

# Software Project Management

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# Course Information

## Software Project Management

### ■ Time

**Week 10-11, 16**

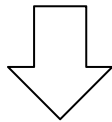
**Week 1-16, Thursday, 9:55-11:30 am**

### ■ Classroom

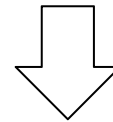
**4教西214**

### ■ Grading (5 credits)

**Attendance (10%), Assignment (30%), Exam (60%)**

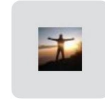


**签到 (随机3+2次)**



**大作业 (10+20)**

### ■ Q&A: 微信群



群聊: 软件项目管理 2025



该二维码7天内(2月25日前)有效, 重新进入将更新

# Software Project Management

## What?



Software Project Management is a **system management method** based on **software project**, which uses the relevant **knowledge, techniques and tools** for **planning, organizing, advising and controlling** each stage of **software project cycle** to achieve the **project objectives**.

# Software Project Management

## ■ Why? Critical to the success of software projects

Software project involves a large number of personnel and activities, progress and funding constraints, and will encounter a variety of changes, risks and contradictions, must have a good management to be successful.

American Standish Group in 2003 Statistical Report: An Analysis of 13,522 projects, only a third success, 82 percent of project delays, 43% of the project over budget.

**Causes of project failure is usually related to project management.**

# References



**PMBOK Guide, Fifth Edition, PMI, 2013**



**PMBOK Guide, Sixth Edition, PMI, 2017**



**PMBOK Guide, Seventh Edition, PMI, 2021**



**Software project management, Fifth Edition, Bob Hughes,  
Mike Cotterell, 2010.**

## **A Guide to the Project Management Body of Knowledge**

**----Project Management Institute(PMI)**

# Objectives

- Understanding the essentials of Software Project Management, learning the **10 knowledge areas** and **5 process groups** of project management, to improve the practical ability, for the future in enterprise to lay a good foundation.

## 10 knowledge areas



## Five process groups



1. Project Management Overview
2. Project Integration Management
3. Project Scope Management
4. Project Time Management
5. Project Cost Management
6. Project Quality Management
7. Project Human Resource Management
8. Project Risk Management
9. Project Procurement Management
10. Project Stakeholder Management
11. Software Project Management



# Software Project Management

## Chapter1: Project Management Overview





# Chapter 1: Project Management Overview

**1**

**Project and Project Management**

**The Concept**

**2**

**Software Project Management**

**The Role and Importance**

**3**

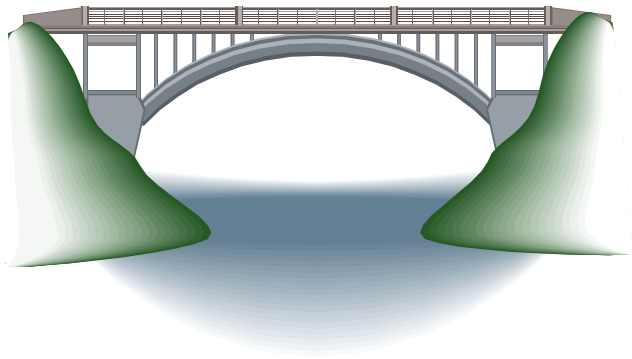
**Software Project Management**

**The Main Contents**

# Section 1.1: Project and Project Management

## □ What is Project?

A project is a **temporary** endeavor undertaken to create a **unique product, service, or result**  
---PMBOK Guide



# Section 1.1: Project and Project Management

## Temporary

The temporary nature of projects indicates that a project has a definite beginning and end.

## Unique

Every project creates a unique product, service, or result. The outcome of the project may be tangible or intangible.

# Section 1.1: Project and Project Management

***Temporary does not necessarily mean the duration of the project is short; It refers to the project's engagement and longevity***

***Temporary does not typically apply to product, service, or result created by the project***

most projects are undertaken to create a lasting outcome





# Section 1.1: Project and Project Management

*Repetitive elements may be present in some project deliverables and activities, this repetition does **not change** the fundamental, **unique** characteristics of the project work*

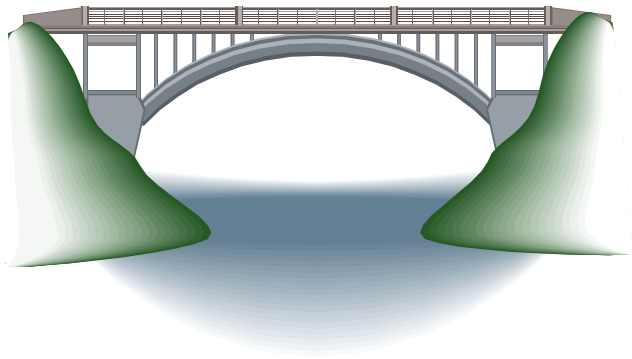
*E.g., office buildings can be constructed with the same or similar materials and may be by the same teams. However, each building project remains unique with different location, design, situations, and stakeholders*



# Section 1.1: Project and Project Management

## □ What is Project?

A project is a **temporary** endeavor undertaken to create a **unique product, service, or result**  
---PMBOK Guide



# Section 1.1: Project and Project Management

## □ What can a Project Create?

- ✓ A **product** that can be either a component of another item, an enhancement of an item, or an end item in itself;
- ✓ A **service or a capability** to perform a service (e.g., a business function that supports production or distribution);
- ✓ An **improvement** in the existing product or service lines (e.g., A Six Sigma project undertaken to reduce defects);
- ✓ 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 exists or a new process will benefit society).

# Section 1.1: Project and Project Management

Examples of projects include, but are not limited to:

- Developing a new product, service, or result;
- Effecting a change in the structure, processes, staffing, or style of an organization;
- Developing or acquiring a new or modified information system (hardware or software);
- Conducting a research effort whose outcome will be aptly recorded;
- Constructing a building, industrial plant, or infrastructure;
- Implementing, improving, or enhancing existing business processes and procedures.



# Project

## □ What is Project?

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

**Product** : bridge, building

**Service**: training

**Result** : research



# Section 1.1: Project and Project Management

VS.

## Ongoing work

An ongoing work effort is generally a **repetitive** process that follows an organization's existing procedures

## Project

Because of the unique nature of projects, there may be **uncertainties** or **differences** in the products, services, or results that the project creates.

# Section 1.1: Project and Project Management

## □ Project VS Operations

a **temporary** endeavor undertaken to create a **unique** product, service, or result

**Operations** are **ongoing** endeavor that produce **repetitive** outputs, with resources assigned to do basically the **same** set of tasks according to standards institutionalized in a product life cycle

### Project

- Temporary: Time Limited
- Unique
- A lot of change management



### Operation

- Repetitive
- Continuity
- Remain sustained and continuity



Support the day-to-day business, achieve strategic goals of the business

# Test

## Which of the following activities are not projects, why?



1. Explore Mars for signs of life
2. Report to department manager for monthly work
3. The development of new versions of the operating system
4. Updating the website 12306.cn
5. Daily cleaning is a project

There is a haze boundary between the non-routine project and the routine job.

The first time you do a routine task it will be like a project



## Report to department manager for monthly work

*If you do a project, and then **do the exact same effort again**, it's **no longer a project**, it's a process, since now you know exactly how much work it is, how long it'll take, what it'll cost, and the risks.*

It's when you don't know how to do something that the project management process really helps.

# Project vs. Program vs. Portfolio

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

*A program is not a large project.*

A program is a **management concept**, when there is a **high-level coordination** requirement for largely separate but linked efforts:



## Related Projects

There are multiple projects that share something: inputs, budgets, people, etc., often to achieve a larger goal.



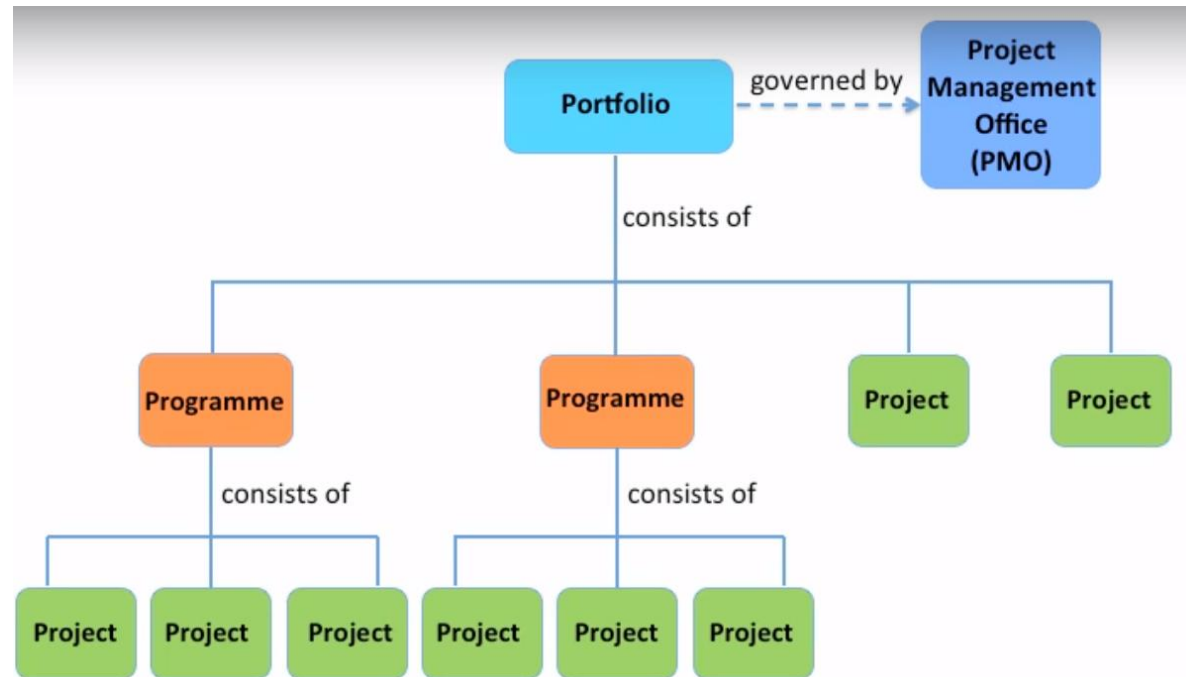
## Coordinated Way

They need a “program manager” to oversee them and make decisions to optimize the projects as a group.

# Project vs. Program vs. Portfolio

**A portfolio** : a collection of **projects, programs, sub-portfolios,** and **operations** managed as a group to achieve **strategic** objectives.

Individual projects that are either within or outside of a program are still considered part of a portfolio

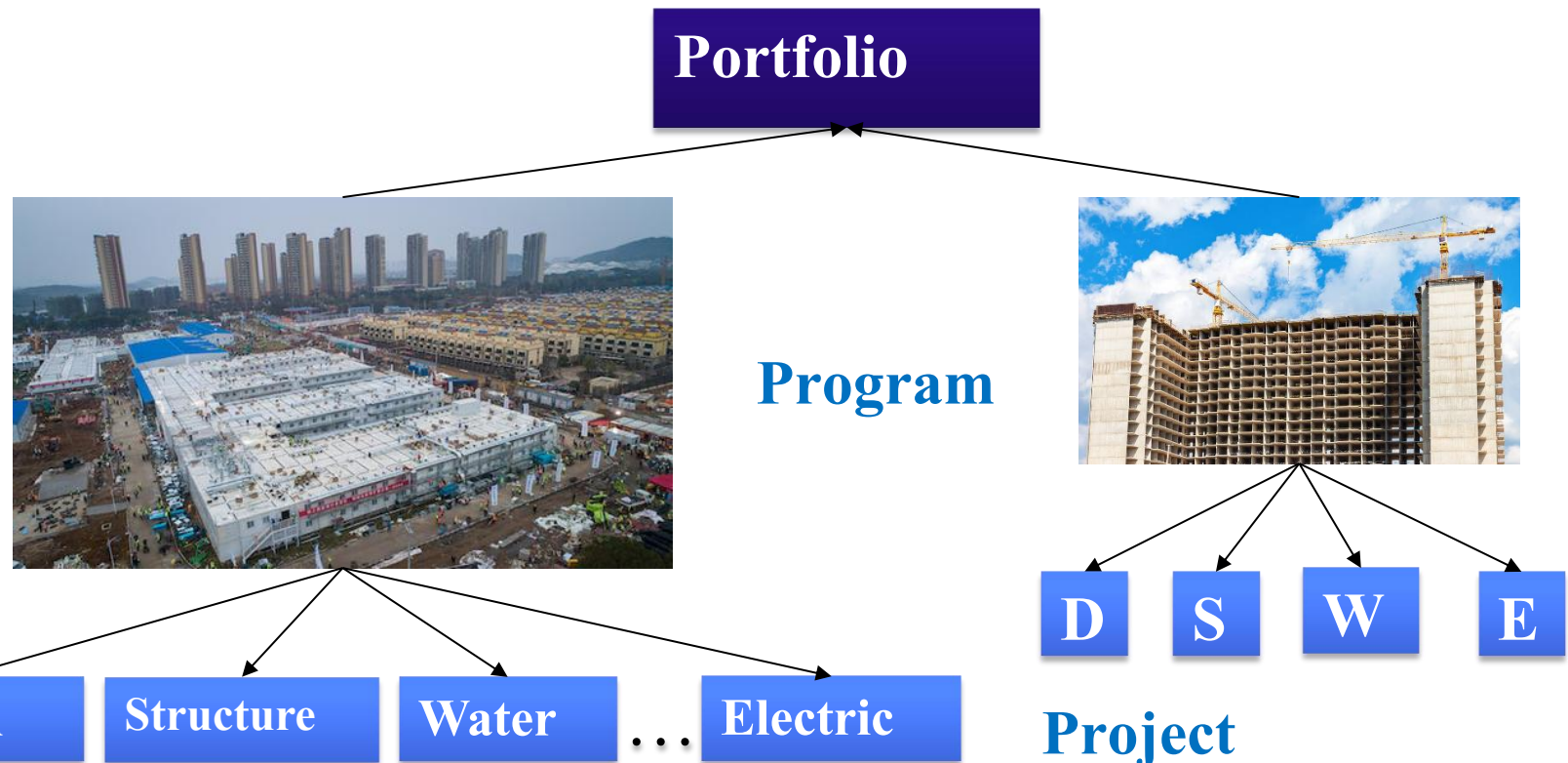




# Project vs. Program vs. Portfolio

**Program:** **related** Projects managed in a coordinate way to obtain benefits

**Portfolio:** a collection of projects, programs, sub-portfolios, and **operations** managed as a group to achieve **strategic** objectives





# Test



~~1.~~ A portfolio is a set of related projects that together deliver a specific business objective.

~~2.~~ A project could be part of a program, or exist individually.

~~3.~~ A program consists of all the projects being undertaken by an organization.



# Important points

- **What is project:** A project is a temporary endeavor undertaken to create a unique product, service, or result
- **Natures of project:** temporary, unique
- **What can a project create:** product, service, improvement, result.
- **Project vs. Operations**
- **Project vs. Program vs. Portfolio**

# Section 1.1: Project and Project Management

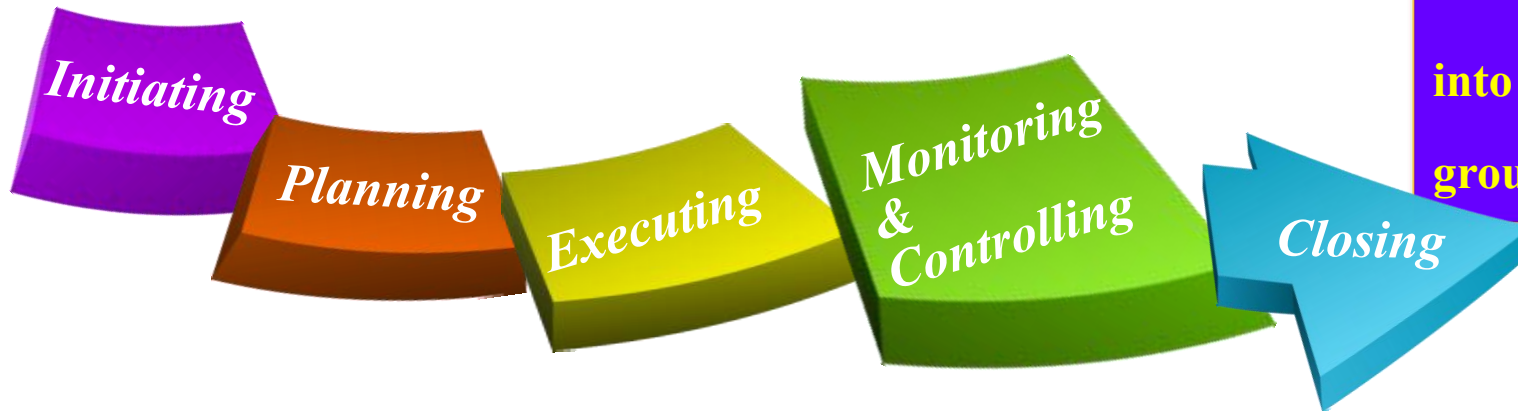
## □ What is Project Management?

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

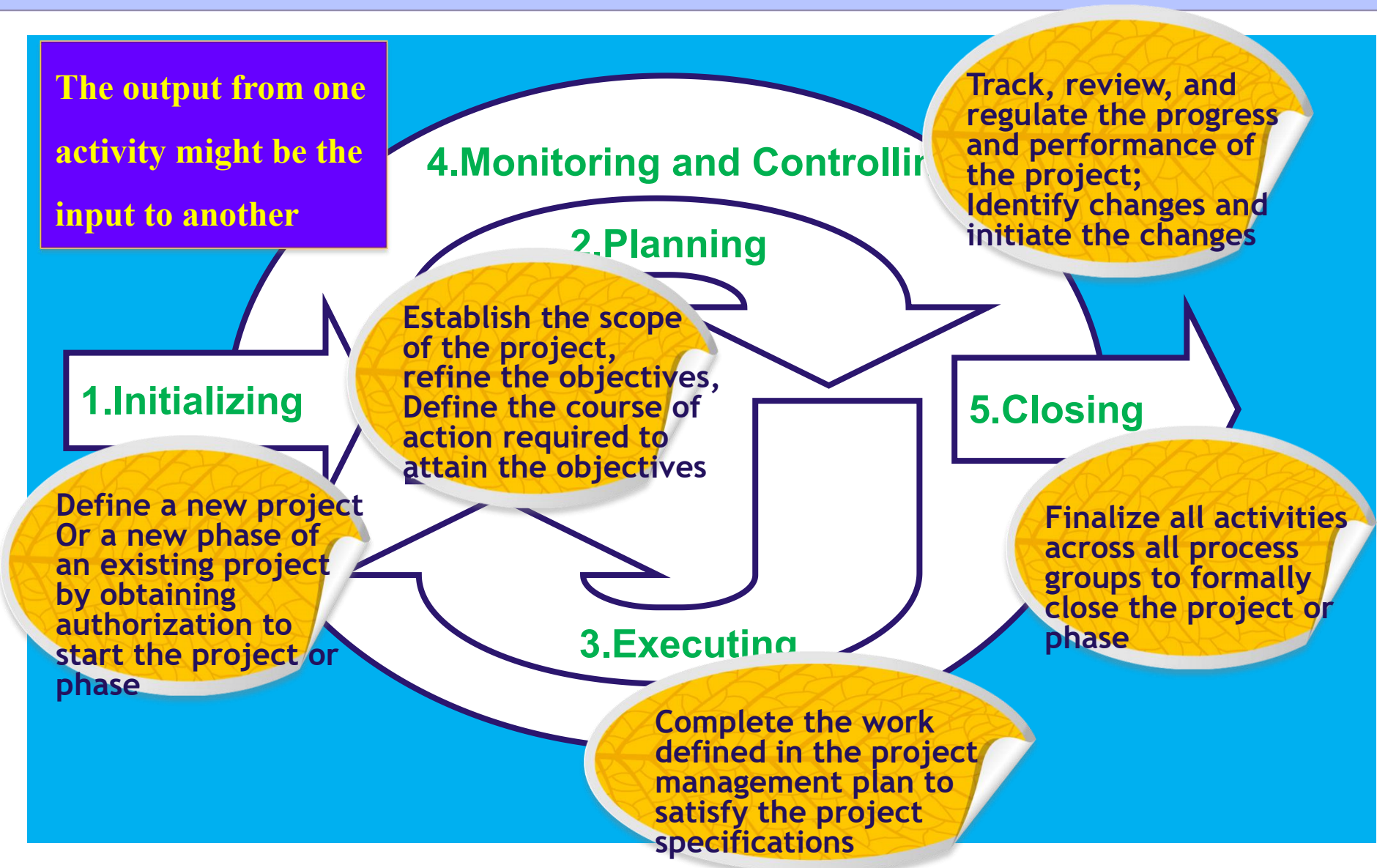
Five group progress and ten knowledge area mapping

**47** logically grouped **project management** processes, which are categorized into **5** process groups

### *Five **process** groups*

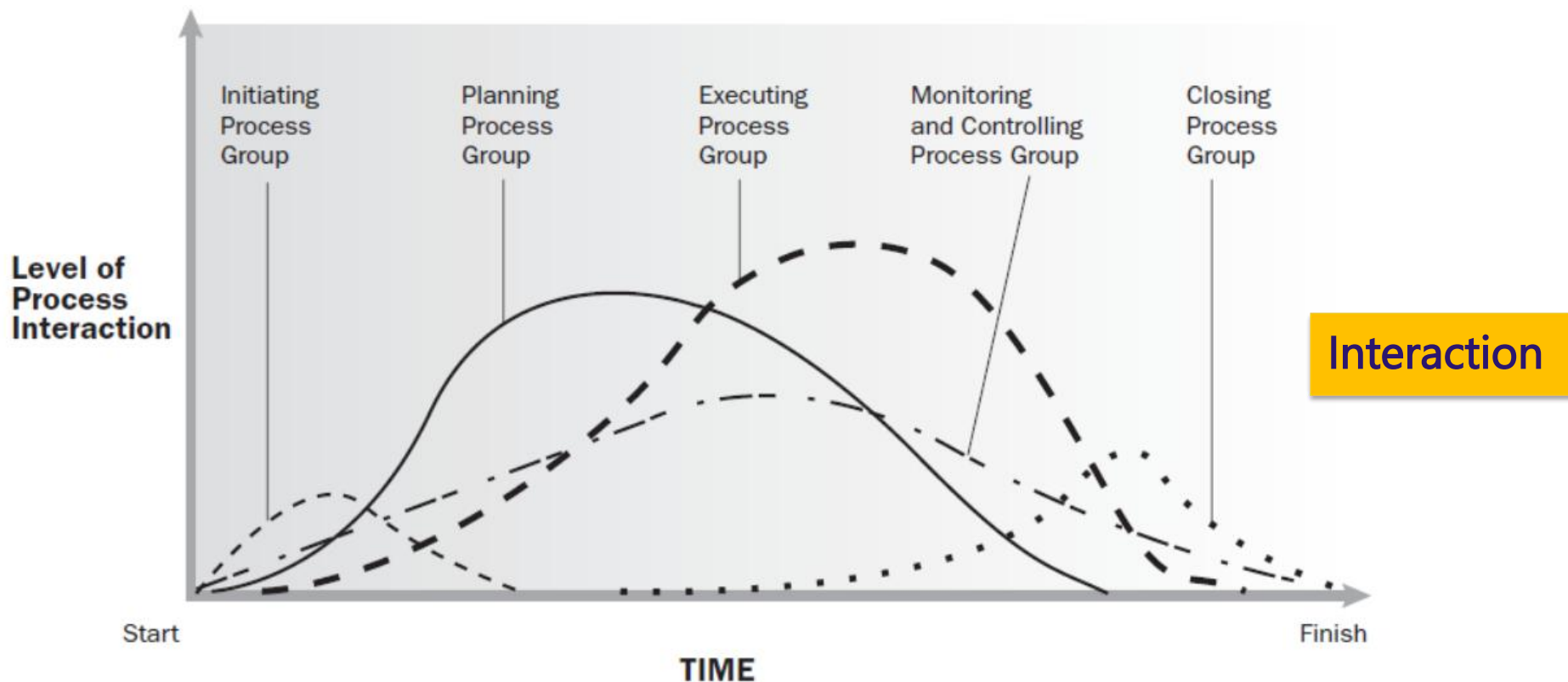


# Section 1.1: Project and Project Management



# Five process groups

**5 Process Groups are overlapping activities that occur throughout the project**





# Ten Knowledge Areas

47 project management processes are further grouped into 10 Knowledge Areas



# Project Management Process Groups and Knowledge Areas

5 process groups

10 knowledge areas

| Knowledge Areas                       | Project Management Process Groups |                                                                                                                                                                                |                                                                                 |                                                                               |                            |
|---------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------|
|                                       | Initiating Process Group          | Planning Process Group                                                                                                                                                         | Executing Process Group                                                         | Monitoring and Controlling Process Group                                      | Closing Process Group      |
| 4. Project Integration Management     | 4.1 Develop Project Charter       | 4.2 Develop Project Management Plan                                                                                                                                            | 4.3 Direct and Manage Project Work                                              | 4.4 Monitor and Control Project Work<br>4.5 Perform Integrated Change Control | 4.6 Close Project or Phase |
| 5. Project Scope Management           |                                   | 5.1 Plan Scope Management<br>5.2 Collect Requirements<br>5.3 Define Scope<br>5.4 Create WBS                                                                                    |                                                                                 | 5.5 Validate Scope<br>5.6 Control Scope                                       |                            |
| 6. Project Time Management            |                                   | 6.1 Plan Schedule Management<br>6.2 Define Activities<br>6.3 Sequence Activities<br>6.4 Estimate Activity Resources<br>6.5 Estimate Activity Durations<br>6.6 Develop Schedule |                                                                                 | 6.7 Control Schedule                                                          |                            |
| 7. Project Cost Management            |                                   | 7.1 Plan Cost Management<br>7.2 Estimate Costs<br>7.3 Determine Budget                                                                                                         |                                                                                 | 7.4 Control Costs                                                             |                            |
| 8. Project Quality Management         |                                   | 8.1 Plan Quality Management                                                                                                                                                    | 8.2 Perform Quality Assurance                                                   | 8.3 Control Quality                                                           |                            |
| 9. Project Human Resource Management  |                                   | 9.1 Plan Human Resource Management                                                                                                                                             | 9.2 Acquire Project Team<br>9.3 Develop Project Team<br>9.4 Manage Project Team |                                                                               |                            |
| 10. Project Communications Management |                                   | 10.1 Plan Communications Management                                                                                                                                            | 10.2 Manage Communications                                                      | 10.3 Control Communications                                                   |                            |
| 11. Project Risk Management           |                                   | 11.1 Plan Risk Management<br>11.2 Identify Risks<br>11.3 Perform Qualitative Risk Analysis<br>11.4 Perform Quantitative Risk Analysis<br>11.5 Plan Risk Responses              |                                                                                 | 11.6 Control Risks                                                            |                            |
| 12. Project Procurement Management    |                                   | 12.1 Plan Procurement Management                                                                                                                                               | 12.2 Conduct Procurements                                                       | 12.3 Control Procurements                                                     | 12.4 Close Procurements    |
| 13. Project Stakeholder Management    | 13.1 Identify Stakeholders        | 13.2 Plan Stakeholder Management                                                                                                                                               | 13.3 Manage Stakeholder Engagement                                              | 13.4 Control Stakeholder Engagement                                           |                            |

Develop Project Charter

# Section 1.1: Project and Project Management

□ Managing a project typically includes, but is not limited to

✓ Identifying **requirements**

✓ Addressing the various **needs, concerns, and expectations** of the **stakeholders** in planning and executing the project

✓ Setting up, maintaining, and carrying out **communications** among **stakeholders** that are active, effective, and collaborative in nature;

✓ Managing **stakeholders** towards meeting project **requirements** and creating project **deliverables**

✓ Balancing the competing project **constraints**, which include, but are not limited to:

|               |            |
|---------------|------------|
| ---Scope      | ---Quality |
| --- Schedule  | ---Budget  |
| --- Resources | --- Risk   |



# Project vs. Program vs. Portfolio Management

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

**Program management:** the application of knowledge, skills, tools, and techniques to a program in order to meet the program requirements and to obtain benefits and control not available by managing projects individually.

- Projects within a program are related through the common outcome or collective capability.
- Program management focuses on the project interdependencies and helps to determine the optimal approach for managing them.

# Project vs. Program vs. Portfolio Management

**A portfolio:** a collection of projects, programs, sub-portfolios, and operations managed as a group to achieve strategic objectives.

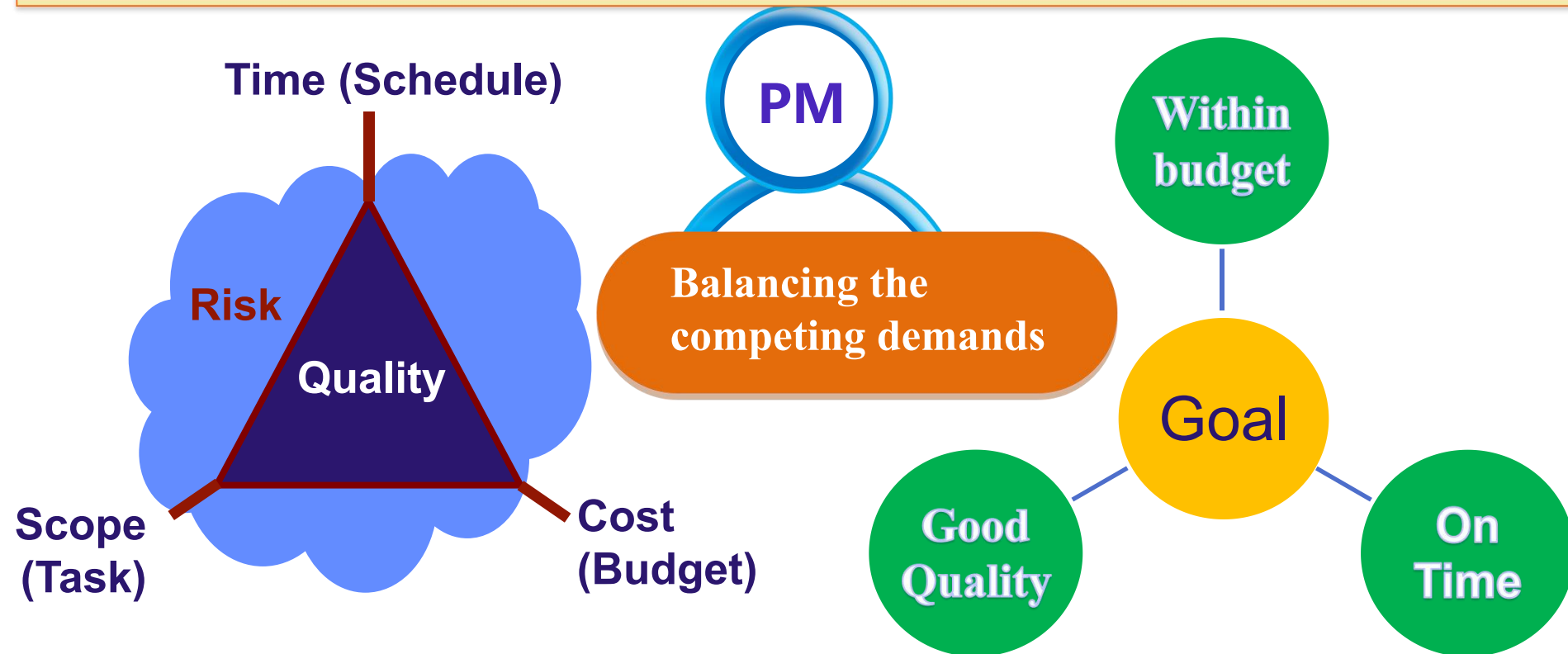
**Portfolio management:** refers to the centralized management of one or more portfolios to achieve strategic objectives.

- Portfolio management 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.

# Project Manager

**The person responsible for accomplishing the project objectives**

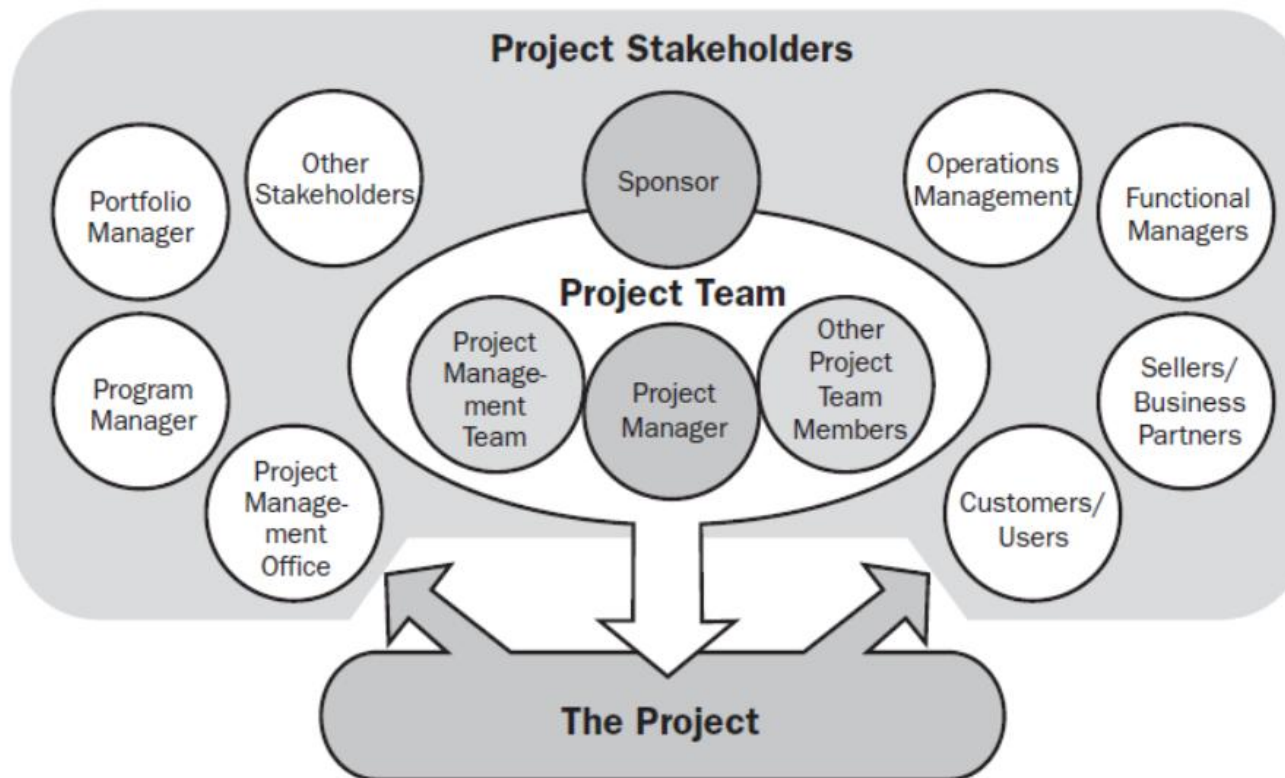
- Leads the project team, Develops/obtains approval for the Project Management Plan
- Ensures the project delivers in accordance with time, cost, scope, quality constraints
- Monitors and controls the plan activities, risks and issues.
- Ensure project milestones are met. Keeps all stakeholders informed of project progress



# Stakeholders

An **individual, group, or organization** who may **affect, be affected by, or perceive itself to be affected** by a decision, activity, or outcome of a **project**

## Project Life Cycle and Organization



**All members of the project team; All interested entities that are internal or external to the organization.**

# Stakeholders

**NOTE: Key stakeholders** can make or break the success of a project. Even if all the deliverables are met and the objectives are satisfied, *if your key stakeholders aren't happy, nobody's happy.*



Manage the influences of these various stakeholders in relation to the project requirements to ensure a successful outcome.

# Week 1: Summary

- **Project: a temporary endeavor undertaken to create a unique product, service, or result.**
- **Operations, Program, Portfolio**
- **Project Management: the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.**
- **Five Process Groups**
- **Ten Knowledge areas**
- **Project Manager**