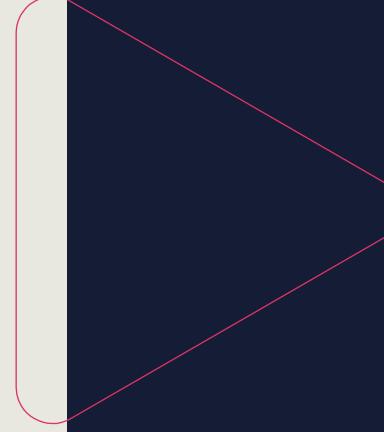




PROJECT MANAGEMENT FUNDAMENTALS

BOOTCAMP

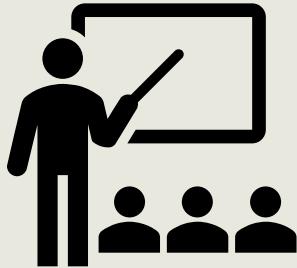
Session 1



Instructor: Barb Waters, MBA, PMP

Class will begin at 11am EDT

TARGET AUDIENCE



This Bootcamp is for:	This Bootcamp is:
<ul style="list-style-type: none">anyone who would like to apply project management skills and vocabulary to their current role	<ul style="list-style-type: none">not a PMP exam prep course
<ul style="list-style-type: none">anyone who would like to manage larger projects and gain more responsibility	<ul style="list-style-type: none">not aligned to the PMBOK 7th edition update
<ul style="list-style-type: none">students who might be interested in pursuing the CAPM® exam. Also, students who would like a foundational class before pursuing the PMP.	<ul style="list-style-type: none">not limited to CAPM® candidates. Everyone is welcome!

COURSE AGENDA

In this course, you will learn the most important concepts in project management, including:

- Project management introduction and fundamentals
- Project coordination and integration of project activities
- Planning and managing the project scope, schedule, and budget
- Project quality and risks
- Stakeholder engagement and communication
- Managing procurement
- Leading the project team

**This class is aligned to the
Project Management
Institute's
CAPM® Certification**

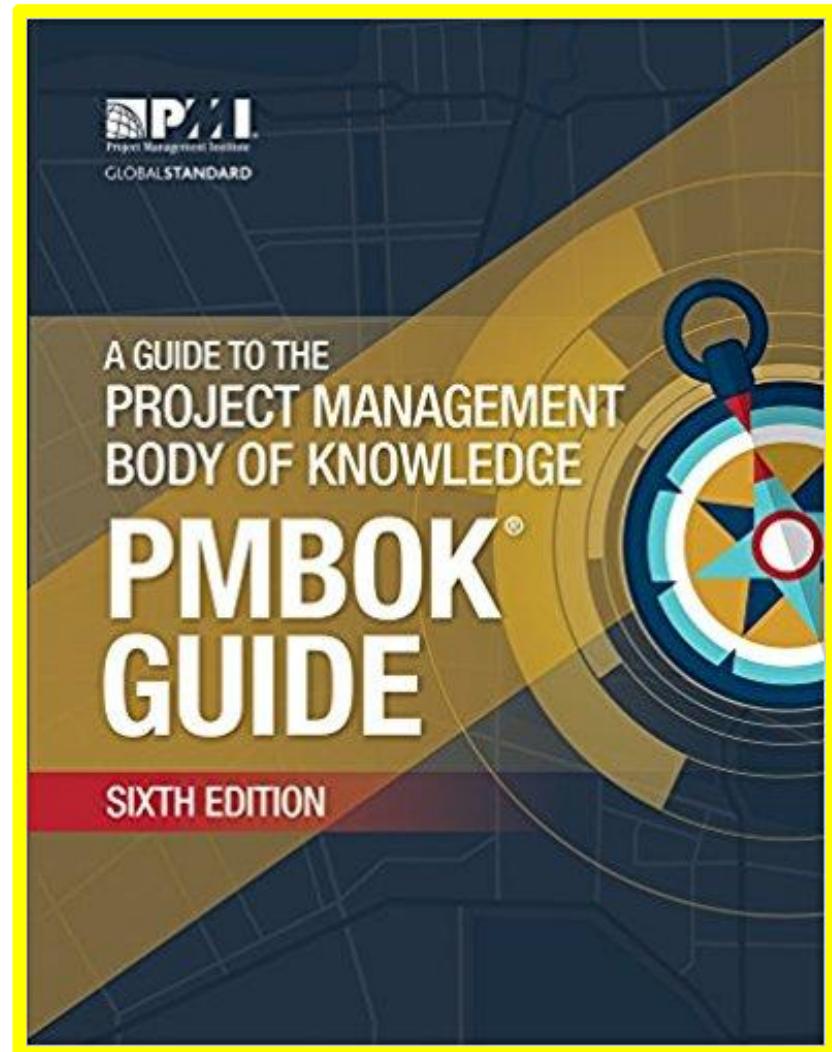
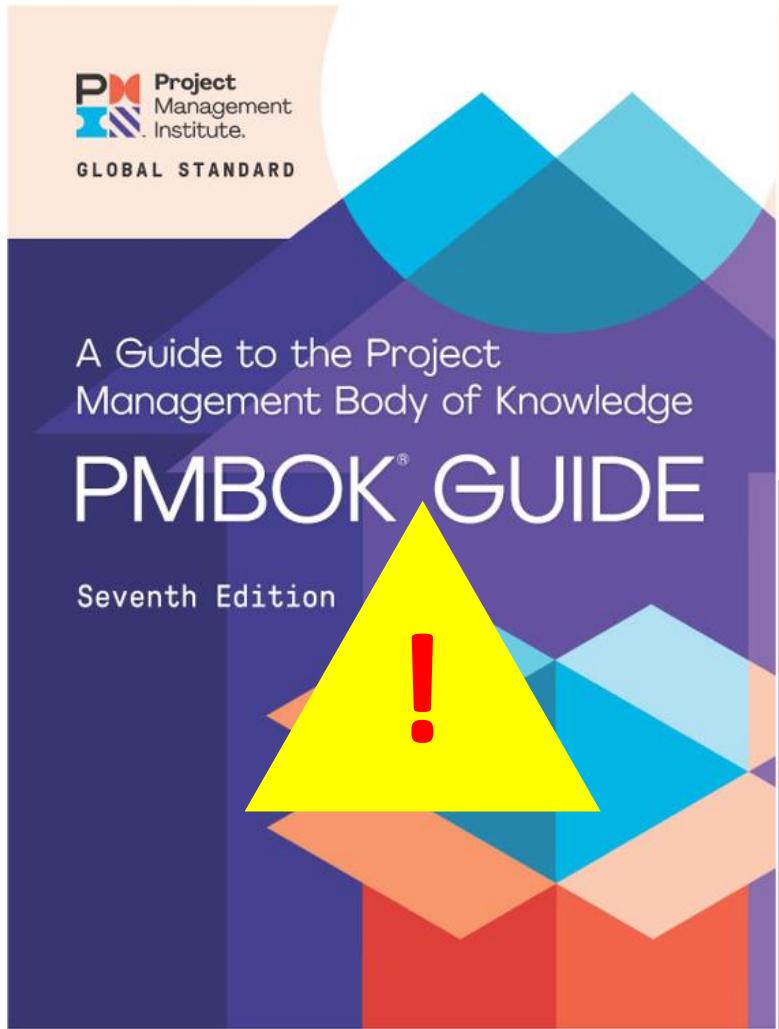
Additional self-study is recommended.



**Certification Associate
in Project Management**

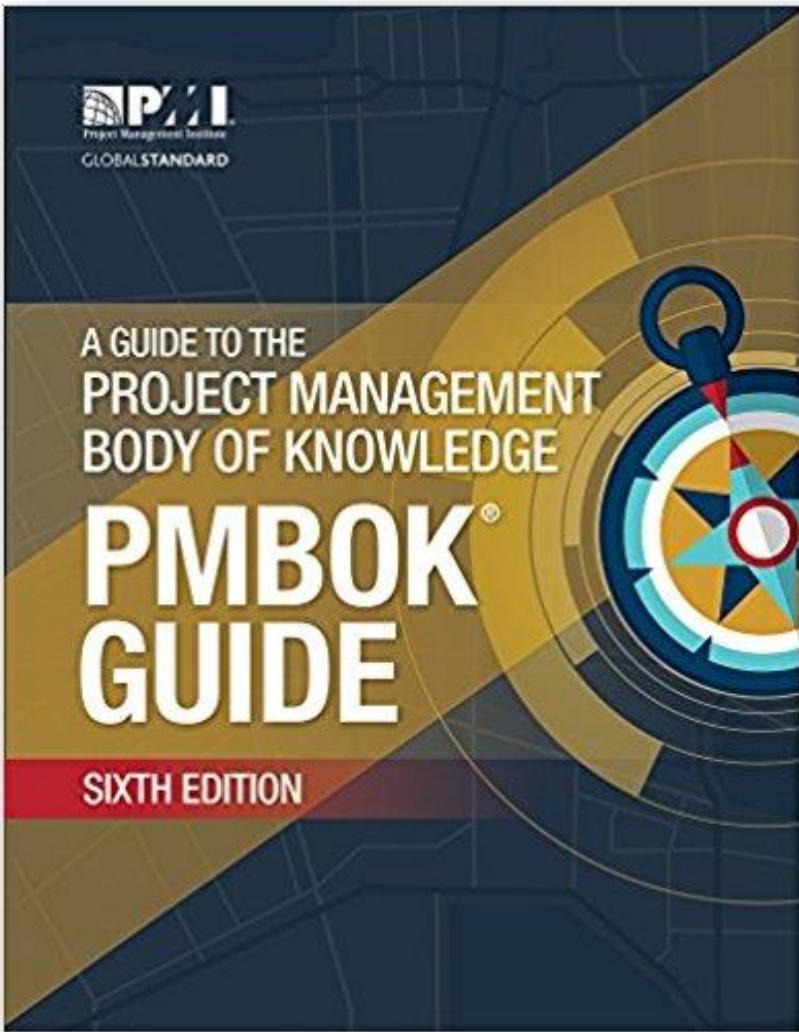
Project Management Institute
pmi.org

PMBOK SEVENTH EDITION...NOT THE CAPM® STUDY GUIDE



The PMP® Exam will not change with the release of the PMBOK® Guide - Seventh Edition

PMBOK 6th EDITION...GET YOUR COPY TODAY!



The *PMBOK® Guide* – Sixth Edition will be available for purchase and download through 31 March 2022. At this time, it will no longer be available for purchase or download through PMI, though resellers may still have copies for sale. Those who already have this edition on their bookshelf can continue to reference it, with the understanding that the current, ANSI-accredited version of The Standard for Project Management is contained in the seventh edition.

Elements from the Sixth Edition, such as Process Groups, will be maintained as a valid model going forward. This content will be refined and made available through [PMIstandards+™](#), a digital companion to PMI standards and guides.

Access to [PMIstandards+](#) is FREE for PMI members, and non-members may subscribe for a low, monthly price.

PMI STANDARDS+™

- The PMBOK Guide integrates with PMIstandards+™
- Included with PMI membership
- Access to PMI Standards and Guides
- Content that helps the user apply the PMBOK® Guide on the job.
 - “How To” articles
 - Case studies and videos
 - Downloadable templates
- PMIstandards+™ is a digital offering



REQUIRED eLEARNING (for CAPM® candidates)

12 hours of Bootcamp + 11 hours of eLearning

Total of 23 hours required by the Project Management Institute

- **Project Management Introduction (PMBOK® Sixth Edition) 1.00**
- **Project Fundamentals (PMBOK® Guide Sixth Edition) 1.00**
- **The Process Groups (PMBOK® Guide Sixth Edition) 1.25**
- **Project Initiation and Planning (PMBOK® Guide Sixth Edition) 1.25**
- **Managing Project Work (PMBOK® Guide Sixth Edition) 1.25**
- **Project Changes and Closing (PMBOK® Guide Sixth Edition) 1.00**
- **Capturing, Analyzing, and Using Project Lessons Learned 1.00**
- **Strategically Focused Project Management 1.25**
- **Plan and Define Project Scope (PMBOK® Guide Sixth Edition) 1.25**
- **Create Work Breakdown Structure (PMBOK® Guide Sixth Edition) 1.25**
- **Validate and Control Scope (PMBOK® Guide Sixth Edition) 1.00**

RECOMMENDED eLEARNING (for CAPM® candidates)

PERCIPIO

- **Watch > 30 hours of video**
 - *For the full list of recommended courses please refer to the **course syllabus***
- **Read the PMBOK 6th edition**
- **Practice with the TestPrep exam simulator**
- **Ask a Mentor if you need additional exam prep support.**

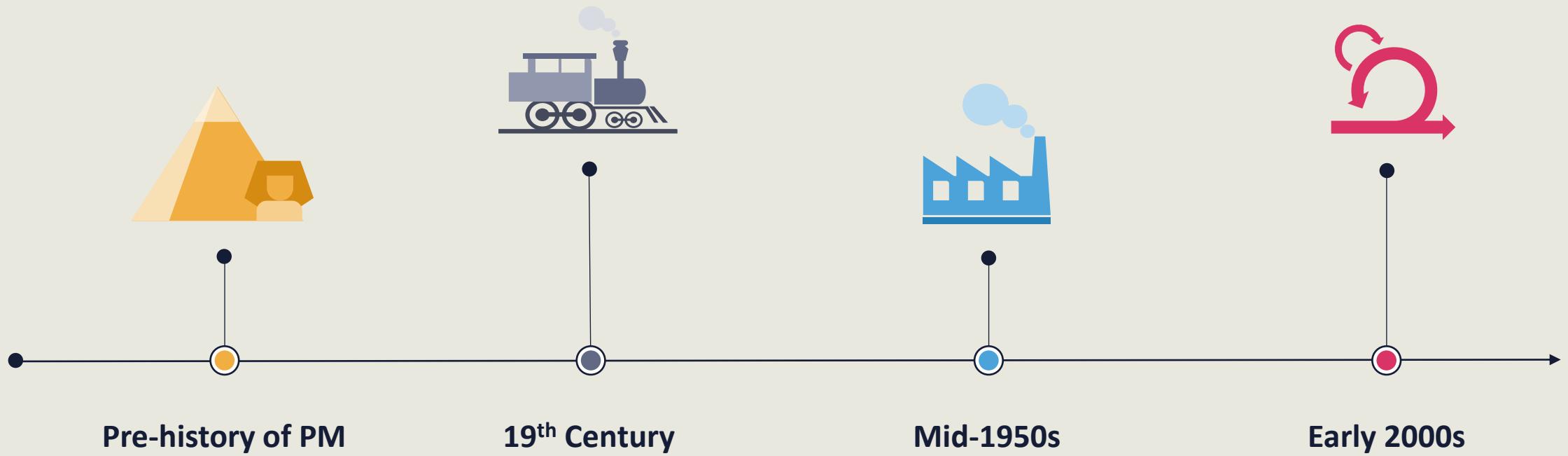
The screenshot displays the PERCIPIO eLearning platform interface. At the top, there's a banner for the CAPM® certification with the text: "Discover the skills needed to effectively work on or with project teams as you prepare for the CAPM® certification." Below the banner, the "Certification Exam: 6th Edition" is mentioned. The main content area features three course cards:

- Project Management Introduction (PMBOK® Guide Sixth Edition)**
COURSE | 1h 3m 22s
Description: If you're responsible for managing projects, understanding the project basics is essential. Project management is affected at every stage by the organization, the social environment, the project stakeholders, and many other aspects of the context in which...
View More
Status: Started
Actions: Start Course | Take Test
- Project Fundamentals (PMBOK® Guide Sixth Edition)**
COURSE | 51m 33s
Description: Knowing the project basics is essential before you begin managing projects. Each project fundamental is an element or characteristic that all projects have in common. This course covers the project and product life cycles and project phases, and in...
View More
Status: Started
Actions: Start Course | Take Test
- The Process Groups (PMBOK® Guide Sixth Edition)**
COURSE | 1h 7m 45s
Description: Managing projects is easier with a solid knowledge of project management processes. This course covers the process groups and knowledge areas in the PMBOK® Guide, along with their key interactions with each other.
Status: Started
Actions: Start Course | Take Test

A BRIEF HISTORY OF PROJECT MANAGEMENT

Projects have changed over time.

Project management approaches have evolved as well.





CONSTANT WHITEWATER

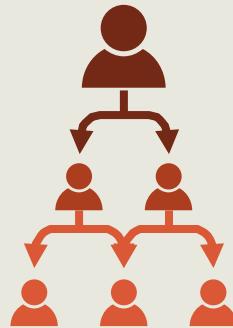
Rapid pace of change

- Adaptation is essential
- Too much planning results in rework
- What's important now?

EVOLUTION OF PROJECT MANAGER ROLE

Before: Traditional Project Manager

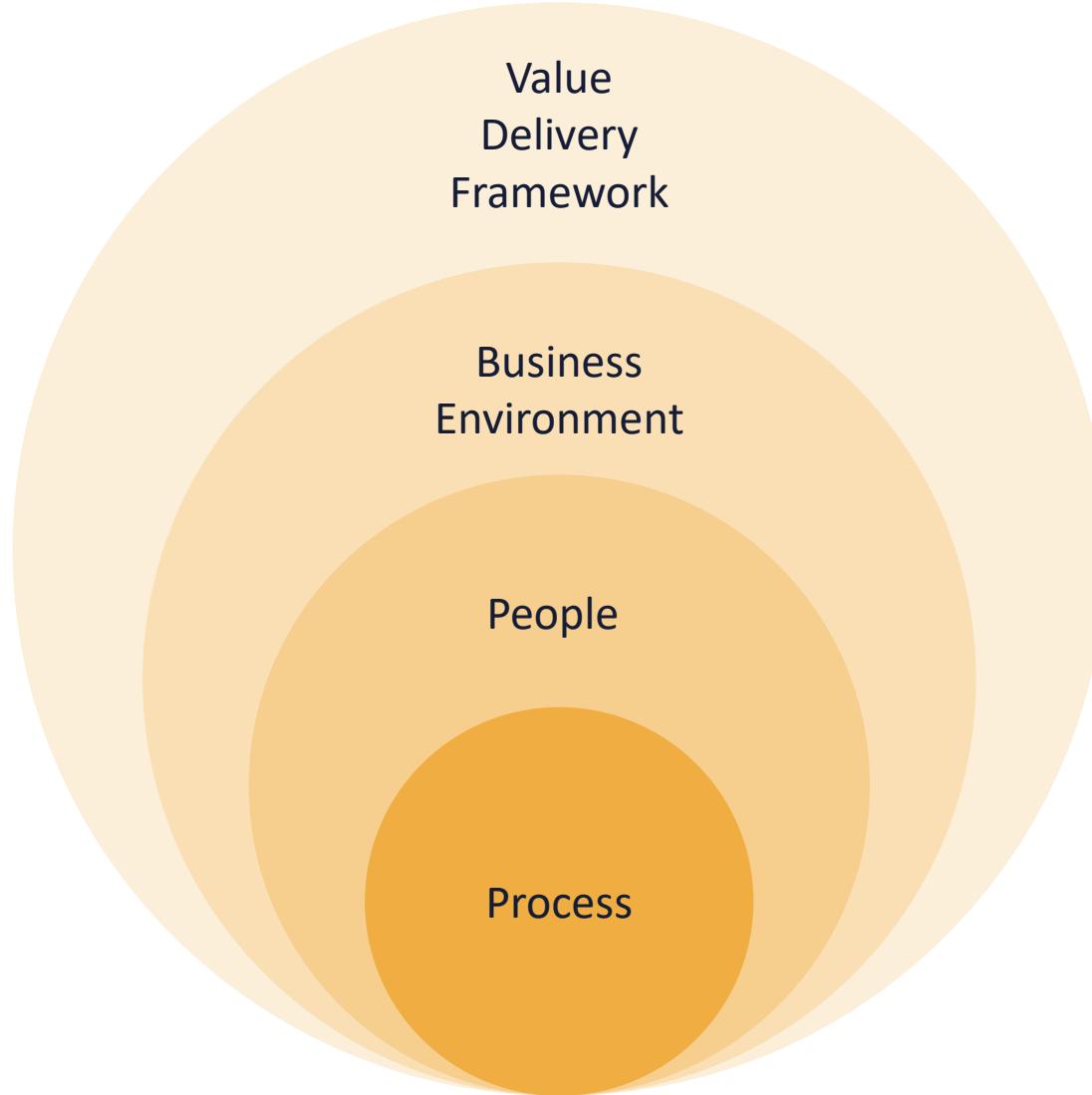
- Leads the team
- Task-focused



Now: Servant Leadership

- Provides for the team
- People-focused
- Role may be called lead, facilitator, Scrum Master, Coach, etc..





VALUE DELIVERY

WHAT IS A PROJECT?

Project Characteristics

- Temporary
- Unique product, service, or result
- Fulfils a purpose
- Requires dedicated resources



Different than Operational Work

- Ongoing
- Repetitive
- Often the result of a project handoff

WHAT IS PROJECT MANAGEMENT?

The practice of initiating, planning, executing, monitoring, controlling and closing project work in order to meet goals and achieve objectives while keeping stakeholders informed and engaged.



PROJECTS, PROGRAMS, & PORTFOLIOS

Project

- Managed by project manager
- Has specific, individual objectives

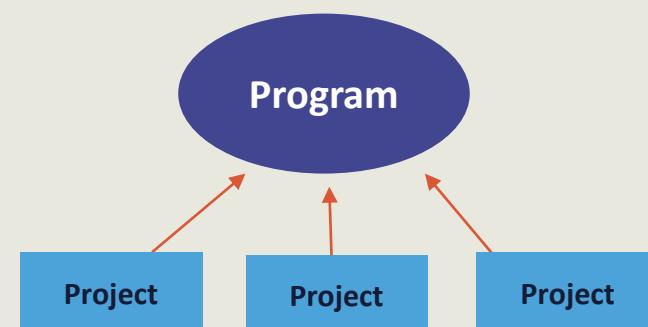
Program

- Managed by program manager
- Related projects
- Grouped to maximize benefits, resources, and efficiency for the projects

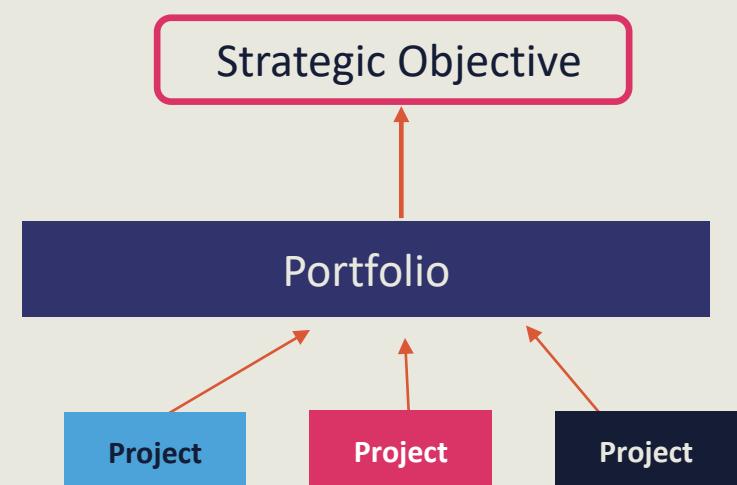
Portfolio

- Managed by portfolio manager
- Unrelated projects
- Grouped according to organization's strategic objectives

Project



Strategic Objective



PROJECTS AND STRATEGIC PLANNING

Achieving strategic objectives that cannot be addressed within normal operations

Typically authorized as a result of

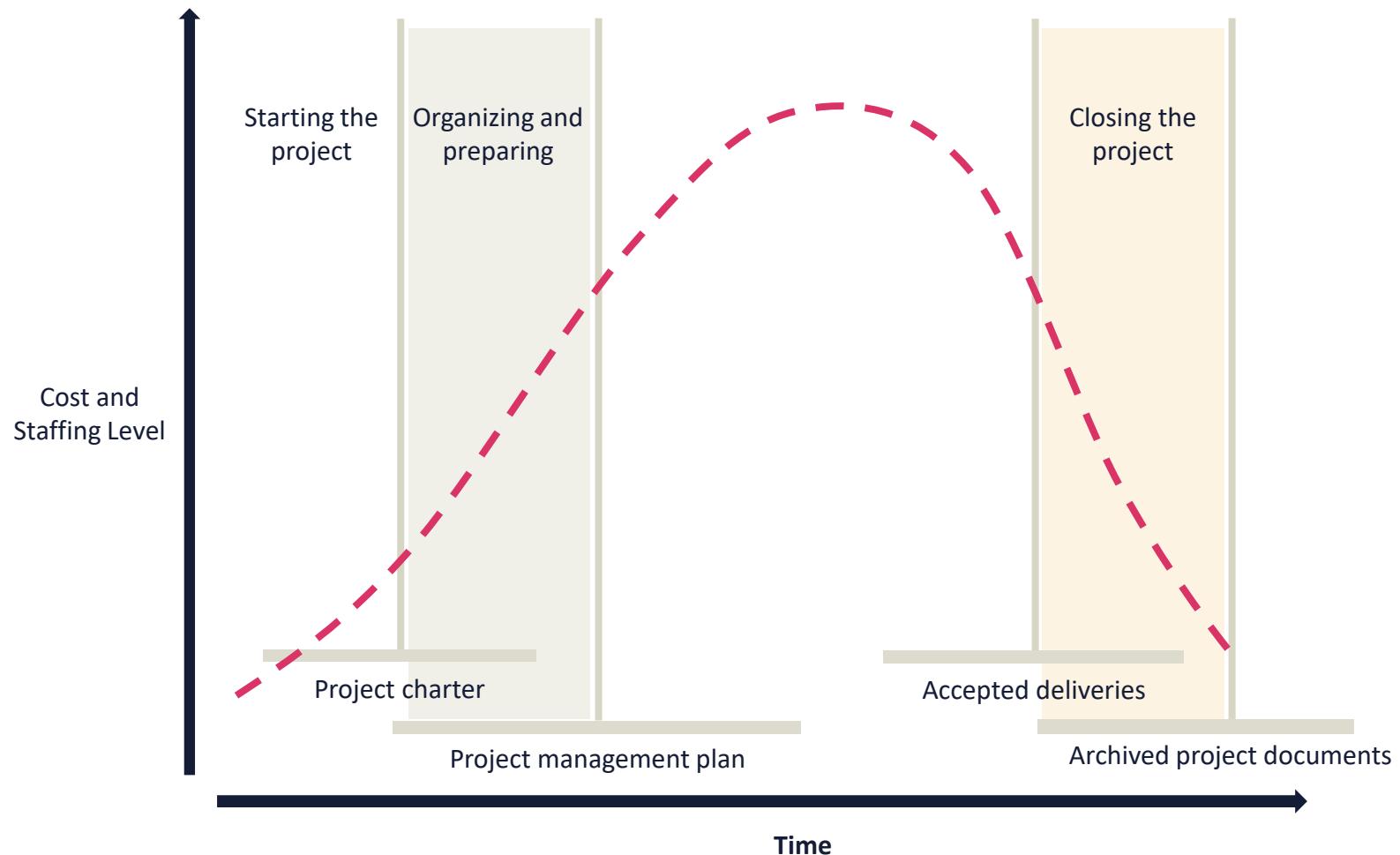
- Market demand
- Strategic opportunity/business need
- Environmental consideration
- Customer request
- Technological advance
- Legal requirement

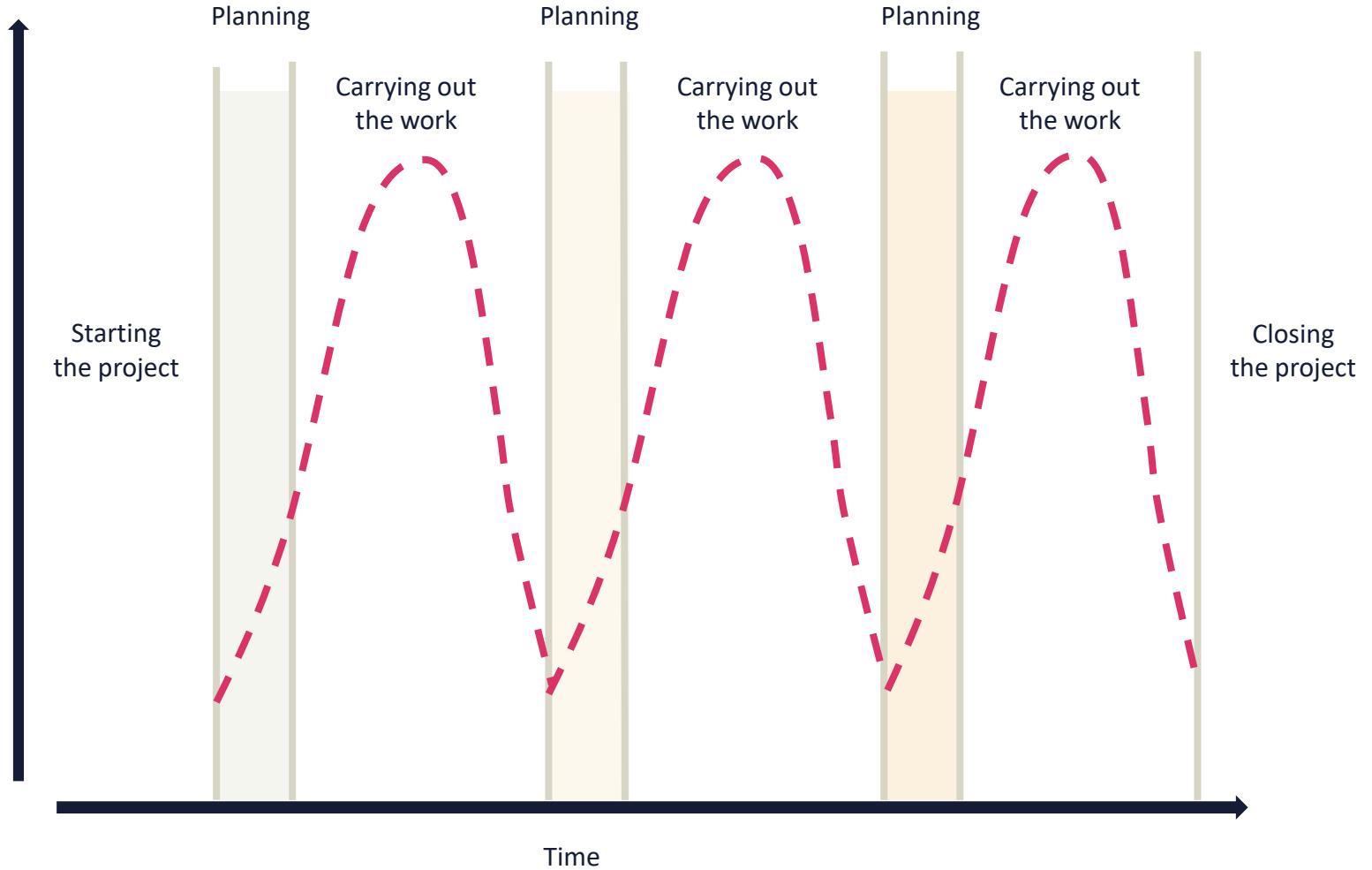


TRADITIONAL PROJECT LIFE CYCLE

Traditional project management
can also be called:

- Waterfall
- Plan-driven
- Predictive





AGILE PROJECT LIFE CYCLE

Agile is iterative and adaptive.
There are **multiple planning phases**.

PREDICTIVE VS. AGILE

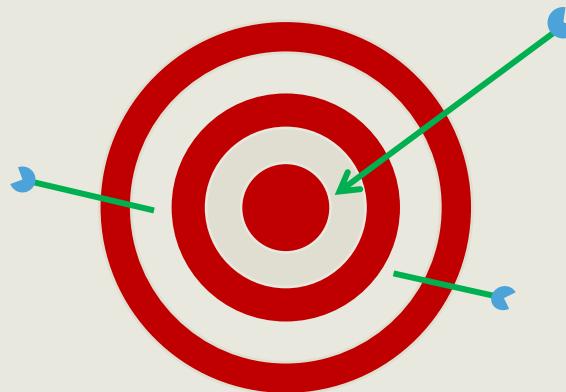
Predictive

- Plan carefully
- Few course corrections



Agile

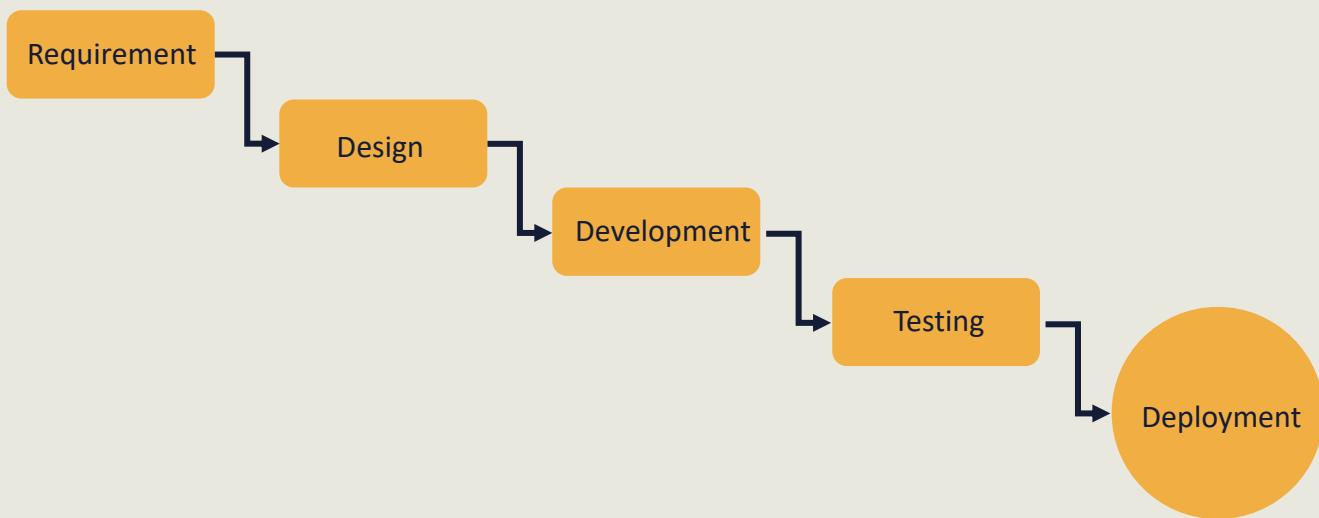
- Rolling wave planning
- Constant course corrections



PM METHODOLOGIES

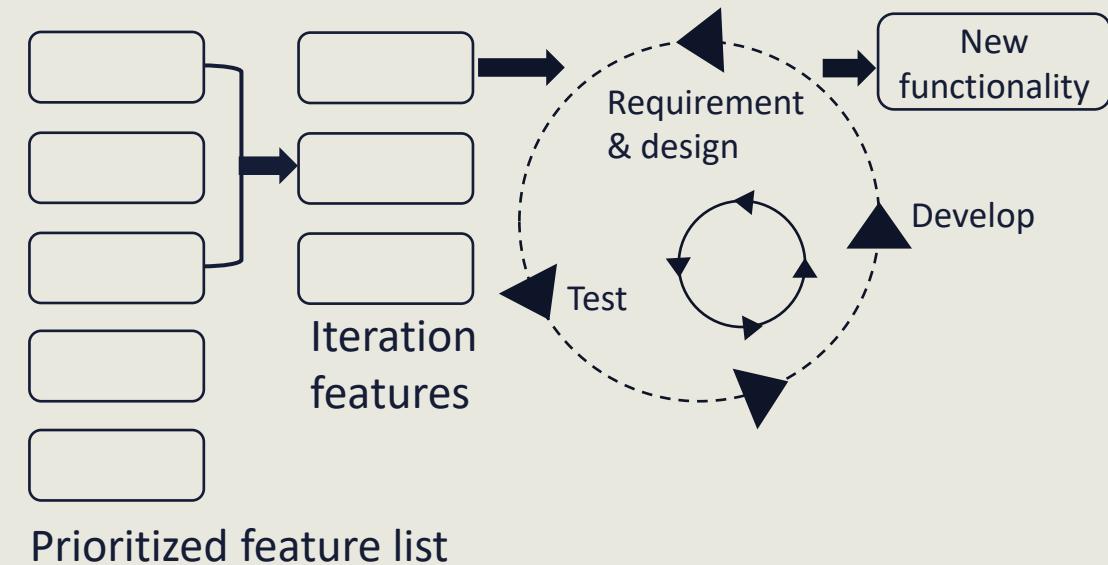
Predictive

- Waterfall methodology
- Plan-driven
- Traditional

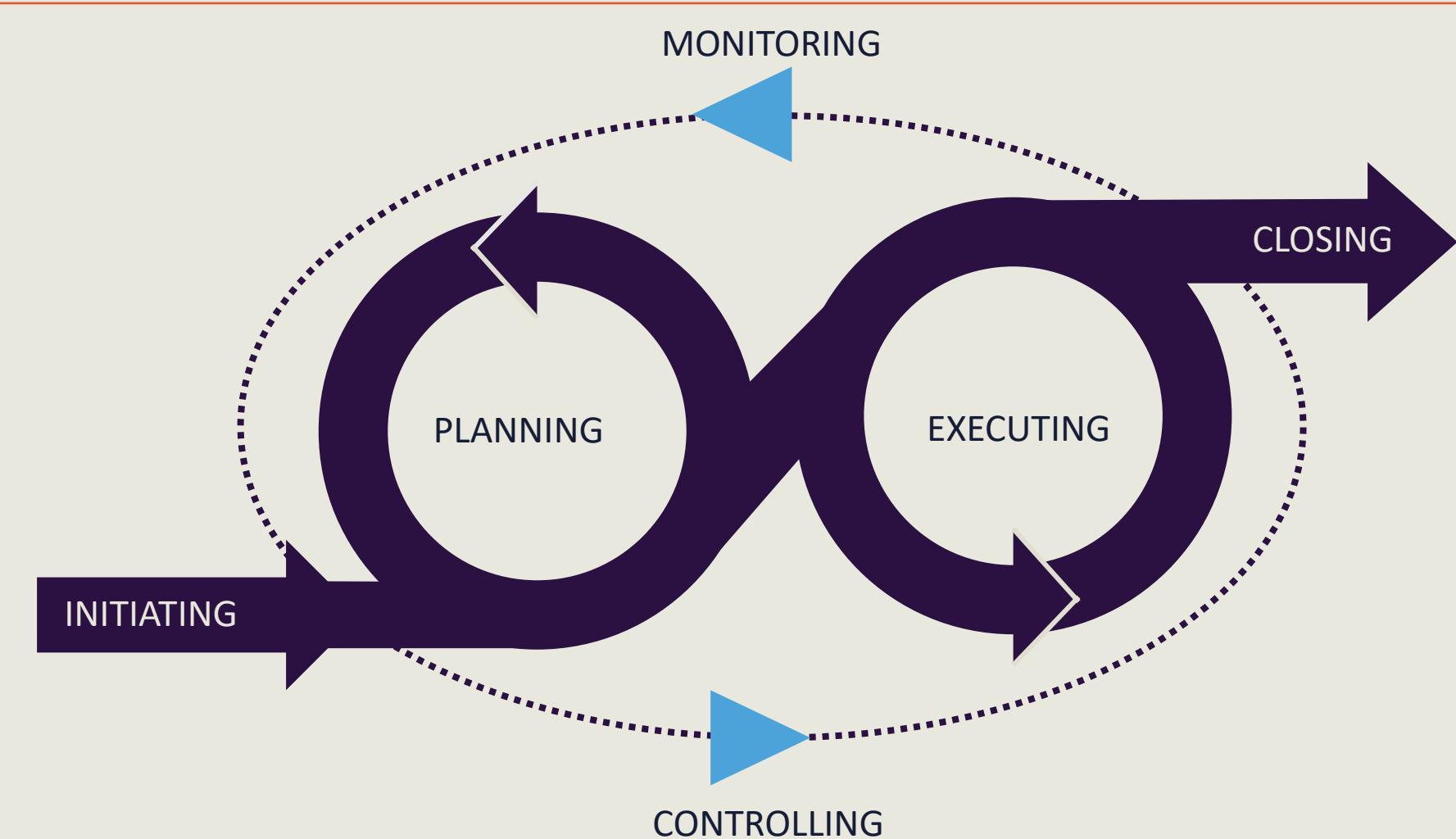


Agile

- Iterative
- Incremental
- Adaptive
- Stakeholder involvement



THE LIFE CYCLE PROCESSES



ENTERPRISE ENVIRONMENTAL FACTORS (EEFs)

“Enterprise”

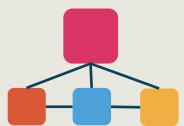
- Inside the organization
- Organizational structure
- Organizational policies
- Technology

“Environment”

- Outside the organization
- Government or industry standards
- Marketplace conditions
- Economy
- Socio-political situation



Human Resources



Organizational
Culture or Structure



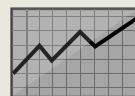
Commercial
Databases



Industry Standards



Government
Standards



Marketplace
Conditions



Political Climate

ORGANIZATIONAL CULTURE

Values

Norms

Informal policies & procedures

Views of authority

- Vision and mission statements
- Principles that it aims to achieve
- Example: we are known for our quality standards

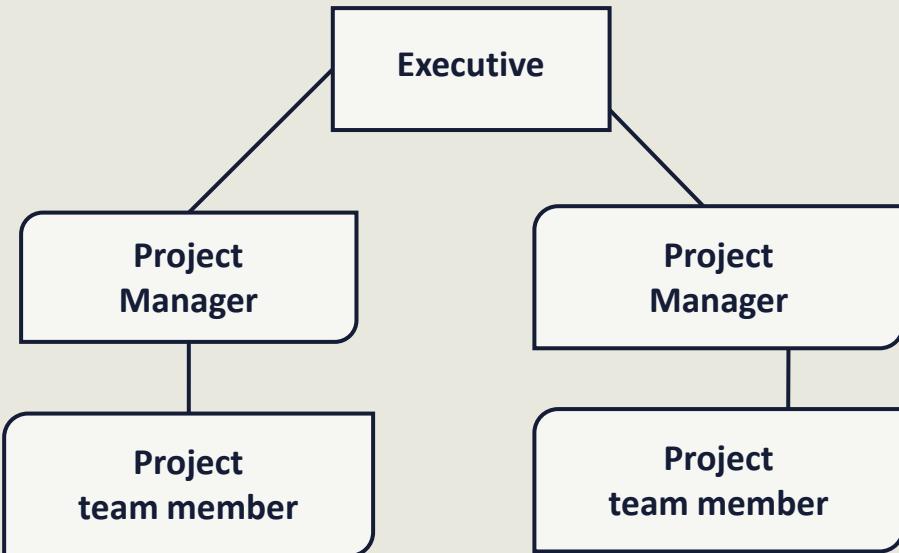
- Set of implied or unwritten rules and standards for the way things are done
- Particular language or way of communicating (jargon)
- Shared beliefs and practices
- Example: when a person leaves the team, we have the option to change desks in order of seniority

- Unwritten rules that the members of an organization are expected to follow
- Not found in employee handbook
- How to interact with employees, customers, and other stakeholders
- How to really "get things done around here".
- Example: go to a particular manager for approval, rather than to the person in the organizational chart

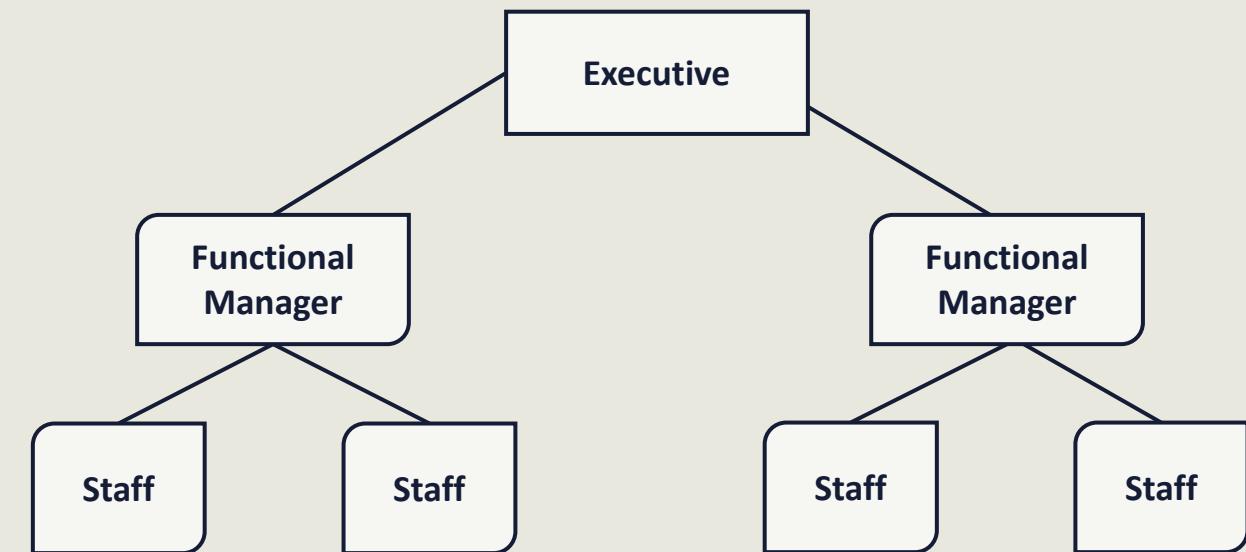
- level of respect for authority among members of the project
- determines whether work is done on time and according to specifications
- can affect level of risk to the project
- Example: team members decide to perform a task differently than the way it was assigned, which can impact project objectives

ORGANIZATIONAL STRUCTURE

Projectized organization



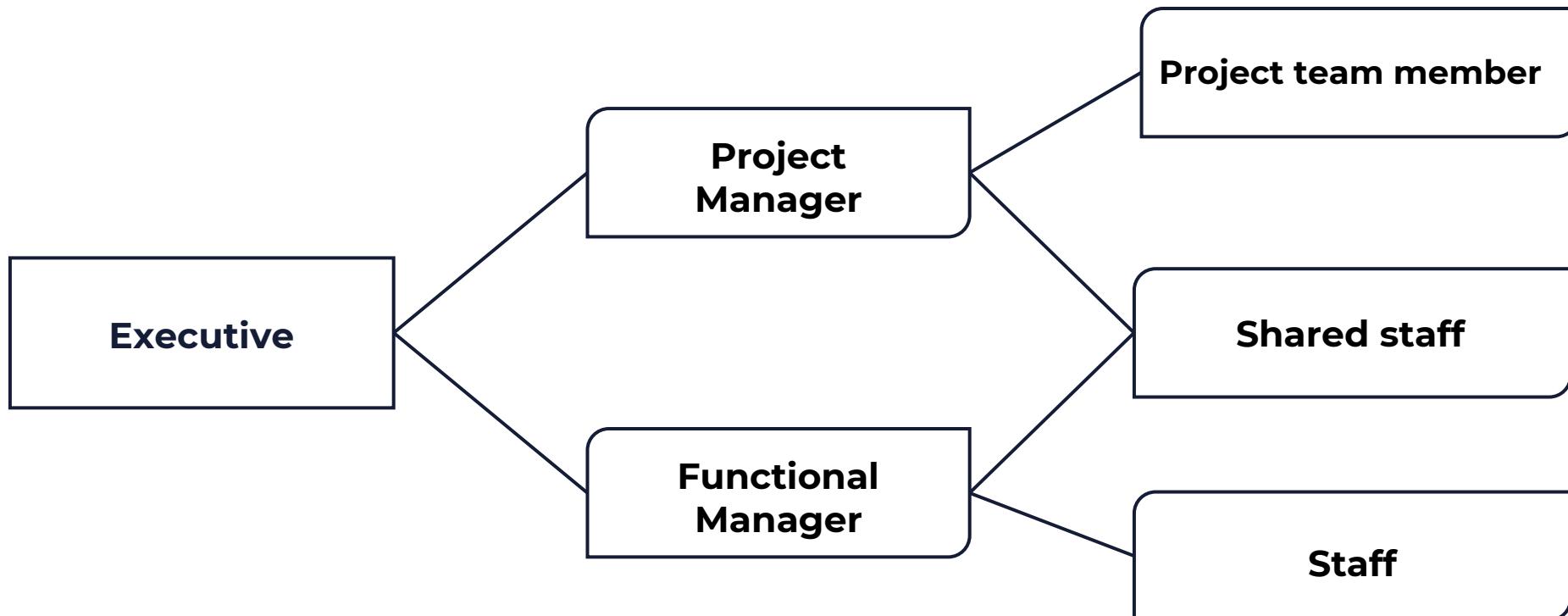
Functional organization



MATRIX STRUCTURES

Types of Matrix Organizations:

- Strong matrix: project work over functional duties
- Balanced matrix: equal emphasis between functional duties and projects
- Weak matrix: functional duties over project work



PROJECT CHARACTERISTICS

Project Characteristics	Functional	Projectized
Project manager's authority	Very low	High
Resource availability	Very low	High
Person in control of budget	Functional manager	Project manager
Project manager's role	Part time	Full time
Project administrative staff	Part time	Full time

FORMS OF POWER

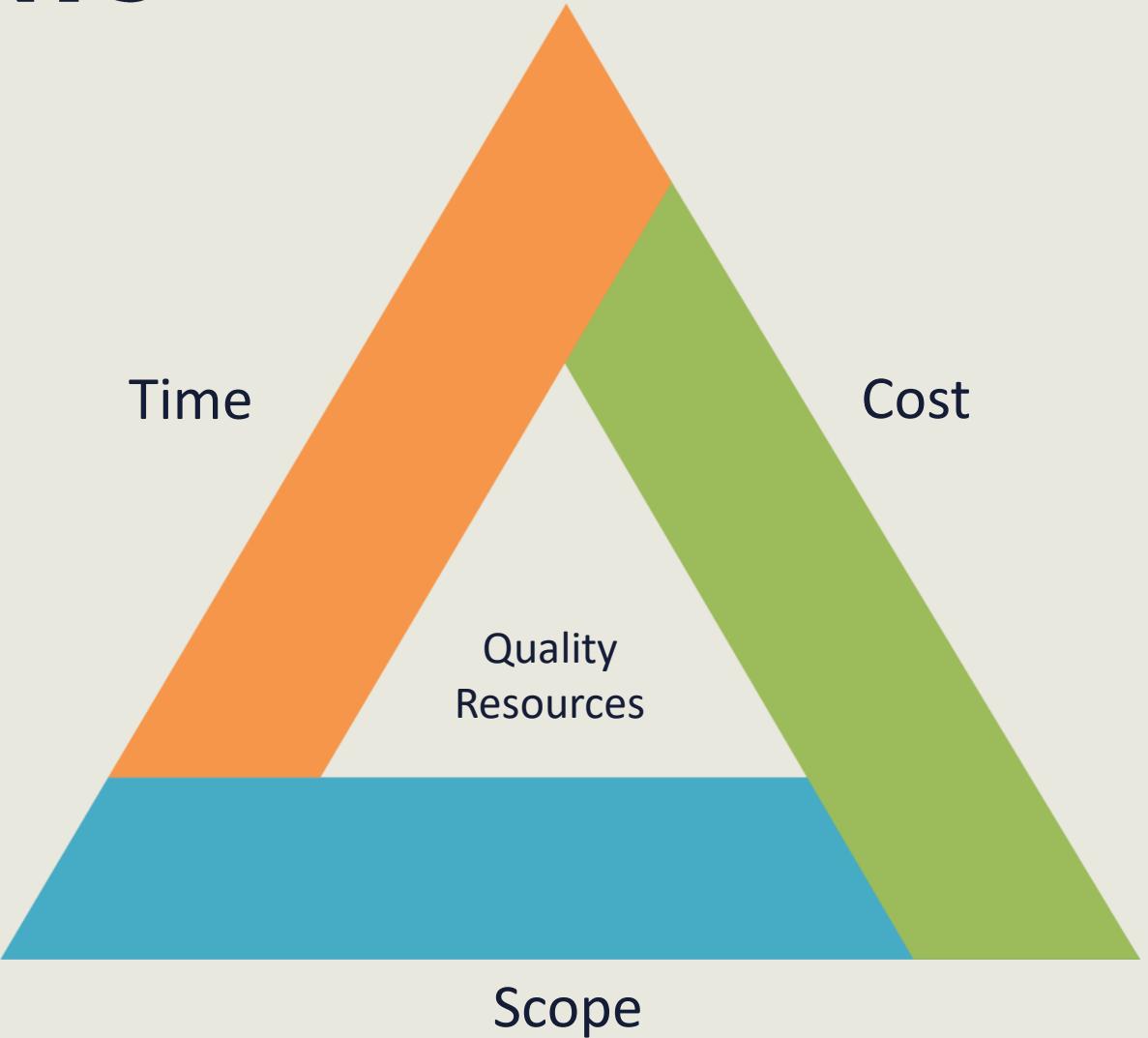
- Politics and Power
- Understanding how the organization works
- Using the correct form of power to influence and negotiate



- Positional (sometimes called formal, authoritative, legitimate) (e.g., formal position granted in the organization or team);
- Informational (e.g., control of gathering or distribution);
- Referent (e.g., respect or admiration others hold for the individual, credibility gained);
- Situational (e.g., gained due to unique situation such as specific crisis);
- Personal or charismatic (e.g., charm, attraction);
- Relational (e.g., participates in networking, connections, and alliances);
- Expert (e.g., skill, information possessed, experience, training, education, certification);
- Reward-oriented (e.g., ability to give praise, monetary or other desired items);
- Punitive or coercive (e.g., ability to invoke discipline or negative consequences);
- Ingratiating (e.g., application of flattery or other common ground to win favor or cooperation);
- Pressure-based (e.g., limit freedom of choice or movement for the purpose of gaining compliance to desired action);
- Guilt-based (e.g., imposition of obligation or sense of duty);
- Persuasive (e.g., ability to provide arguments that move people to a desired course of action); and
- Avoiding (e.g., refusing to participate).

PROJECT CONSTRAINTS

- Competing demands
- Primary constraints
 - Time
 - Cost
 - Scope
- Secondary constraints
 - Quality
 - Resources



THE BUSINESS CASE



Answers "Why is this project needed?"

Includes high-level details

- Justification
- Benefits to the organization
- Alignment to the strategic plan
- Alternative solutions
- Recommended solution
- May include feasibility study
 - Determine if project is viable
 - Trial period

BUSINESS NEED

Answers the question “Why?”

- Customer requests
- Organizational needs
- Social needs
- Changes in market demands
- Legal requirements
- Government standards
- Technological advances
- Ecological impacts
- Required training



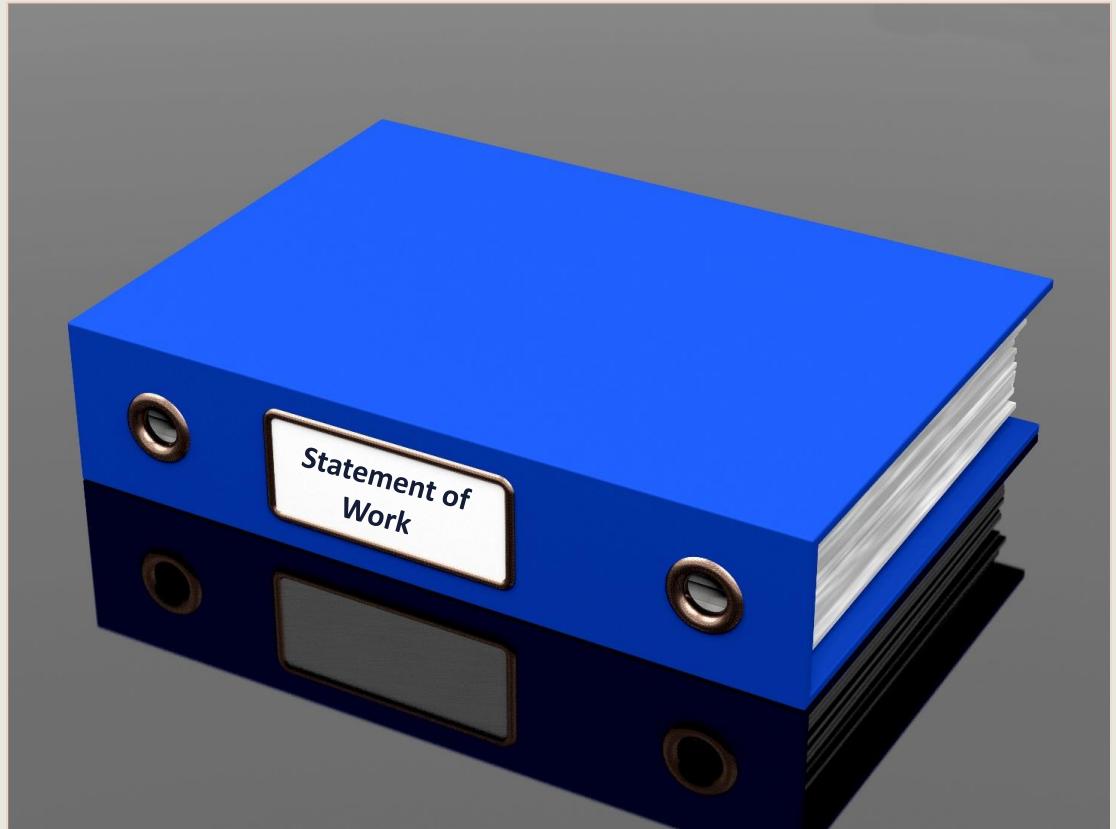
STATEMENT OF WORK

Business need

High-level scope
description

Strategic plan

Acceptance criteria

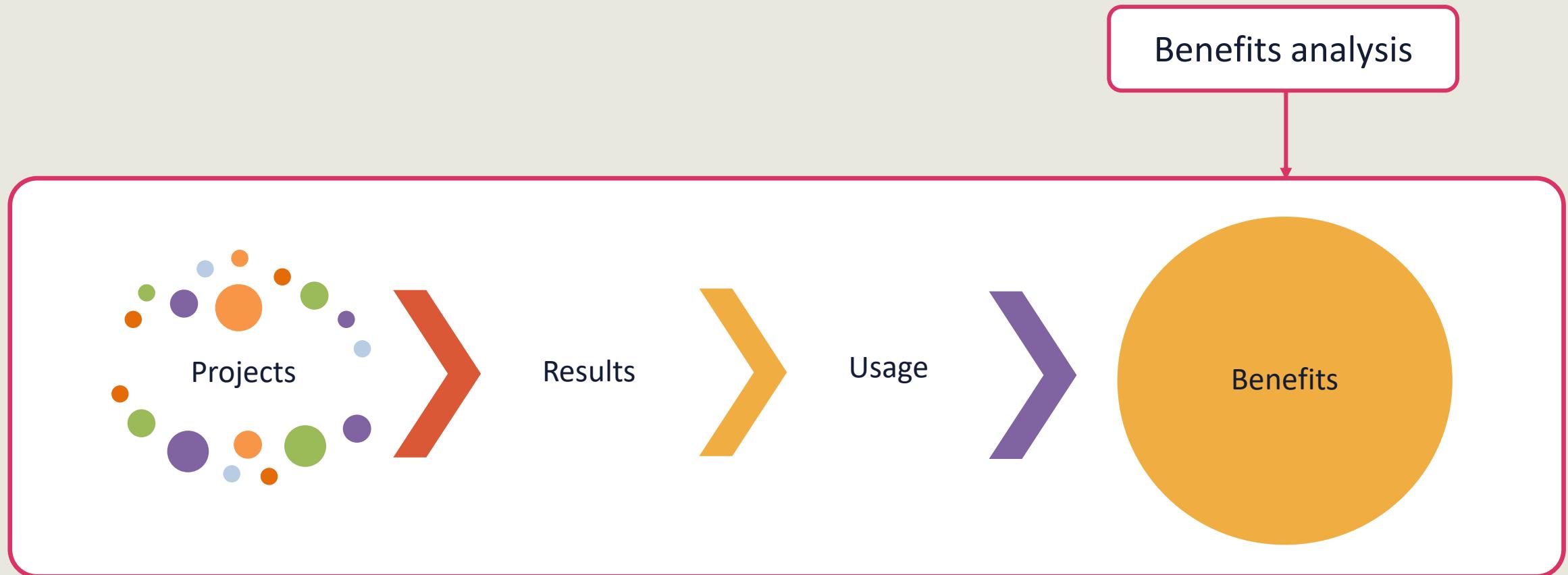


SUNK COSTS

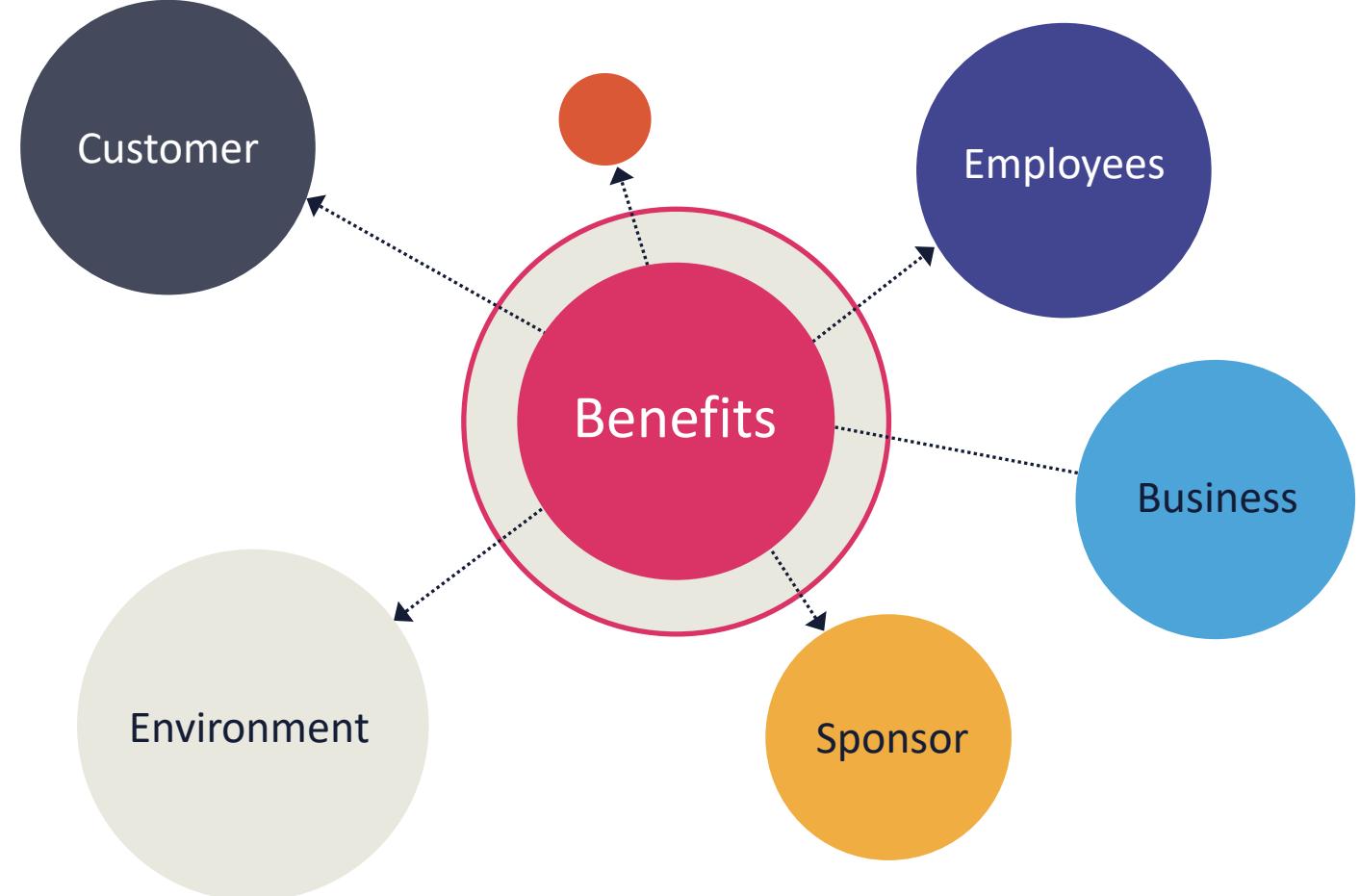
Sunk costs: Money that has been spent and cannot be recovered



PROJECT BENEFITS



WHO BENEFITS?



BUSINESS VALUE AND EXPECTED BENEFITS

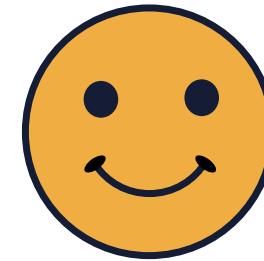
Tangible

- Monetary assets
- Fixtures
- Stockholder equity
- Utility
- Can be quantified



Intangible

- Good will
- Brand recognition
- Public benefit
- Trademarks
- Difficult to quantify



Organizations obtain business value from project investments.

ESTIMATE TANGIBLE BENEFITS

Project Selection Methods/Decision Models

Mathematical Approach

- Evaluate project on its own merits
- Constrained optimization
- Goal is to optimize the reward

Comparative Approach

Benefit Measurement Methods

- Payback period
- Internal Rate of Return (IRR)
- Net Present Value (NPV)
- Cost Benefit Analysis
 - Benefit Cost Ratio (BCR)
- Scoring Models
 - Rate options against predefined list of criteria

THE PROJECT CHARTER

Provides formal authorization
for project work to begin

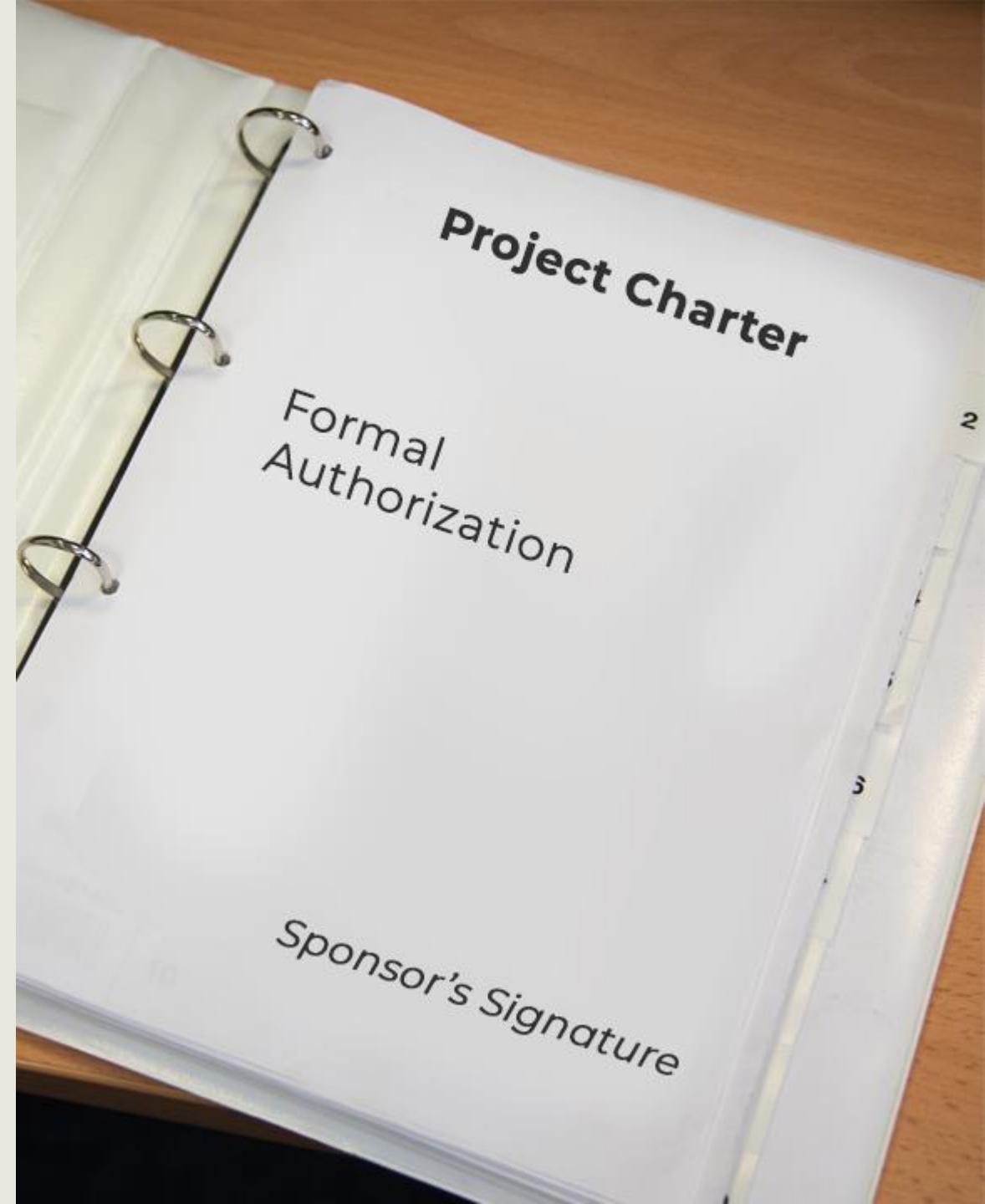
- Sponsor's signature
- No work can begin until the charter is signed

Names the project manager

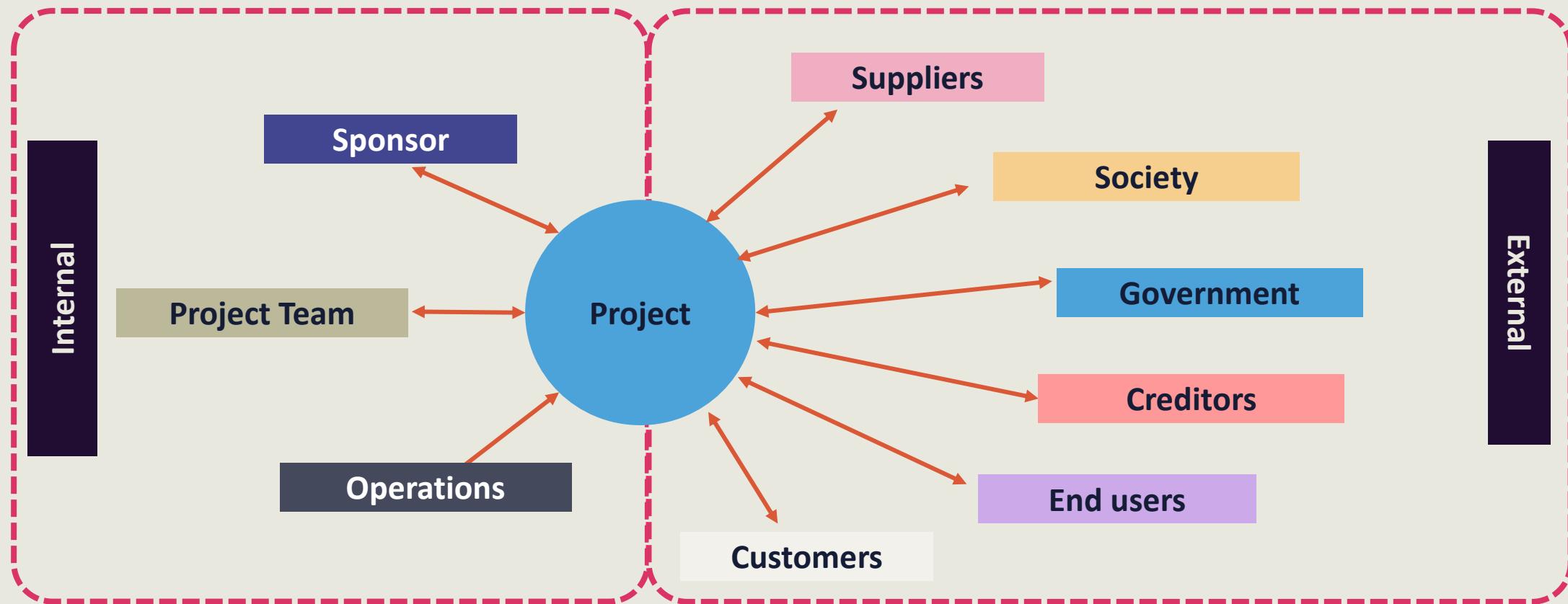
- Responsibilities
- Level of authority

Provides high level project information

- | | |
|---------------------|------------------------------------|
| • Business need | • Schedule, milestones, and budget |
| • Objectives | • Key stakeholders |
| • Requirements | • Known risks |
| • Scope description | • Success criteria |
| • Key deliverables | |

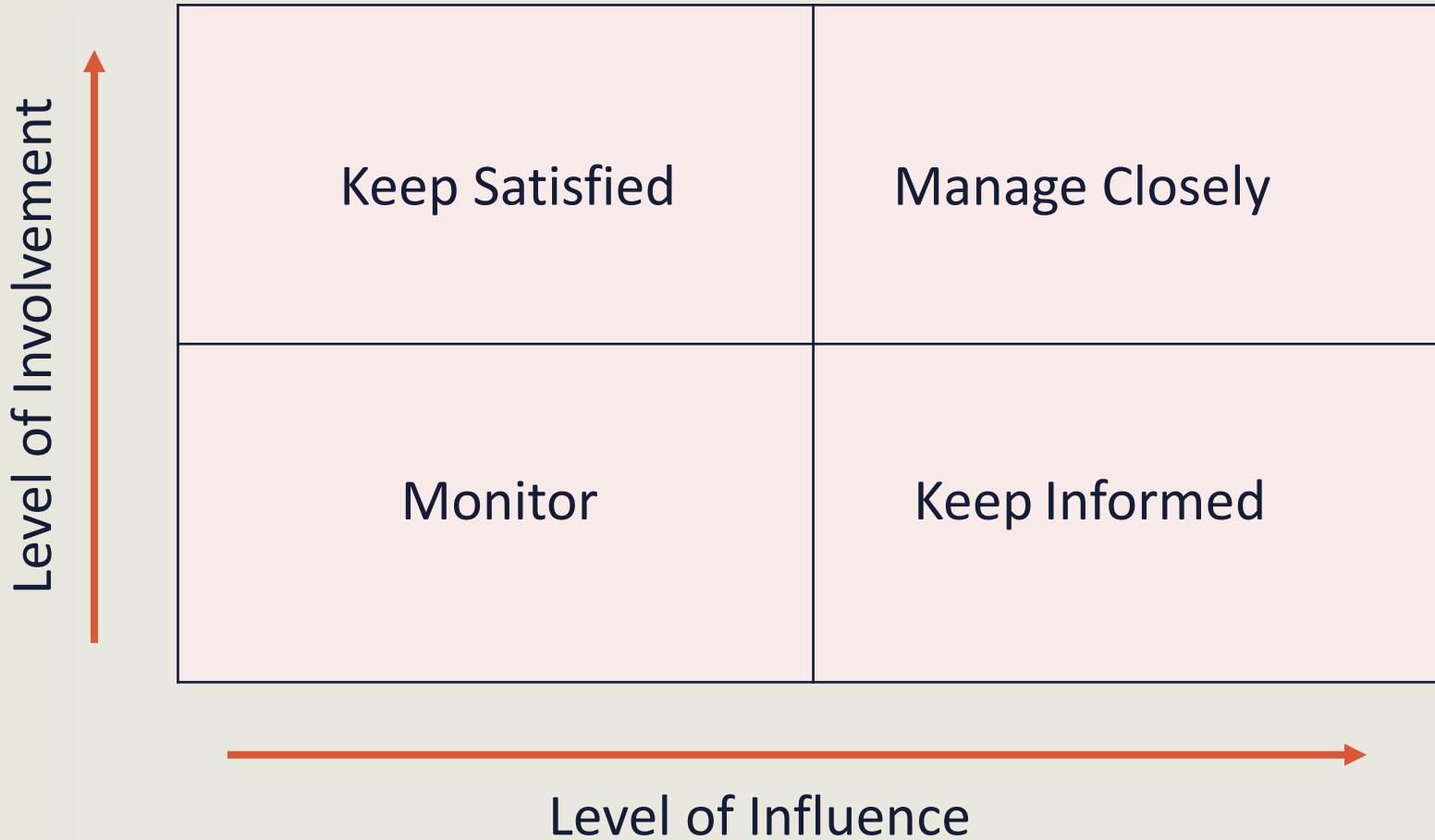


IDENTIFY STAKEHOLDERS



Any person or organization that has a vested interest in your project.
If you aren't sure of all stakeholders, you may utilize “personas”.

STAKEHOLDER ANALYSIS



Power/Interest grid
Power/Influence grid
Influence/Impact grid
Salience Model

- Power, Urgency, Legitimacy
- (3D)

Keep in mind that stakeholder attitudes and positions can change. Stakeholder analysis is ongoing.

STAKEHOLDER REGISTER

Project Title: _____			Date Prepared: _____			
Name	Contact Info	Dept/Position	Role	Requirements	Expectations	Classification (level of influence and involvement)
Savannah Paulus	ext. 5711 s.paulus@gleeson.com	Senior architect	Functional manager of team member Susan Chung	Notify of schedule changes	Susan returns to functional duties by September 1 st	2
Ramon Weiss	30776 Oak Ave Tel: 303-555-5768 Cell: 303-555-2889	Chair, Poseidon Park Protection Association	None	No environmental impact on adjacent park	Consulted on any construction that could impinge on park grounds	3
Barry Bashira	75-472 Barcel Court Tel: 303-555-8173, Ext. 5669 Fax: 303-555-8194	CEO, Unito Properties	Customer	Project delivered: - On time - On spec - On budget	- Meet all milestones - Keep to schedule, budget, scope - Fulfill customer requirements	1

STAKEHOLDER REGISTER AND ISSUE LOG

Stakeholder Register:

Reevaluate and update regularly

Stakeholder engagement can change

Low-power stakeholders may leverage relationships

Issue Log:

Keep track of stakeholder issues and concerns

Document status of issues and actions taken

Name	Contact Info	Dept/Position	Role	Requirements	Expectations	Classification (level of influence and involvement)
Savannah Paulus	ext. 5711 s.paulus@gleeson.com	Senior architect	Functional manager of team member Susan Chung	Notify of schedule changes	Susan returns to functional duties by September 1 st	2
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PROJECT MANAGEMENT PLAN



Integration

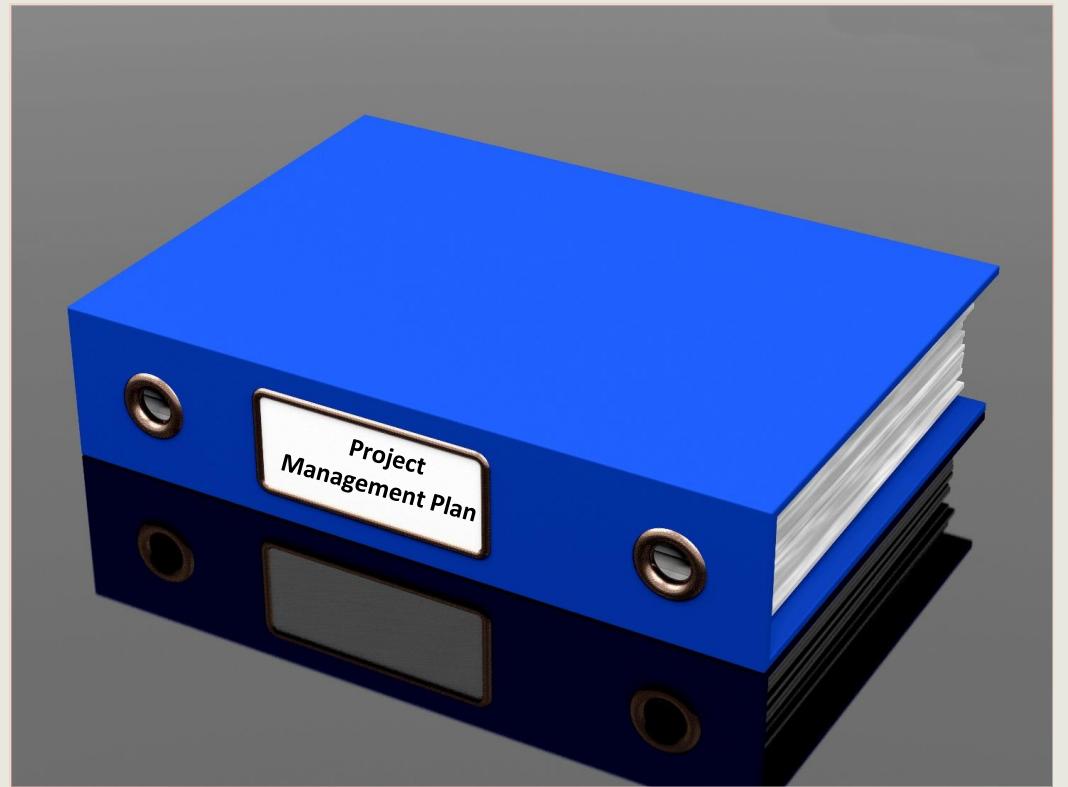
This may go through multiple iterations.



PROJECT MANAGEMENT PLAN

The Project Management Plan is like the owner's manual for your project.

- Realistic
- Agreed upon
- Formal document
- Contains a subsidiary management plan for each knowledge area.





KICK-OFF MEETING

Purpose

- Announce the start of the project
- Communicate the vision
- Ensure buy-in
- Introduce key details to stakeholders
 - Milestones
 - Risks
 - Communication plan
 - Meeting schedule
 - Policies

Attendees

- Project Manager and team
- Sponsor
- Functional Managers
- Customers
- Vendors
- Key Stakeholders

PROJECT AND PRODUCT SCOPE

Developing a detailed description

PROJECT “HOW”



PRODUCT “WHAT”



SCOPE PLANNING DOCUMENTS

Scope Management Plan

1. How will scope be defined?
2. How will scope be validated and controlled?
3. How will scope be managed throughout the project?

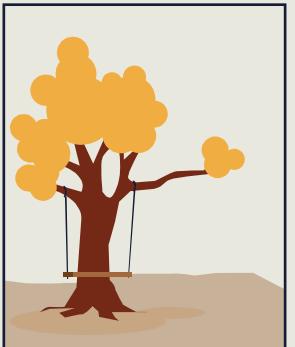
Requirements Management Plan

1. How requirements will be planned, tracked, and reported
2. How changes will be managed
3. Priorities and metrics
4. Traceability structure for capture of requirements

PROJECT REQUIREMENTS



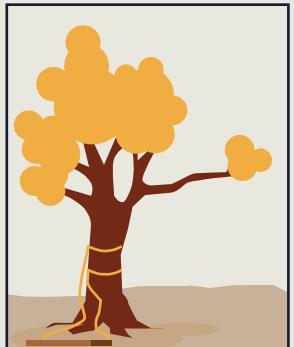
How the costumer explained it



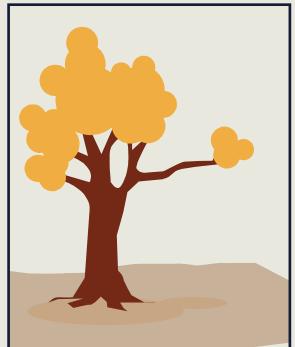
How the project leader understood it



How the analyst designed it



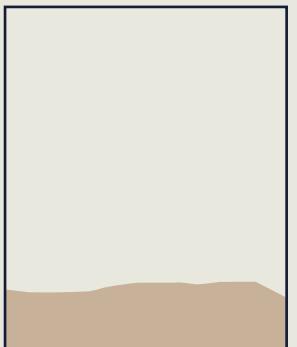
How the programmer wrote it



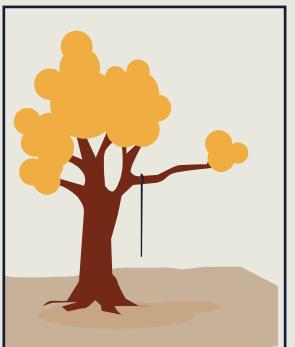
What the beta testers received



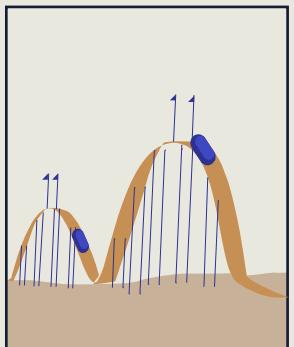
How the business consultant described it



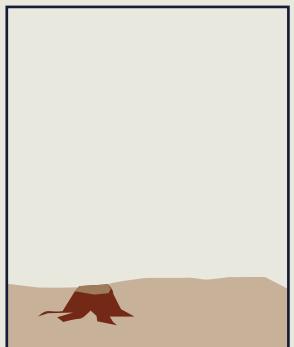
How the project was documented



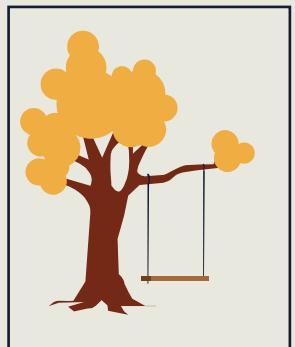
What operations installed



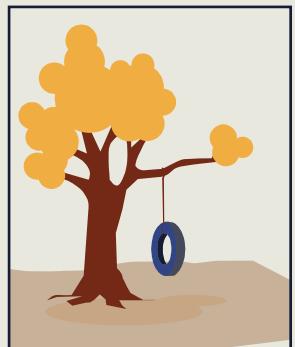
How the customer was billed



How it was supported



What marketing advertised



What the costumer really needed

CATEGORIES OF REQUIREMENTS

Business

- Big-picture business goals
- Benefits in terms of profit or metrics

Functional

- How it works
- “If you push this button, this will happen.”

- What should the product be like?
- Collect requirements
- Understand customer needs
- Features or functionality a product must have
- Narrowing down final set of requirements
- Provide as much detail as possible

Non-Functional

- Characteristics such as appearance
- “The power button will be green.”

BRAINSTORMING

- A technique used to generate and collect multiple ideas related to project and product requirements.
- Create an unstructured list
- Members inspire each other



MEETINGS

Focus Groups

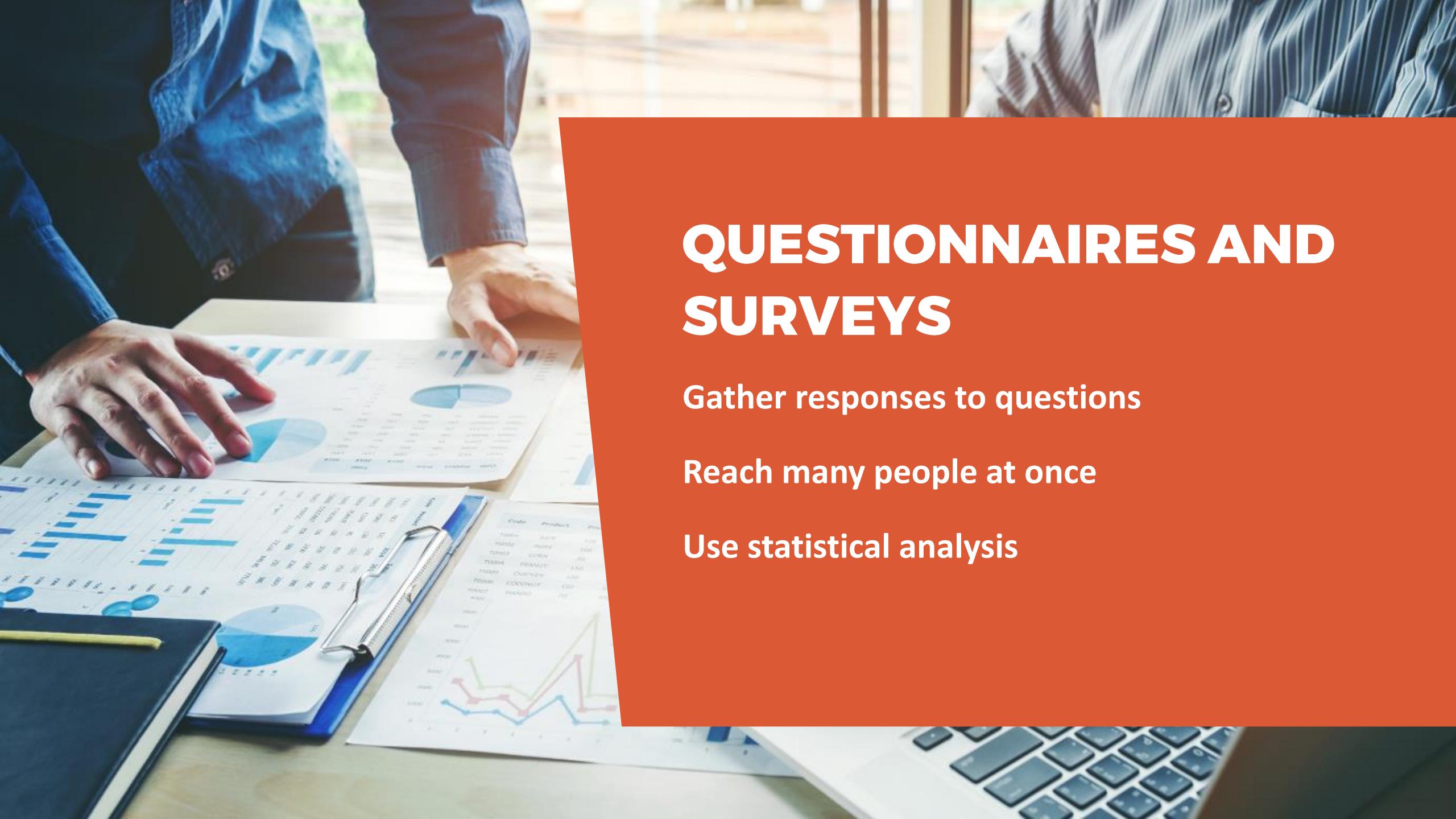
- Interactive discussion
- What are your expectations or concerns?
- What specific requirements do you feel need to be included, or excluded?



Facilitated Workshops

- Cross-functional
 - Diverse viewpoints
 - Avoid “group think”
- Meet to work and make decisions



A photograph showing a person's hands pointing at a document filled with various charts, graphs, and data tables. The person is wearing a blue denim jacket and a dark shirt. The background shows a window with a view of a wooden building.

QUESTIONNAIRES AND SURVEYS

Gather responses to questions

Reach many people at once

Use statistical analysis

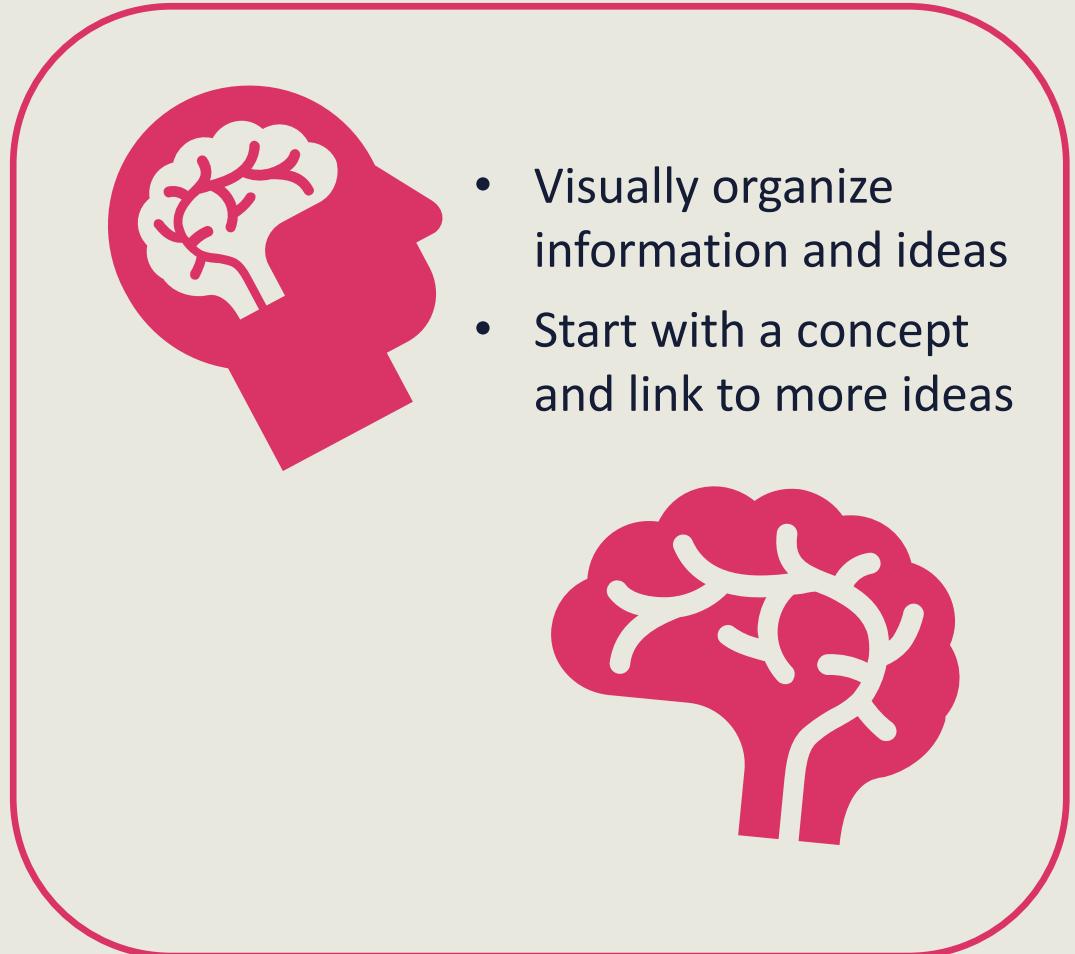
NOMINAL GROUP TECHNIQUE



- Prioritization tool
- Brainstorm ideas, then rank them
- Each member has equal say

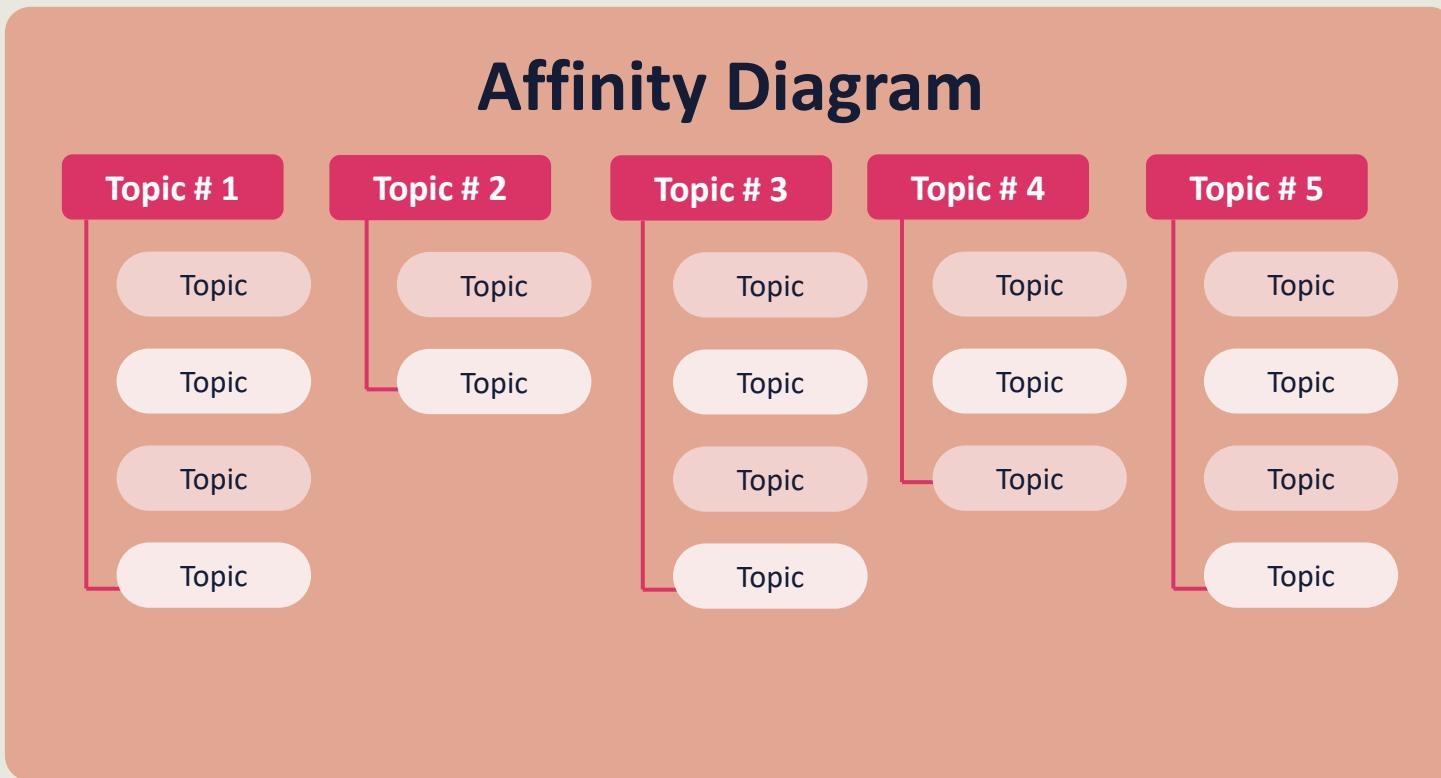
	Idea #1	Idea #2	Idea #3
Voter #1	1	2	3
Voter #2	2	3	1
Voter #3	2	1	3
Total	1.67	2	2.33

MIND MAPPING



AFFINITY DIAGRAM

A technique in which a large number of ideas are classified into groups for further review and analysis



MULTICRITERIA DECISION ANALYSIS

Requirement	Difficulty	Cost	Resources	Risk	Value	Skill Level	Total score
Requirement X	3	2	3	3	3	2	16
Requirement Y	3	1	3	3	3	3	16
Requirement Z	1	3	2	2	2	2	12
Requirement A	3	2	2	1	1	1	10
Requirement B	1	2	1	3	2	2	11
Requirement C	2	1	3	2	3	3	14
Requirement D	2	3	1	1	1	1	9
Requirement V	1	2	1	2	1	2	9

A technique that utilizes a decision matrix to provide a systematic analytical approach for establishing criteria, such as risk levels, uncertainty, and valuation, to evaluate and rank many ideas.

GROUP DECISION MAKING

There are various methods of reaching a group decision such as

- **Unanimity.** A decision that is reached whereby everyone agrees on a single course of action. One way to reach unanimity is the Delphi technique.
- **Majority.** A decision that is reached with support obtained from more than 50% of the members of the group.
- **Plurality.** A decision that is reached whereby the largest block in a group decides, even if a majority is not achieved.
- **Dictatorship.** In this method, one individual makes the decision for the group.



A photograph of two women in an office environment. One woman, wearing a white shirt and red glasses, is seated at a desk, looking up and smiling. The other woman, wearing a yellow top, is standing and leaning over the desk, also smiling. They appear to be engaged in a friendly conversation.

OBSERVATION

- Watch how a task is performed
- Job shadowing
- Participant observation

PROTOTYPES

- Working model of a product
- Example: prototype of virtual reality headset
- Users give feedback
- Refine prototype based on requirements



REQUIREMENTS DOCUMENTATION

Result of collecting requirements

Quantifies and prioritizes

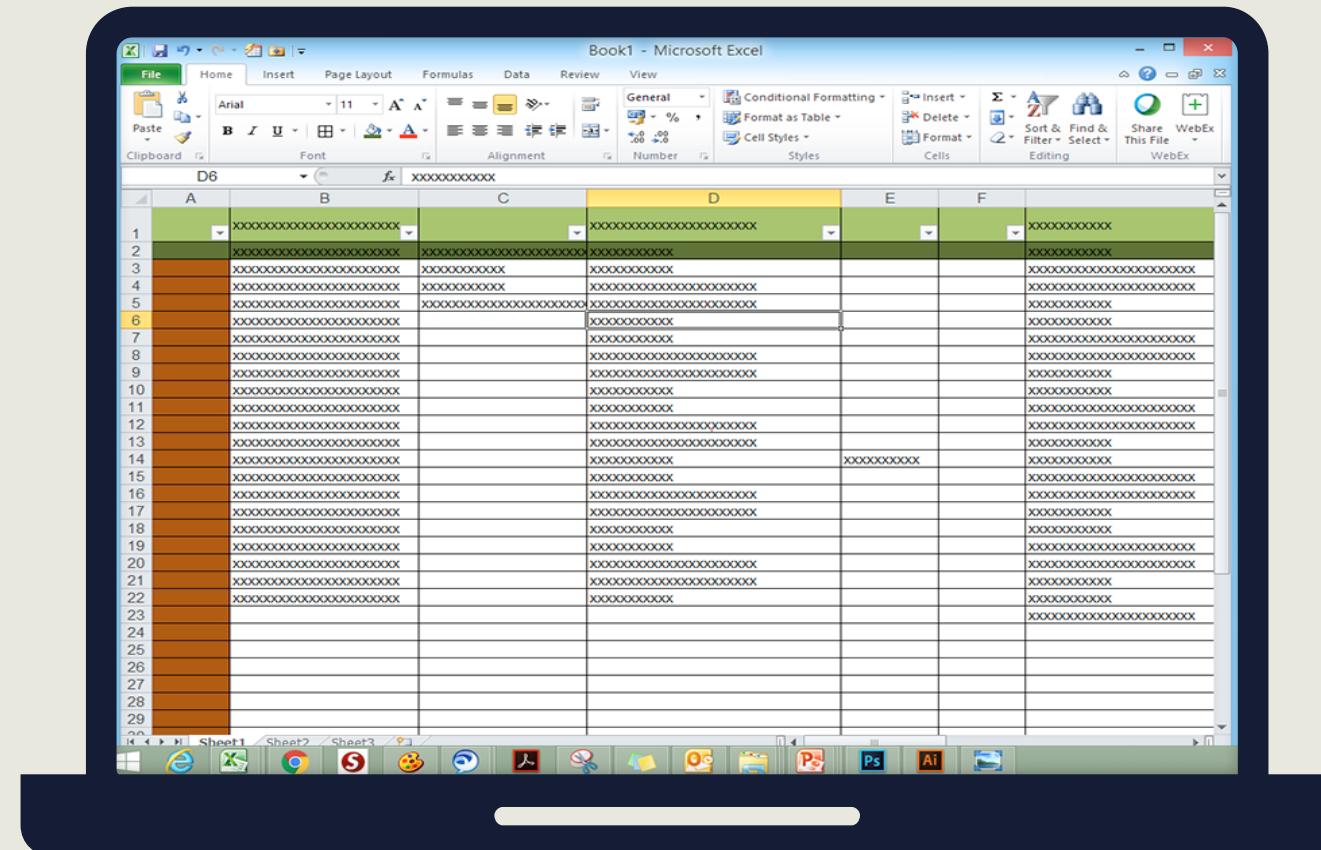
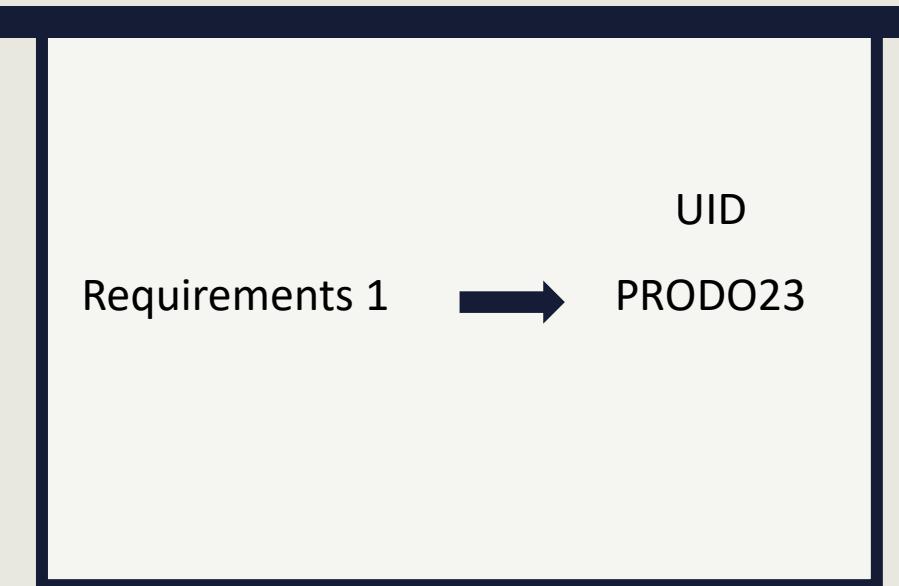
- Needs
- Wants
- Expectations

Includes how each requirement satisfies a business need



REQUIREMENTS TRACEABILITY MATRIX

- Forward and backward traceability
- Unique identifier
- Tracking system



A screenshot of a Microsoft Excel spreadsheet titled "Book1 - Microsoft Excel". The spreadsheet displays a Requirements Traceability Matrix. The columns are labeled A through F, and the rows are numbered 1 through 29. The first three rows (1, 2, 3) have a green header, while the remaining rows (4 through 29) have an orange header. The matrix consists of two main sections: a vertical section on the left and a horizontal section on the right. The vertical section contains numerous "XXXXXX" placeholder values. The horizontal section contains several "XXXXXX" placeholder values. The matrix is set against a dark blue background.

A	B	C	D	E	F
1	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
2	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
3	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
4	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
5	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
6	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
7	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
8	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
9	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
10	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
11	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
12	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
13	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
14	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
15	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
16	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
17	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
18	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
19	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
20	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
21	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
22	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
23					
24					
25					
26					
27					
28					
29					

VALUE ENGINEERING

Value Engineering/Value Analysis: Identifying the best value alternative for materials, designs, etc. in an effort to cut costs while increasing efficiency, effectiveness or quality.

What can be optimized?

- Processes
- Technology
- Experienced resources

What can be eliminated?

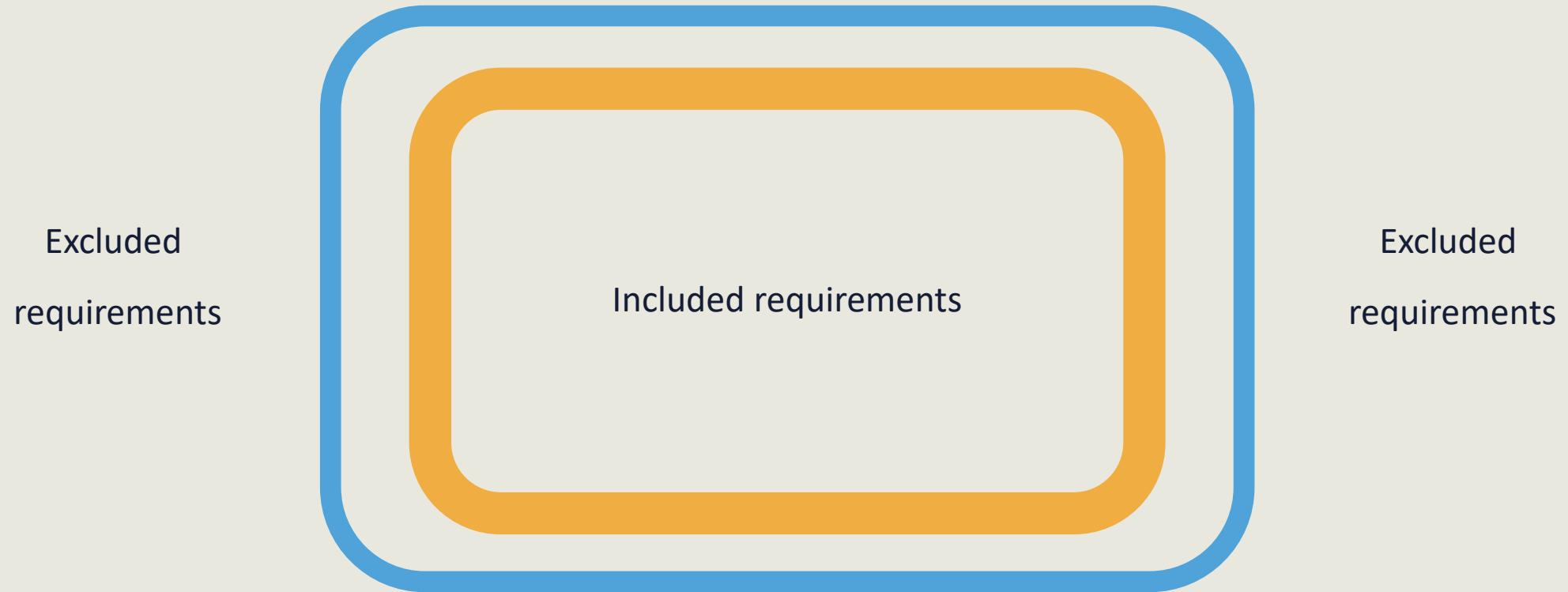
- Unnecessary steps and features

What can be substituted?

- Materials
- Vendor



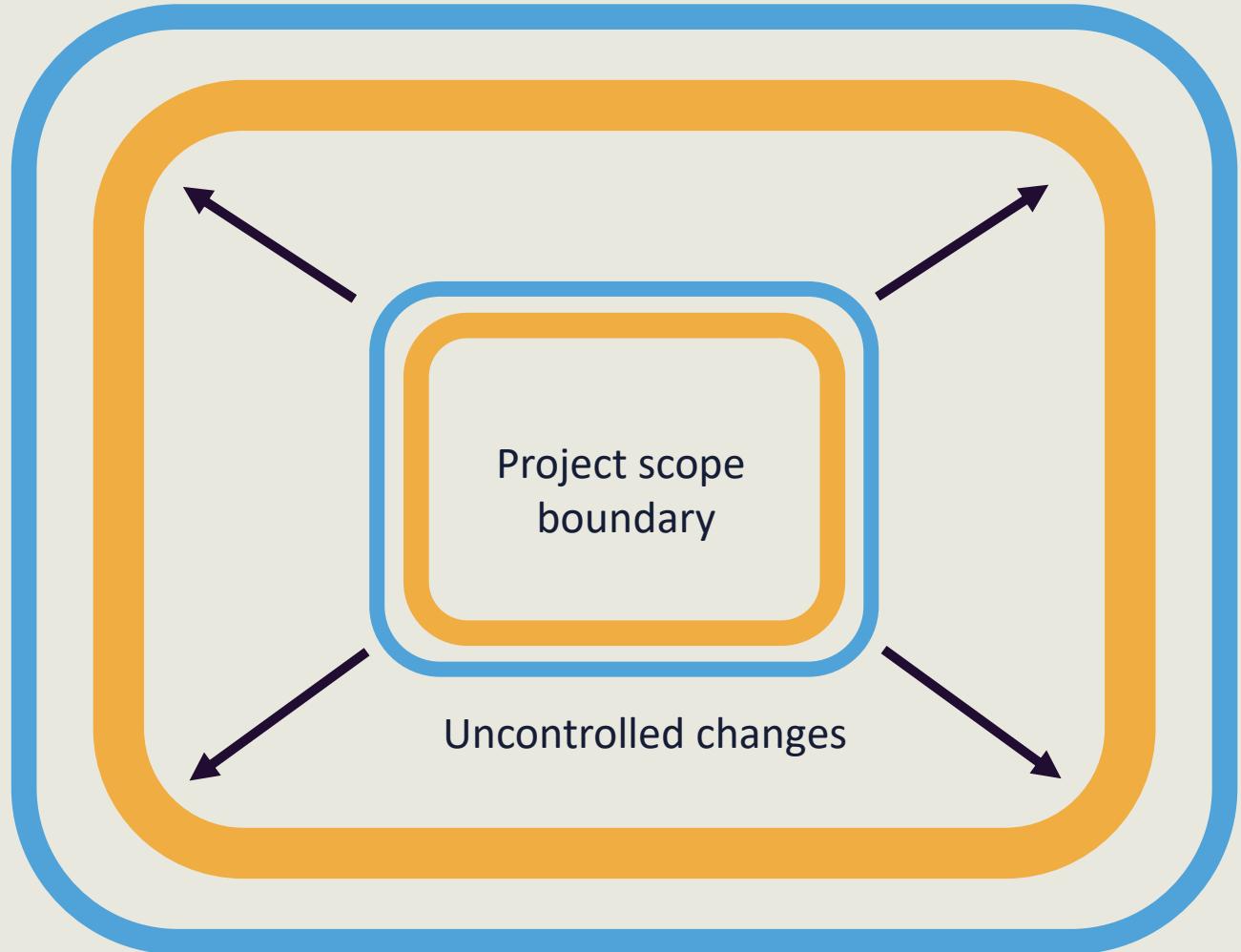
SCOPE BOUNDARIES



Project scope is like a boundary

SCOPE CREEP

Uncontrolled increase in scope
Some changes seem minor
Over time, they add up



PRODUCT ACCEPTANCE CRITERIA

- Do deliverables meet requirements?
- Prevents disagreements

Acceptance criteria

- ✓ Battery lasts 8 hours on full charge
- ✓ Password protected with 4-6 characters

PROJECT ASSUMPTIONS

Assumption. A factor in the planning process that is considered to be true, real, or certain, without proof or demonstration.

- We have to make certain assumptions during planning.
- Ex: Prices of raw materials will remain steady.
- Ex: Vendors will follow through on commitments.
- Ex: Resources will remain available.
- Inaccurate assumptions contribute to risk.



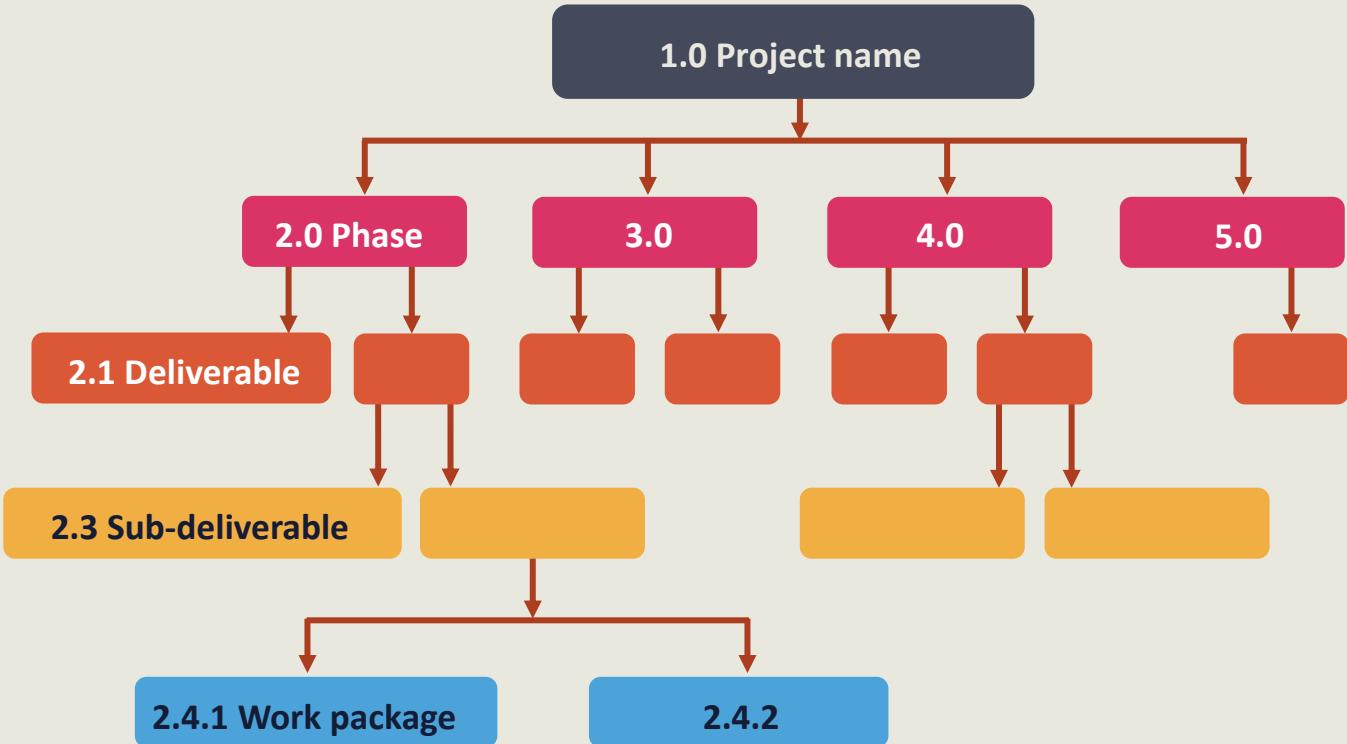
PROJECT SCOPE STATEMENT

Components of a Scope Statement

- Project objective (from the charter)
- Project description
- Acceptance criteria
- Key deliverables
- Scope exclusions
- Time and cost estimates
- Project constraints
- Project assumptions



WORK BREAKDOWN STRUCTURE (WBS)



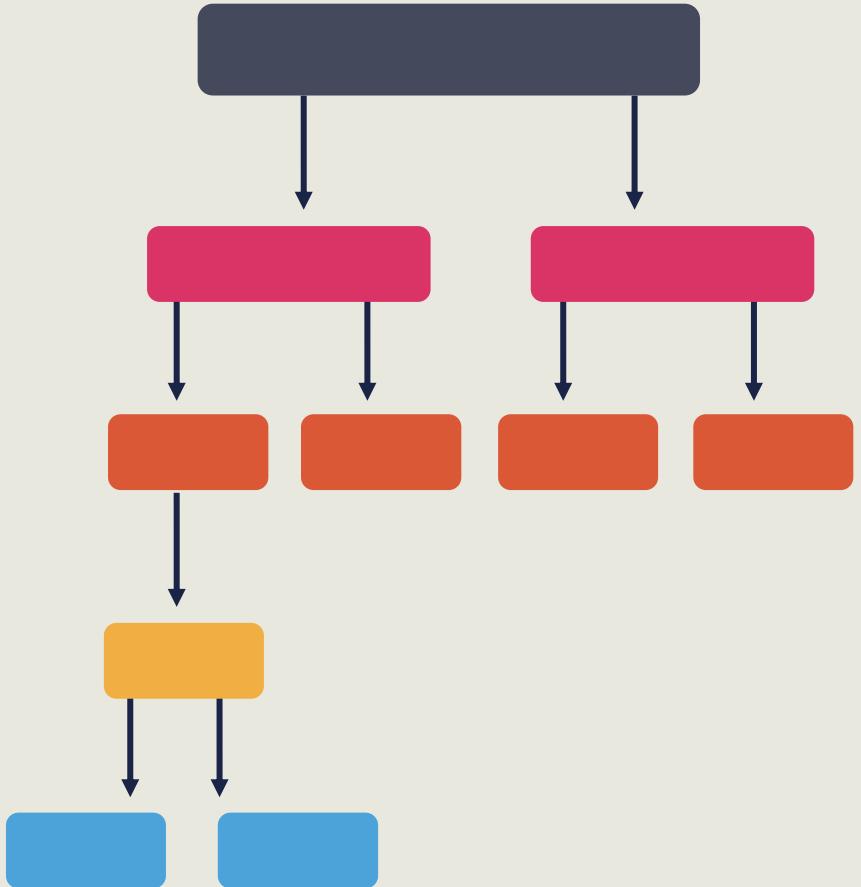
Decomposition can be tailored

Lowest level is always called
the “work package”

8/80 or 4/40 rule

Control accounts

WBS DICTIONARY



WBS Dictionary	
Project name: Software integration project	Date: June 23
WBS number: 4.2	WBS name: Coding
Parent WBS number: 4	Parent WBS name: Development
Responsible individual/organization: Development team	
Associated requirement(s):	
Scope of work: The modules will be developed using all the available tools that will enable the developers to handle both the visual and run time software requirements. The software to be integrated has both server and end user components.	
Budget: Cost account 2b	
Child WBS number: 4.2.1	Child WBS name: Server
Child WBS number: 4.2.2	Child WBS name: End user
Prepared by: Gina Rosetti	Approved by: Anthony Caruso
Title: Development manager	Title: Project manager
Date: May 12	

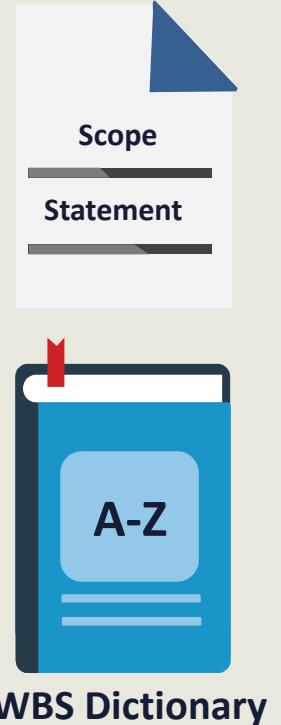
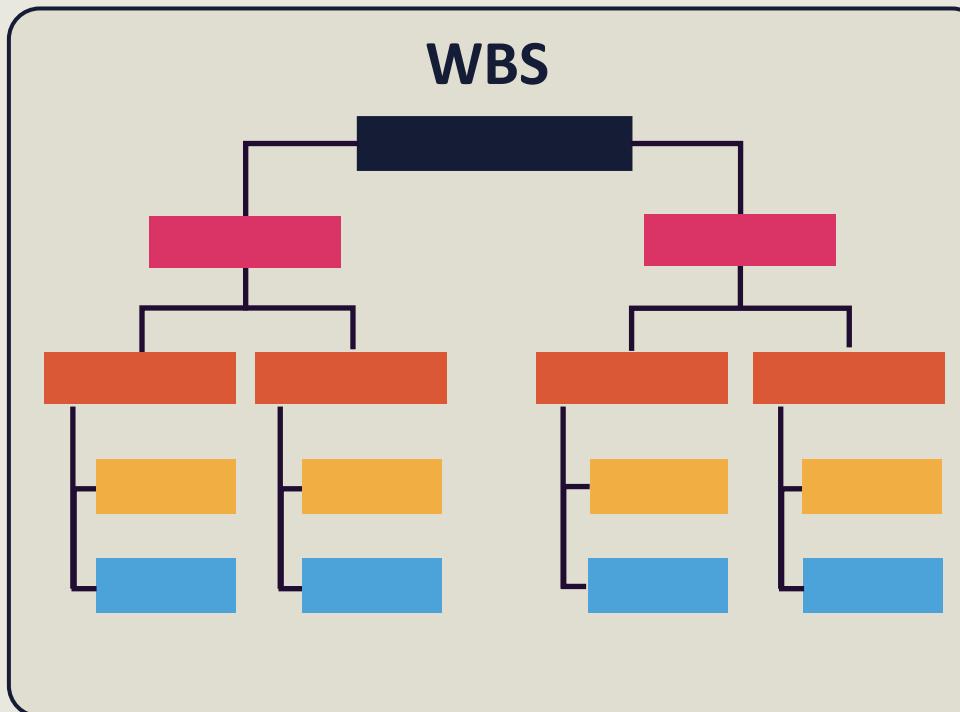
SCOPE BASELINE

Scope Statement

WBS

WBS Dictionary

- Code Identifier
- Description of work
- Life of schedule milestones
- Resources
- Cost estimates
- Quality requirements
- ETC.





ROLLING WAVE PLANNING

- Plan each task as it gets closer
- Progressive elaboration
- Adding more detail to the plan as additional project information becomes available
- Allows the plan to evolve in a controlled way
- Iterative process
- Not scope creep



SCHEDULE MANAGEMENT PLAN

Decisions

- Methodology and technology
- Estimating techniques
- Level of accuracy
- Units of measure
- Define process for tracking and reporting

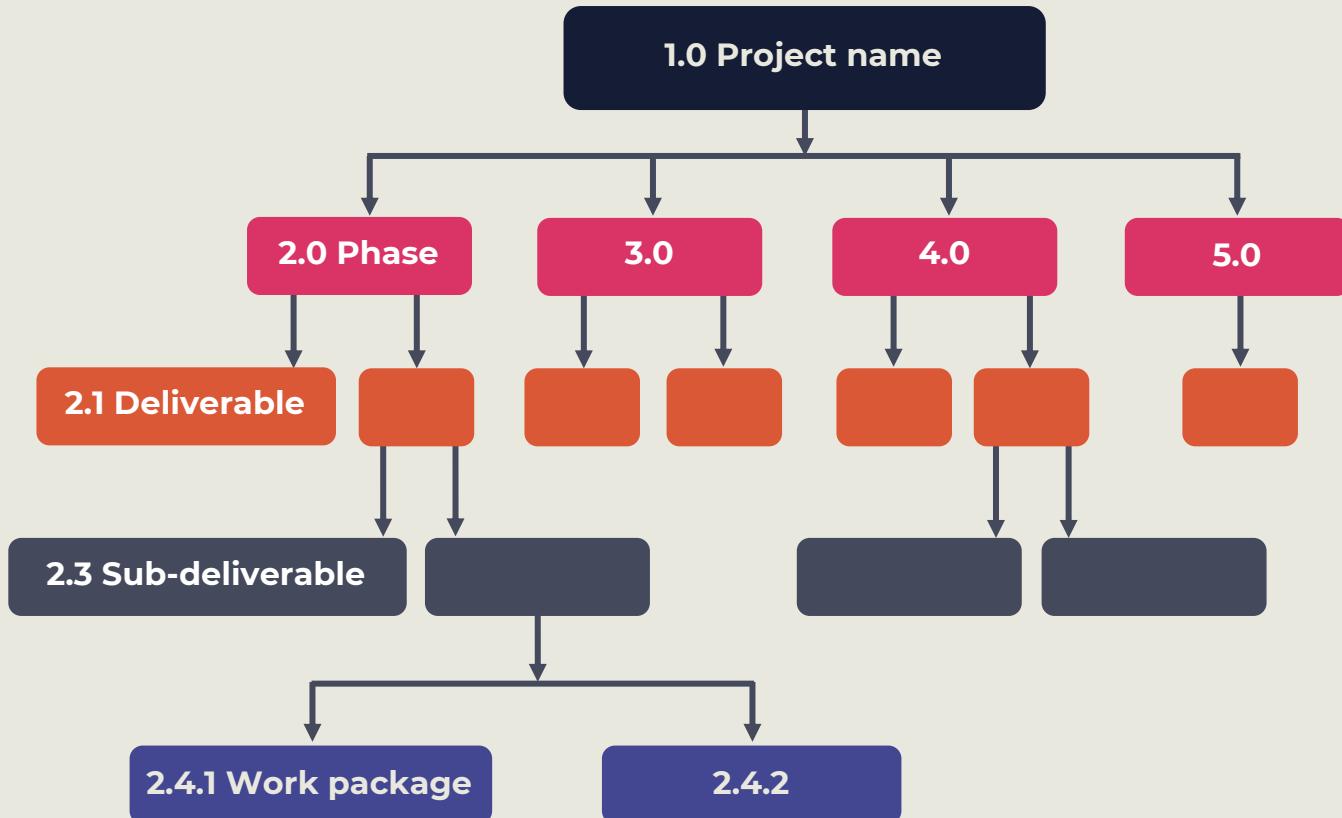
Factors that will affect the schedule

- Time zones
- Holiday schedules
- Labor laws, etc..

DEFINING ACTIVITIES: HOW TO WORD DELIVERABLES

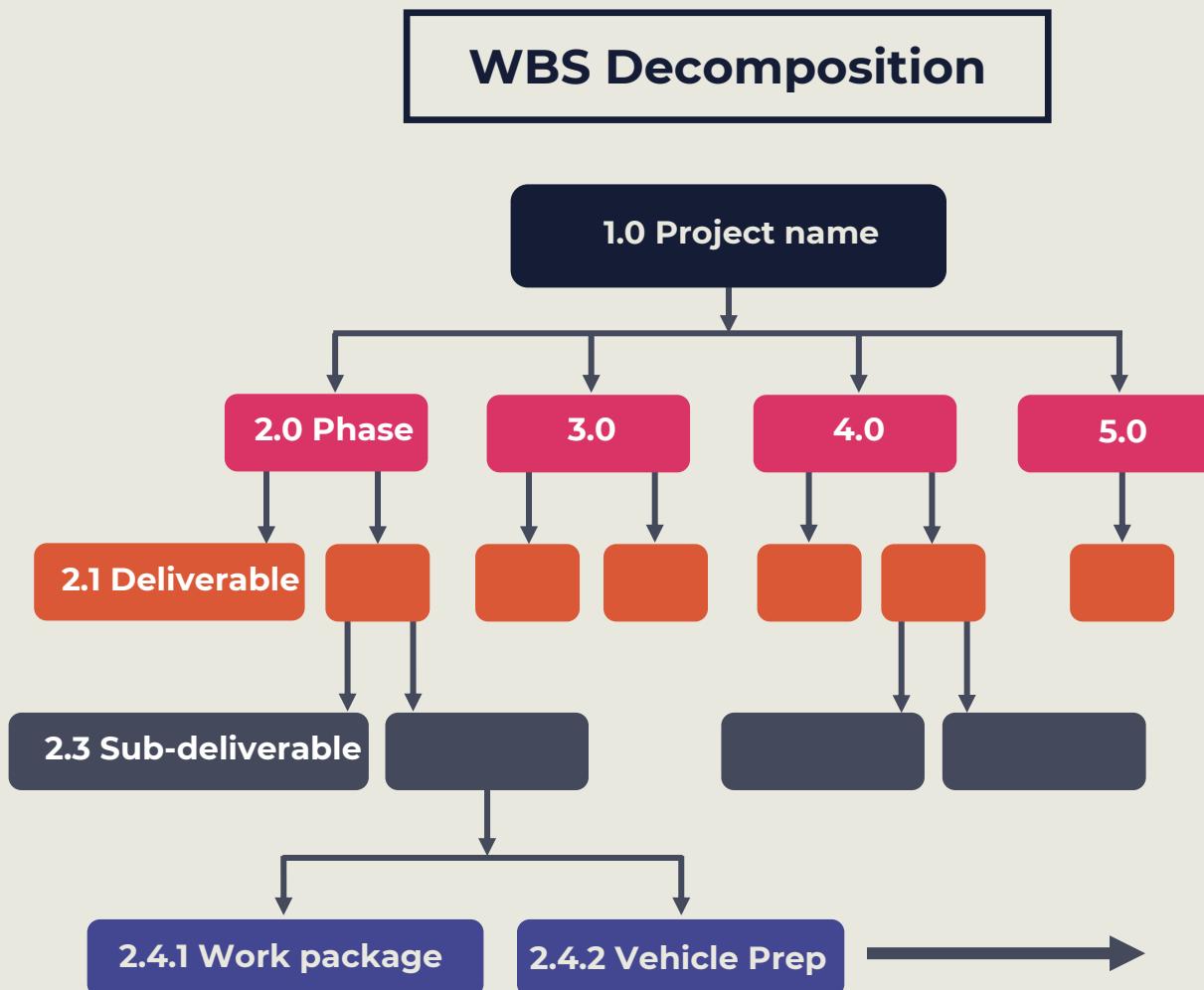
Scope WBS (nouns)	Schedule Activities (verbs)
Training materials	Develop training materials
Operating system	Program operating system

WORK BREAKDOWN STRUCTURE (WBS)



- Decomposition
- Lowest level is always called the “work package”

DEFINE ACTIVITIES



Activity List and Attributes

- Activity and WBS ID
- Activity description
- Predecessor and successor information
- Logical relationships and lead/lag time
- Resource requirements
- Geographic area

Activity ID	WBS ID	Name	Description
1.	1.1.2.2.	Activity	Change the oil
2.	1.1.2.2.	Activity	Rotate the tires
3.	1.1.2.2.	Activity	Verify insurance

MILESTONES

Zero-duration events

Mandatory milestone

Optional milestone

May be used as “quality gates”

Positioned after final process in phase

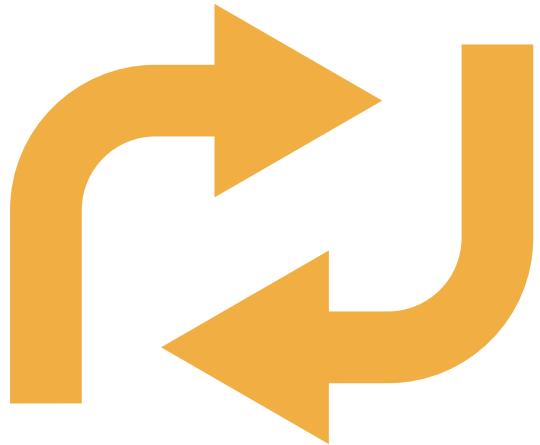
Decision points

They trigger

- Other project activities
- Customer invoicing



SEQUENCING ACTIVITIES



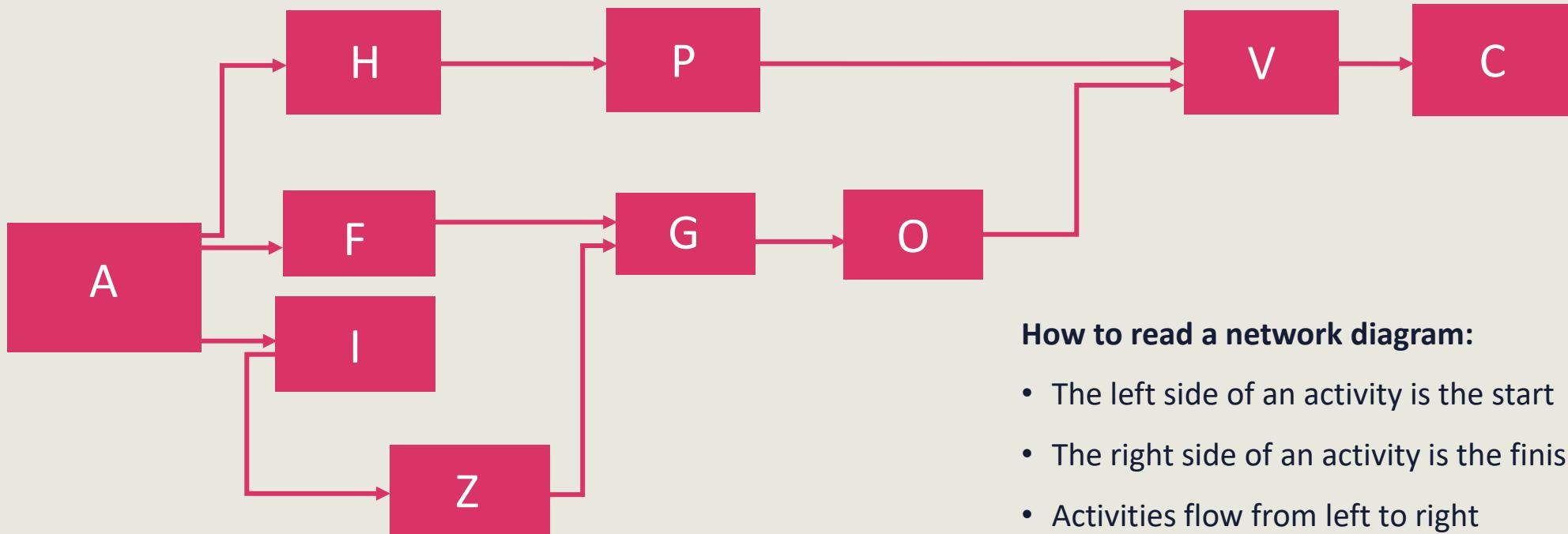
Logical relationship between activities

Purpose: to identify the logical relationships between activities so you can develop a realistic schedule

Apply leads and lags

SEQUENCING ACTIVITIES: PROJECT SCHEDULE NETWORK DIAGRAM

Precedence Diagramming Method:
Identifying and documenting relationships among project activities to obtain the greatest efficiency

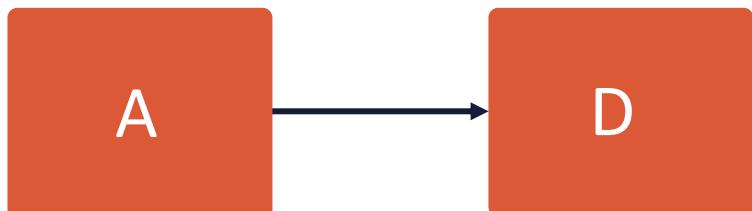


How to read a network diagram:

- The left side of an activity is the start
- The right side of an activity is the finish
- Activities flow from left to right

SEQUENCING ACTIVITIES

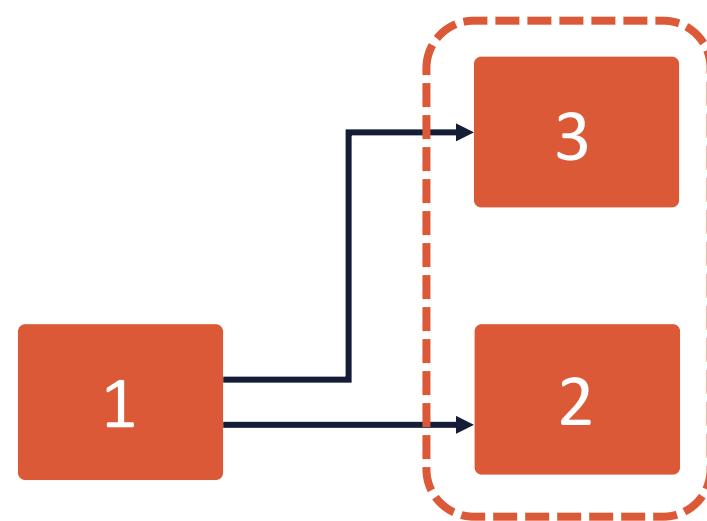
Sequential Activities



Activity A
is predecessor
of Activity D

Activity D
is successor
of Activity A

Concurrent Activities



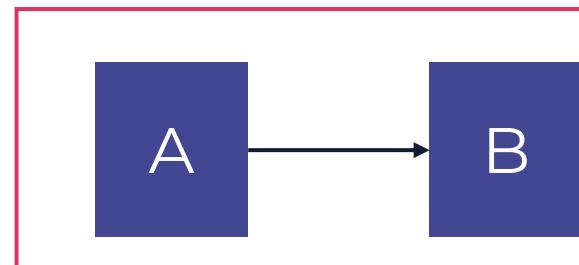
DEPENDENCY DETERMINATION

Dependency	Description
Mandatory	Contractually required or inherent to the nature of the work. Hard logic.
Discretionary	Established based on knowledge of best practices or desired specific sequences. Must be documented since they can create additional unnecessary float. Soft logic.
External	Relationship between project activities and non-project activities, usually outside the team's control.
Internal	Relationships that are internal to the company or project may be out of the team's control.

FINISH TO START (FS)

Finish to Start, or **FS**, is a dependency relationship in which one activity must finish before another activity can start. In a project schedule network diagram a finish-to-start relationship is shown as an arrow connecting the right-hand side of the preceding activity to the left-hand side of the subsequent activity.

This is the most common type of relationship.

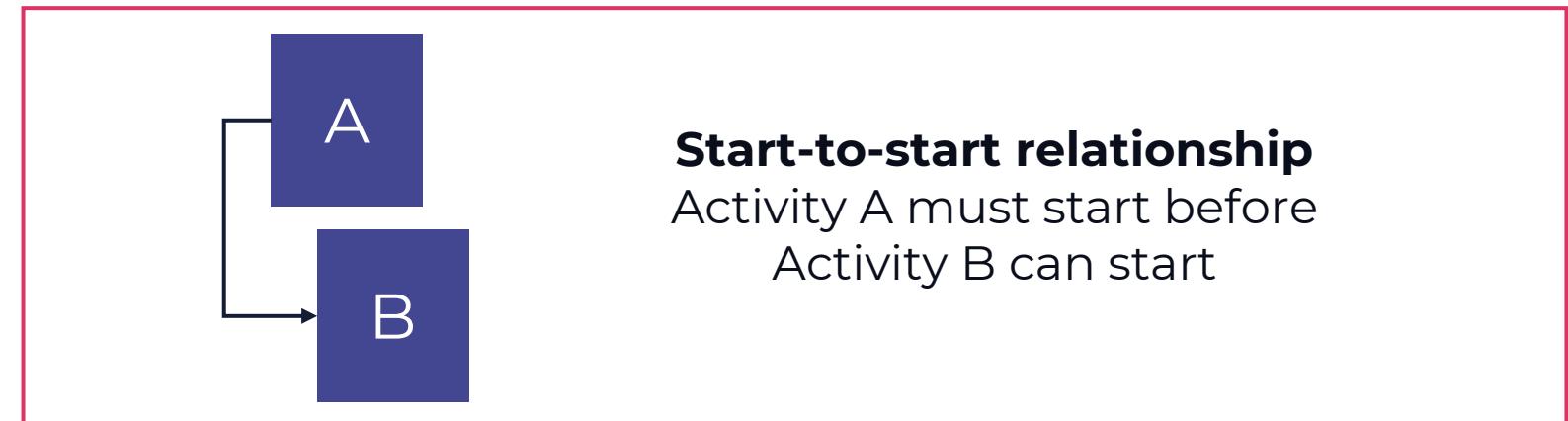


Finish-to-start relationship
Activity A must finish before
Activity B can start

Example: You must finish the background check before a new hire can begin working.

START TO START (SS)

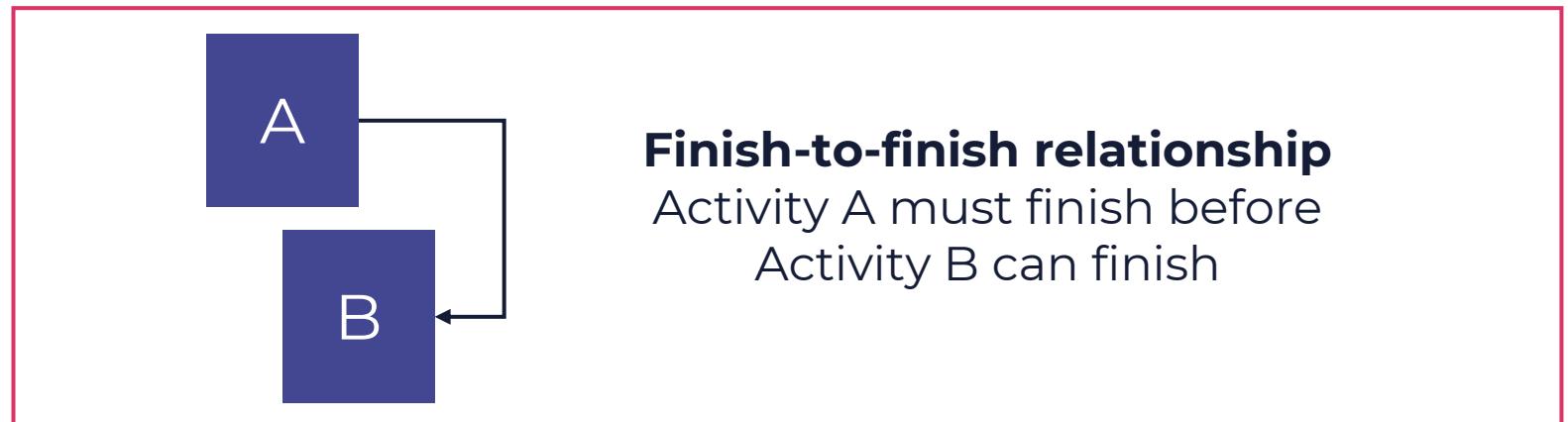
Start to Start, or **SS**, is a dependency relationship in which one activity must start before another activity can start. In a project schedule network diagram a start-to-start relationship is shown as an arrow connecting the left-hand side of the preceding activity to the left-hand side of the subsequent activity.



Example: You can start the new hire paperwork and start the background check.

FINISH TO FINISH (FF)

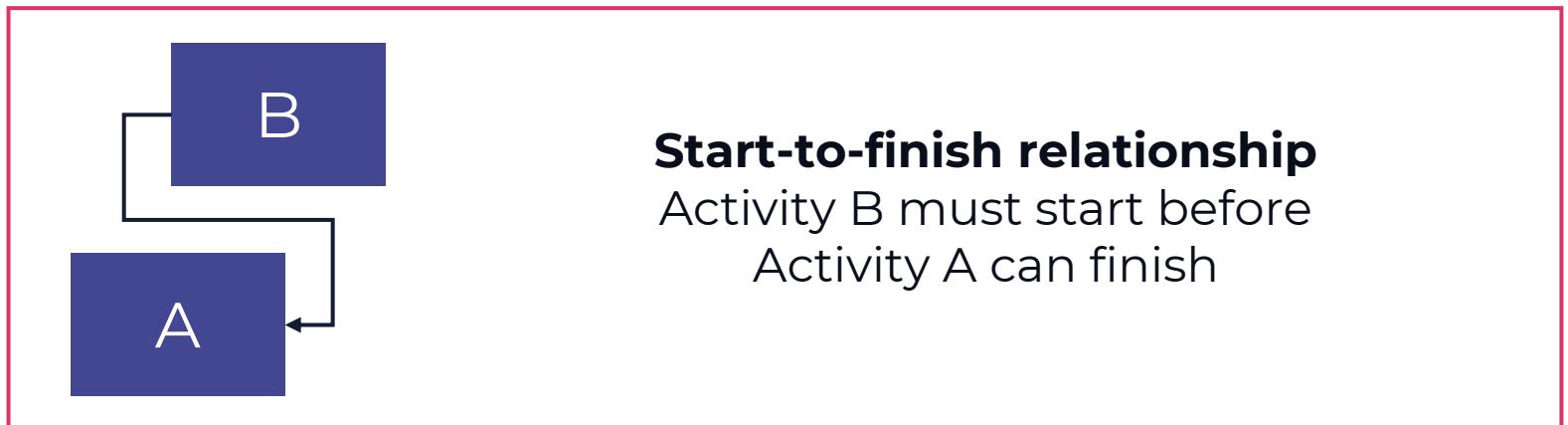
Finish to Finish, or **FF**, is a dependency relationship in which one activity must finish before another activity can finish. In a project schedule network diagram a finish-to-finish relationship is shown as an arrow connecting the right-hand side of the preceding activity to the right-hand side of the subsequent activity.



Example: Ideally, you should finish training your replacement before you leave your job.

START TO FINISH (SF)

Start to Finish, or **SF**, is a dependency relationship in which one activity must start before another activity can finish. In a project schedule network diagram a start-to-finish relationship is shown as an arrow connecting the left-hand side of the preceding activity to the right-hand side of the subsequent activity.

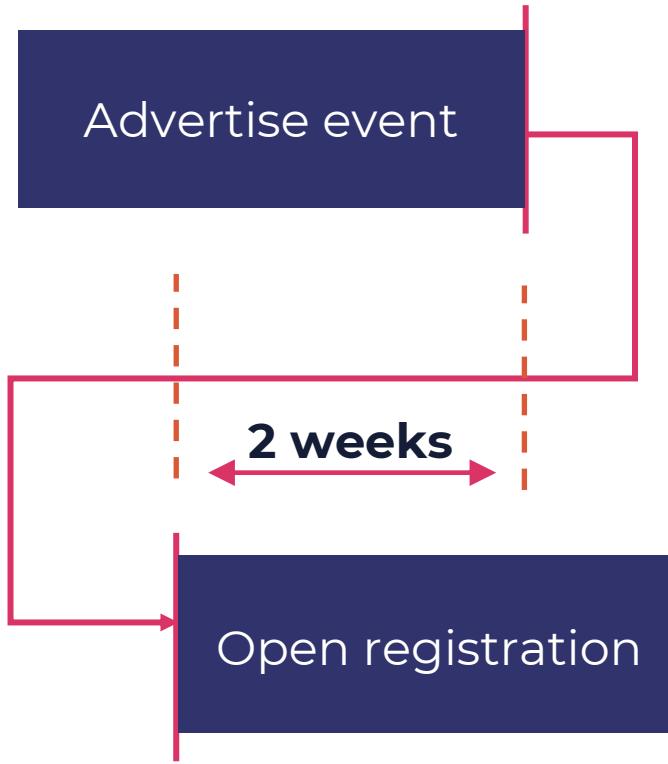


Example: The second shift of workers must arrive before the first shift can leave.

LEADS

FS-2 weeks
(Lead)

Finish to Start

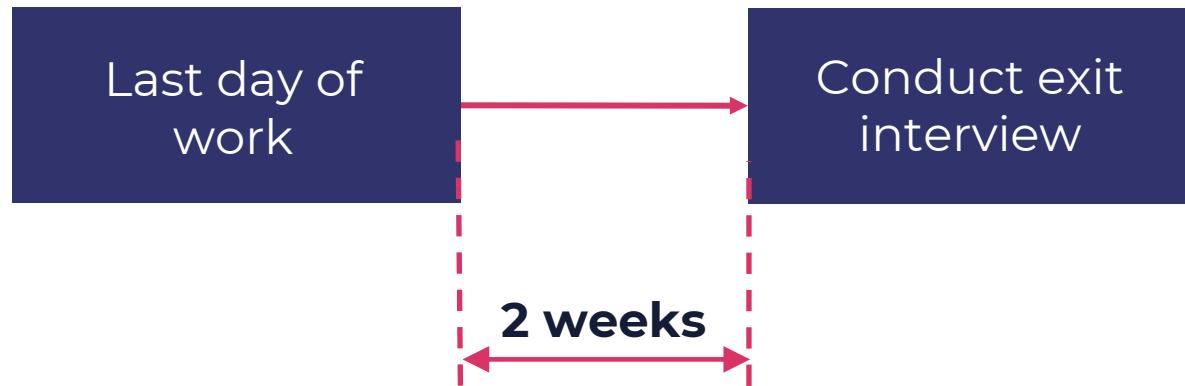


2 Week Overlap

“Open registration” starts 2 weeks before “Advertise event” finishes

LAGS

**Finish to Start
FS + 2 weeks (Lag)**

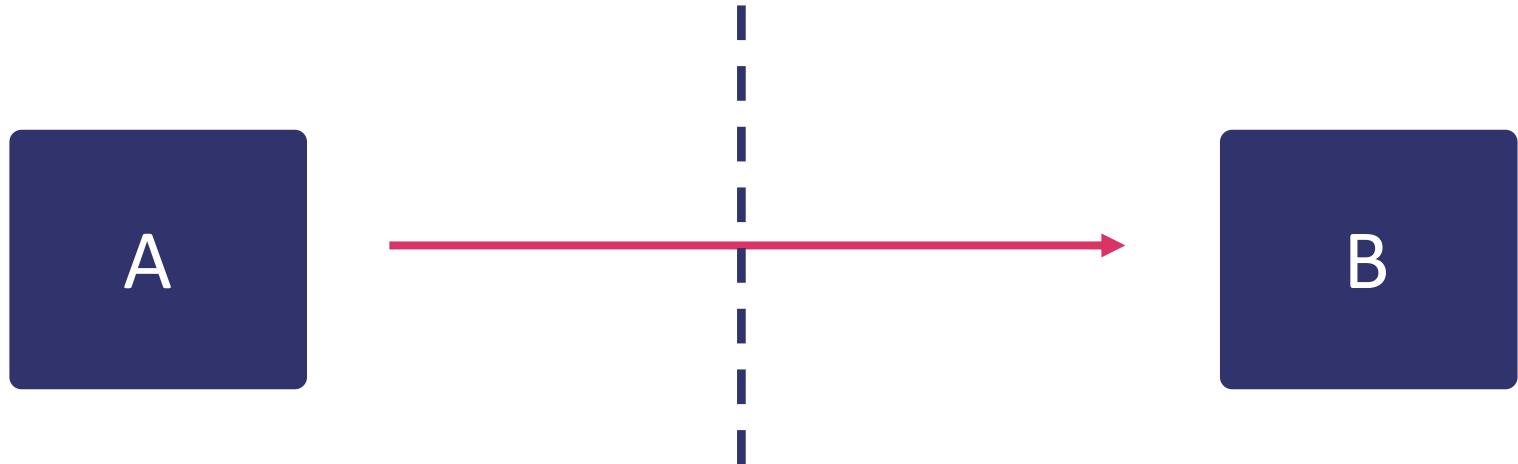


2 Week Delay
Activity 2 starts 2 weeks after Activity 1 finishes

GOVERNANCE GATES

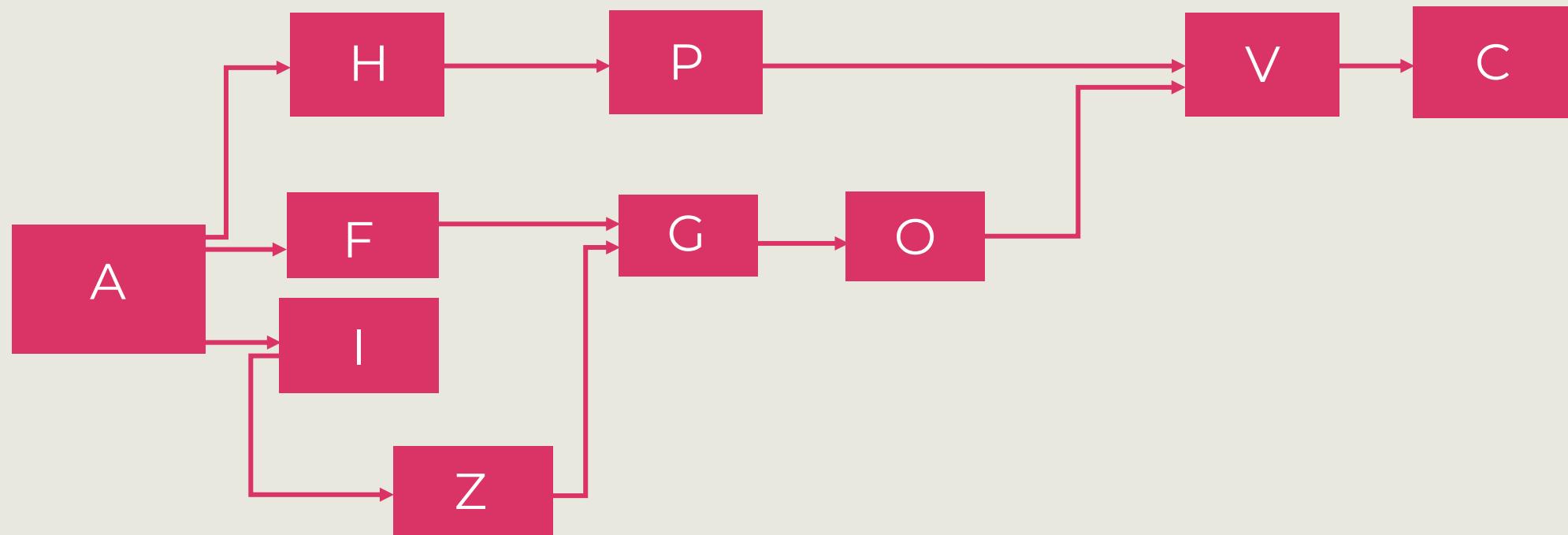
One of the following must happen before the successor activity can begin:

- Client sign-off
- Management approval
- Legislative approval



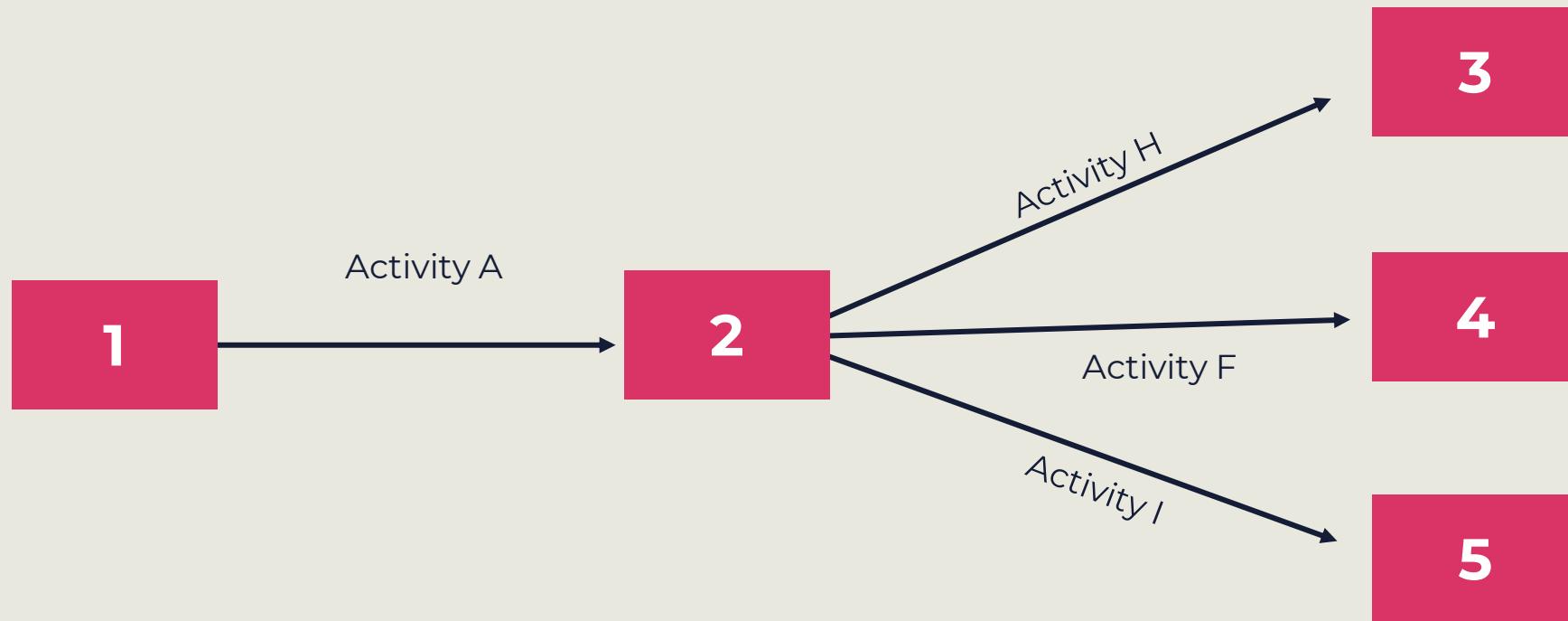
ACTIVITY ON NODE

Project Schedule Network Diagrams



ACTIVITY ON ARROW

Project Schedule Network Diagrams



ESTIMATING ACTIVITY RESOURCES

- Determine what resources are needed
- Gather information
- Resource types:
 - **Human resources** – people
 - **Physical resources** – materials, equipment, and supplies

Considerations

- Types of resources
- Quantity of resources required
- Required skill sets
- Project team roles and availability



INFLUENCES ON RESOURCES

- Organizational culture and structure
- Existing human resources
- Personnel administration policies
- Marketplace conditions



RESOURCES AFFECT BUDGET AND SCHEDULE

Resources are the largest expense

Coordinated with estimating costs

What the project will cost

What the project can afford

Realistic project schedule

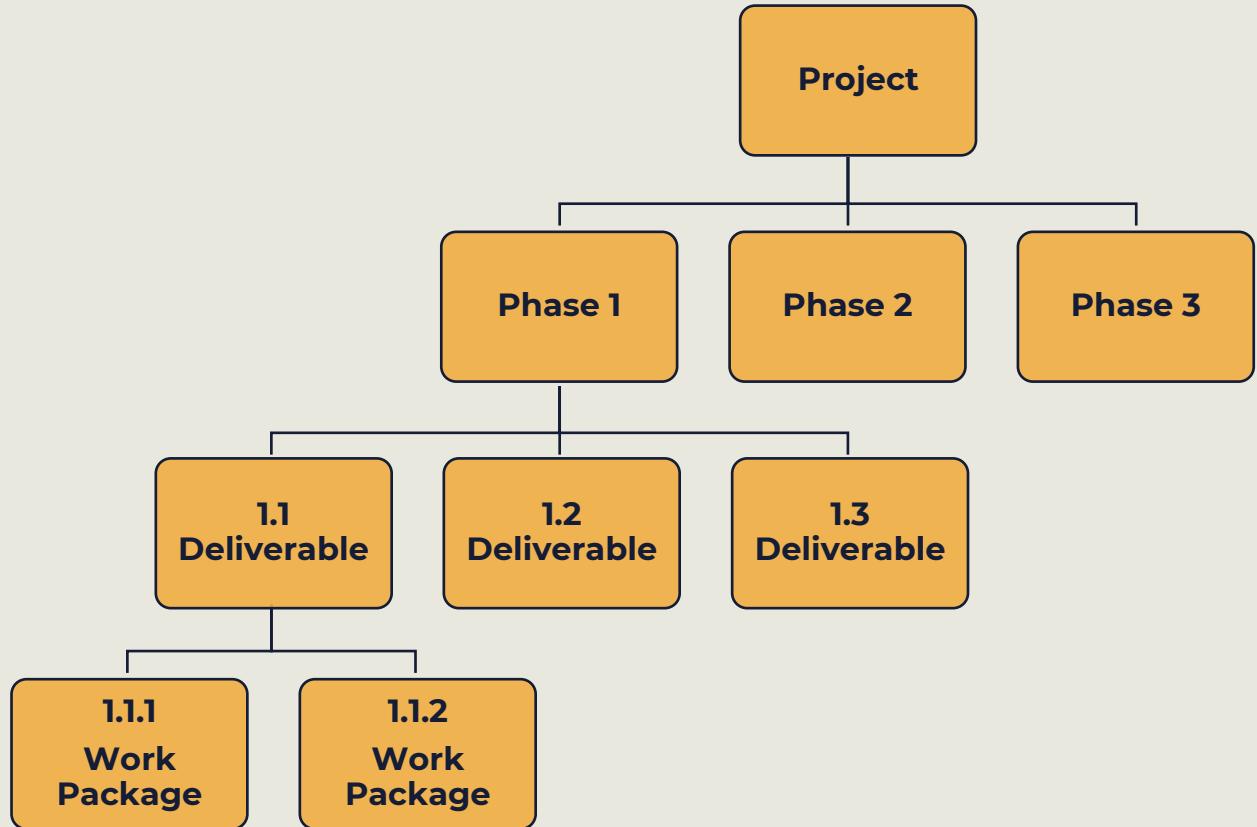


RESOURCE CALENDARS

BOTTOM-UP ESTIMATING

Project resource requirements

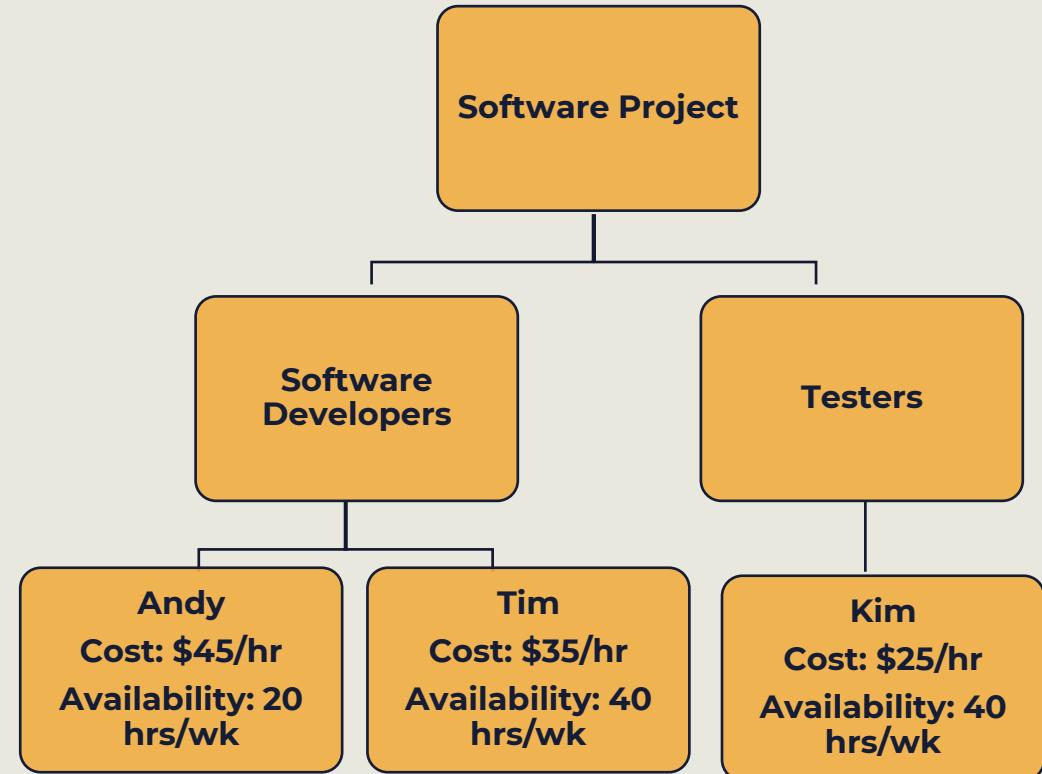
Estimate activity
resource requirements



ESTIMATE ACTIVITY RESOURCES

Resource Breakdown Structure (RBS)

- Visually simple
- Breaks resources into categories
- Organizes data
- Reports on utilization



ANALOGOUS ESTIMATES

- Also known as “top-down” estimates
- Good for well-known work

Pros

- Quick
- Inexpensive

Cons

- Not always accurate

New Project:
Software Upgrade Version 3

Duration estimate: 6 months

Previous Project:
Software Upgrade Version 1

Duration estimate: 6 months

Previous Project:
Software Upgrade Version 2

Duration estimate: 6 months

PARAMETRIC ESTIMATING

(EFFORT VS. DURATION)

Effort

- Amount of labor invested in an activity
- Used to calculate cost

Duration

- How long an activity takes

$$40 \text{ hours} \div 2 \text{ people} = 20 \text{ hours}$$

Effort = 40 hours

Duration = 20 hours

PARAMETRIC ESTIMATING

(EFFORT VS. DURATION)

- 10 rooms
- 4 hours/room
- 40 hours of work
- 2 painters

Duration = 20 hours

$$\frac{\text{Quantity of Work} \times \text{Productivity Rate}}{\text{Number of Resources}} = \text{Duration}$$

$$\frac{(10 \times 4)}{2} = 20$$

LAW OF DIMINISHING RETURNS



Team of 2 = 20 hours



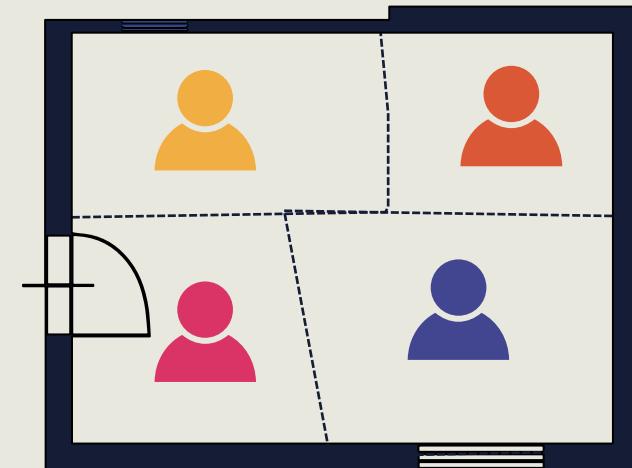
Team of 4 = 10 hours



Team of 6 = 10 hours

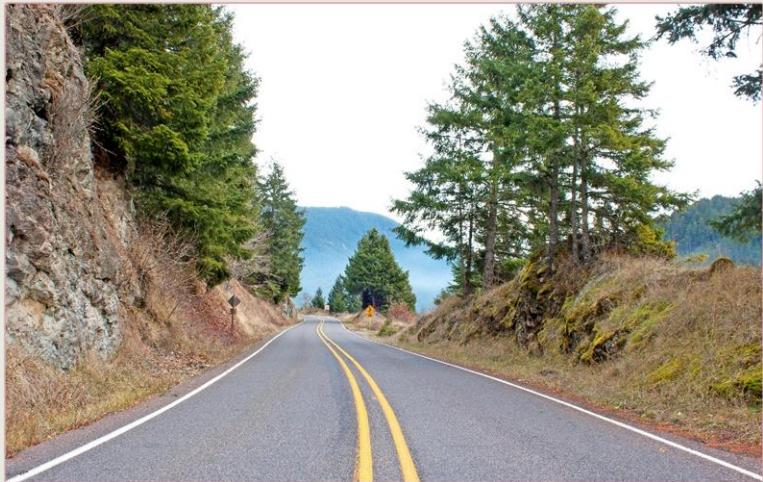


Team of 8 = 15 hours



Activity estimate = \$5,600

THREE-POINT ESTIMATING



Optimistic



Most Likely



Pessimistic

THREE- POINT ESTIMATING

Program Evaluation
and Review
Technique
(PERT)

Beta formula
**Weight the most
likely x 4**

Beta (PERT) Formula

$$\frac{O + (4 \times ML) + P}{6}$$

Example

Optimistic	40 minutes
Most Likely	50 minutes
Pessimistic	90 minutes

PERT Results

$$(40 + (4 \times 50) + 90) / 6$$
$$330 / 6$$

Expected duration = 55 minutes

THREE- POINT ESTIMATING

**What if you have no
subject matter
expert?**

Triangular formula

Triangular Formula

$$\frac{O + ML + P}{3}$$

Example

Optimistic	40 minutes
Most Likely	50 minutes
Pessimistic	90 minutes

PERT Results

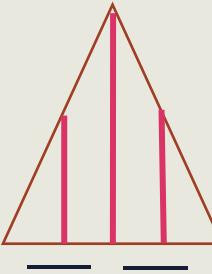
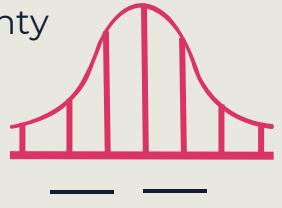
$$(40 + 50 + 90) / 3 \\ 180 / 3$$

Expected duration = 60 minutes

ESTIMATE ACTIVITY DURATIONS: RESERVE ANALYSIS

Uncertainty Calculator

Pessimistic – Optimistic = Uncertainty

Pessimistic	Optimistic
90	40
Triangular $(P - O)/3 = \text{Uncertainty}$ $(\underline{\quad} - \underline{\quad})/3 = \underline{\quad}$	Beta $(P - O)/6 = \text{Uncertainty}$ $(\underline{\quad} - \underline{\quad})/6 = \underline{\quad}$
	

Reserves may be added to activity durations to account for schedule **uncertainty**.

ESTIMATE ACTIVITY DURATIONS: RESERVE ANALYSIS

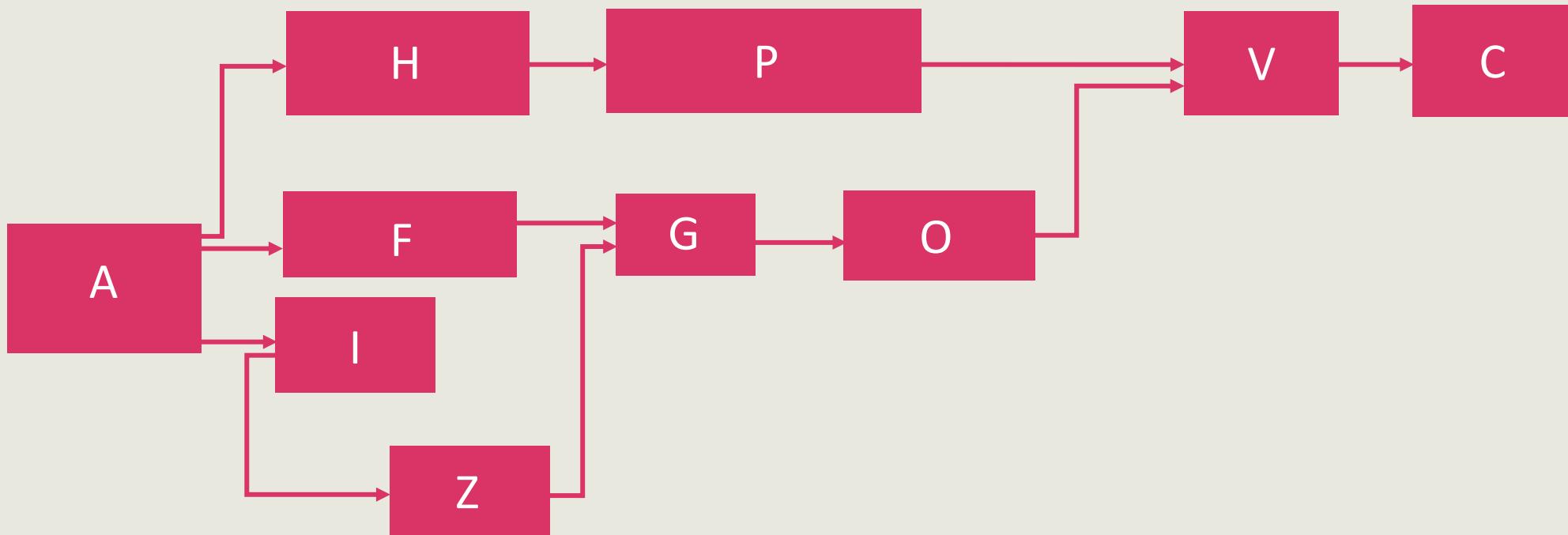
(Task) $20 \text{ days} \times 10\% = 2 \text{ days}$

(Project) $52 \text{ weeks} \times 10\% = 5.2 \text{ weeks}$

Buffer time for
the project

Buffer

SCHEDULE NETWORK DIAGRAM WITH ACTIVITY DURATIONS



DAILY BOOTCAMP SURVEY

Please share your thoughts.

At the end of each Bootcamp session please let us know how we are doing. Your feedback helps us to offer the best possible Bootcamp experience.

Thank you for attending Session 1!