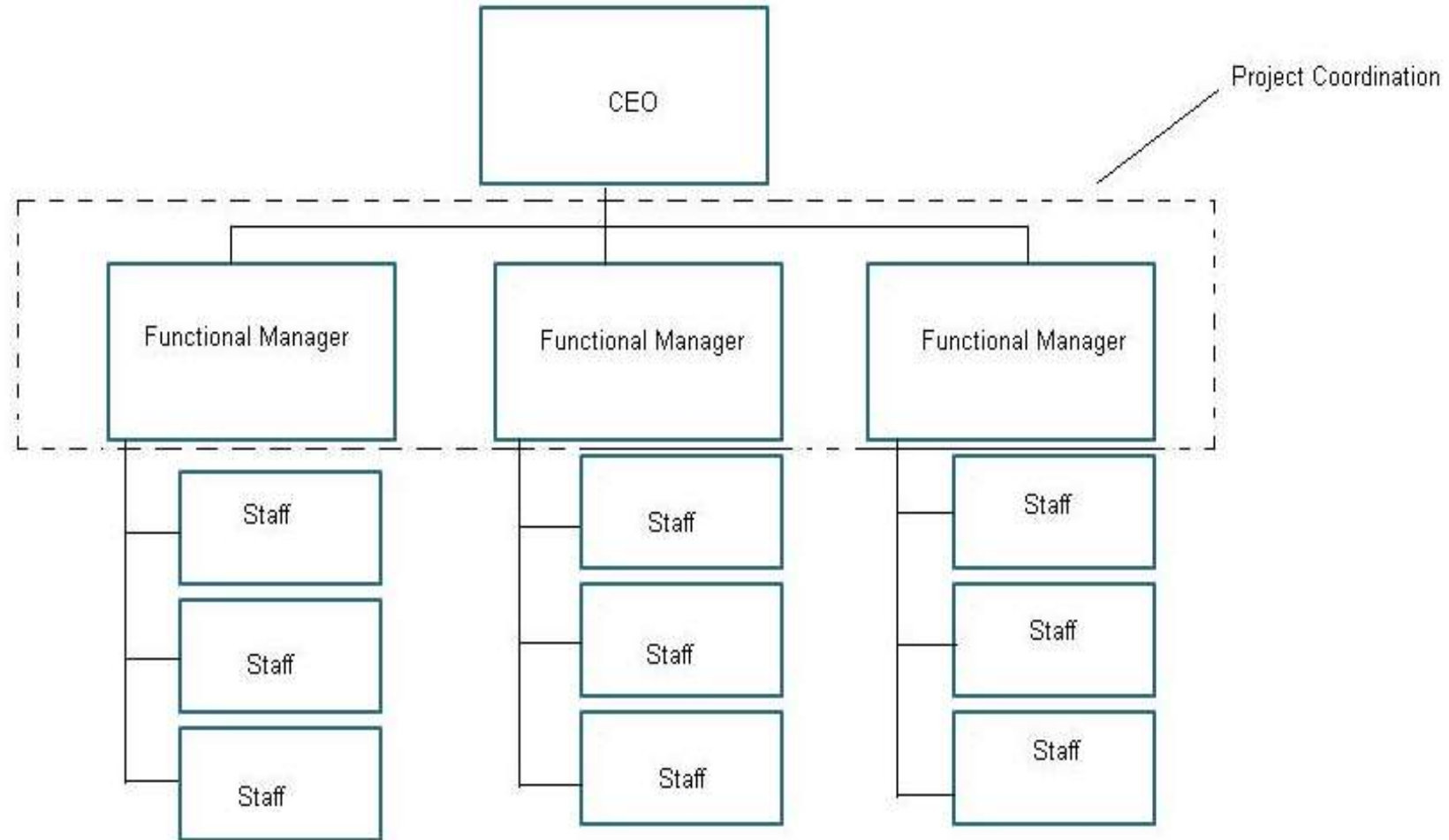
Cultures and Styles

- Organizational Culture is reflected in many aspects
 - Shared values, norms, beliefs, expectation
 - Policies, rules and procedures.
 - The perception of the authority relationships
 - Ethics
 - Working Schedule
 - Dressing Style
- Organizational Culture can impact the project
 - Attitude on risk
 - Management style

Organizational Structures

- Functional
- Matrix
 - Weak Matrix
 - Balance Matrix
 - Strong Matrix
- Projectized

Functional Organization



Green boxes : Staff involved in Project Work

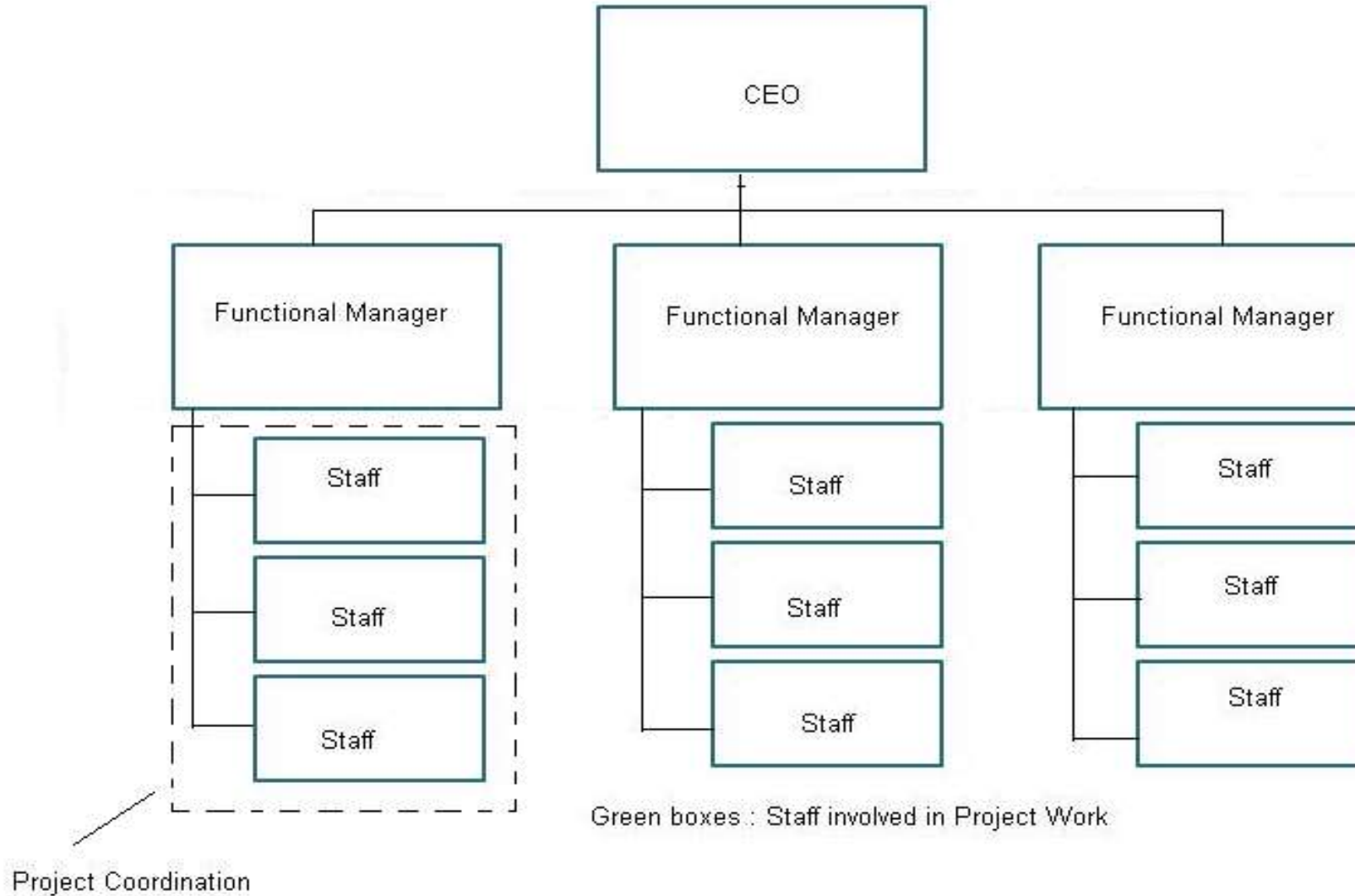
Functional Organization

- Hierarchical
- Grouped by area of specialization
- Staff members report to a clear superior
- Project scope is usually limited to the department's boundaries
- Project manager has title authority
- The most common form of the organization.

Functional Organization Analysis

Advantages	Disadvantages
Technical Management is easier.	No authority for project manager
Clear career path in areas of specialization	No career path in project management
Team members report to only one boss	People are focused on their functional specialization, instead on their projects.

Projectized Organization



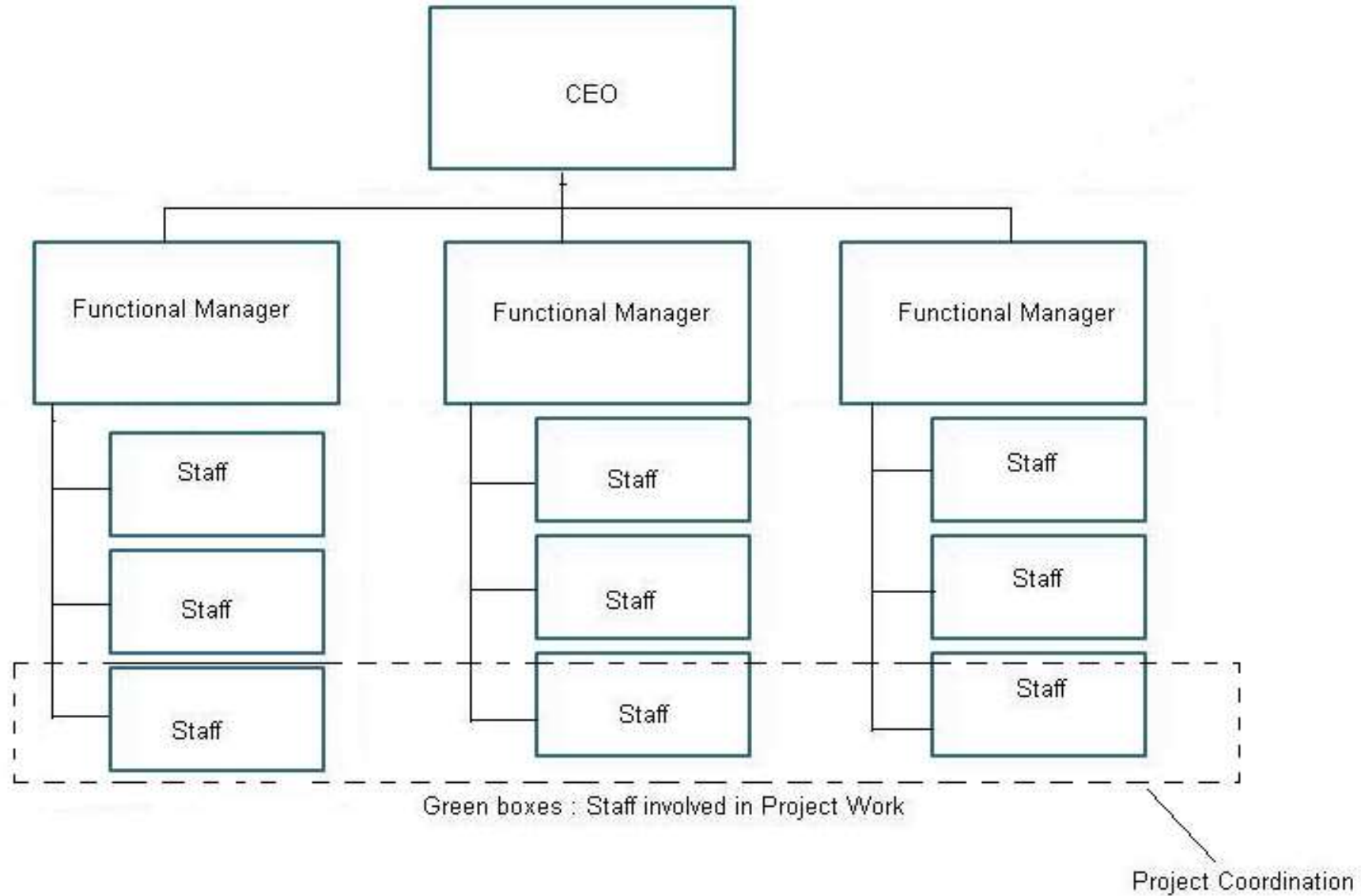
Projectized Organization

- All work is organized by projects.
- Project Manager has total control over the projects.
- Personnel report only to project manager.

Projectized Organization Analysis

Advantages	Disadvantages
Efficient Project Organization	Team is disbanded when project ends
Better alignment of people interest with their project objective.	Less efficient usage of resources
Communication is more effective than in functional structures	Duplication of job functions

Matrix Organization



Matrix Organization

- Balance between functional and projectized
- Three types
 - Weak-Functional manager has more power than project manager
 - Balanced-functional manager and project manager share authority
 - Strong-power rests with project manager.
- Staff members report tot two bosses-project manager and functional manager

Matrix Organization Analysis

Advantages	Disadvantages
Better visibility of project objectives	People reports two managers
Better project management control of resources	More complex to control
Team members are not disbanded when project ends	Resources allocation problems
Maximum utilization of resources	Potential conflicts between project managers and functional managers.

Projects

- Social awareness programme (Food waste/Sanitation/Road safety)
- Organising event (Academic club events/Tarang Bazar/B-School meet etc)
- Community engagement project (conducting competition/teaching in nearby school/awareness campaign)
- Organising Training programme (GTET students)
- Impact analysis (Skill training)
- Problems identified by Centurion
- Accounting for street vendors
- IT project/product development/field projects (For technical students)