Software Process and Project Management
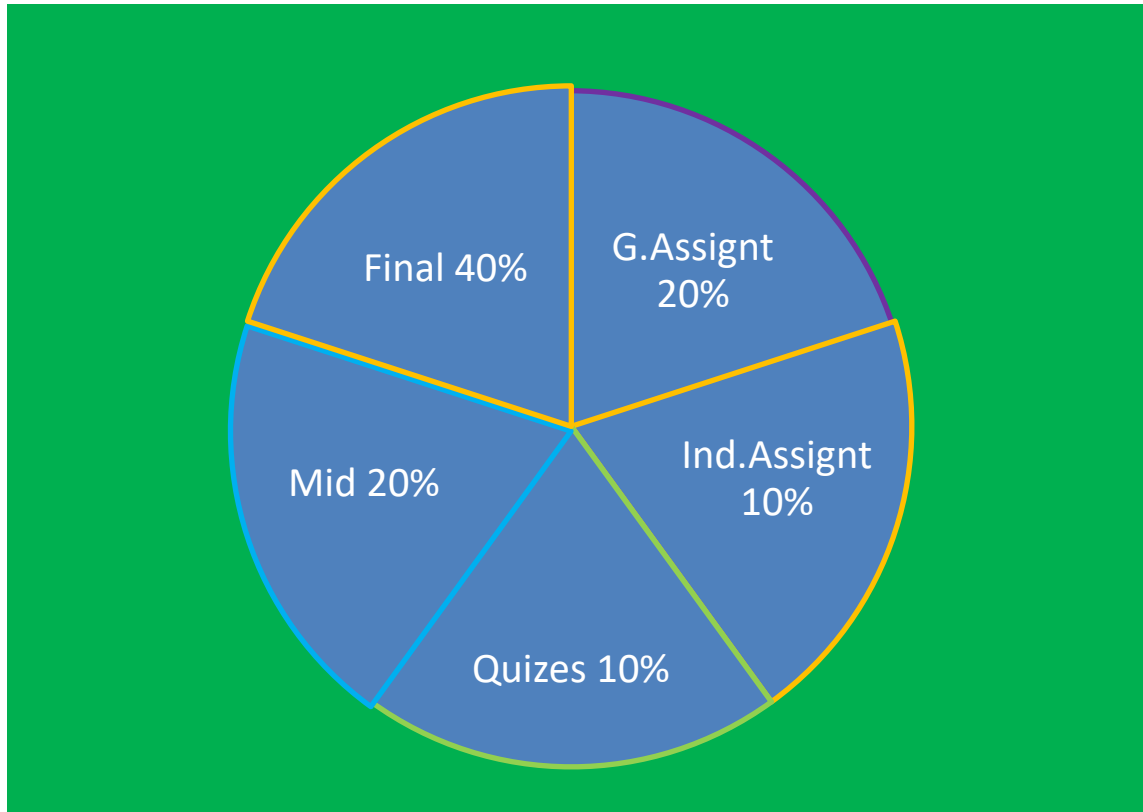
Course Tutor: Desalegn Belay(Msc)
Target Group: 3rd Year SE Students

Evaluation

Schedule

Wednesday

- Morning: 2:00 – 3:50

Thursday

Afternoon   8:00-10:50

Attendance Requirements'

◦ Minimum 85% during lecture session except for some unprecedented mishaps.

CHAPTER 1

1) Introduction to Software Project Management

1.1 Importance of IS project mgt.

Why need to manage SW projects?

Failure of many IT Projects. For instance,

- The United States Internal Revenue System was to abandon its tax system modernization program after having spent $4 billion;

- The state of California spent $1 billion on its non-functional welfare database system;

…why

- The €339 million United Kingdom air traffic control system was reported as being two years behind schedule;

- A 1995 Standish Group study (CHAOS) found that only 16.2% of IS projects were successful and over 31% were canceled before completion, costing over $81 B in the U.S. alone

- **Worldwide cost of IT failure (revisited): $3 trillion**

…why

RESOLUTION

	2004	2006	2008	2010	2012
Successful	29%	35%	32%	37%	39%
Failed	18%	19%	24%	21%	18%
Challenged	53%	46%	44%	42%	43%

Project resolution results from CHAOS research for years 2004 to 2012.

The reasons for the increase in successful projects vary. First, the average cost of a project has been more than cut in half. Better tools have been created to monitor and control progress and **better skilled project managers with better management processes** are being used. The fact that there are processes is significant in itself."

Worldwide cost of IT failure (revisited): $3 trillion

Causes of Project Management Failure

◦ Bad Communications

◦ Poor schedule or resource Management (mismanagement)

◦ Weak requirements definitions (leads to inadequate

  planning)

◦ Inadequate planning, assumptions, risks, or resources

◦ Use of new or unproven technologies/methods

…Causes of PM Failure

◦ Ineffective (or nonexistent) quality controls

◦ Managing multiple projects at once or multi-tasking resources

◦ Supply chain failures

◦ Scope creep or poor impact analysis

◦ Lack of qualified resources

Advantages of Using Formal SPM

- Better control of financial, physical, and human resources

- Improved customer relations

- Shorter development times

- Lower costs

- Higher quality and increased reliability

- Higher profit margins

- Improved productivity

- Better internal coordination

- Higher worker morale

1.1.1,What is Project?

A project is a temporary endeavor undertaken to create a unique product or service.
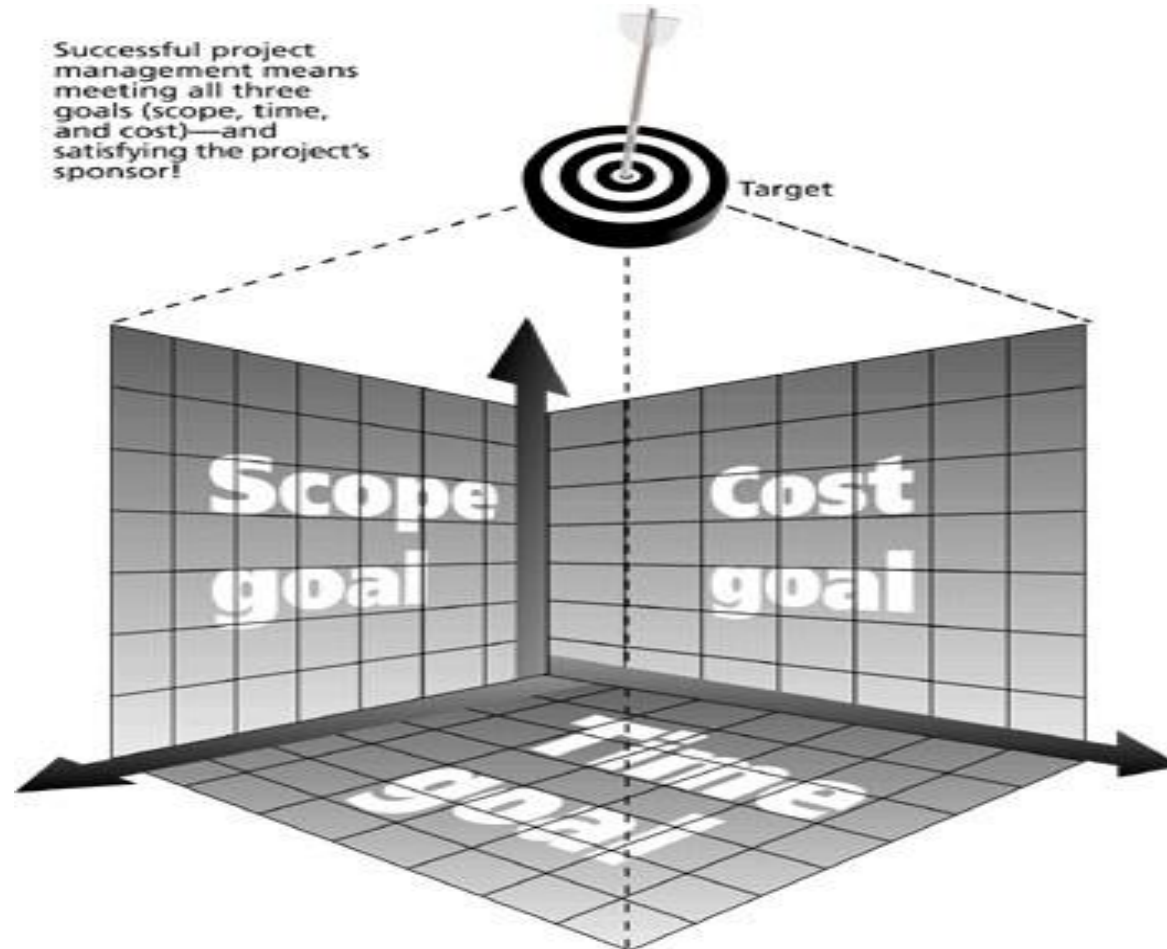
Attributes of projects

- Unique purpose

- Temporariness

- Require resources, often from various areas

- Should have a primary sponsor and/or customer

- Involve uncertainty

The Triple Constraint

- Every project is constrained in different ways by its

  - **Scope goals:** What is the project trying to accomplish?

  - **Time goals:** How long should it take to complete?

  - **Cost goals:** What should it cost?

- It is the project manager's duty to balance these three often competing goals

The Triple Constraint of Project Management

Successful project management means meeting all three goals (scope, time, and cost)—and satisfying the project's sponsor!

Target

Scope goal

Cost goal

Time goal

1.1.3 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.

◦ Project management is "the application of knowledge, skills, tools, and techniques to project activities in order to meet project requirements." (PMI*)

*The Project Management Institute (PMI) is an international professional society. Their web site is www.pmi.org.

Stages of project

Feasibility study

- This is an investigation to decide whether a prospective project is worth starting.
- information will be gathered about the general requirements of the proposed system.
- the probable developmental and operational costs, along with the value of the benefits of the new system are estimated.
- with a large system, the feasibility study could be treated as a project in its own right.
- this evaluation may be done as part of a strategic planning excersise whrere a whole range of potential software development are evaluated and put into an order of priority.

The Cost-benefit Analysis

Cost-benefit analysis is designed to compare the costs and benefits of a project or programme.
It is often used when deciding whether to implement large projects, or choosing between different options.
It is normally applied before a project begins, but can also be used for monitoring and evaluation.

planning

If the feasibility study produces results that indicate the prospective project appears viable, then planning of the project can take place .

in fact, for a large project, we would not do all our detailed planning right at the beginning.

We would formulate an outline plane for the whole project and a detailed one for the first stage.

More detailed planning of the later stages would be done as they approached.

This is because we would have more detailed and accurate information upon which to base our plans nearer to the start of the later stages.

Project execution

The project can now be executed. Individual projects are likely to differ considerably but a classic project life cycle is shown in figure 1.1.
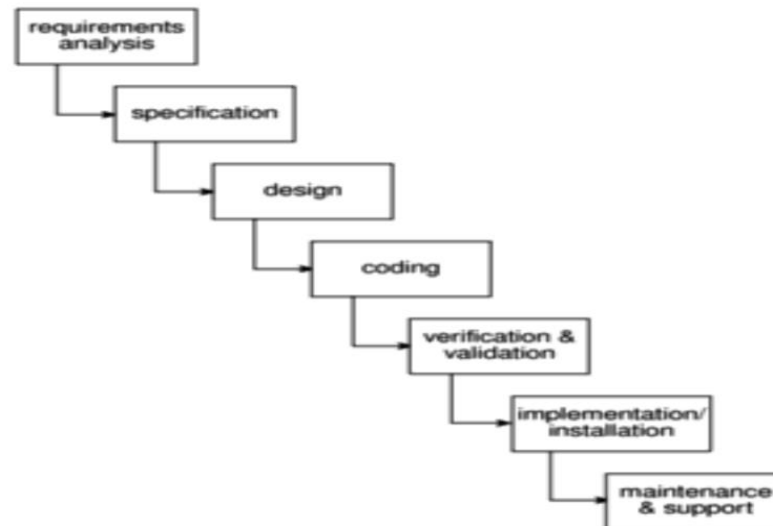
Figure 1.1 *A typical project life-cycle.*

Project and Product Life Cycles

The Project Life Cycle

A project life cycle is a collection of generally sequential and sometimes overlapping project phases whose name and number are determined by the management and control needs of the organization or organizations involved in the project, the nature of the project itself, and its area of application.

Characteristics of the Project Life Cycle

Projects vary in size and complexity. No matter how large or small, simple or complex, all projects can be
mapped to the following life cycle structure.
• Starting the project,
• Organizing and preparing,
• Carrying out the project work, and
• Closing the project.
This generic life cycle structure is often referred to when communicating with upper management or
other entities less familiar with the details of the project. This high-level view can provide a common frame of
reference for comparing projects—even if they are dissimilar in nature

Product life cycle

The product life cycle consists of generally sequential, non-overlapping product phases determined by the manufacturing and control need of the organization.
The last product life cycle phase for a product is generally the product's retirement. Project life cycles occur in one or more phases of a product life cycle.
Care should be taken to distinguish the project life cycle from the product life cycle. All projects have a purpose or objective, but in those cases where the objective is a service or result, there may be a life cycle for the service or result, not a product life cycle

The role of project manager

The project manager is the person assigned by the performing organization to achieve the project objectives.

The role of a project manager is distinct from a functional manager or operations manager.

Typically the functional manager is focused on providing management oversight for an administrative area, and operations

managers are responsible for a facet of the core business.

Depending on the organizational structure, a project manager may report to a functional manager.

In other cases, a project manager may be one of several project managers who report to a portfolio or program manager

that is ultimately responsible for enterprise-wide projects.

 In this type of structure, the project manager works closely with the portfolio or program manager to achieve the project objectives and to ensure the project plan aligns with the overarching program plan.

Project Management Framework
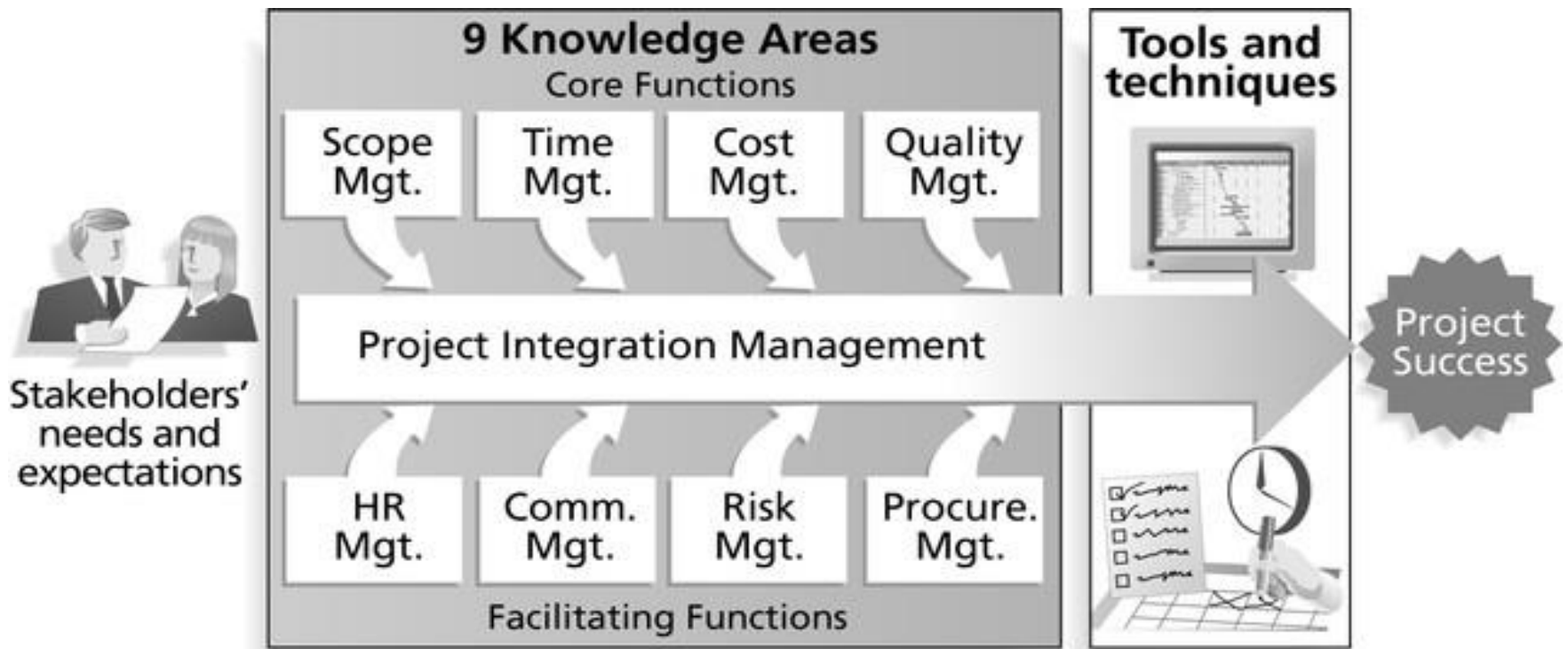
Project Stakeholders

◦ Stakeholders are the people involved in or affected by project activities

◦ Stakeholders include

- ◦ the project sponsor and project team
- ◦ support staff
- ◦ customers
- ◦ users
- ◦ suppliers
- ◦ opponents to the project

9 Project Management Knowledge Areas

Knowledge areas describe the key competencies that project managers must develop

- 4 core knowledge areas lead to specific project objectives (scope, time, cost, and quality)
- 4 facilitating knowledge areas are the means through which the project objectives are achieved (human resources, communication, risk, and procurement management
- 1 knowledge area (project integration management) affects and is affected by all of the other knowledge areas

Project Management Tools and Techniques

Project management tools and techniques assist project managers and their teams in various aspects of project management

Some specific ones include

- ◦ Project Charter and WBS (scope)
- ◦ Gantt charts, network diagrams, critical path analysis, critical chain scheduling (time)
- ◦ Cost estimates and earned value management (cost)

More Advantages of Project Management*

Bosses, customers, and other stakeholders do not like surprises

Good project management (PM) provides assurance and reduces risk

PM provides the tools and environment to plan, monitor, track, and manage schedules, resources, costs, and quality

PM provides a history or metrics base for future planning as well as good documentation

Project members learn and grow by working in a cross-functional team environment

*Knutson, Joan, *PM Network*, December 1997, p. 13

How Project Management (PM) Relates to Other Disciplines

Much of the knowledge needed to manage projects is unique to PM

However, project managers must also have knowledge and experience in

- General management
- The application area of the project

Project managers must focus on meeting specific project objectives

Project Management and Other Disciplines

Application area knowledge and practice

Project management knowledge and practice

General management knowledge and practice
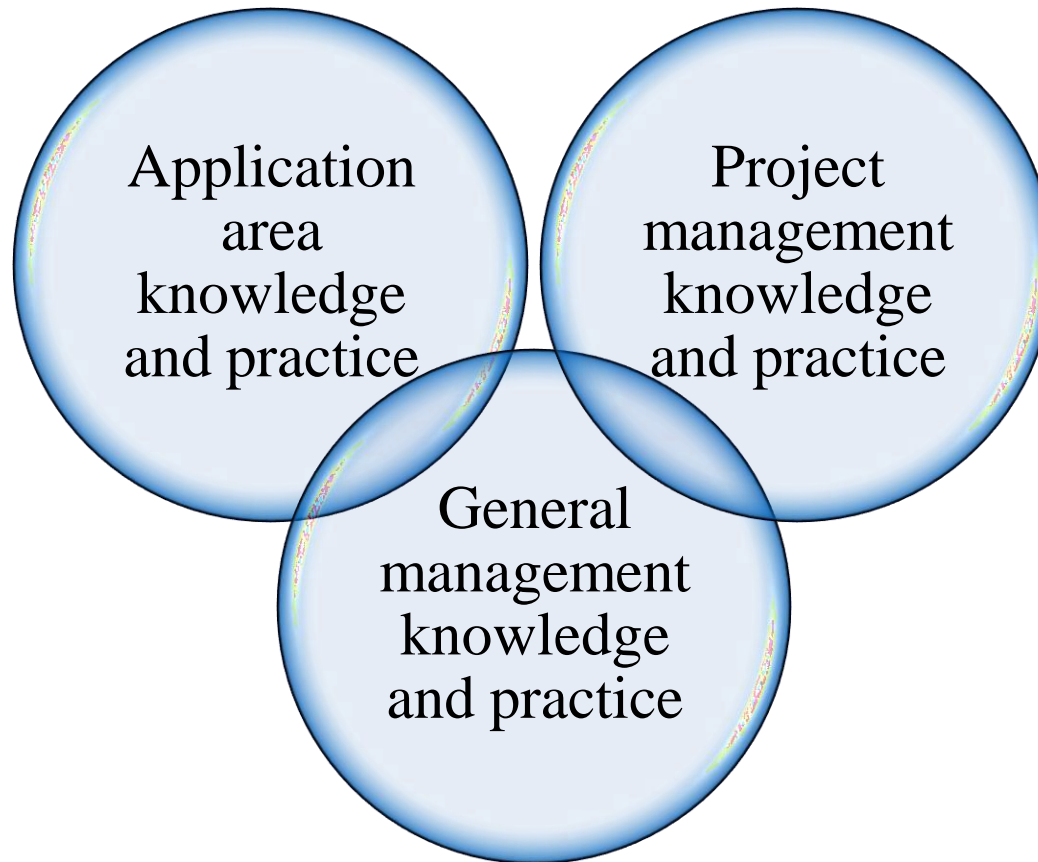
What Helps Projects Succeed?

◦ According to the Standish Group's report CHAOS 2001: A Recipe for Success, the following items help IT projects succeed, in order of importance:

1. **Executive support**
2. User involvement
3. Experienced project manager
4. Clear business objectives
5. Minimized scope
6. Standard software infrastructure

7. Firm basic requirements
8. Formal methodology
9. Reliable estimates

Suggested Skills for a Project Manager

- **Communication skills:** listening, persuading people

- **Organizational skills:** planning, goal-setting, analyzing

- **Team Building skills:** empathy, motivation, esprit de corps

- **Leadership skills:** set example, energetic, vision (big picture), delegates, positive

- **Coping skills:** flexibility, creativity, patience, persistence

- **Technological skills:** experience, project knowledge
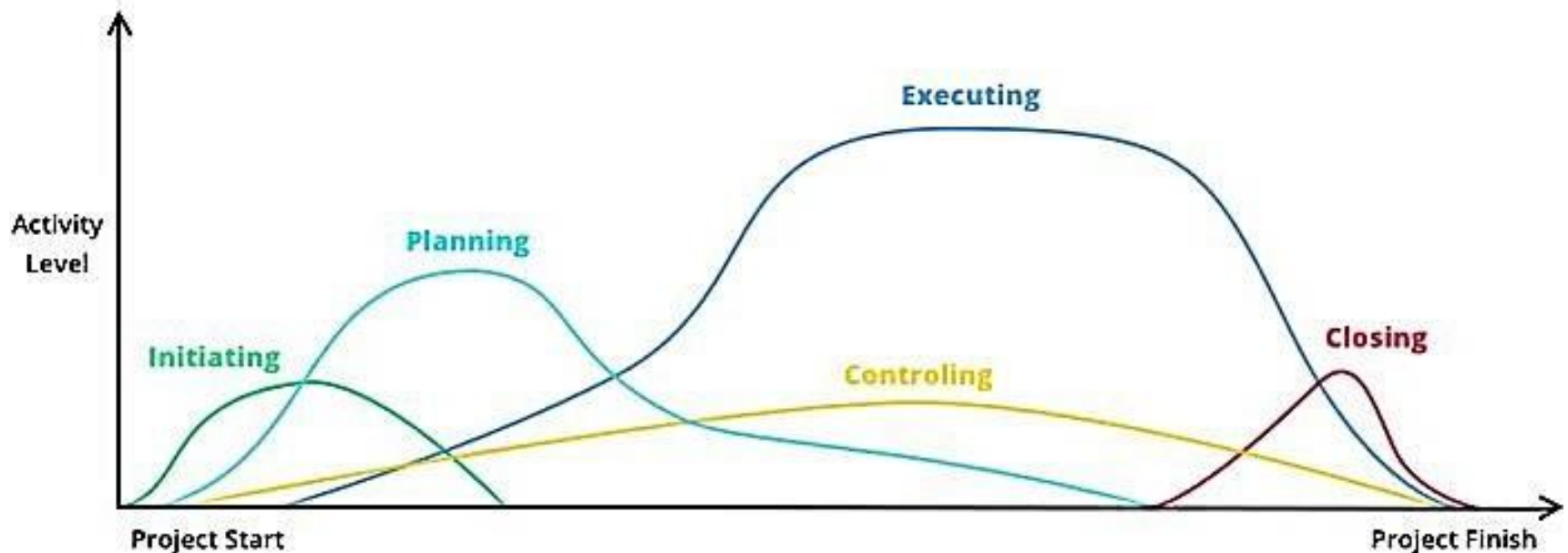
Project Management Process Groups

Project management can be viewed as a number of interlinked processes

The project management process groups include
1. Initiating processes
2. Planning processes
3. Executing processes
4. Controlling processes
5. Closing processes

Overlapping of Process Groups in a Phase (PMBOK Guide, 2000, p. 31)

How processes overlap on a project

Planning is the most important at the start of a project. Then, executing takes over.

Controlling is important throughout the entire project.

Relationships Among Process Groups, Activities, and Knowledge Areas

Knowledge Areas	Project Process Groups				
	Initiation	**Planning**	**Executing**	**Controlling**	**Closing**
Integration		Project plan development	Project plan execution	Integrated change control	
Scope	Initiation	Scope planning		Scope verification	
		Scope definition		Scope change control	
Time		Activity definition		Schedule control	
		Activity sequencing			
		Activity duration estimating			

Knowledge Areas	Project Process Groups				
	Initiation	Planning	Executing	Controlling	Closing
Cost		Resource planning		Cost control	
		Cost estimation			
		Cost budgeting			
Quality		Quality planning	Quality assurance	Quality Control	
Human resource		Organizational planning	Team development		
		Staff acquisition			
Communication		Communications planning	Information distribution	Performance reporting	Administrative closur
Risk		Risk management planning		Risk monitoring and control	
		Risk identification			
		Qualitative risk analysis			
		Quantitative risk analysis			
		Risk response planning			
Procurement		Procurement planning	Solicitation		Contract close-out

I thank you.