

# **Session 1 Introduction, Concept and Overview of Project Management. Scope & Coverage**

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# Break –Up of Sessions

- 1.** Introduction: - Concept and Overview of Project management. Scope & Coverage. Project Function in an organization Layout
- 2.** Project Identification:- Selection of product identification of market preparation of feasibility study/report Project formulation - Evaluation of risks, preparation of Project report.
- 3.** Selection of location & site of the project - Factors affecting location - policies of Central - State Government towards location - Legal aspects of project management.
- 4.** Financial Analysis :- Profitability Analysis - Social cost Benefit Analysis Preparation
- 5.** Budget and Cash Flows
- 6.** Selection of Project Department team. Setting up Organisation, Goals and targets dates. Role of Consultants in Project Management.
- 7.** Materials Management and other resources (Project) Planning - Procurement - storage - disposal.
- 8.** Financing of the Project: Source of Finance - Cost implications there of Financial Institutions -Guidelines for funding projects, Risk Analysis - Sensitivity Analysis.
- 9.** Quantitative Aspects of projects :- PERT/CPM Network Analysis for monitoring of the project
- 10.** Other quantitative techniques for monitoring and Control of project
- 11.** Theory of Constraints and Critical Chain Analysis
- 12.** Computer Applications :- Selection of software packages for application to Project management
- 13.** Presentations by Students on Projects / Topic allotted

## History of Project Management

- As a discipline, Project Management developed from several fields of application including construction, engineering, and defence activity.
- Two forefathers of project management are Henry Gantt, called the father of planning and control techniques, who is famous for his use of the Gantt chart as a project management tool; and Henri Fayol for his creation of the 5 management functions which form the foundation of the body of knowledge associated with project and program management.
- Both Gantt and Fayol were students of Frederick Winslow Taylor's theories of scientific management. His work is the forerunner to modern project management tools including work breakdown structure (WBS) and resource allocation.

## History of Project Management

- The 1950s marked the beginning of the modern Project Management era. Project management was formally recognized as a distinct discipline arising from the management discipline.
- In the United States, prior to the 1950s, projects were managed on an ad hoc basis using mostly Gantt Charts, and informal techniques and tools. At that time, two mathematical project-scheduling models were developed. The "Critical Path Method" (CPM) was developed as a joint venture between DuPont Corporation and Remington Rand Corporation for managing plant maintenance projects.
- And the "Program Evaluation and Review Technique" or PERT, was developed by Booz-Allen & Hamilton as part of the United States Navy's (in conjunction with the Lockheed Corporation) Polaris missile submarine program; These mathematical techniques quickly spread into many private enterprises.

# WHAT IS A PROJECT?

Organizations perform work. Work generally involves either operations or projects, although the two may overlap. Operations and projects share many characteristics; for example, they are:

- Performed by people.
- Constrained by limited resources.
- Planned, executed, and controlled.

Projects are often implemented as a means of achieving an organization's strategic plan. Operations and projects differ primarily in that operations are ongoing and repetitive while projects are temporary and unique. A project can thus be defined in terms of its distinctive characteristics—*a project is a temporary endeavor undertaken to create a unique product or service*. *Temporary* means that every project has a definite beginning and a definite end. *Unique* means that the product or service is different in some distinguishing way from all other products or services. For many organizations, projects are a means to respond to those requests that cannot be addressed within the organization's normal operational limits.

# What is a Project

- A Project can be defined as a Complex of Non-routine activities that must be completed with a set amount of resources and within a set time
- Main Characteristics:
  - Temporary / Time-bound
  - Unique (Not done before nor likely to be done again)
  - Continuous elaboration
  - Iterative Processes
  - Budgeted resources
  - Many uncertainties
  - Little Control on some of the uncertainties

# A Few Examples of Projects

- Construction of a new Highway or a Port
- Development of a customer specific Software
- Setting up a new factory
- Development of a Product
- Launching of a Product
- Development of a drug
- Raising capital
- Business restructuring
- Opening a new branch / office
- Construction of a Power Plant
- Identity card Project
- Launching of PMS or Incentive scheme

## What is a Process ?

- Set of interrelated or interacting activities which transforms inputs into outputs.
- If a process is established & stable, one would get designed & predictable output for a known measured input
- A process has five elements:
  - Supplier
  - Input
  - Process that converts measured input into desired output
  - Output
  - Customer



# What is a Process?



- People**
- Equipment**
- Materials**
- Supplies**
- Information**
- etc.**

**A series of steps or tasks that change or transform the inputs.**

- Products**
- Goods**
- Services**
- Consequences**

A process is a series of activities that transforms a set of inputs into a specific set of outputs.

# Project and Process

- Major difference in Process and a Project is the uncertainty and involvement of far too number of variables that can impact each activity and relative lack of control over variety of events that have finite probability of occurrence
- A Project can be conceived of a series of standardized generic processes – the sub processes of these generic processes however may be unique and iterative and are smaller projects themselves
- A Project can thus be completed through a series of systematic processes where one can have reasonable control and a scope for correction so as to maintain the schedule, contain costs and deliver as per scope with fair amount of accuracy by building contingencies in the Project design

# WHAT IS PROJECT MANAGEMENT?

*Project management* is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. Project management is accomplished through the use of the processes such as: initiating, planning, executing, controlling, and closing. The project team manages the work of the projects, and the work typically involves:

- Competing demands for: scope, time, cost, risk, and quality.
- Stakeholders with differing needs and expectations.
- Identified requirements.

It is important to note that many of the processes within project management are iterative in nature. This is in part due to the existence of and the necessity for progressive elaboration in a project throughout the project life cycle; i.e., the more you know about your project, the better you are able to manage it.

# Project Management Knowledge Areas



Integration

Scope

Time

Cost

Quality

Human Resources

Communication

Risk

Procurement

## What is Project Management

- **Project Management** is the discipline of planning, organizing, and managing resources to bring about the successful completion of specific project goals and objectives.
- A project is a temporary endeavour, having a defined beginning and end, usually constrained by date, but can be by funding or deliverables, undertaken to meet particular goals and objectives, usually to bring about beneficial change or added value.
- The temporary nature of projects stands in contrast to business as usual (or operations), which are repetitive, permanent or semi-permanent functional work to produce products or services. In practice, the management of these two systems is often found to be quite different, and as such requires the development of distinct technical skills and the adoption of separate management.

## What is Project Management

- The primary challenge of project management is to achieve all of the project goals and objectives while honouring the preconceived project constraints.
- Typical constraints are scope, time, and budget.
- The secondary—and more ambitious—challenge is to optimize the allocation and integration of inputs necessary to meet pre-defined objectives.

# Project Management

Project Management deals with:

- Planning
- Scheduling
- Monitoring & Controlling

so as to complete the Project as per the defined scope, within the budgeted cost and at the committed delivery time

## Defining Scope

- Scope may appear simple and obvious
- Lack of clarity in the early stages of a project is very common and though cause many problems, gives one time to resolve the cost and delivery repercussions. However, at a later or advanced stages it would lead to serious problems
- Many projects start up with vague or ill defined ideas.
- If one hopes to deliver a successful project in a finite amount of time, one needs to determine the final state - the end product, that must be achieved for which one must set a concrete goal.
- If one has an infinite amount of time one could simply try one solution after another until one hits upon the best solution. This 'inventive' approach to product development can give rise to spectacular and unique solutions but more often than ends in a failure.



## Defining Scope

- Unfortunately we do not operate in an environments where we have infinite amounts of time or resources.
- Most of us operate in an environment where we need to deliver a concrete solution in a finite period of time. In order to do this we need a way to select the best solution from a range of possible approaches.
- The first and most important step in this process is defining what will actually constitute a success. Then we can evaluate all of the possibilities against our definition of success and find the best fit. Without this we'll be shooting in the dark.
- The more accurate one can be about defining one's objectives, the more likely one will be to succeed.

## Scope and Goals

- Scope is a general term to describe everything that the project encompasses, everything that must be achieved for the project to be complete.
- This would encompass the vision of those who have sought the necessity, goals and requirements which would be embodied in documents such as a “project proposal” , “commercial specifications” and “technical specifications”.

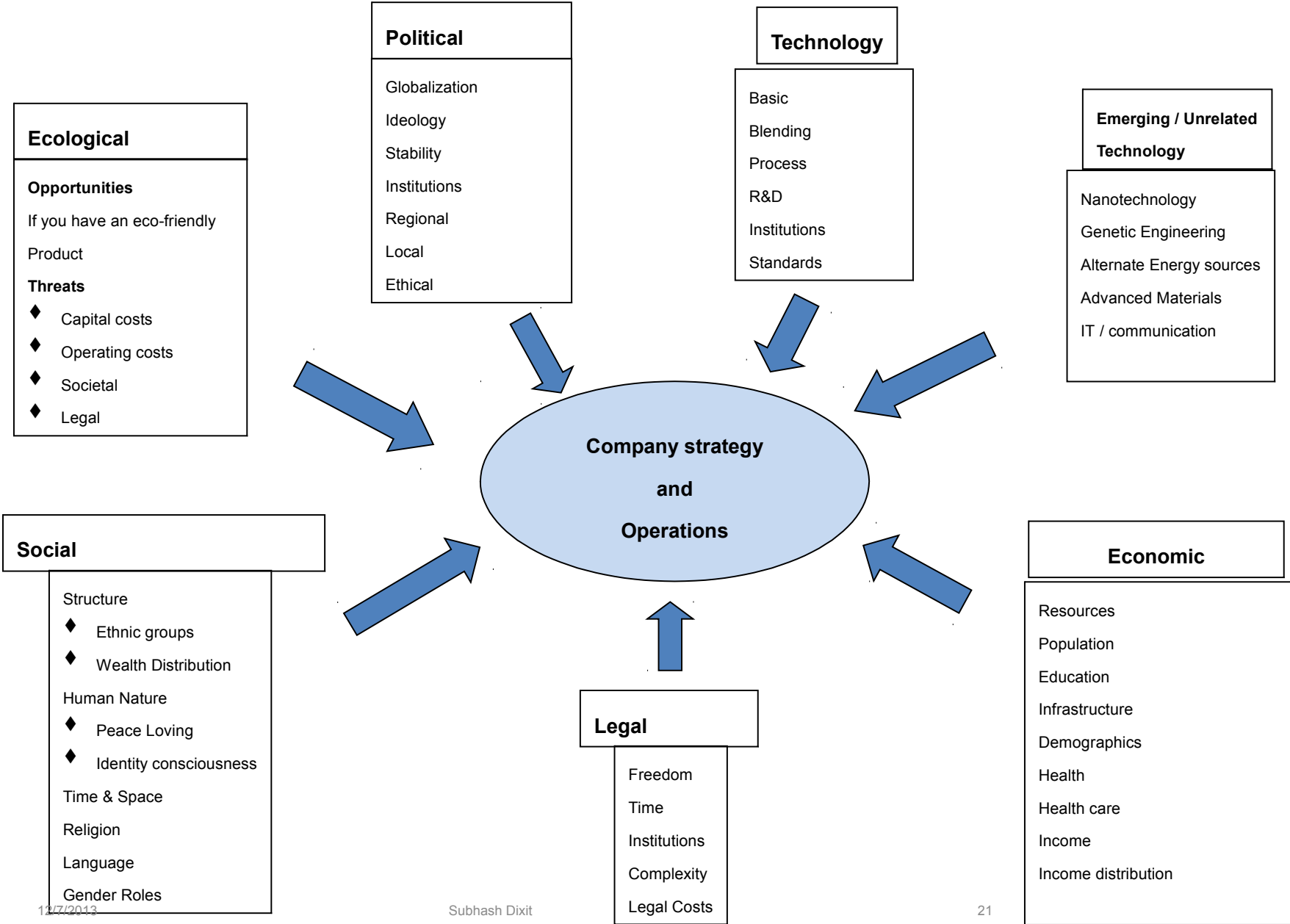
## Scope Triangle



## Scope Triangle

- The 'Scope Triangle' or the 'Quality Triangle' shows the trade-offs inherent in any project.
- The triangle illustrates the relationships between three primary forces in a project.
- Time is the available time to deliver the project, cost represents the amount of money or resources available and quality represents the "fit-to-purpose" that the project must achieve to be a success.
- The normal situation is that one of these factors is fixed and the other two will vary in inverse proportion to each other. For example "Time" is often fixed and the "Quality" of the end product will depend on the "Cost" or resources available.
- Similarly if you are working to a fixed level of "Quality" then the "Cost" of the project will largely be dependent upon the "Time" available (if you have longer you can do it with fewer people).

# Factors impacting Projects - Business Environment



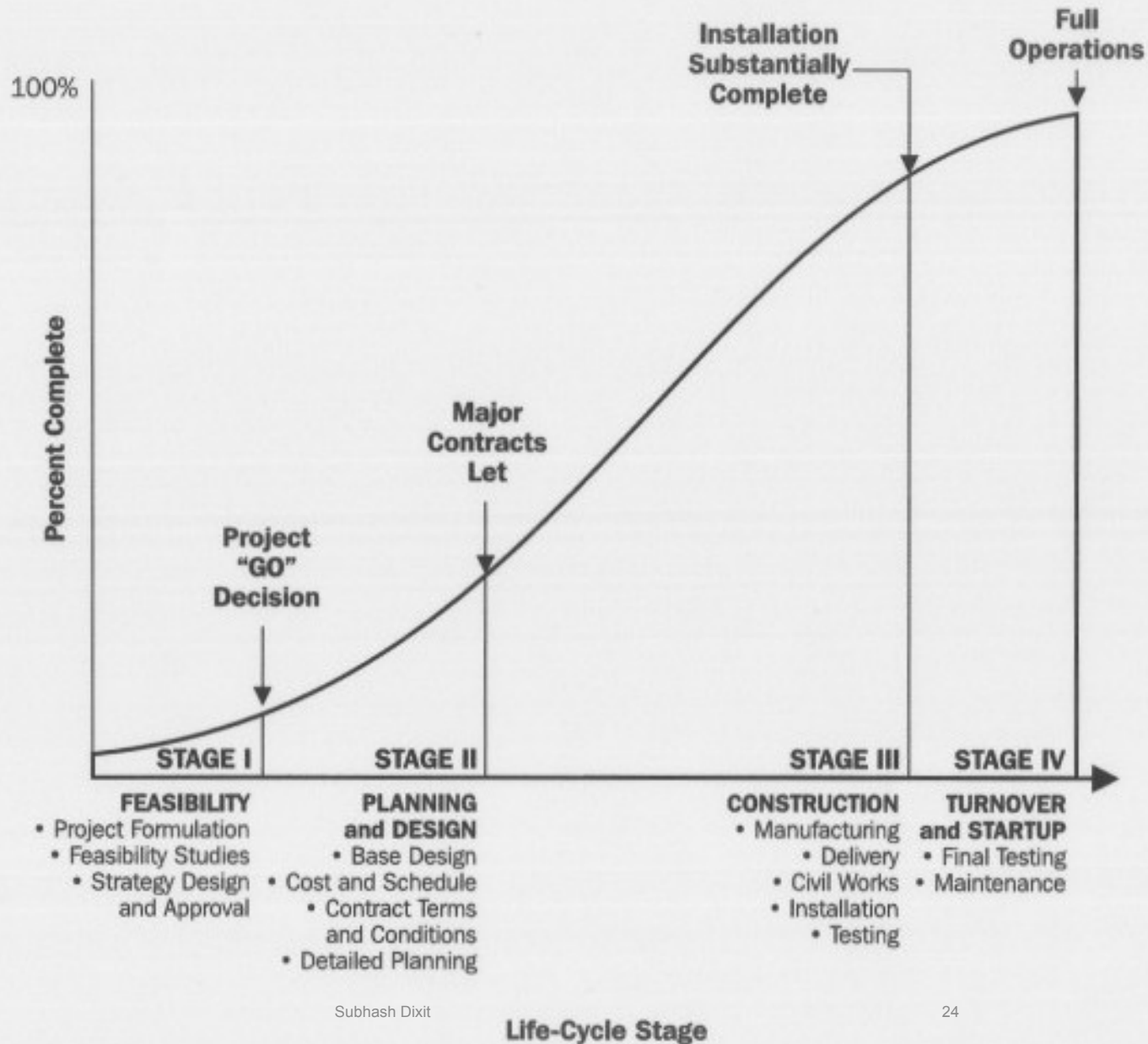
## “Scope creep”

- Scope creep is the almost unstoppable tendency that a project has to accumulate new functionality.
- Some scope creep is inevitable since, early on, any project will be defined in great detail and will get evolved progressively.
- A large amount of scope creep, however, can be disastrous.
- When the scope starts to creep, new functionality must be added to cover the increased scope. This is represented by the quality arm of the triangle, representing the ability of the ‘product’ to fulfil users’ requirements. More requirements fulfilled = a better quality product. In this situation you have three, and only three options :
  - Add time – delay the project to give you more time to add the functionality
  - Add cost – recruit, hire or acquire more people to do the extra work
  - Cut quality – trade off some non-essential requirements for the new requirements

## “Scope creep”

- If the art of management lies in making decisions, then the art of project management lies in making decisions quickly!
- When faced with scope creep you cannot ignore it. You need to tackle it in one of the ways described above and the sooner the better.
- Delaying raises the risk of your project failing.
- A poor project manager will see the scope triangle as a strait-jacket by which their project is irrevocably constrained.
- A better project manager will make better use of one or more of the axes and will shift the emphasis in the project to one of the other axes.
- The best project managers will juggle all three like hot potatoes and will make decisions every day which effectively trade-off time vs quality vs resources.

# Project Life Cycle - Stages





## Characteristics of the Project Life Cycle

The project life cycle serves to define the beginning and the end of a project. For example, when an organization identifies an opportunity to which it would like to respond, it will often authorize a needs assessment and/or a feasibility study to decide if it should undertake a project. The project life-cycle definition will determine whether the feasibility study is treated as the first project phase or as a separate, standalone project.

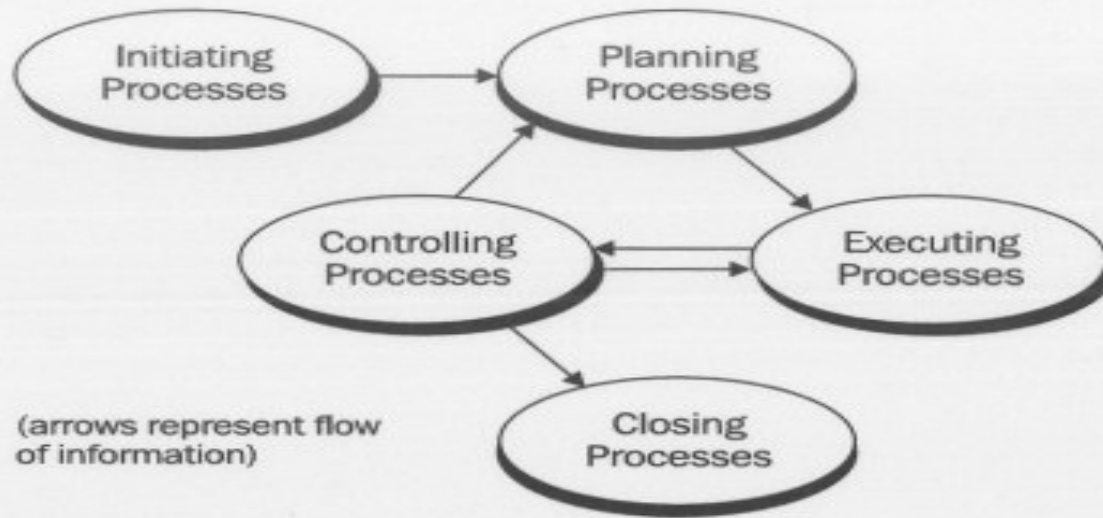
The project life-cycle definition will also determine which transitional actions at the beginning and the end of the project are included and which are not. In this manner, the project life-cycle definition can be used to link the project to the ongoing operations of the performing organization.

The phase sequence defined by most project life cycles generally involves some form of technology transfer or handoff such as requirements to design, construction to operations, or design to manufacturing. Deliverables from the preceding phase are usually approved before work starts on the next phase. However, a subsequent phase is sometimes begun prior to approval of the previous phase deliverables when the risks involved are deemed acceptable. This practice of overlapping phases is often called *fast tracking*.

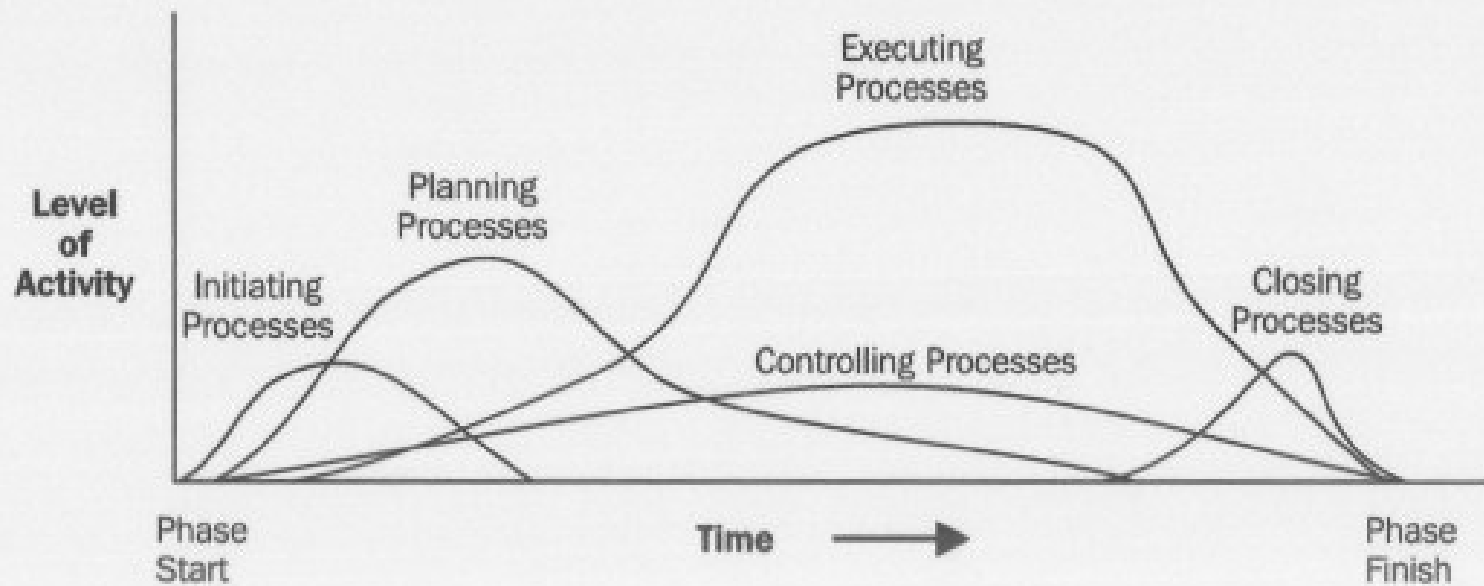
Project life cycles generally define:

- What technical work should be done in each phase (e.g., is the work of the architect part of the definition phase or part of the execution phase?).
- Who should be involved in each phase (e.g., implementers who need to be involved with requirements and design).

Project life-cycle descriptions may be very general or very detailed. Highly detailed descriptions may have numerous forms, charts, and checklists to provide structure and consistency. Such detailed approaches are often called *project management methodologies*.



Links among Process Groups in a Phase



3-2. Overlap of Process Groups in a Phase

## Non-Functional Requirements

- It is essential to consider other requirements too, these are called “non-functional requirements” which, is a bit of an oxymoron. The point however is valid, there are 'obvious' requirements that your end-users may not specify but may be implied.

### Performance

- Performance covers areas like responsiveness, throughput and speed of operation. What is the minimum performance that will satisfy your client ? Usability How “easy-to-use” will the finished product be ? For example do you cater for disabled or handicapped users ? Generic ease of use should be considered though,

### Reliability

- Reliability requirements deal with the continuous availability of the product to users. They should state what availability is necessary and desirable. Security In products which deal with confidential or sensitive information, security considerations should be taken into account. Requirements for different levels of access, encryption and protection should be gathered.

# Non-Functional Requirements

## Financial

- Financial considerations, sometimes, will determine the success or failure of the project. For example a bank or investor might specify certain financial constraints or covenants which must be satisfied during the project.

## Legal

- There may be legal requirements that must be met due to the environment in which your product will operate.

## Operational

- There may be a number of day-to-day operational issues that need to be considered. Failure to accommodate these will not delay project launch but may limit or halt its uptake by end-users once it has been launched.

## Specialist

- There might be special requirements that are dependent upon the nature of the project or the nature of the business. You should considered these separately and state them explicitly in design docs.

**Thank You**