

# Fundamentals of Software Project Management (FSPM)

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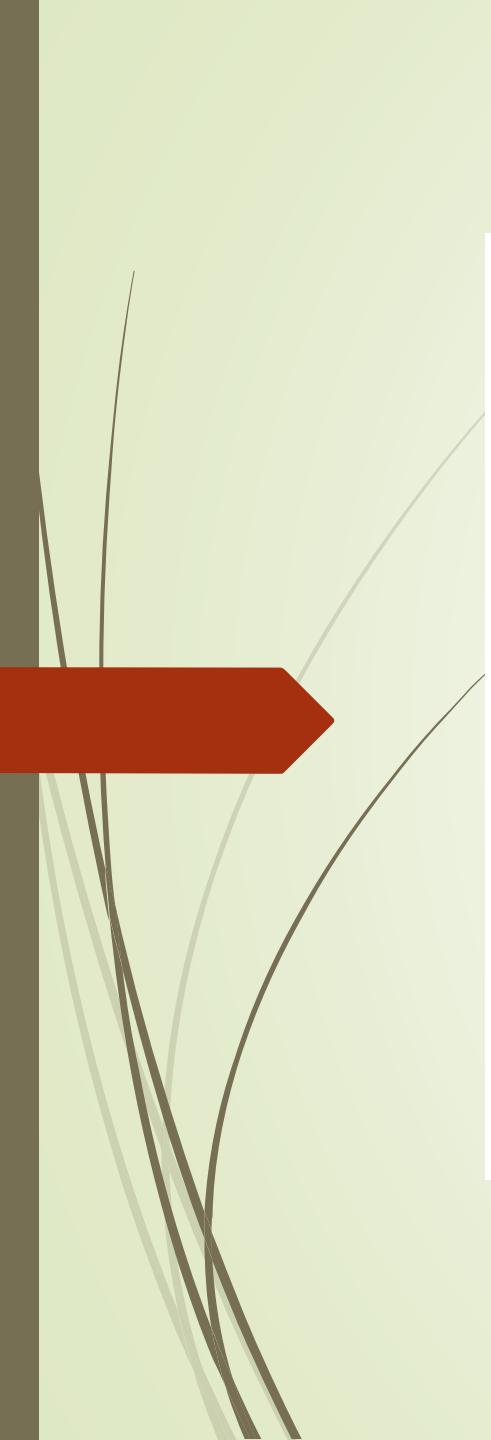
(School of Computing)

National University- FAST (KHI Campus)



# Week 4

## Project Scope

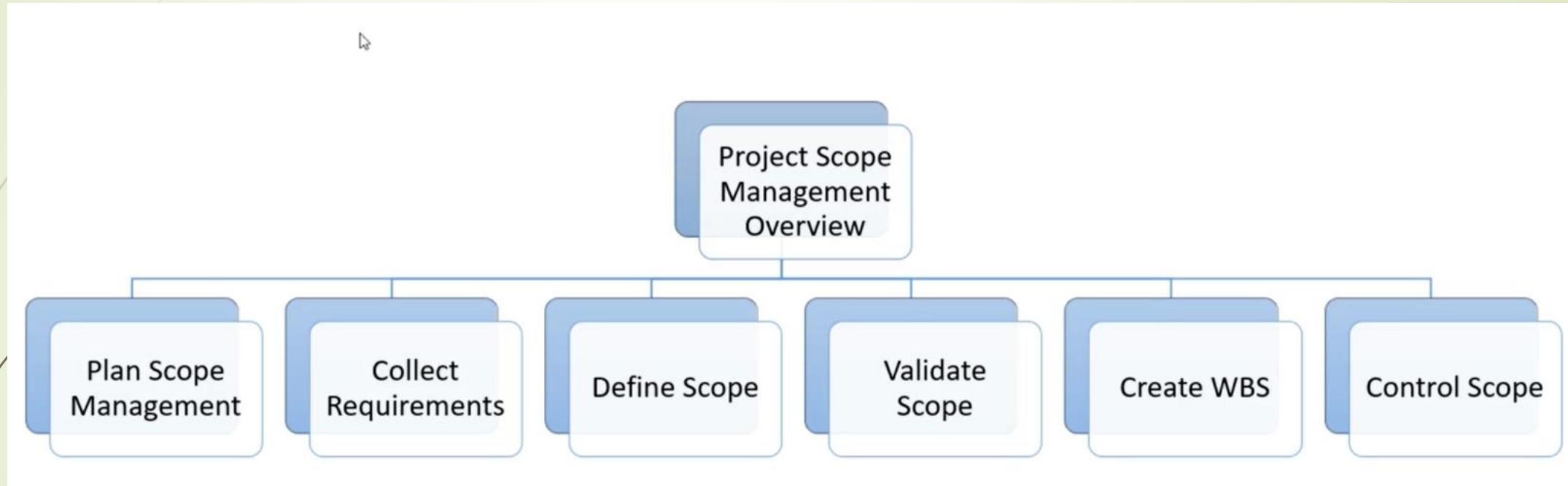


## What is Project Scope Management?

- ▶ **Scope** refers to all the work involved in creating the products of the project and the processes used to create them.
- ▶ A **deliverable** is a product produced as part of a project, such as hardware or software, planning documents.
- ▶ **Project scope management** includes the processes involved in defining and controlling what is or is not included in a project.

## Project Scope Management Processes

- ▶ **Collecting requirements** : defining and documenting the features and functions of the products produced during the project as well as the processes used for creating them.
- ▶ **Defining scope**: reviewing the project charter, requirements documents, and organizational process assets to create a scope statement.
- ▶ **Creating the WBS**: subdividing the major project deliverables into smaller, more manageable components.
- ▶ **Verifying scope**: formalizing acceptance of the project deliverables.
- ▶ **Controlling scope**: controlling changes to project scope throughout the life of the project.



## Collect Requirements



The key benefit is to provide the basis for defining and managing project scope.

## Define Scope



Describes the project, service, or result boundaries by defining which of the requirements collected will be included in and excluded from the project scope.

## Create Work Breakdown Structure



Provides a structured vision of what has to be delivered.



Product Scope –  
product related  
features/functionalities

Project Scope – project  
related  
features/functionalities

## Project Scope Management

### Product Scope





## Project Scope



- ✓ Defines the requirements of products
- ✓ Work required to create the product
- ✓ Defines what is in the scope, and what not.



- Meetings
- Reports
- Analysis
- Design Documents

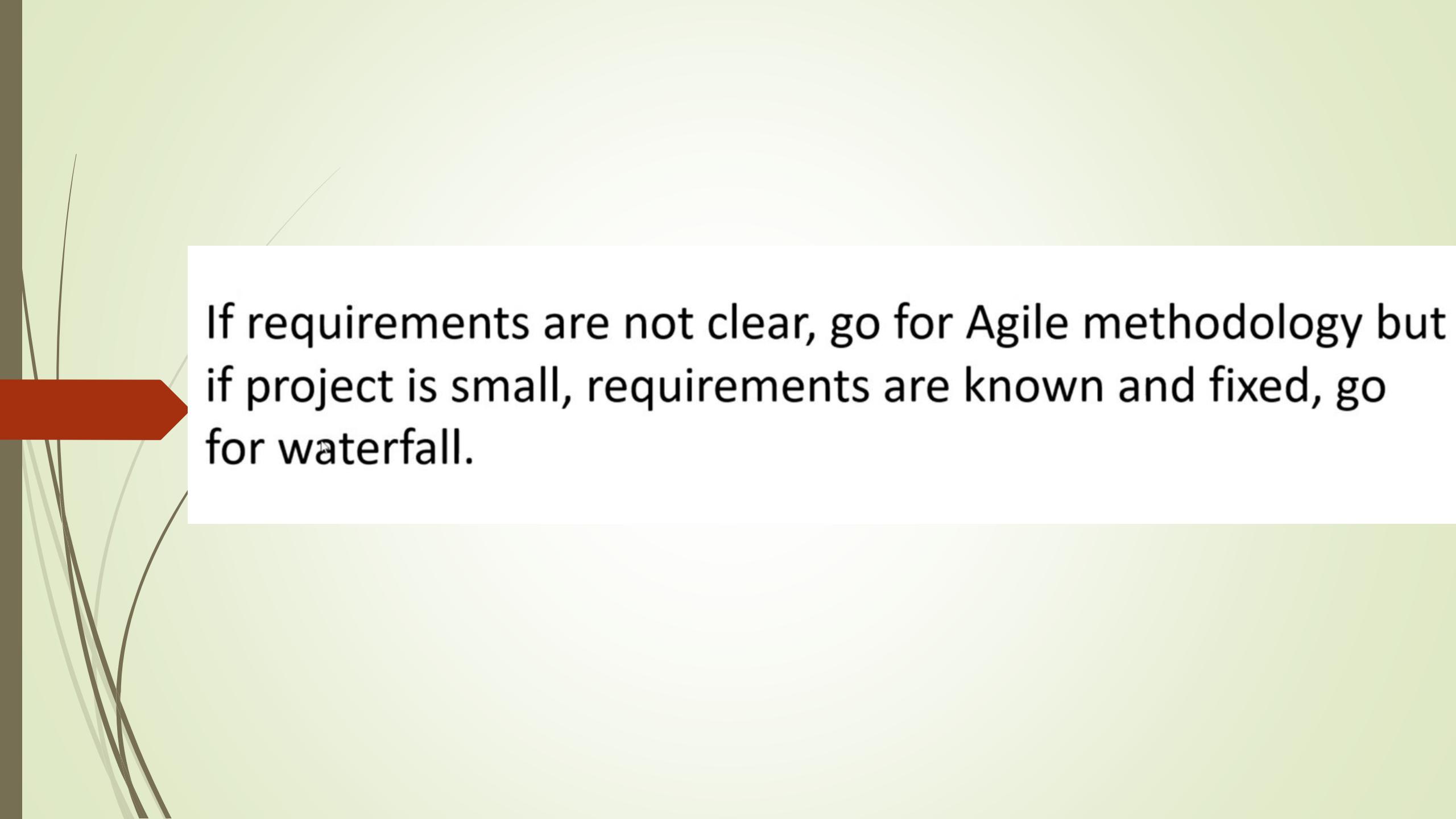
### Project Scope

What exactly you need to do to build the bridge

## Project Scope Management Customization

Factors include but not limited to

- Knowledge and requirement management
- Validation and control
- Development approach
- Stability of requirements
- Governance



If requirements are not clear, go for Agile methodology but if project is small, requirements are known and fixed, go for waterfall.

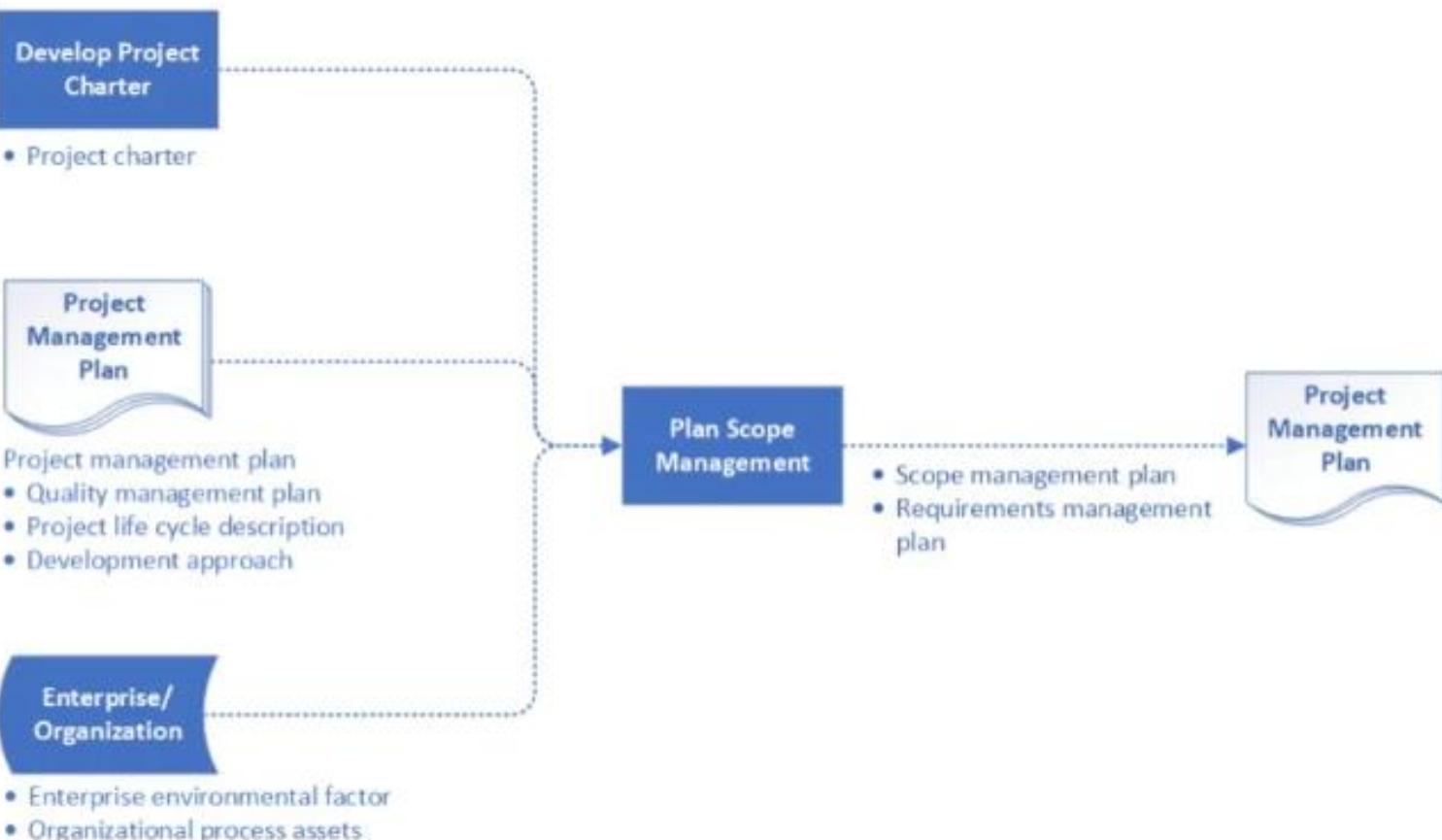
# 1- Plan Scope Management

- Plan Scope Management Overview
- Plan Scope Management Data Flow
- Plan Scope Management Input
- Plan Scope Management Tools & Technique
- Plan Scope Management Output

## Plan Scope Management Overview

**Plan scope management** is the process of creating a scope management plan that documents how the project and product scope will be defined, validated, and controlled.

# Plan Scope Management Data Flow





## Plan Scope Management Input

- Project charter
- Project management plan
  - Quality management plan
  - Project life cycle description
  - Development approach
    - Predictive
    - Adaptive
- Enterprise environmental factors
- Organizational process assets



## Plan Scope Management Tools & Techniques

- Expert judgment
- Data analysis
  - Alternative analysis
- Meetings



## Plan Scope Management Output

- Scope management plan
- Requirements management plan

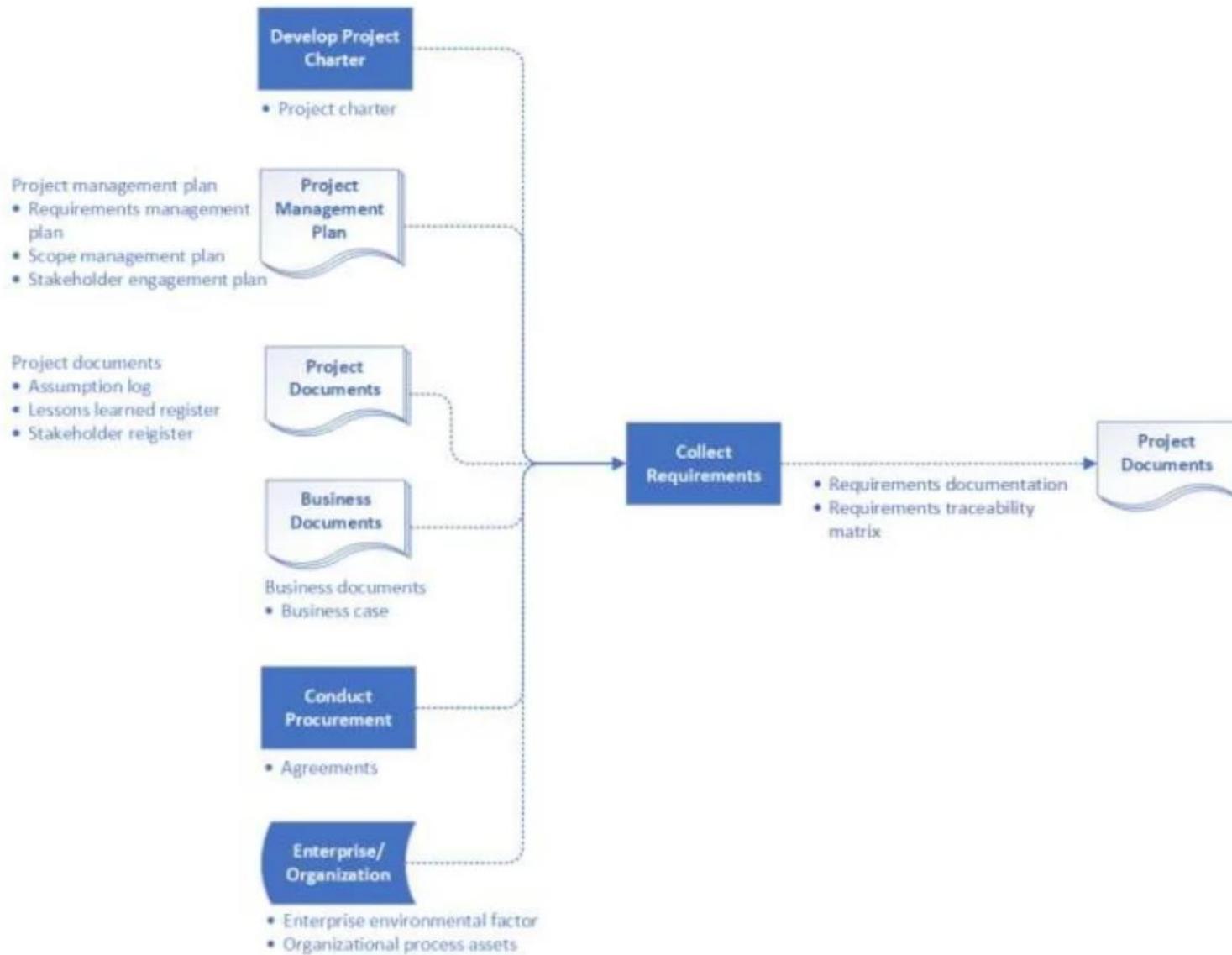
## Lesson 3: Collect Requirements

- Collect Requirements Overview
- Collect Requirements Data Flow
- Collect Requirements Input
- Collect Requirements Tools & Techniques
- Collect Requirements Output

## Collect Requirements Overview

**Collect requirements** is the process of determining, documenting, and managing stakeholder needs and requirements to meet objectives.

# Collect Requirements Data Flow



Activate Windows  
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# Collect Requirements Input

- Project charter
- Project management plan
  - Scope management plan
  - Requirements management plan
  - Stakeholder engagement plan
- Project documents
  - Assumption log
  - Lessons learned register
  - Stakeholder register
- Business documents
  - Business case
- Agreements
- Enterprise environmental factors
- Organizational process assets

# Collect Requirements Tools & Techniques

- Expert judgment
- Data gathering
  - Brainstorming
  - Interviews
  - Focus groups
  - Questionnaires & surveys
  - Benchmarking
- Data analysis
  - Document analysis
- Decision making
  - Voting: unanimity, majority, plurality
  - Autocratic decision making
  - Multicriteria decision analysis
- Data representation
  - Affinity diagram
  - Mind mapping
- Interpersonal & team skills
  - Nominal group technique
  - Observation/conversation (job shadowing)
  - Facilitation
    - Joint application development
    - Quality function deployment
    - User stories
- Context diagram
- Prototypes

# Collect Requirements Output

- Requirements documentation
  - Business requirements
  - Stakeholder requirements
  - Solution requirements
    - Functional requirements
    - Nonfunctional requirements
  - Transition & readiness requirements
  - Project requirements
  - Quality requirements
- Requirements traceability matrix

## Lesson 4: Define Scope

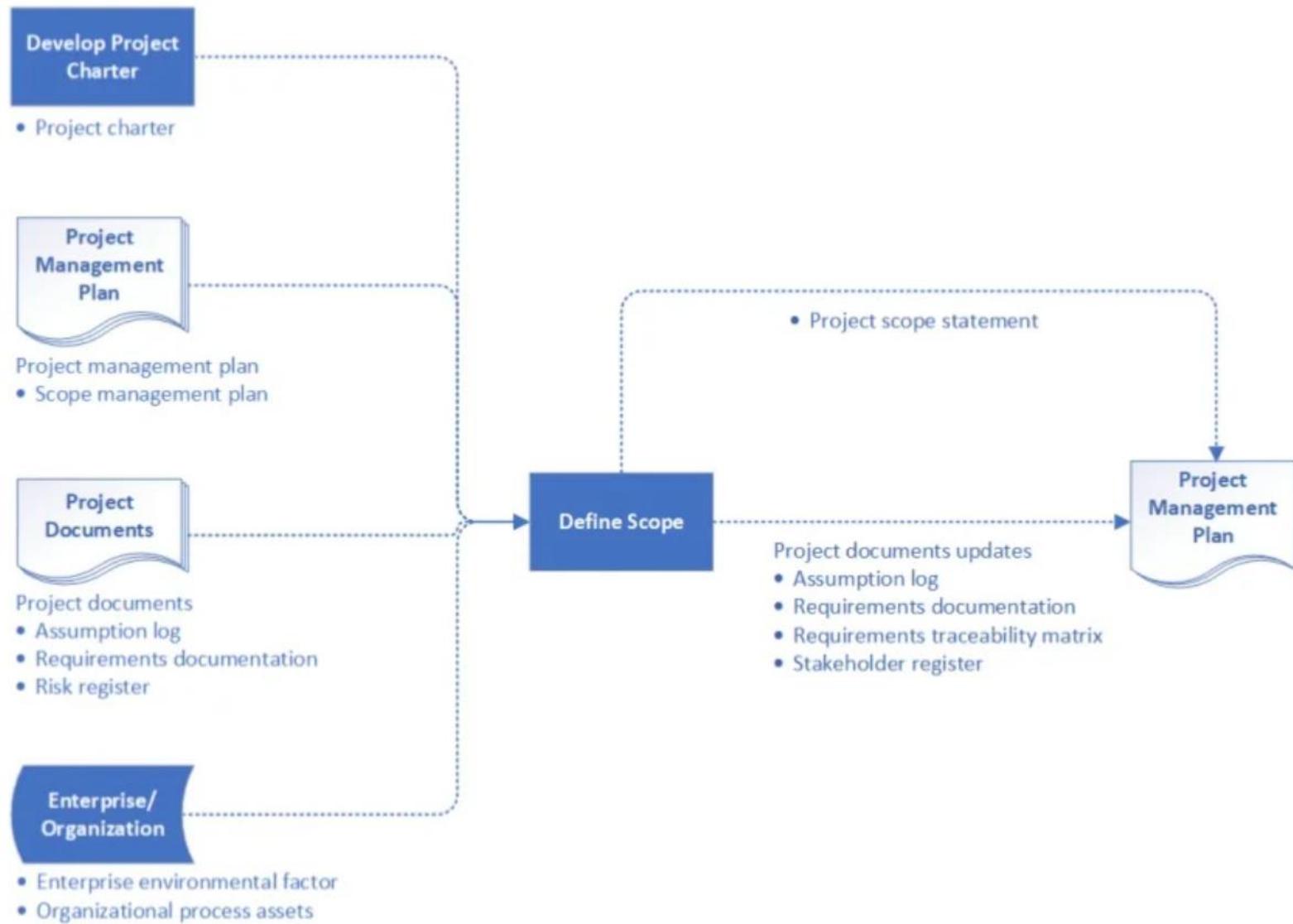
- Define Scope Overview
- Define Scope Data Flow
- Define Scope Input
- Define Scope Tools & Techniques
- Define Scope Output



## Define Scope Overview

**Define scope** is the process of developing a detailed description of the project and product.

# Define Scope Data Flow



Activate Windows  
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# Define Scope Input

- Project charter
- Project management plan
  - Scope management plan
- Project documents
  - Assumption log
  - Requirements documentation
  - Risk register
- Enterprise environmental factors
- Organizational process assets

# Define Scope Tools & Techniques

- Expert judgment
- Data analysis
  - Alternative analysis
- Decision making
  - Multicriteria decision analysis
- Interpersonal & team skills
  - Facilitation
- Product analysis

# Define Scope Output

- Project scope statement
  - Product scope description
  - Deliverables
  - Acceptance criteria
  - Project exclusions → can reduce scope creep
- Project documents updates
  - Assumption log
  - Requirements documentation
  - Requirements traceability matrix
  - Stakeholder register

# Project Charter vs Project Scope Statement

## Project Charter

- Project purpose
- Measurable project objectives and related success criteria
- High-level requirements
- High-level project description, boundaries, and key deliverables
- Overall project risk
- Summary milestone schedule
- Preapproved financial resources
- Key stakeholder list
- Project approval requirements
- Project exit criteria
- Assigned project manager, responsibility, and authority level
- Name and authority of the sponsor or other person authoring the project charter

## Project Scope Statement

- Project scope description
- Project deliverables
- Acceptance criteria
- Project exclusions
- Assumptions
- Constraints

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## Lesson 5: Create WBS

- Create WBS Overview
- Create WBS Data Flow
- Create WBS Input
- Create WBS Tools & Techniques
- Create WBS Output

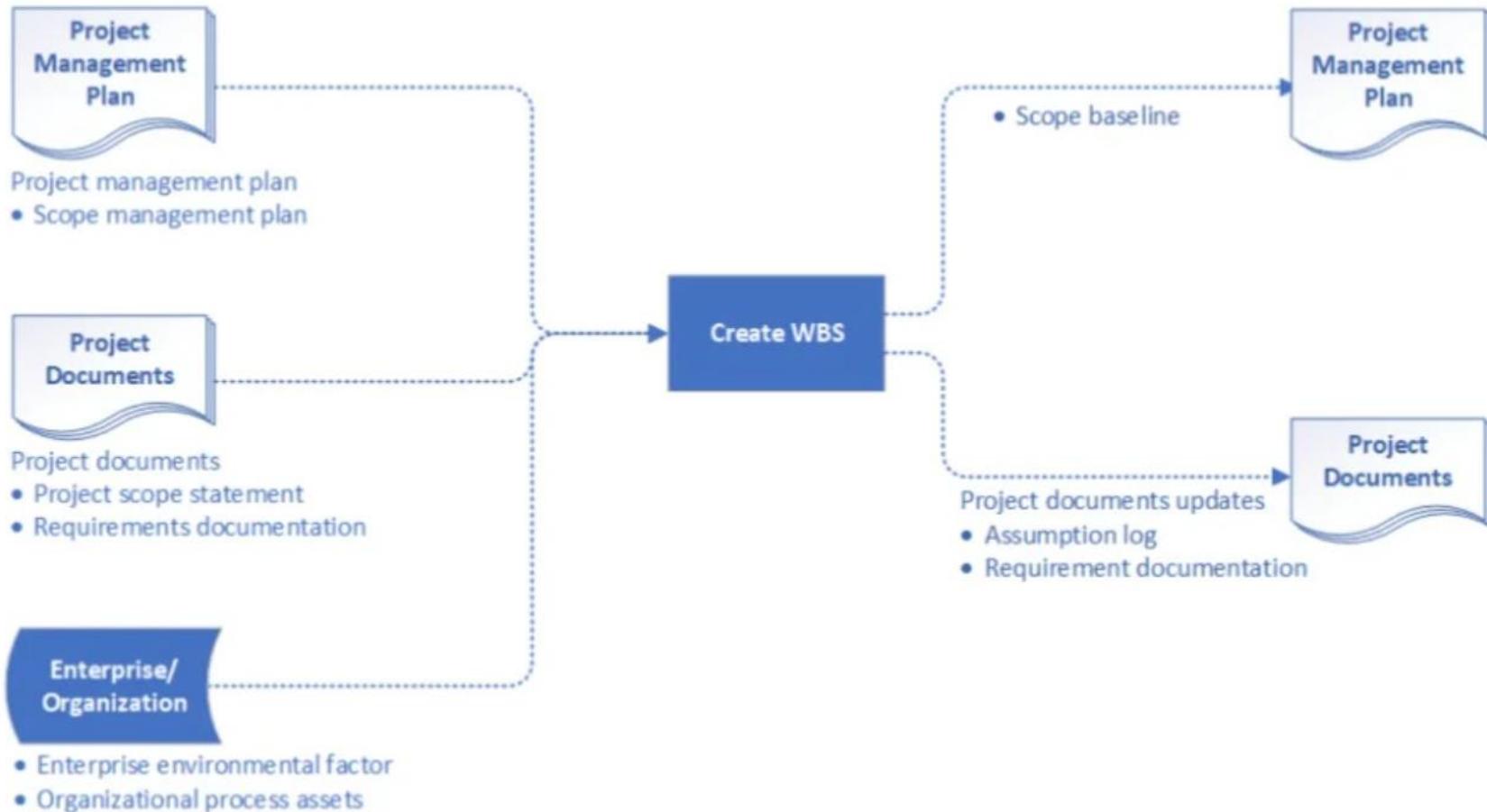


## Create WBS Overview

**Create WBS** is the process of subdividing project deliverables and project work into smaller, more manageable components.

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# Create WBS Data Flow



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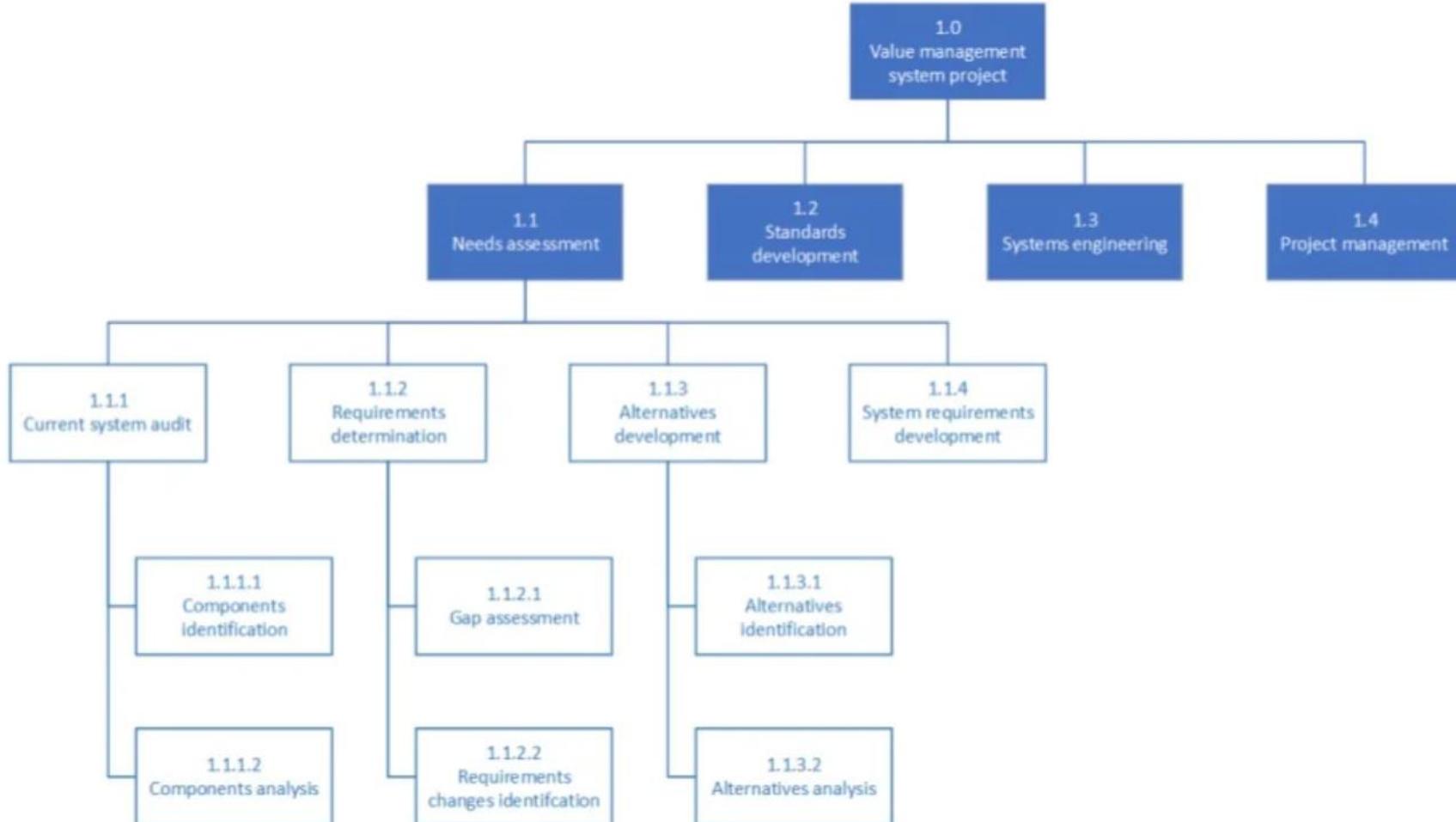
## Create WBS Input

- Project management plan
  - Scope management plan
- Project documents
  - Project scope statement
  - Requirements documentation
- Enterprise environmental factors
- Organizational process assets

# Create WBS Tools & Techniques

- Expert judgment
- Decomposition

# WBS Example



Activate Windows  
Go to Settings to activate Windows.

# Create WBS Output

- Scope baseline
  - Project scope statement
  - WBS
  - Work package
  - Planning package
- WBS dictionary
- Project documents updates
  - Assumption log
  - Requirements documentation

## WBS Component ≠ Activity

- WBS is deliverables-oriented
- Each work package should consist of nouns (deliverables), not actions (activities).
- Further breakdown of work package into activities is done as part of **Define Activities** process in **Project Schedule Management**.

## Lesson 6: Validate Scope

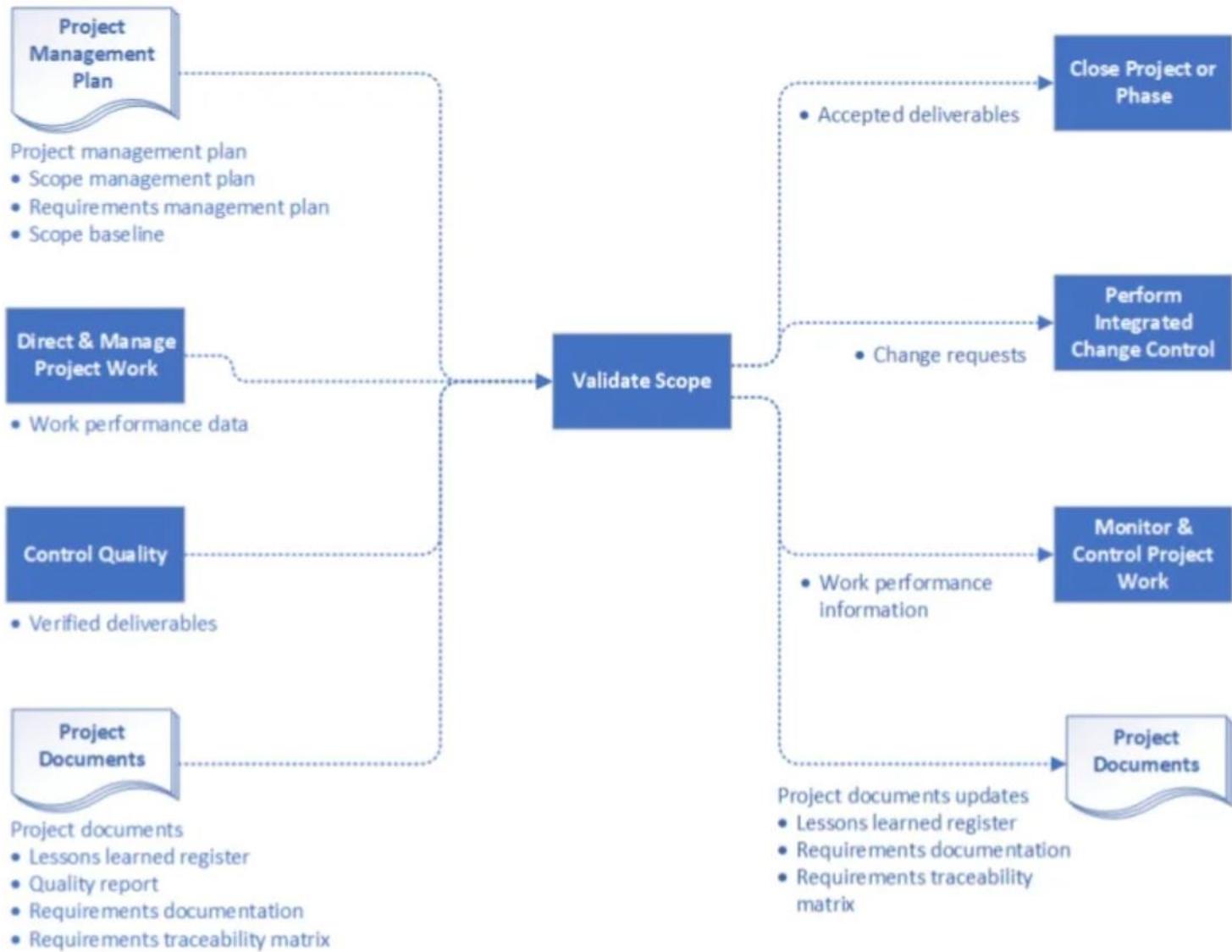
- Validate Scope Overview
- Validate Scope Data Flow
- Validate Scope Input
- Validate Scope Tools & Techniques
- Validate Scope Output



## Validate Scope Overview

**Validate scope** is the process of formalizing acceptance of the completed project deliverables.

# Validate Scope Data Flow



Activate Windows  
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## Validate Scope Input

- Project management plan
  - Scope management plan
  - Requirements management plan
  - Scope baseline
- Project documents
  - Lessons learned register
  - Quality reports
  - Requirements documentation
- Requirements traceability matrix
- Verified deliverables
- Work performance data

Activate Windows  
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# Validate Scope Tools & Techniques

- Inspection (reviews, product reviews, walkthroughs)
- Decision making
  - Voting

# Validate Scope Output

- Accepted deliverables → formally signed off
- Work performance information
- Change requests
- Project documents updates
  - Lessons learned register
  - Requirements documentation
  - Requirements traceability matrix

## Lesson 7: Control Scope

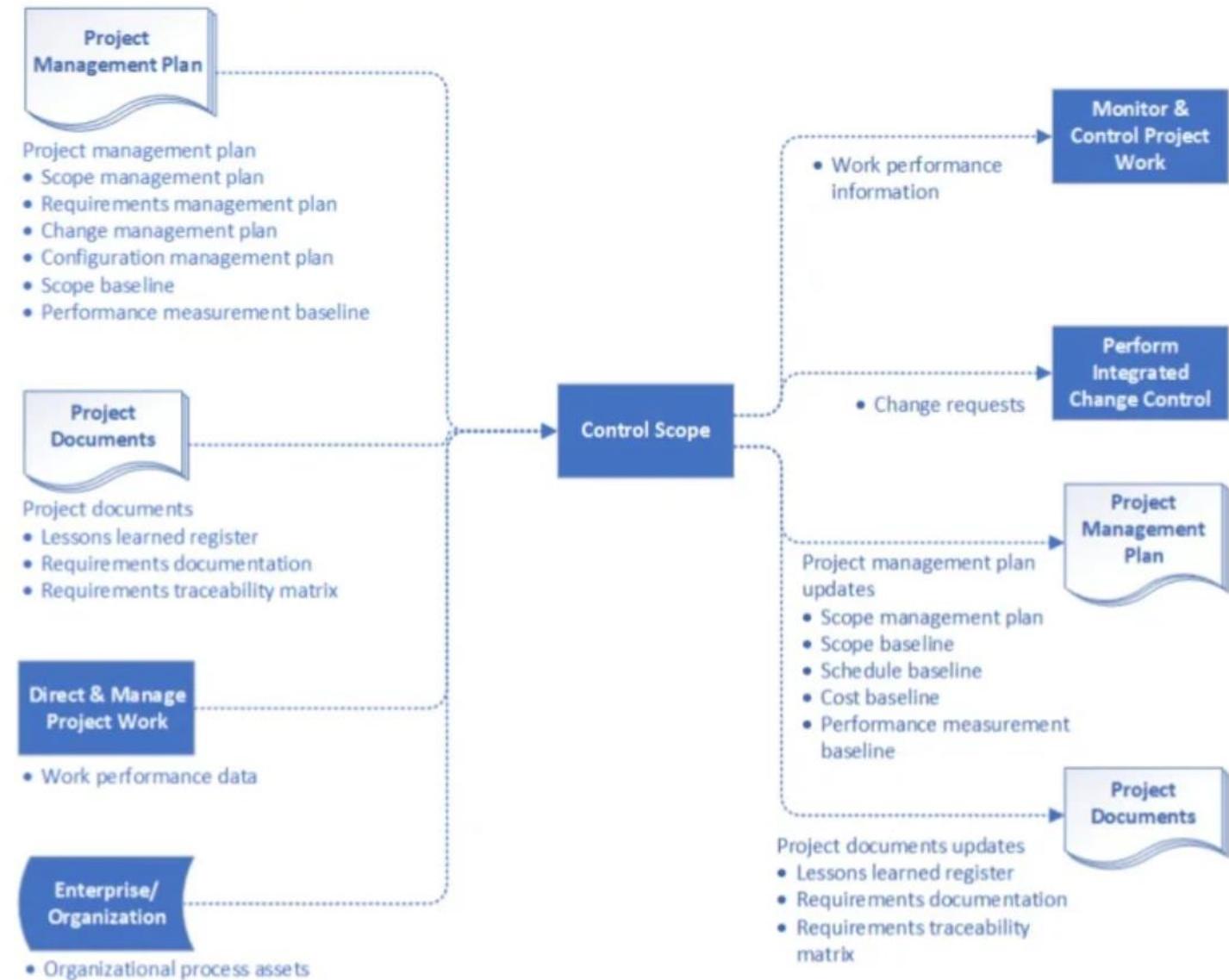
- Control Scope Overview
- Control Scope Data Flow
- Control Scope Input
- Control Scope Tools & Techniques
- Control Scope Output



## Control Scope Overview

**Control scope** is the process of monitoring the status of the project and product scope and managing changes to the scope baseline.

# Control Scope Data Flow



Activate Windows  
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# Control Scope Input

- Project management plan
  - Scope management plan
  - Requirements management plan
  - Change management plan
  - Configuration management plan
  - Scope baseline
  - Performance measurement baseline
- Project documents
  - Lessons learned register
  - Requirements documentation
- Requirements traceability matrix
- Work performance data
- Organizational process assets

# Control Scope Tools & Techniques

- Data analysis
  - Variance analysis
  - Trend analysis

# Control Scope Output

- Work performance information
- Change requests
- Project management plan updates
  - Scope management plan
  - Scope baseline
  - Schedule baseline
  - Cost baseline
  - Performance measurement baseline
- Project documents updates
  - Lessons learned register
  - Requirements documentation
  - Requirements traceability matrix