Foundations of IT Project Management

7204201 Project Management in Information Technology

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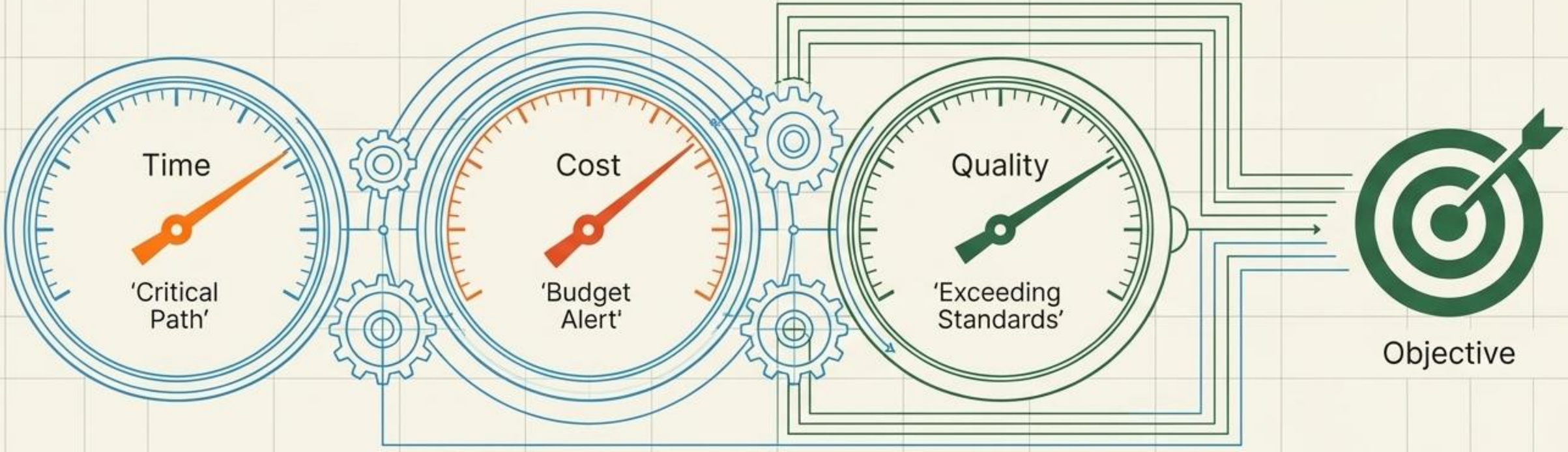
Every project is driven by an objective and bounded by rigid constraints.

A project is a temporary endeavor consisting of a specific group of tasks designed to achieve a clear, defined objective.



Clear Objective

Group of Tasks

Temporary Nature

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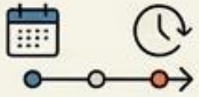
Defining the Boundaries: Projects vs. Continuous Operations

Projects	Operations
Unique	Repetitive
Definite start and end 	Continuous/Infinite
Rapid	Gradual
Specific target	General coverage
Strictly limited by budget	Scalable as needed
Effectiveness (Right result)	Efficiency (Faster execution)
Risk-taking	Experience-based

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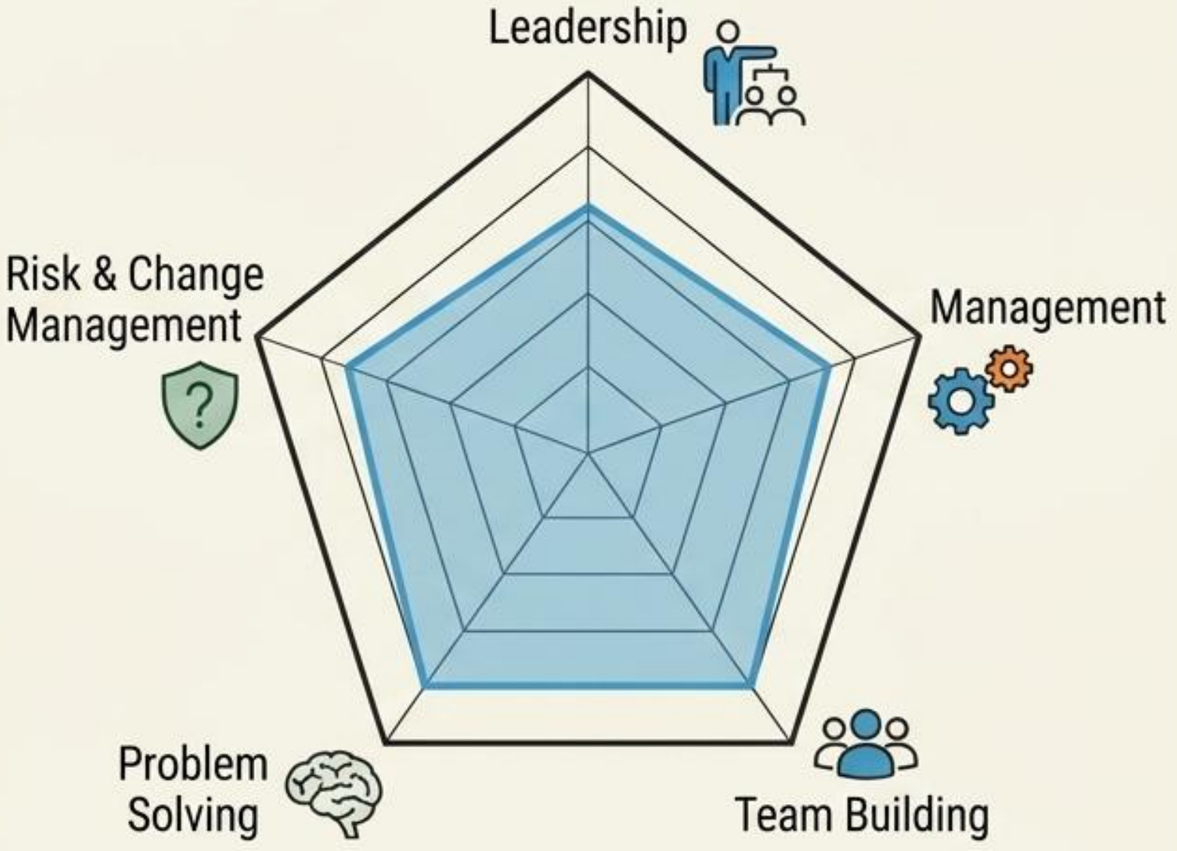
The Project Manager: The control center driving project success.

The PM advises, controls, and monitors performance to ensure objectives are met.

Core Functions

1. Define Project Scope
2. Plan & Assemble the Team
3. Create the Schedule
4. Command & Control

Required Skills



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The Master Blueprint: The 4 Phases of the Project Life Cycle

Every successful IT project follows a structured progression from conception to finalized delivery.

Step 1

Initiation

Define the scope, assess project size, and select the appropriate approach.

Step 2

Planning

Determine activities, estimate resources, evaluate risks, and create the schedule.

Step 3

Execution

The team executes the plan while the PM monitors, commands, and manages change.

Step 4

Closing

Deliver the finalized system, leading to success or failure, and transition to maintenance.

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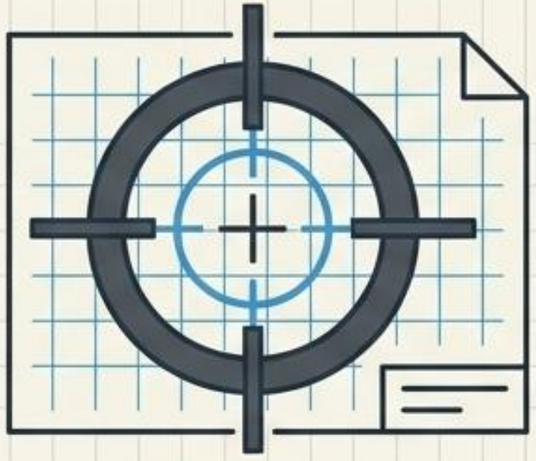
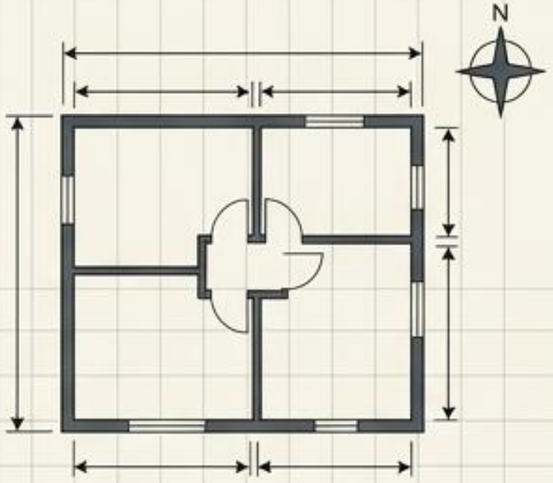
Laying the Foundation: From Initiation to Architectural Planning

Phase 1: Initiation



Focus: Defining scope and determining activities for each software development step.

Phase 2: Planning



Assess Constraints → Estimate Needs → Set Milestones & Deliverables → Create Schedule → Execute & Adjust Plan

The primary purpose of planning is to eliminate or reduce uncertainty.

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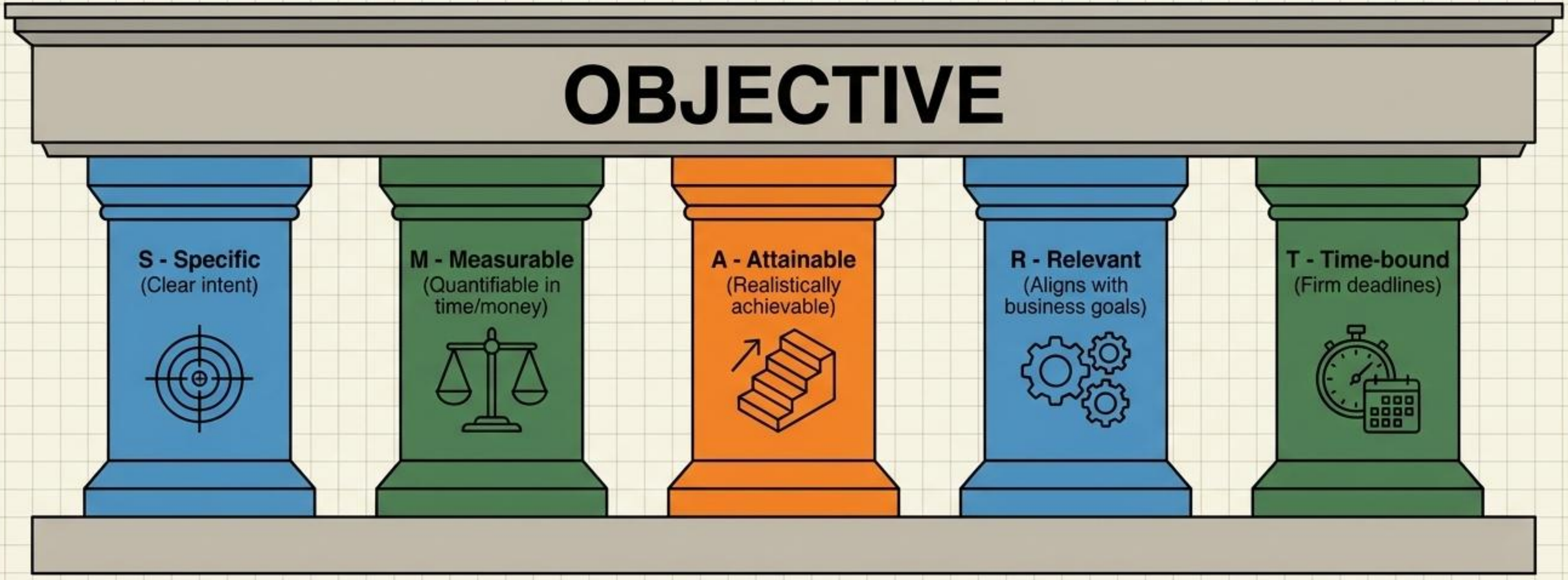
Structural Integrity requires setting SMART Objectives.

An objective cannot stand if it is missing any foundational elements.



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The Anatomy of a Project Plan Document

A comprehensive project plan is modular, addressing seven distinct vectors of project execution.

Introduction.

Objectives and constraints (Budget, Time).

Organizational Structure.

Personnel hierarchy and responsibilities.

Risk Analysis.

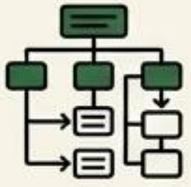
Identifying probabilities and mitigation strategies.

Resources.

Equipment required and cost estimation.

Work Breakdown Structure (WBS).

Main tasks, sub-tasks, and delivery dates.



Schedule.

Activity relationships and timelines.

Monitoring & Reporting.

Reporting types for project tracking.

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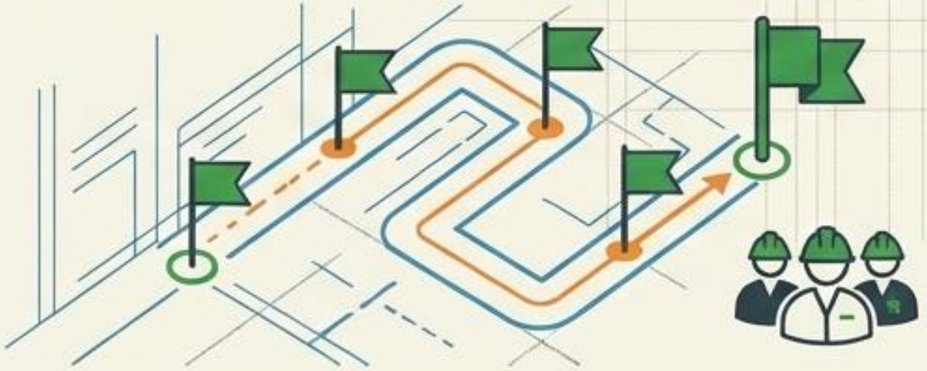
Tracking Progress: Internal Milestones vs. External Deliverables

Both occur when activities are completed, but they serve fundamentally different purposes.

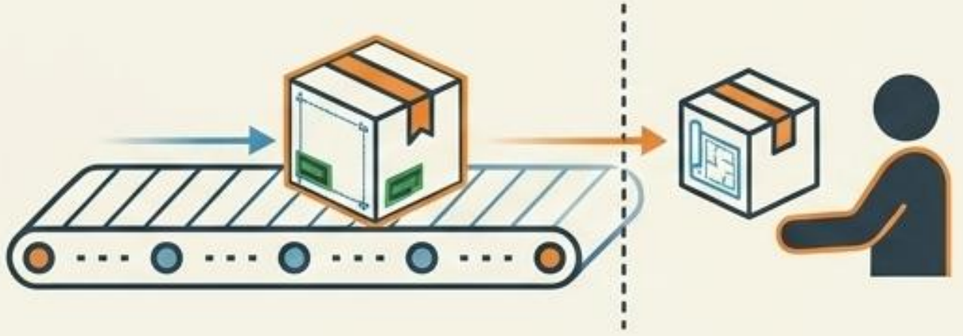
Milestone (Internal Checkpoints)

Used internally by the team to track progress and report to management.



Deliverable (External Output)

The formal product or result handed over to the client at the end of a project phase.



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Navigating Execution to Project Closure

Execution is highly reactive. The PM must continuously steer the team through changes until final resolution.

Execution Phase

Team executes while PM monitors, commands, and mitigates change.

Closes Successfully

Maintenance Phase

Closes due to Failure.

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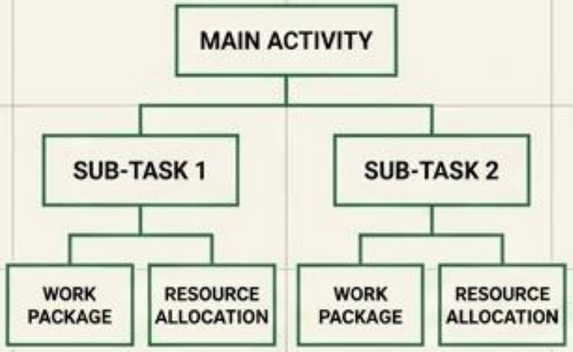
The Toolkit: Principles of Project Scheduling

Managing complex timelines requires dissecting tasks, mapping dependencies, and protecting the critical path.

Scheduling Principles



Break down main activities into sub-tasks, define relationships, and allocate personnel appropriately.

The Critical Task

A task that, if delayed or over budget, will directly impact and delay the entire project.

The Buffer

Time estimation must start with normal duration, then add reserve time (buffer) to account for unforeseen problems.

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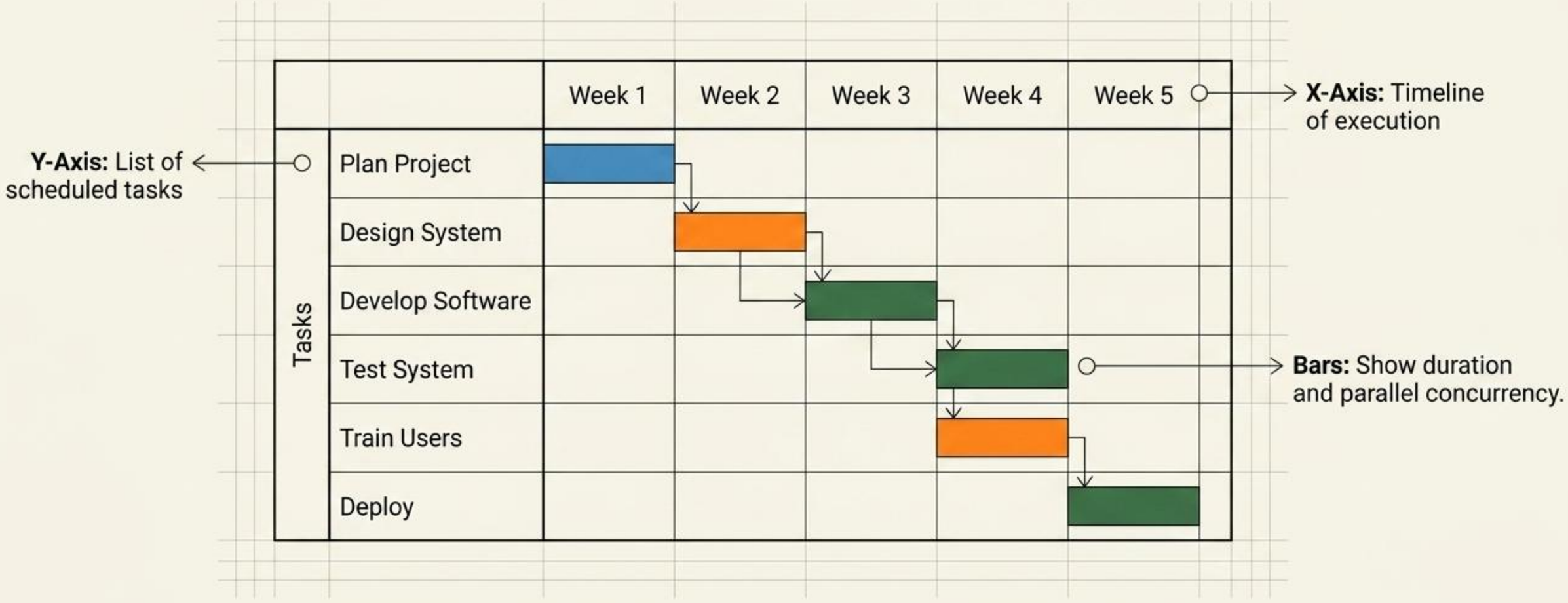
Visualizing Time: The Gantt Chart Approach

Developed in 1917, the Gantt Chart remains the standard for providing a traditional, easily scannable overview of project timelines.



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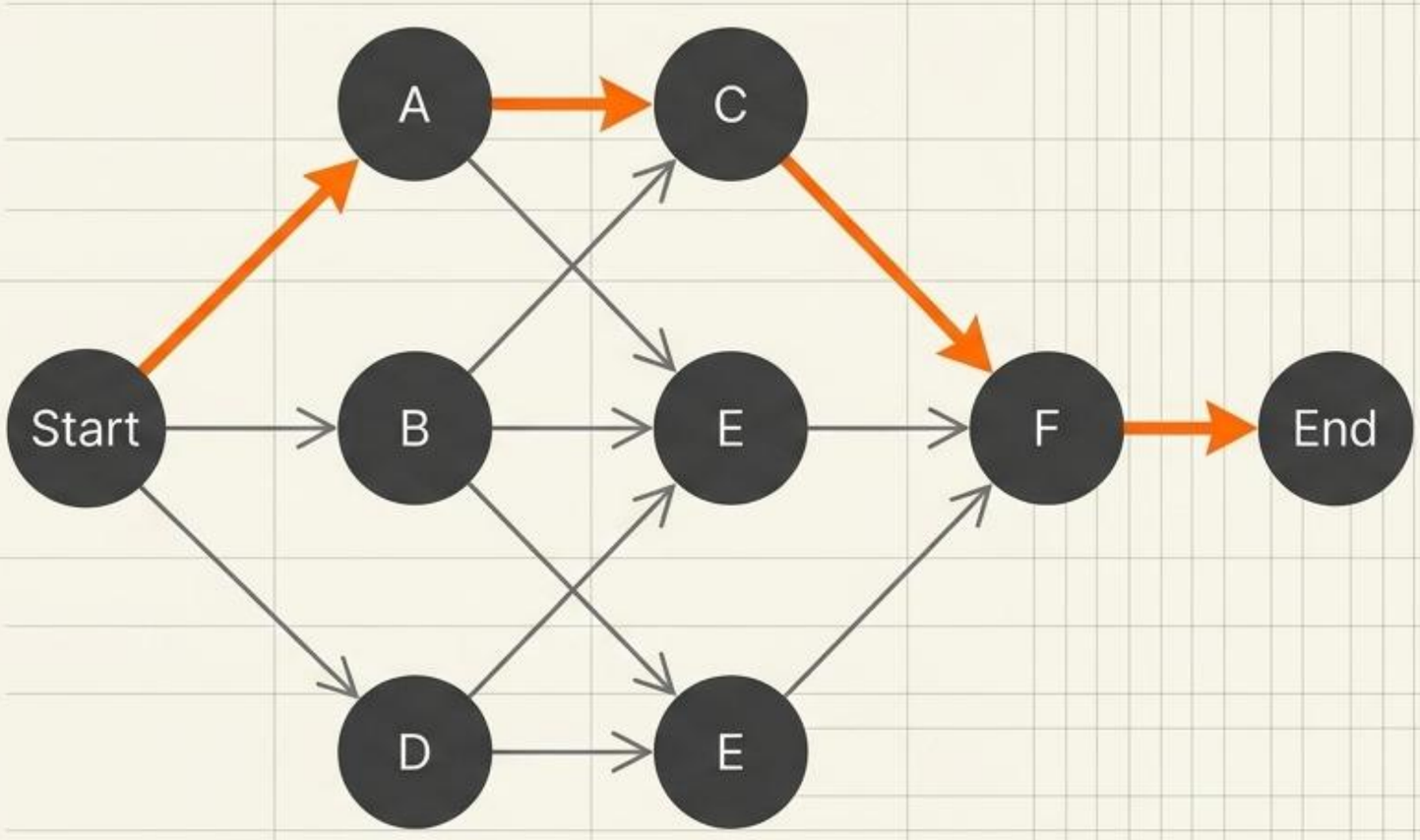
Mapping Complexity: PERT & the Critical Path Method (CPM)

For complex initiatives, visualizing strict task dependencies and calculating the exact critical path is mandatory.

PERT (Project Evaluation Review Technique).
Best for new projects never done before.
Uses probabilistic scheduling (estimation).

CPM (Critical Path Method).
Best for repeated projects done previously. Uses deterministic scheduling (exact known times).



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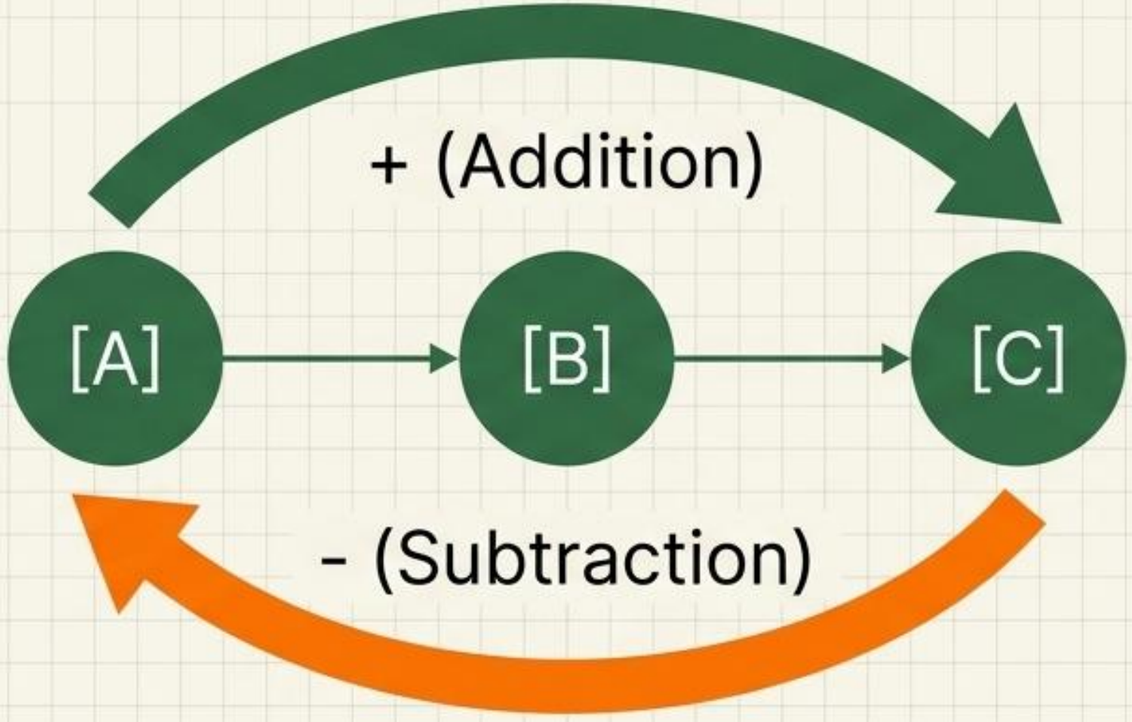
Demystifying the Algorithm: Calculating TE and TL

PMs use the Critical Path Method to calculate specific time values, revealing exactly how much flexibility exists within the schedule.



TE (Time Earliest)

Calculated from left to right using addition. Finds the earliest possible time an activity can finish.

TL (Time Latest)

Calculated from right to left using subtraction. Finds the latest time an activity can finish without delaying the overall project.

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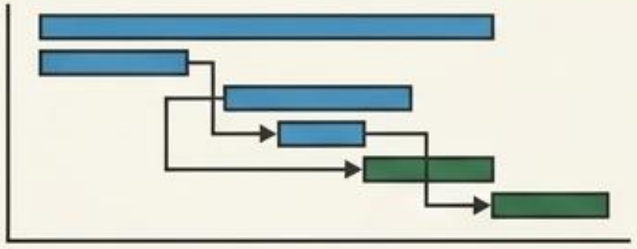
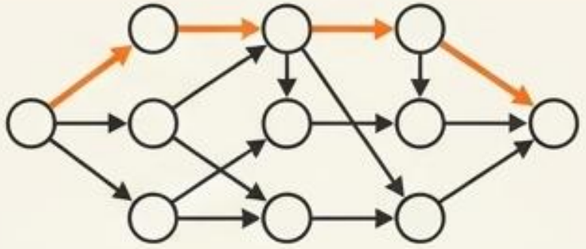
The Synthesis: Aligning Tools with Project Reality

Gantt Chart



- Ideal for small projects.
- Easy to read and shows parallel tasks clearly.
- Can show critical path, but lacks detailed network dependency mapping.

PERT / CPM



- Ideal for large, highly complex projects.
- Makes every task dependency explicitly clear.
- Calculates exact critical paths for hyper-efficient resource control.

Project Success is achieved by matching the right structural methodology with the specific scheduling tool that fits your project's complexity.

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