COS30049 – Computing Technology Innovation Project

Week 2 - Scope, Time, and Project Communication Management

(Lecture – 01)

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Acknowledgement of Country

We respectfully acknowledge the Wurundjeri People of the Kulin Nation, who are the Traditional Owners of the land on which Swinburne's Australian campuses are located in Melbourne's east and outer-east, and pay our respect to their Elders past, present and emerging.

We are honoured to recognise our connection to Wurundjeri Country, history, culture, and spirituality through these locations, and strive to ensure that we operate in a manner that respects and honours the Elders and Ancestors of these lands.

We also respectfully acknowledge Swinburne's Aboriginal and Torres Strait Islander staff, students, alumni, partners and visitors.

We also acknowledge and respect the Traditional Owners of lands across Australia, their Elders, Ancestors, cultures, and heritage, and recognise the continuing sovereignties of all Aboriginal and Torres Strait Islander Nations.

Objectives of Today

Scope Management

- **Define Scope**
- **Create WBS**
- **Scope Validate / Control**

Time Management

- **Schedule management**
- **Activities management**

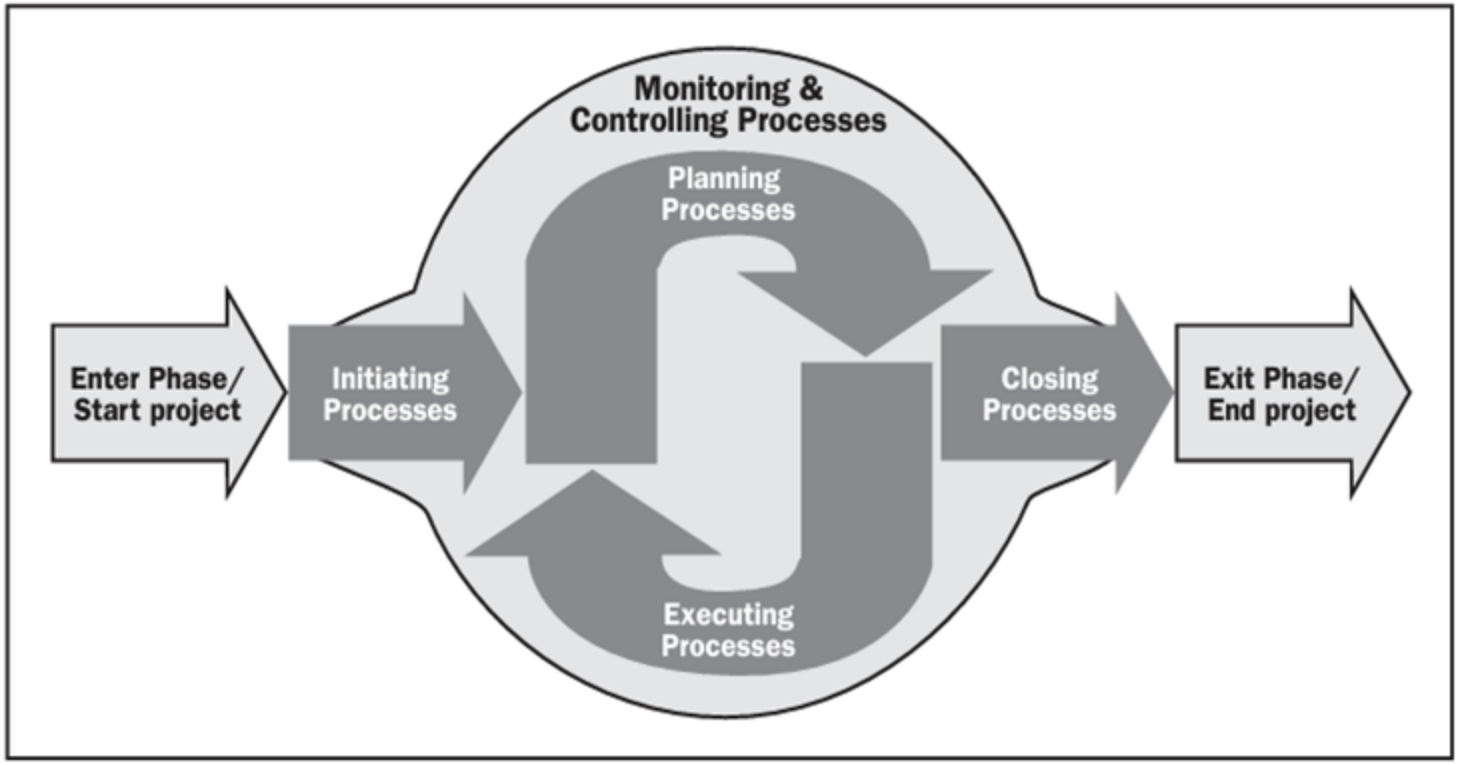
Communication Management

- **Minutes of Meeting**

Image from [Reddit]

Project lifecycle

1. Selection and Initiation
2. **Planning**
3. Execution
4. Monitoring & Controlling
5. Closing



Project Management Process,

Project Management Institute,
2001, p.40

Importance of Scope and Time Management

Overview of Project Constraints:

Projects are bound by scope, time, cost, and quality constraints. Balancing these constraints is crucial to project success

Impact on Project Success:

- Effective management ensures the project meets its objectives and is delivered on time and within budget.
- Failure to manage scope and time can lead to project overruns, missed deadlines, and increased costs.

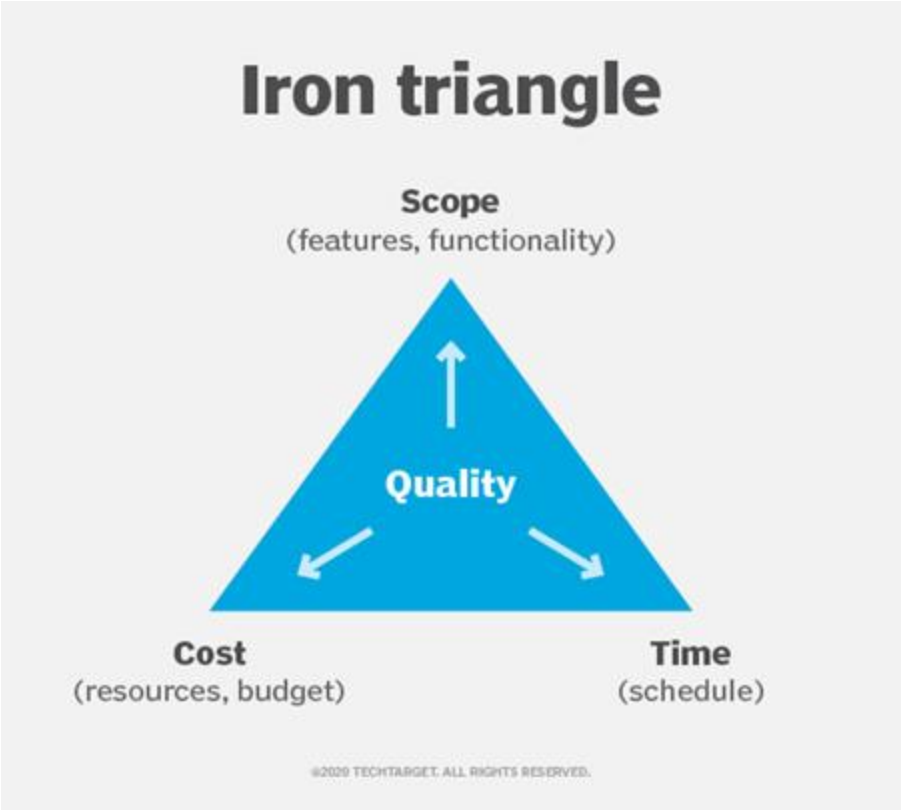


Image from [Project Constains by Paul Kirvan]

Case Study

Emphasizing the Importance of Scope and Time Management Plan

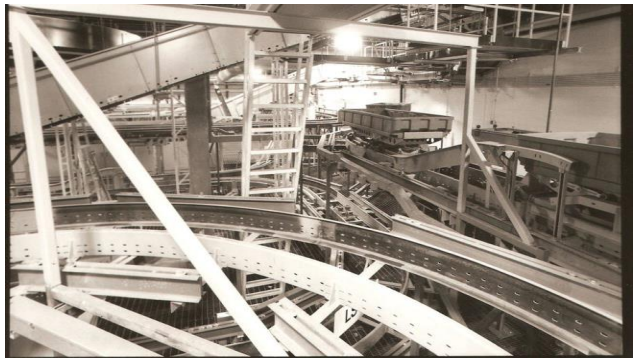
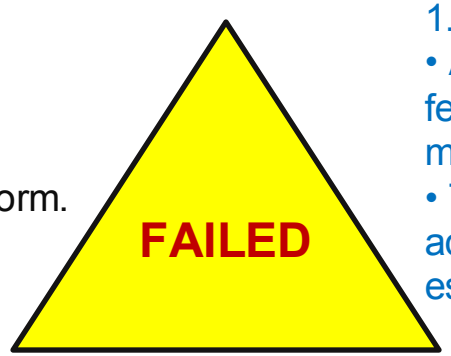


Image Source: [Biz Journals]

Backgroud: A software development company, TechSolutions, was contracted to develop a custom customer relationship management (CRM) system for a mid-sized retail business, RetailMasters. The project was estimated to take six months to complete with a budget of $500,000.

Initial Project Scope:

- Develop a web-based CRM system.
- Key features: customer database, sales tracking, customer support ticketing, and reporting.
- Integration with existing e-commerce platform.
- Training for RetailMasters' staff.



Time Management Plan:

- **Month 1**: Requirements gathering and initial design.
- **Month 2-3**: Development of core features (customer database, sales tracking).
- **Month 4-5:…..**
- **Month 6**: Testing, bug fixing, and staff training.

Challenges Faced:

1. **Scope Creep**:
- As development progressed, RetailMasters requested additional features like a mobile app, advanced analytics, and a loyalty program module.
- These requests were not part of the original project scope and were added without formal approval or adjustments to the time and cost estimates.

2. **Poor Time Management**:
- The project team did not adhere to the initial time management plan.
- Delays in the requirements gathering phase impacted the development schedule.
- Inadequate resource allocation and lack of regular progress tracking further compounded the delays.

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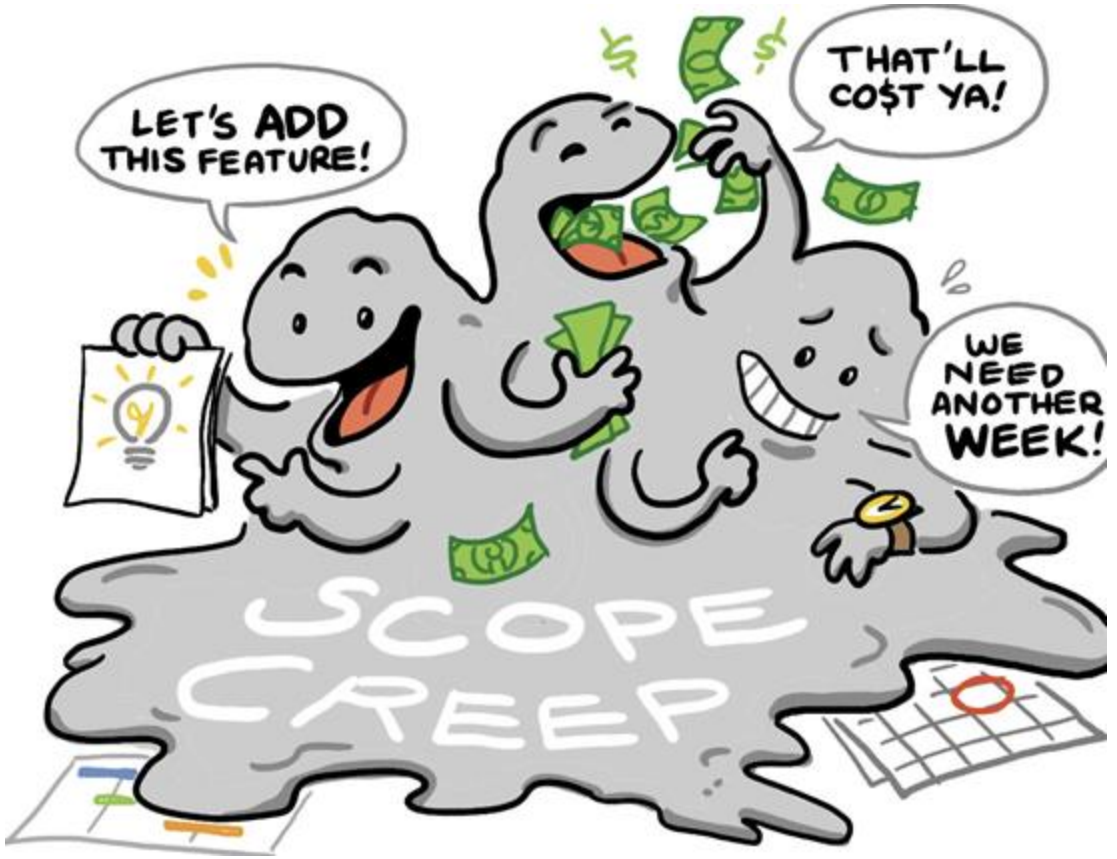
Scope Management



(Source)

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Scope Management - Definition

Definition:
Scope Management involves defining and controlling what is included and excluded from a project.

Key activities include:

- Defining Project Scope: Determining the boundaries and deliverables of the project.
- Creating the Work Breakdown Structure (WBS): Breaking down the project into smaller, manageable components.
- Verifying the Scope: Ensuring project deliverables meet required standards and gaining stakeholder acceptance.
- Controlling the Scope: Monitoring project progress and managing changes to the scope baseline.

Purpose:

- **Ensures All Project Requirements Are Met**: Provides a clear understanding of what needs to be delivered, ensuring that all project objectives are achieved.
- **Prevents Scope Creep**: Controls changes to the project scope, preventing the project from expanding beyond its original objectives.
- **Improves Stakeholder Communication**: Ensures that all stakeholders have a common understanding of the project scope, leading to better collaboration and communication.

Scope Management Processes

Processes:

1. Plan Scope Management
2. Collect Requirements
3. Define Scope
4. Create WBS (Work Breakdown Structure)
5. Validate Scope
6. Control Scope

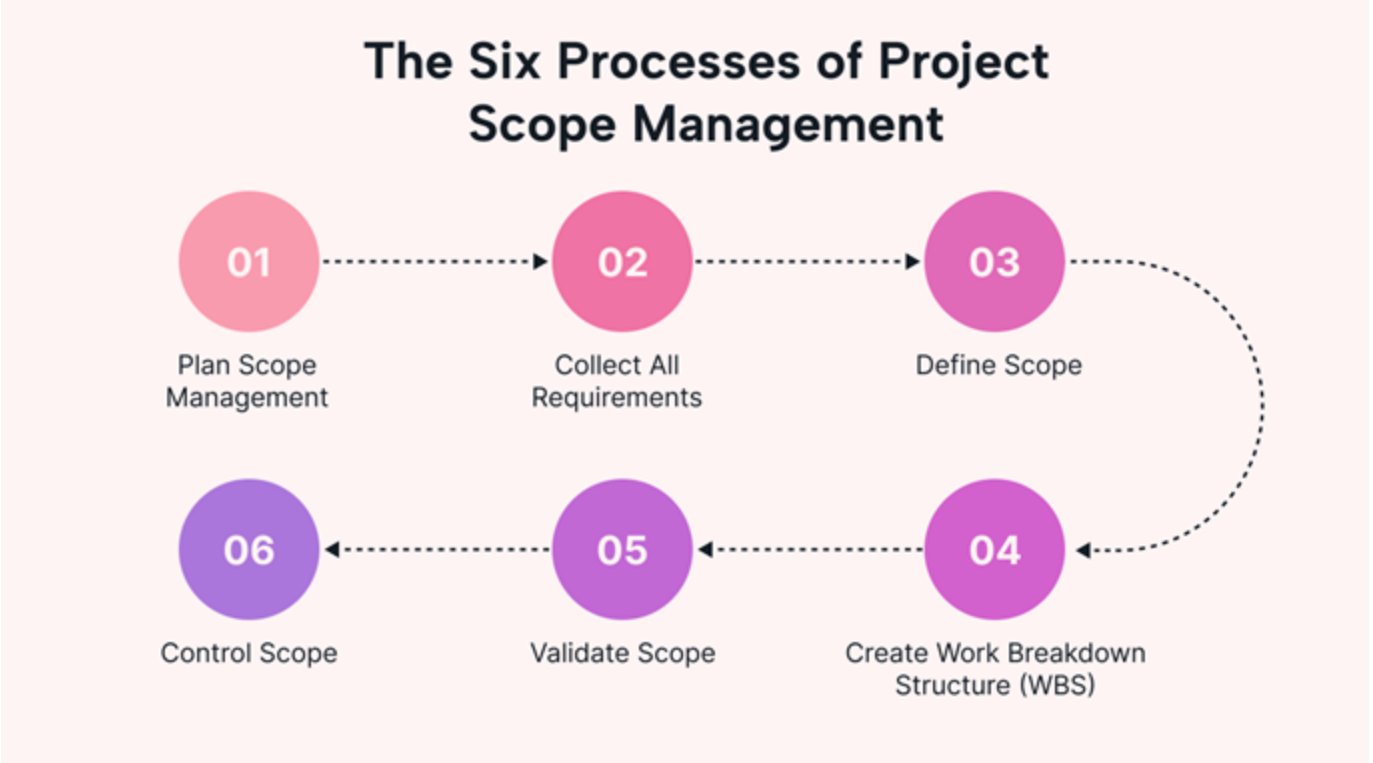


Image Source: [Project Scope Management: What It Is and How to Master It Motion Blog]

What are these processes for?

01 - Plan Scope Management

We need a plan not only managing the project, but also for managing the scope of the project.

Definition:
Plan Scope Management is the process of creating a scope management plan that documents how the project scope will be defined, validated, and controlled throughout the project lifecycle.

Importance:

Provides guidance on how the project scope will be defined, documented, and managed.

Key Components:

- **Inputs:** Project charter, project management plan
- **Tools & Techniques:** Expert judgment, data analysis
- **Outputs:** Scope management plan, requirements management plan

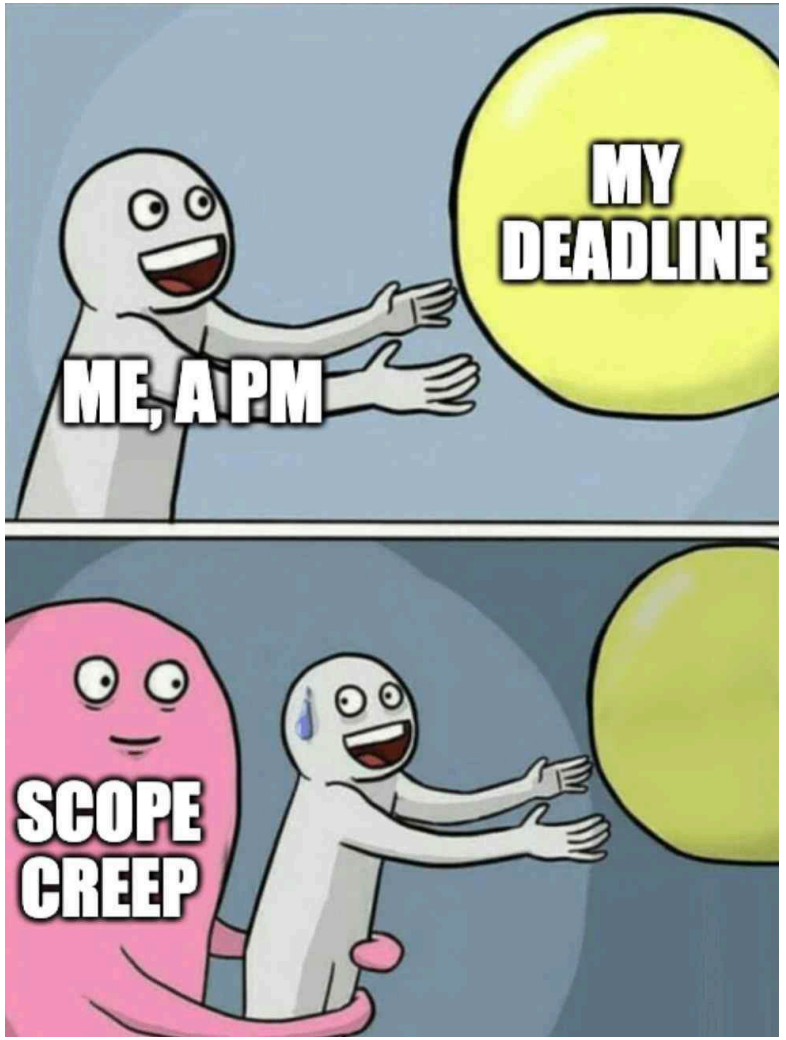


Image Source: [Project Management Memes Visor Blog]

02 - Collect Requirements

Definition:
Collect Requirements is a process within scope management that involves determining, documenting, and managing the needs and requirements of the project stakeholders.

Importance:
Ensures that all stakeholder needs and expectations are captured and addressed, leading to a project that meets its objectives.

Techniques:
Interviews, Surveys, Focus Groups, Brainstorming, Observation

Documenting Requirements:
- **Requirements Documentation**: Detailed descriptions of how individual requirements meet the business need for the project.
- **Requirements Traceability Matrix**: A grid that links requirements to their origin and traces them throughout the project lifecycle.

Project Name		Date	
Project Number		Document Number	
Project Manager		Project Owner/Client	

ID Number	Date Received	Source	Requirement Name and Description	Assigned To	Acceptance Criteria	Tested By and Date	Accepted By and Date

03 - Define Scope

Definition:
Define Scope is the process of developing a detailed description of the project and product. It includes defining the project boundaries, deliverables, assumptions, and constraints to ensure clarity for all stakeholders.

Project Scope Statement:
- Detailed Description: Provides a comprehensive outline of the project scope.
- Deliverables: Specifies the outputs or products that will be delivered by the project.
- Assumptions: Lists any assumptions made during the project planning.
- Constraints: Identifies any limitations or restrictions that may impact the project.

Importance:
- Ensures all stakeholders have a common understanding of the project scope.
- Helps in managing stakeholder expectations and preventing scope creep.
- Provides a clear framework for decision-making and project execution.

04 - Create WBS

Definition:

Work Breakdown Structure (WBS) is a hierarchical decomposition of the total scope of work to accomplish the project objectives and create the deliverables.

Purpose:

The WBS organizes and defines the total scope of the project by breaking it down into smaller, more manageable components.

Steps to Create a WBS:

- Identify deliverables
- break down into smaller components
- review with stakeholders

A practice for creating WBS? Let's do it later in the seminar (Lecture 02).

An example of a website project WBS (Source)

05 - Validate Scope

Process of Acceptance:

- Formal acceptance of completed deliverables by stakeholders.

Verification Techniques:

- Inspections, reviews, audits, walkthroughs

Inputs:

- Project Management Plan, verified deliverables, work performance data

Outputs

- Accepted deliverables, work performance information, change requests, project documents updates.

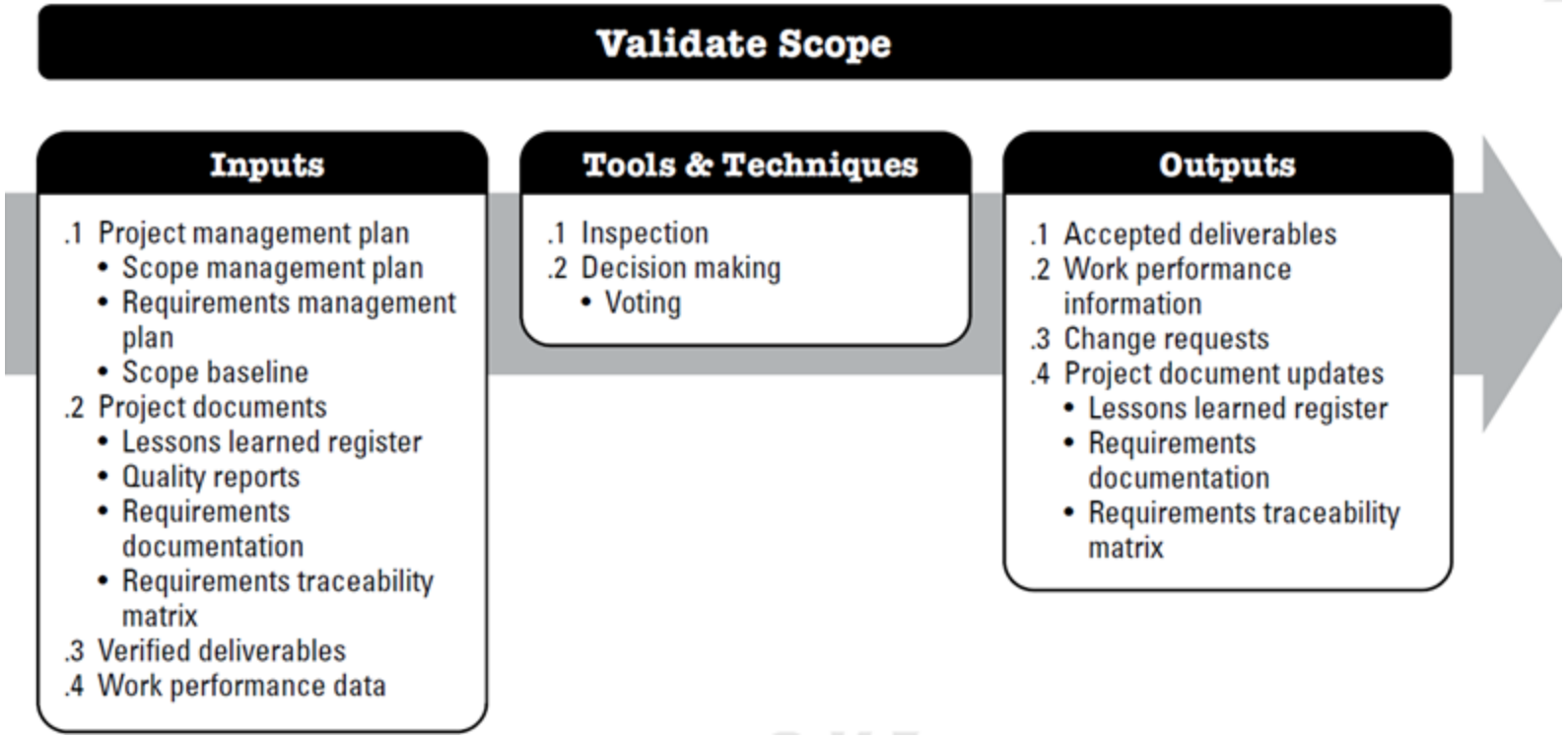


Image from [Project Scope Management on projectengineer.net]

06 - Control Scope

Managing Changes to Scope:

- Identify scope changes, evaluate impact, approve/reject changes.

Importance of Monitoring and Control:

- Ensures the project stays on track and meets its objectives.
- Helps in managing scope creep and ensuring only approved changes are implemented.

Tools & Techniques

- Variance analysis, trend analysis, change control tools.

Outputs

- Work performance information, change requests, project management plan updates, project documents updates.

Time Management

Image Source: [Project Management Memes Visor Blog]

Time Management - Definition

Image Source: [Bing]

Time Management:

Planning, estimating, scheduling, and controlling project activities to ensure timely completion of the project.

Key Components

- **Activity** : The process of identifying and documenting the specific actions to be performed to produce the project deliverables.
- **Sequencing**: Determining the order in which project activities will be performed.
- **Resource Estimation**: Estimating the type and quantities of resources required to perform each activity.
- **Duration Estimation**: Estimating the number of work periods needed to complete individual activities.
- **Schedule Development**: Analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule model.
- **Schedule Control**: Monitoring the status of project activities to update project progress and manage changes to the schedule baseline.

Time Management Processes

Processes:

- **Plan Schedule Management**
  - Establishes policies, procedures, and documentation for planning, developing, managing, executing, and controlling the project schedule.
- **Define Activities**
  - Identifying and documenting the specific actions to be performed to produce the project deliverables.
- **Sequence Activities**
  - Identifying and documenting relationships among project activities.
- **Estimate Activity Resources & Durations**
  - Estimating the type and quantities of resources required to perform each activity and the number of work periods needed to complete individual activities.
- **Develop Schedule**
  - Analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule model.
- **Control Schedule**
  - Monitoring the status of project activities to update project progress and manage changes to the schedule baseline.

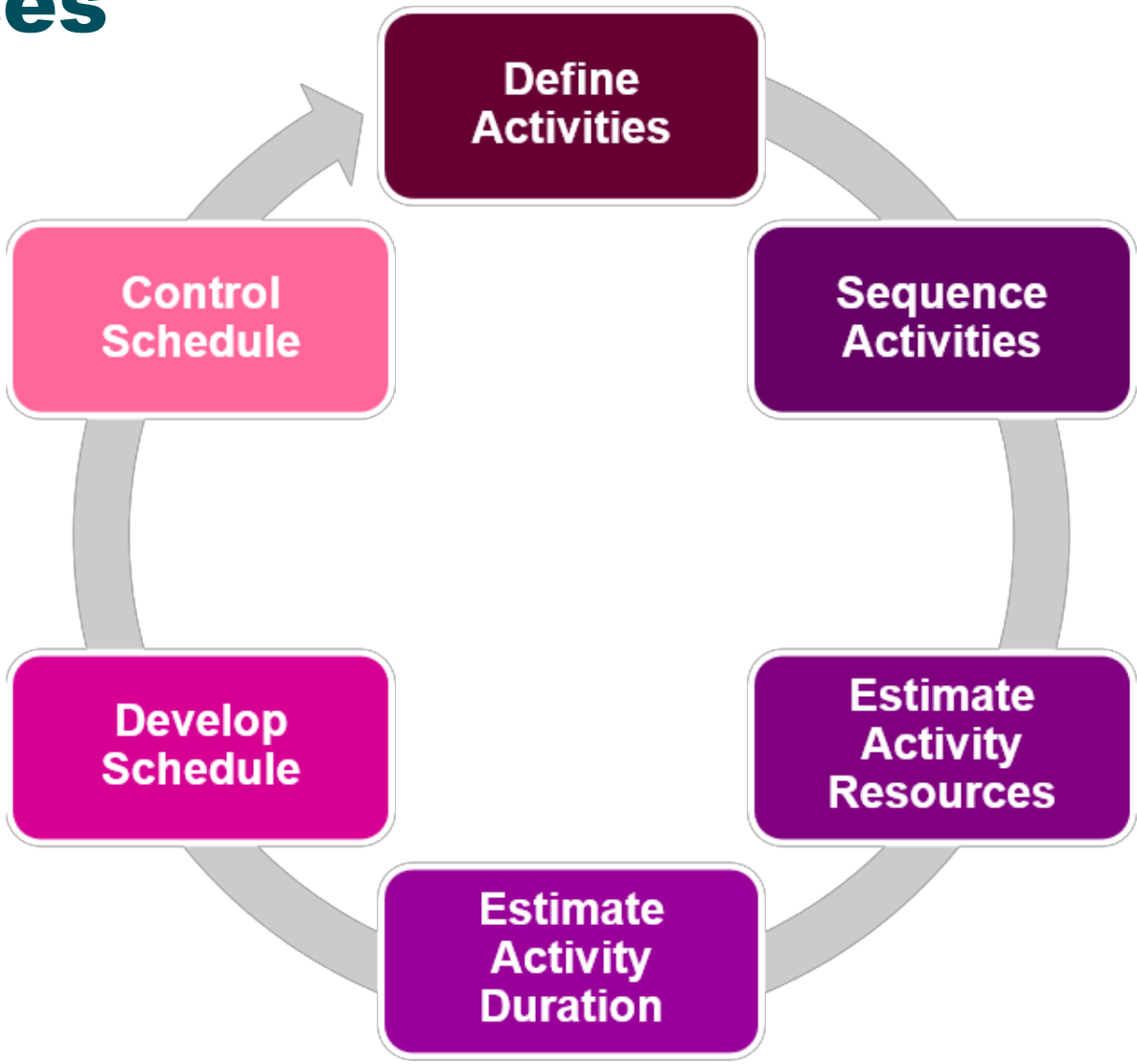


Image from [Project Time Management CUBES Project]

01 - Plan Schedule Management

What's for?

Provides guidelines on how the project schedule will be managed, ensuring all activities are planned, developed, managed, executed, and controlled effectively.

Image from [What is Time Management in Project Management on geeksforgeeks.org]

> Inputs:

- Project charter, project management plan

> Tools & Techniques:

- Expert judgment, meetings

> Outputs:

- Schedule management plan

02- Define Activities

Definition:

The process of identifying and documenting the specific actions to be performed to produce the project deliverables.

- **Breaking Down Work Packages**: Activities are derived from work packages, which are the lowest level of the Work Breakdown Structure (WBS).
- **Activity List**: A comprehensive list of all activities required to complete the project.
- **Activity Attributes**: Detailed descriptions of each activity, including predecessor and successor activities, logical relationships, leads and lags, resource requirements, constraints, and assumptions.
- **Milestone List**: Significant points or events in the project timeline, such as the completion of major deliverables.

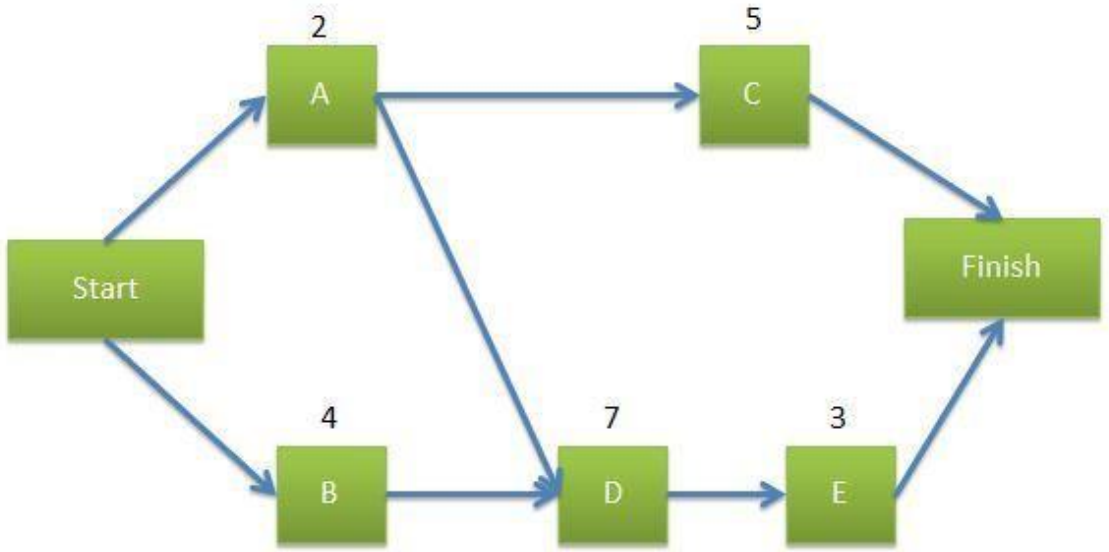
Importance of Defining Activities:

- **Clarity and Focus**: Clearly defined activities provide a detailed understanding of what needs to be done, ensuring that all team members are on the same page.
- **Baseline for Scheduling**: The activity list serves as the foundation for developing the project schedule, helping to allocate resources and estimate durations accurately.
- **Enhanced Monitoring and Control**: Detailed activity descriptions enable better tracking of project progress and facilitate effective control measures.

03 - Sequence Activities

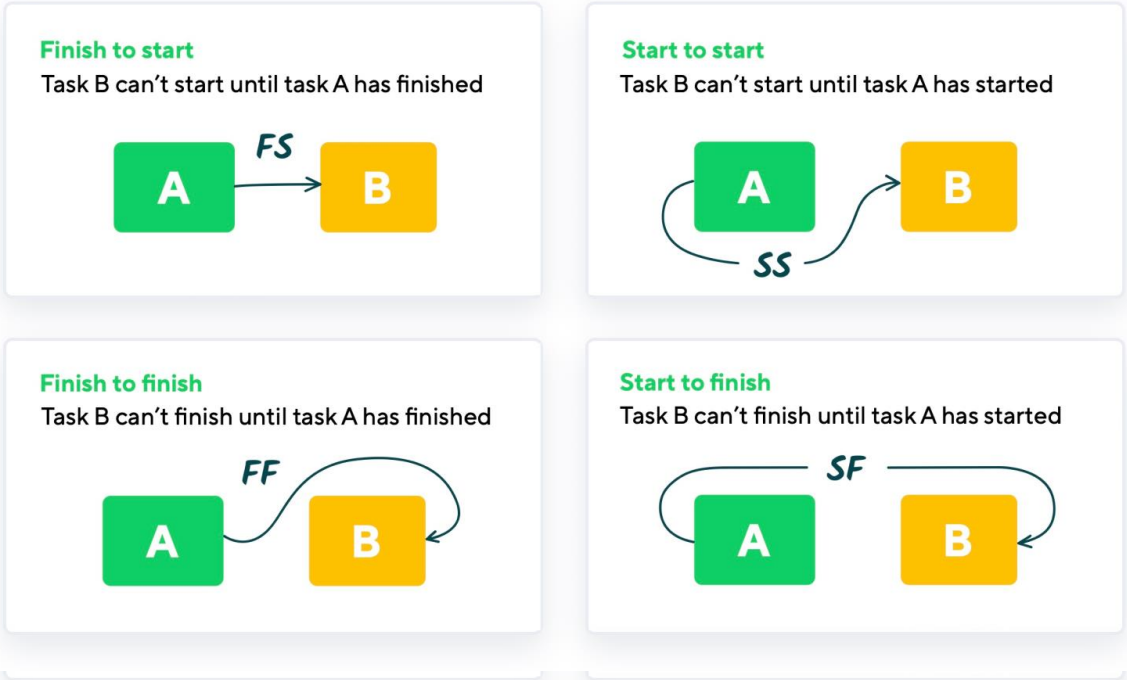
Definition:

The process of identifying and documenting relationships among project activities to define the logical sequence in which they will be performed.



Importance:

Ensures that activities are performed in the correct order, considering dependencies and constraints. Allows project managers to focus on critical tasks that directly impact the project's completion date.



Tools & Techniques for Sequencing Activities:

- Network Diagrams: Visual representation of activity sequencing.
- Precedence Diagramming Method (PDM): Method to sequence activities using nodes and arrows.

Image from [Network Diagram in Project Management Wrike Project Management Guide]

04 - Estimate Activity Resources & Durations

Definition

The process of estimating the type and quantities of resources required to perform each activity and the amount of time each activity will take to complete.

Estimation Techniques

- Expert Judgment: Using experts' experience to estimate activity durations.
- Analogous Estimating: Using historical data from similar projects.
- Parametric Estimating: Using statistical relationships between historical data and other variables.
- Three-Point Estimating: Using optimistic, pessimistic, and most likely estimates to calculate an average duration.
- Bottom-Up Estimating: Aggregating the estimates of lower-level components of the WBS.

Importance of Accurate Estimates

- Ensures realistic schedule and resource allocation.
- Helps in setting achievable deadlines and managing stakeholder expectations.

Outputs

- Activity duration estimates, basis of estimates, project documents updates.

05 - Develop Schedule

Definition:

- **Develop Schedule**: The process of analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule model. This process results in the project schedule, which serves as a baseline for monitoring and controlling project progress.

Tools:

- **Gantt Charts**: A bar chart that represents a project schedule showing the start and finish dates of the project elements.
- **Critical Path Method (CPM):** A schedule network analysis technique used to determine the amount of scheduling flexibility (the amount of float) on various logical network paths in the project schedule network, and to determine the minimum total project duration.
- **PERT (Program Evaluation and Review Technique):** A statistical tool used to analyze and represent the tasks involved in completing a given project, which is used especially in the context of time required to complete each task, and to identify the minimum time needed to complete the total project.

Importance:

- Helps in ensuring that the project is completed on time
- Helps in effective allocation and management of resources
- Provides a baseline for tracking project progress and identifying any delays or issues early.

05 - Develop Schedule - Gantt Chart

Definition: A visual tool to represent the project schedule.

Purpose : To help track planned progress against actual progress.

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A practice for creating Gantt chart? Let's do it later in the seminar (Lecture 02).

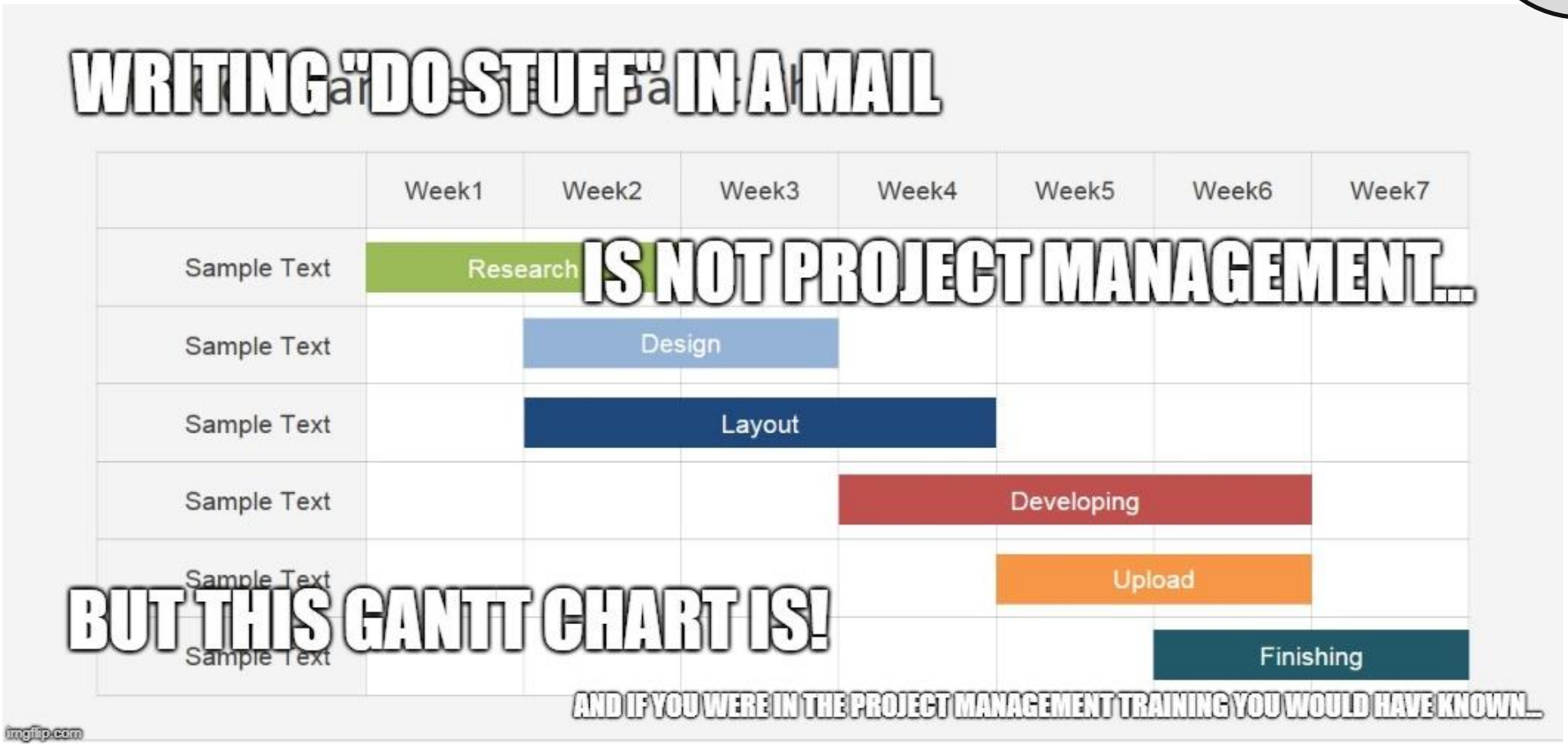

Image: [Imgflip]

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05 - Develop Schedule - Gantt Chart

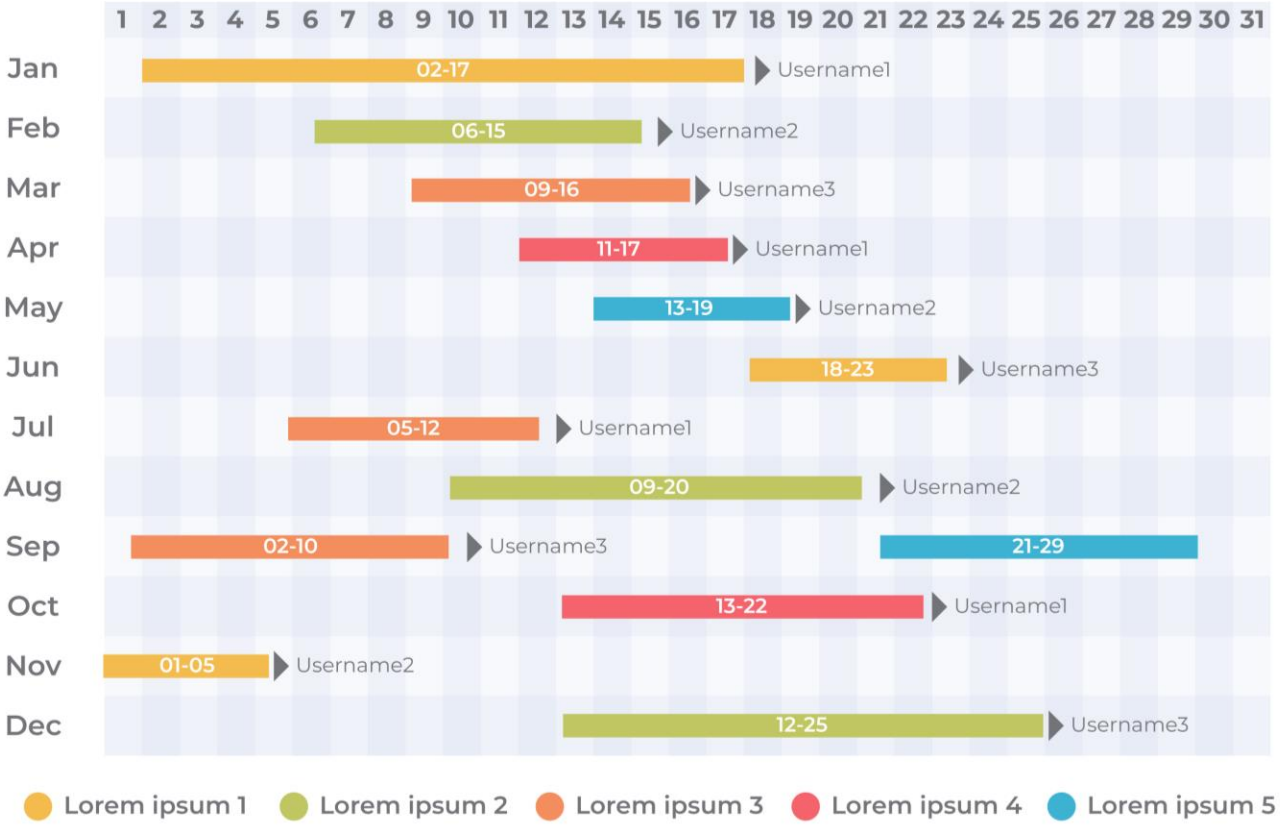

Image Source: by [freepik]

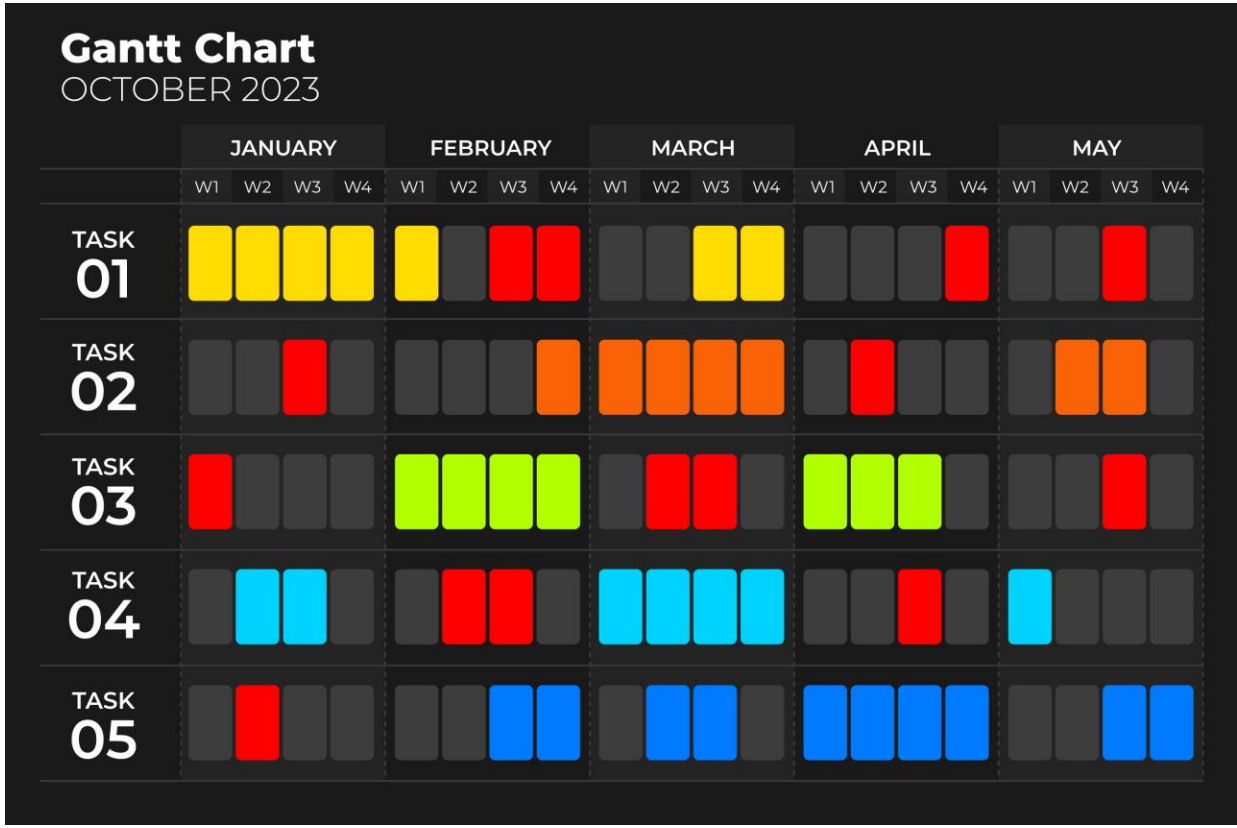

Image Source: by [freepik]

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05 - Develop Schedule - Critical Path Method

Definition:

CPM: A project management technique that determines the sequence of activities that directly affect the project completion time. It identifies the longest path through the project, known as the critical path, and helps in determining the shortest possible project duration.

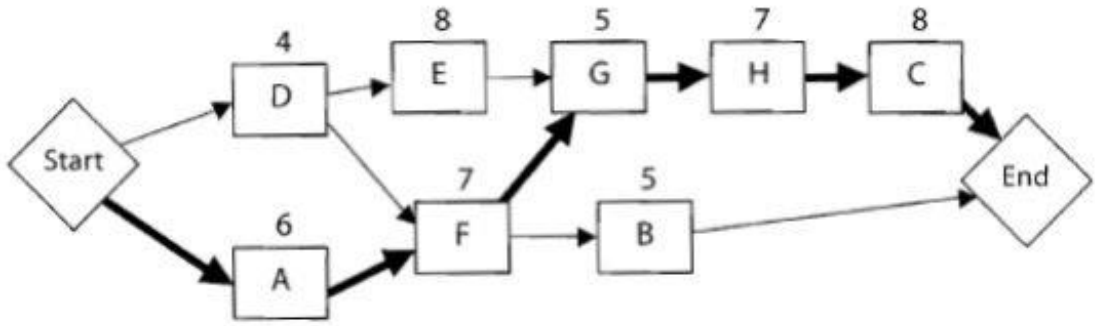
Purpose:

Helps in identifying tasks that cannot be delayed without affecting the project's completion date.

Steps to Apply Critical Path Method:

1. List All Activities: Identify and list all project activities.
2. Determine Dependencies: Define the dependencies between activities.
3. Estimate Duration: Estimate the time required to complete each activity.
4. Construct Network Diagram: Create a network diagram showing the sequence of activities.
5. Calculate Critical Path: Determine the longest path through the network diagram to identify the critical path.
6. Monitor and Adjust: Continuously monitor the critical path and make adjustments as necessary to keep the project on track.

In order to determine the critical path, network diagram of the project is drawn:



We see that this project has 5 paths and the duration of the critical path is 33 months. As a result the duration of the project is also 33 months. (Mulcahy, 2005)

Paths	Duration
Start, D, E, G, H, C, End	32
Start, D, F, G, H, C, End	31
Start, D, F, B, End	16
Start, A, F, G, H, C, End	33
Start, A, F, B, End	18

Image Source: by [Mastering the Basics of Project Management: The Critical Path Method (CPM) Nelson B.J. Blog]

06 - Schedule Control

Monitoring Progress:

- Regularly tracking, reviewing, and regulating the progress of project activities.

Schedule Variance and Performance Index:

- Measure performance using metrics like Schedule Variance (SV) and Schedule Performance Index (SPI).

Definitions:

- **Schedule Variance (SV)**: A measure of schedule performance expressed as the difference between the earned value (EV) and the planned value (PV).
- **Schedule Performance Index (SPI)**: A measure of schedule efficiency expressed as the ratio of earned value (EV) to planned value (PV).

Note: SV and SPI will be explained further in **week 3**

PROJECT COMMUNICATIONS MANAGEMENT

Image Source: [Project Management Memes Visor Blog]

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Project Communication Management

Overview

Project Communications Management involves the processes required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information. Effective communication is critical for successful project management as it ensures that information is properly disseminated among project stakeholders.

Impact on Project Success

- Ensures that all stakeholders are informed and involved.
- Facilitates coordination and collaboration among project team members.
- Helps in managing stakeholder expectations and resolving conflicts.

Key Components

- Planning Communications Management: Determining the information and communications needs of the stakeholders.
- **Managing Communications**: Creating, collecting, distributing, storing, retrieving, and disposing of project information.
  - **Includes Minutes of Meetings**: Documenting discussions, decisions, and action items from meetings.
- Monitoring Communications: Ensuring the information needs of the project and its stakeholders are met.

Planning Communications Management

Purpose

- To develop an appropriate approach and plan for project communications based on stakeholder's information needs and requirements, and available organizational assets.

Inputs

- Project charter, project management plan, stakeholder register, enterprise environmental factors, organizational process assets.

Tools & Techniques

- Expert judgment, communication requirements analysis, communication technology, communication models, communication methods, meetings.

Outputs

- Communications management plan, project documents updates.

Managing Communications

Purpose

- Ensures timely and appropriate collection, creation, distribution, storage, retrieval, management, monitoring, and the ultimate disposition of project information.

Steps

- Identify the information needs of stakeholders.
- Determine the best way to meet those needs.
- Implement the communications plan.
- Monitor and adjust communications as needed.

Tools & Techniques

- Communication technology, communication models, communication methods, information management systems, performance reporting.

Outputs

- Project communications, project management plan updates, project documents updates, organizational process assets updates.

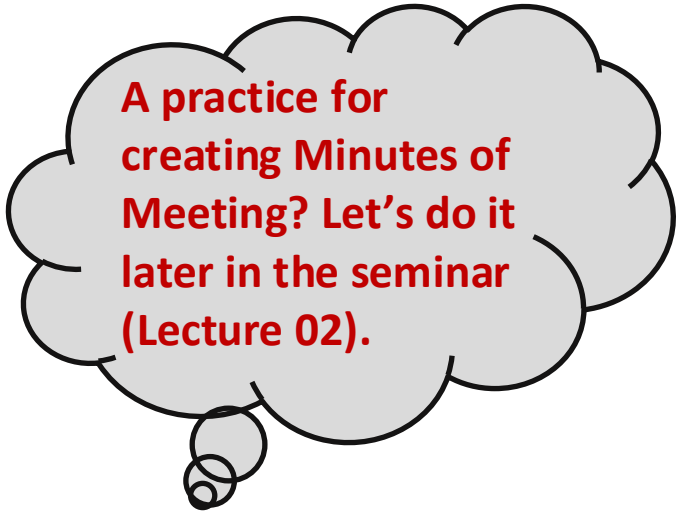
Managing Communications - Minutes of Meeting

Definition:

- Minutes of meeting are the written record of everything that happened during a meeting.

Purpose

- To provide a formal, structured documentation of discussions, decisions, and actions.
- Ensures accountability and follow-up on action items.
- Serves as a reference for future meetings.



Benefits

- Captures key points and decisions,. This helps in maintaining a clear and comprehensive record of the meeting.
- Ensures accountability and follow-up on action items, it ensures that team members are accountable for their tasks.
- Serves as a reference for future meetings, provide a historical record that helps in understanding the context of previous discussions, tracking progress, and making informed decisions.

Monitoring Communications

Purpose

- Ensures that stakeholder communication needs are being met and that communications are effective.

Steps

- Monitor communication activities.
- Evaluate the effectiveness of communication efforts.
- Make adjustments as needed.

Tools & Techniques

- Information management systems, expert judgment, meetings.

Outputs

- Work performance information, change requests, project management plan updates, project documents updates.

Have a Break and Let's Practice in Lecture 02 to Avoid Your Project Being Like This: →

Image Source: [Project Management Memes Visor Blog]