



PMP® Certification Training

Lesson 07: Project Scope Management

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Objectives

- ▷ Define Project Scope Management
- ▷ Differentiate between project scope and product scope
- ▷ Identify the key terms used in Project Scope Management
- ▷ Explain work breakdown structure
- ▷ Describe the Project Scope Management processes

What Is Project Scope Management?

The definition of Project Scope Management is as follows:

Project Scope Management includes the processes required to ensure that a project includes all the work required, and only the work required, to complete the project successfully.

Managing the project scope is primarily concerned with defining and controlling what should be included in the project.

*Definitions taken from the Glossary of the Project Management Institute, *A Guide to the Project Management Body of Knowledge, (PMBOK® Guide)* – Sixth Edition, Project Management Institute, Inc., 2017, Page 129

Project Scope Management Activities

The key activities of Project Scope Management are as follows:



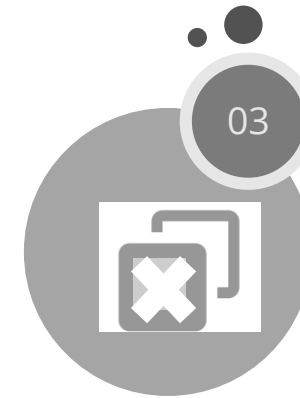
Ensure Constant Monitoring

Ensure all the project work is being completed



Avoid Scope Creep

Define project boundaries and avoid unnecessary addition of scope



Prevent Gold Plating

Restrict the project work only to the defined activities and avoid doing more work than required for the project

Product Scope vs. Project Scope

KEY CONCEPTS

Project Scope Management deals with managing both the product scope as well as the project scope.

The difference between project scope and product scope is as follows:

*Product Scope

Product scope refers to the features and functions that characterize a product, service, or result.

Example: In the banking sector, services like savings accounts and mutual funds are called products.

*Project Scope

Project scope refers to the work performed to deliver a product, service, or result with the specified features and functions. Project Scope is often inclusive of Product Scope.

Example: To deliver a product, requirement and design documents have to be produced. This is a part of project scope and not product scope.

Project Scope Management

TRENDS AND EMERGING PRACTICES

- A business analyst is responsible for requirement-related activities
- Collaborate with business analyst to:
 - Determine problems and identify business needs
 - Identify and recommend viable solutions
 - Elicit, document, and manage stakeholder requirements to meet business and project objectives
 - Facilitate successful implementation of the product, service, or end result of the project
- Project manager and business analyst should have a collaborative partnership

*Definitions taken from the Glossary of the Project Management Institute, *A Guide to the Project Management Body of Knowledge, (PMBOK® Guide)* – Sixth Edition, Project Management Institute, Inc., 2017, Page 132

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Project Scope Management

TAILORING CONSIDERATIONS

Considerations for tailoring the way Project Scope Management Processes are applied in an organization:

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

*Definitions taken from the Glossary of the Project Management Institute, *A Guide to the Project Management Body of Knowledge, (PMBOK® Guide)* – Sixth Edition, Project Management Institute, Inc., 2017, Page 133

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Considerations for Agile/Adaptive environment

- In the beginning of the project, agile methods spend less time to define and agree on scope. These methods spend more time to establish the process for its ongoing discovery and refinement.
- Agile methods build prototypes to understand customer feedback and refine requirements.
- Scope is defined and refined throughout the project.
- Requirements constitute the backlog in agile approaches.

*Definitions taken from the Glossary of the Project Management Institute, *A Guide to the Project Management Body of Knowledge, (PMBOK® Guide)* – Sixth Edition, Project Management Institute, Inc., 2017, Page 133

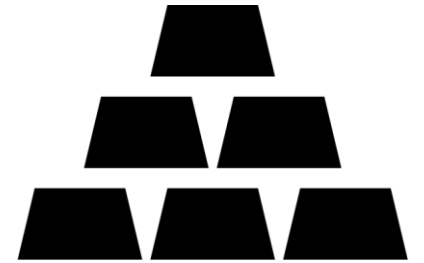
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Definition of Work Breakdown Structure (WBS)

A deliverable-oriented, functional decomposition of the project scope of work into hierarchically grouped work elements

Work Breakdown Structure (WBS) reflects the scope baseline of the entire project. Deliverables not incorporated in WBS will not be a part of the project.

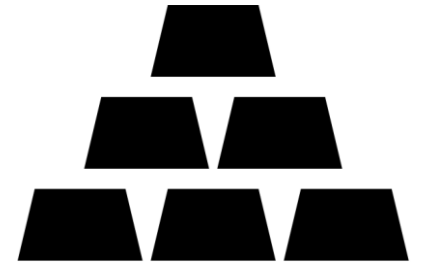
- WBS is prepared with the team's buy-in.
- During decomposition, each level should be complete; it should include all the work in the project before decomposing further.
- Decomposition should be done until the lowest work unit cannot be logically subdivided further (and/or it can be estimated with reasonable accuracy).
- WBS is a deliverable-oriented decomposition and should contain only deliverables and not activities.
- WBS is part of Project Scope Baseline along with Project Scope Statement and WBS Dictionary.



Concept-based questions on work breakdown structure can be expected in the exam.

Work Breakdown Structure (WBS)

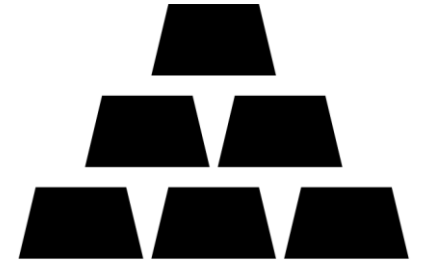
- A WBS defines the total project work.
- If a deliverable is not in the WBS, it is not in the project.
- Each descending level of a WBS represents an increasingly detailed definition of the project work to be performed.
- The WBS is the foundation for project task definition, resource and performance planning, cost estimating, budget control, progress tracking, and status reporting.



Definition of WBS (Contd.)

Work packages are considered decomposed at their lowest level when decomposing them offers no further value or when the work packages can be realistically estimated and they have a meaningful conclusion.

- For a completely decomposed project, each work package should:
 - Have a single purpose
 - Be decomposed until it does not make sense to decompose further
 - Be estimable with a high degree of accuracy
 - Contain clearly understood deliverable(s) or work product(s)



Key Terms

Work Breakdown Structure

A hierarchical decomposition of the total scope of work to be carried out by the project team to accomplish the project objectives and create the required deliverables

WBS Dictionary

A document that provides detailed deliverable, activity, and schedule information about each component in the Work Breakdown Structure

Project Scope Statement

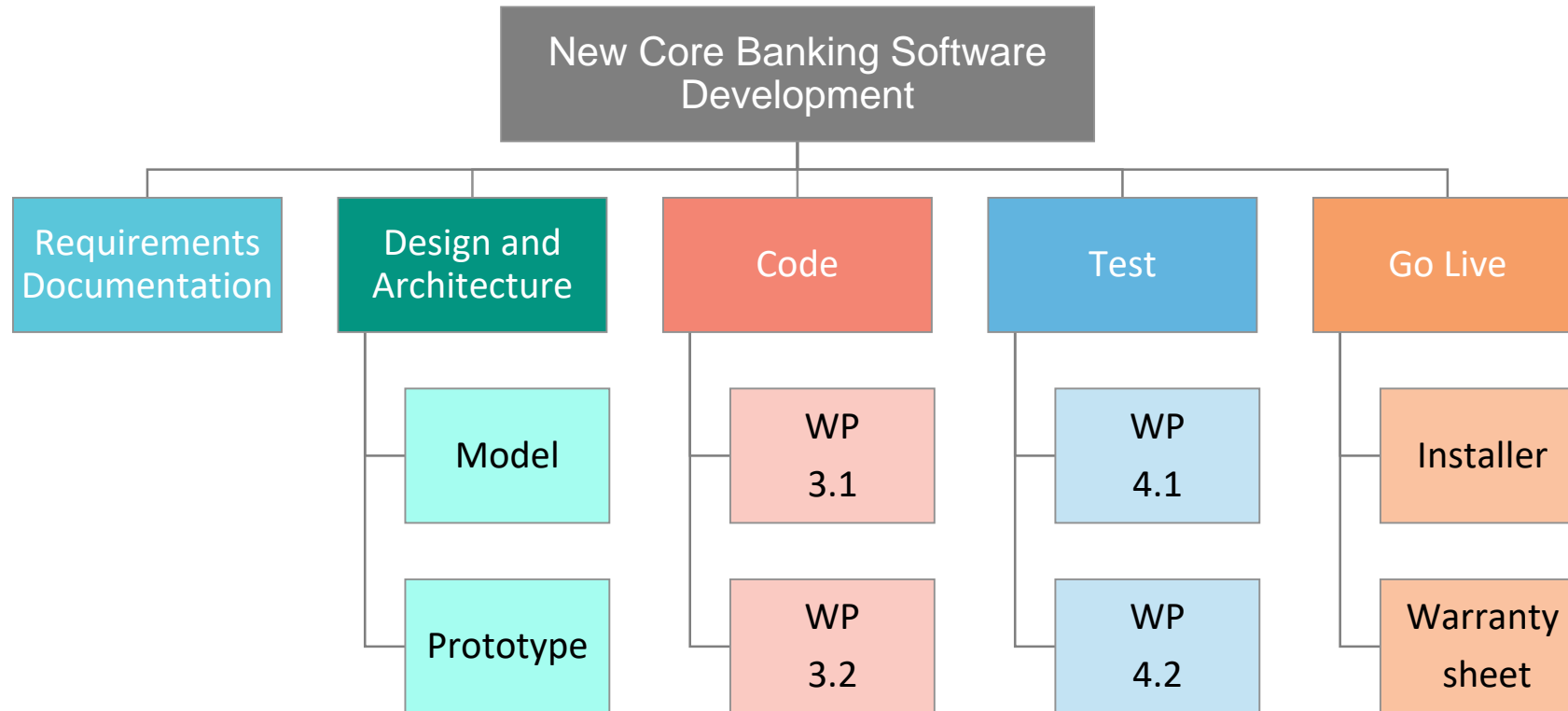
The project scope statement is the description of the project scope, major deliverables, assumptions, and constraints. It describes the project's deliverables in detail.

Control Account

A management control point where scope, budget, actual cost, and schedule are integrated and compared to earned value for performance measurement

WBS: Example

Given below is the WBS of a core banking software development project:



Project Scope Management Processes

Knowledge Areas		Project Integration Management	Project Scope Management	Project Schedule Management	Project Cost Management	Project Quality Management	Project Resource Management	Project Communications Management	Project Risk Management	Project Procurement Management	Project Stakeholder Management
Project Management Process Groups	Initiating	4.1 Develop Project Charter									13.1 Identify Stakeholders
	Planning	4.2 Develop Project Management Plan	5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS	6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Durations 6.5 Develop Schedule	7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget	8.1 Plan Quality Management	9.1 Plan Resource Management 9.2 Estimate Activity Resources	10.1 Plan Communications Management	11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Response	12.1 Plan Procurement Management	13.2 Plan Stakeholder Engagement
	Executing	4.3 Direct and Manage Project Work 4.4 Manage Project Knowledge				8.2 Manage Quality	9.3 Acquire Resources 9.4 Develop Team 9.5 Manage Team	10.2 Manage Communications	11.6 Implement Risk Response	12.2 Conduct Procurements	13.3 Manage Stakeholder Engagement
	Monitoring and Controlling	4.5 Monitor and Control Project Work 4.6 Perform Integrated Change Control	5.5 Validate Scope 5.6 Control Scope	6.6 Control Schedule	7.4 Control Costs	8.3 Control Quality	9.6 Control Resource	10.3 Monitor Communications	11.7 Monitor Risks	12.3 Control Procurements	13.4 Monitor Stakeholder Engagements
	Closing	4.7 Close Project or Phase									

Plan Scope Management

“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.” It belongs to the Planning Process Group.

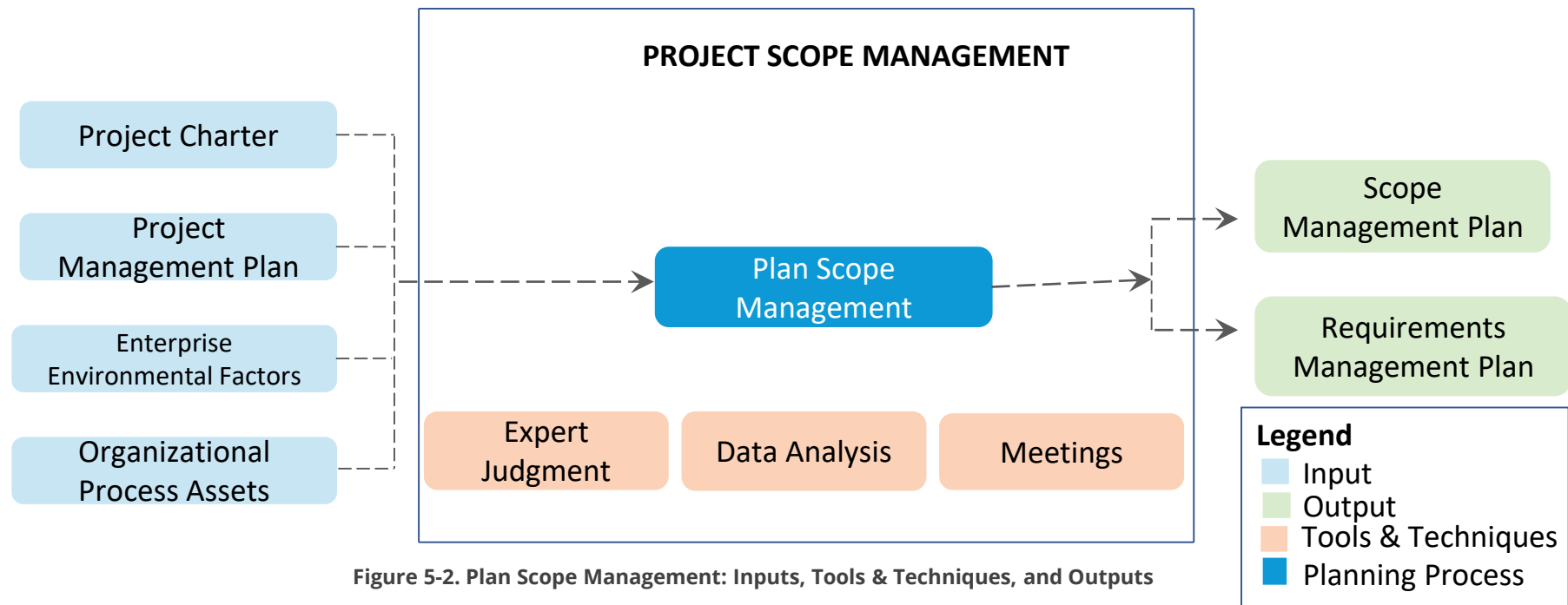


Figure 5-2. Plan Scope Management: Inputs, Tools & Techniques, and Outputs



Understand the inputs and tools and techniques of scope management to answer concept-based questions.

Collect Requirements

“Collect Requirements is the process of determining, documenting, and managing stakeholder needs and requirements to meet objectives.” It belongs to the Planning Process Group.

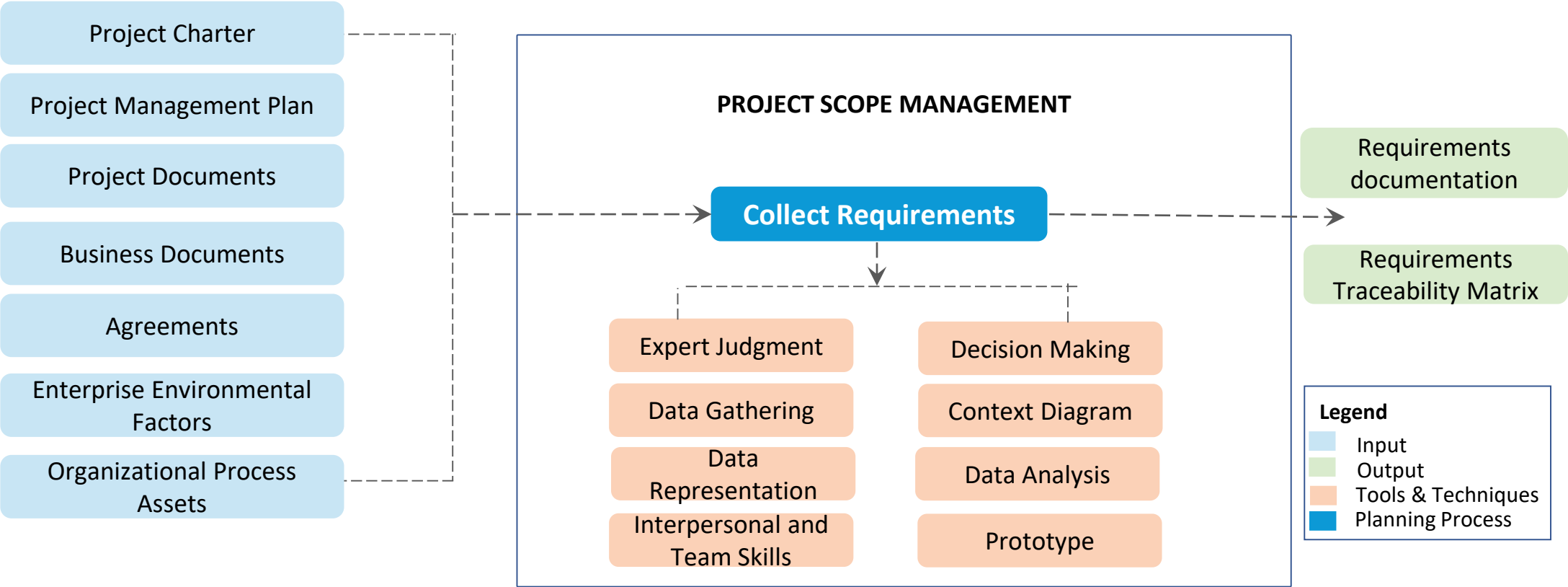


Figure 5-4. Collect Requirements: Inputs, Tools & Techniques, and Outputs9

Business Scenario

PROBLEM STATEMENT



- Gina is a project manager with Bluedot Software Development and Web Design Company.
- A large, global customer contracts the company to design software that would allow them to capture service requests from thousands of potential clients, track existing client projects, and facilitate communication between them and their clients.
- Gina has never led a project of this size, but has successfully completed a similar project on a smaller scale. Therefore, Gina feels confident about her abilities to lead the project and will utilize historical information from her previous project to plan for this initiative.
- During the planning process, Gina and her team conduct interviews and surveys and facilitate workshops to collect the necessary requirements needed to complete the project scope of work. They use these requirements to design and build the software system.
- Unfortunately, during the final user acceptance testing of the software, which is required for customer sign-off, Gina's project team discovers the software design will not support the performance requirements when the system is under the load of several hundred users.

What happens now?

Business Scenario

SOLUTION



- This is a major blow to Gina and her team. They had captured the customer requirements accurately but had not anticipated how to support the non-functional requirements for load and performance of the system.
- With this being a software design issue, the team has to rewrite the core architecture of the software, which requires all components of the systems to be retested before customer sign-off.
- Because of the team's inability to adequately define the requirements without cutting corners, the rework impacts Gina's project in several ways:
 - Increased cost
 - High risk of customer dissatisfaction
 - Missed schedule deadlines
 - Low morale of project team members
- The project needs to assess the impact and likely requires a Change Request for schedule and budget impacts.

Requirement Traceability Matrix

A sample requirements traceability matrix is given below:

Requirement Number	Design	Coding	System Testing	Acceptance Testing
3.1.1.1 (Multi-user access)	SDD Section 3.1	RBACprocessing.cpp SchemaCreation.sql	Tests 111-120	Tests 51-55
...				
...				
...				
...				



Requirements Traceability is a technique used to verify that the work packages of a WBS are delivered and tested. Typically, this is supported through tooling like Microsoft Team Foundation Server or similar products.

Define Scope

“Define Scope is the process of developing a detailed description of the project and product.” It belongs to the Planning Process Group.

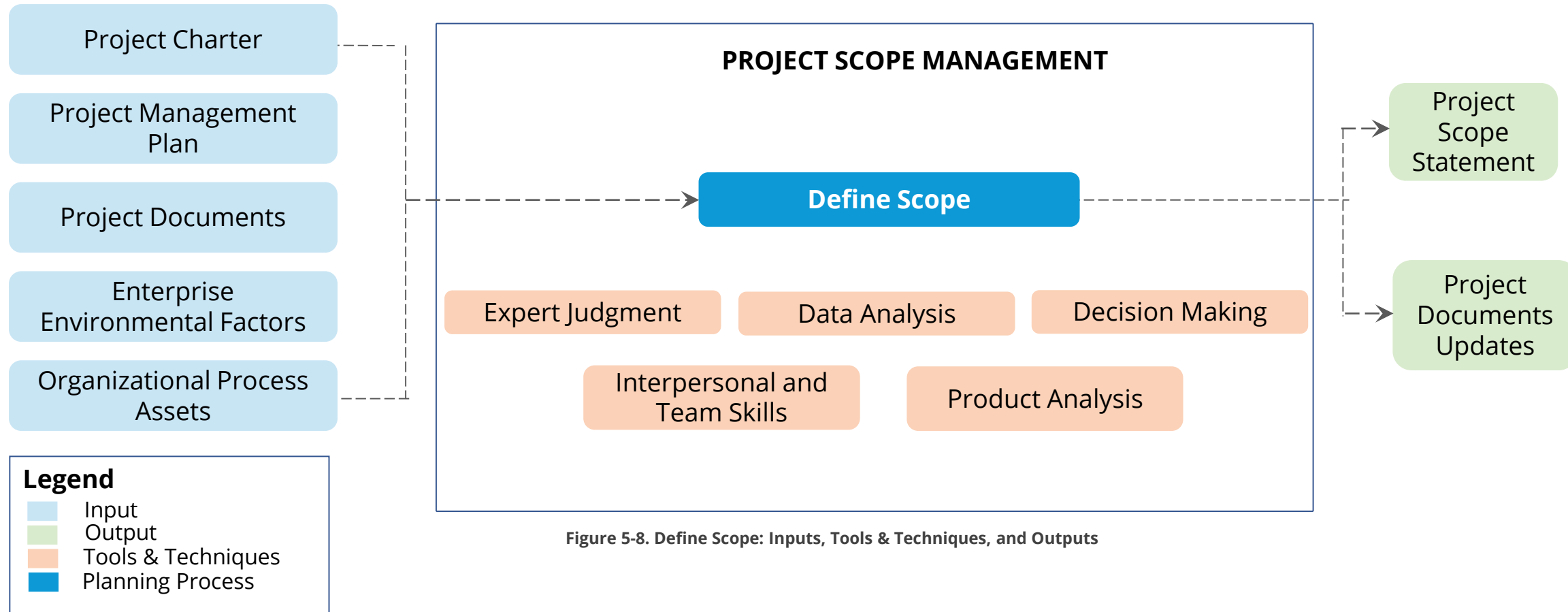


Figure 5-8. Define Scope: Inputs, Tools & Techniques, and Outputs

Create WBS

“Create WBS is the process of subdividing project deliverables and project work into smaller, more manageable components.” It belongs to the Planning Process Group.

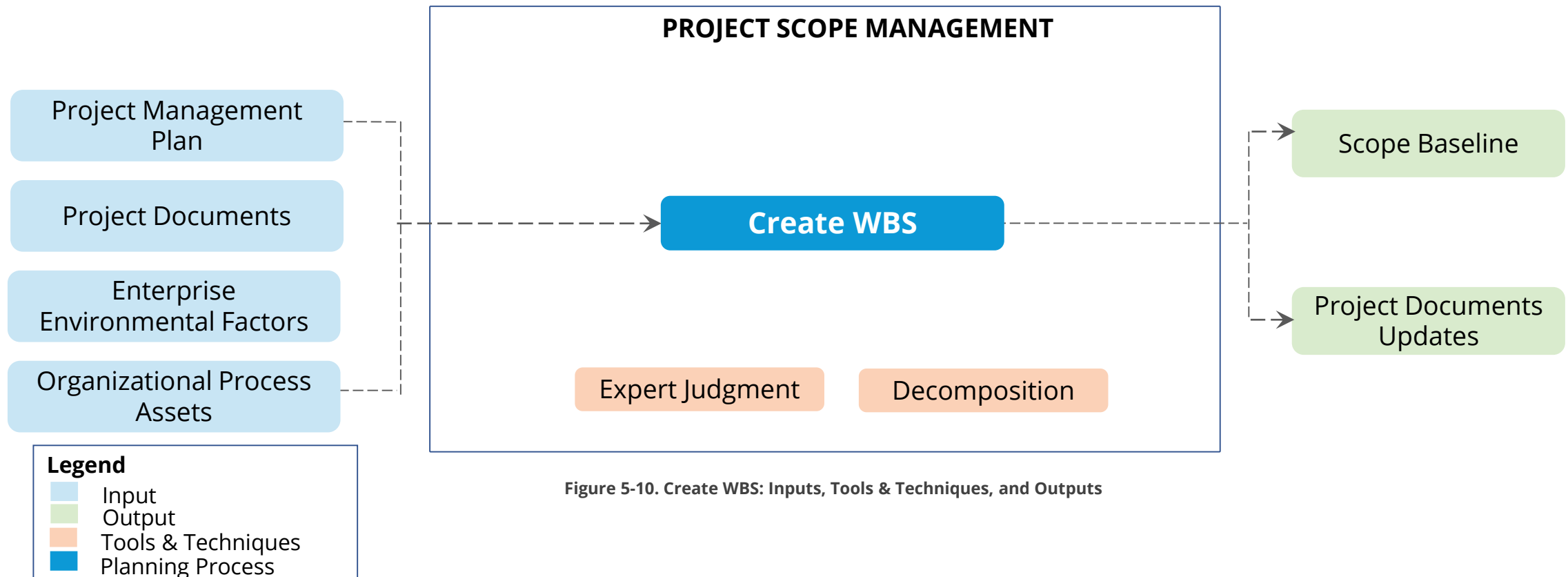


Figure 5-10. Create WBS: Inputs, Tools & Techniques, and Outputs

Validate Scope

“Validate Scope is the process of formalizing acceptance of the completed project deliverables.” It belongs to the Monitoring and Controlling Process Group.

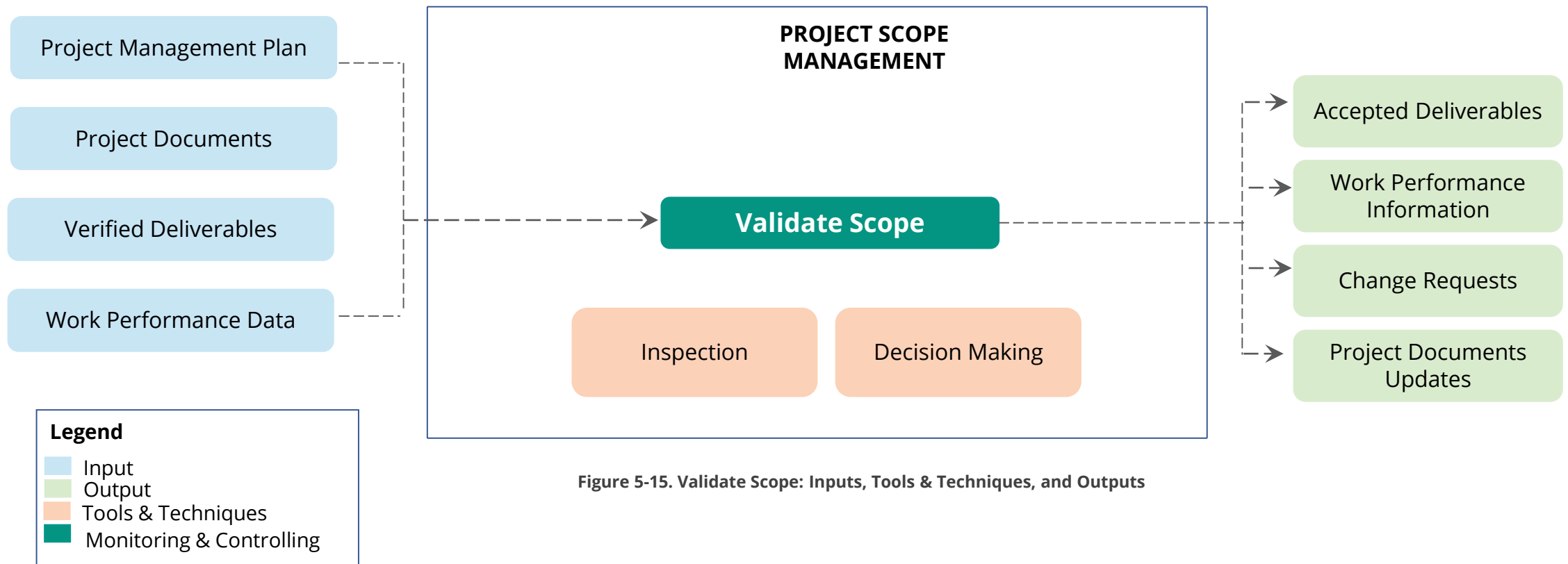


Figure 5-15. Validate Scope: Inputs, Tools & Techniques, and Outputs

Control Scope

“Control Scope is the process of monitoring the status of the project and product scope and managing changes to the scope baseline.” It belongs to the Monitoring and Controlling Process Group.

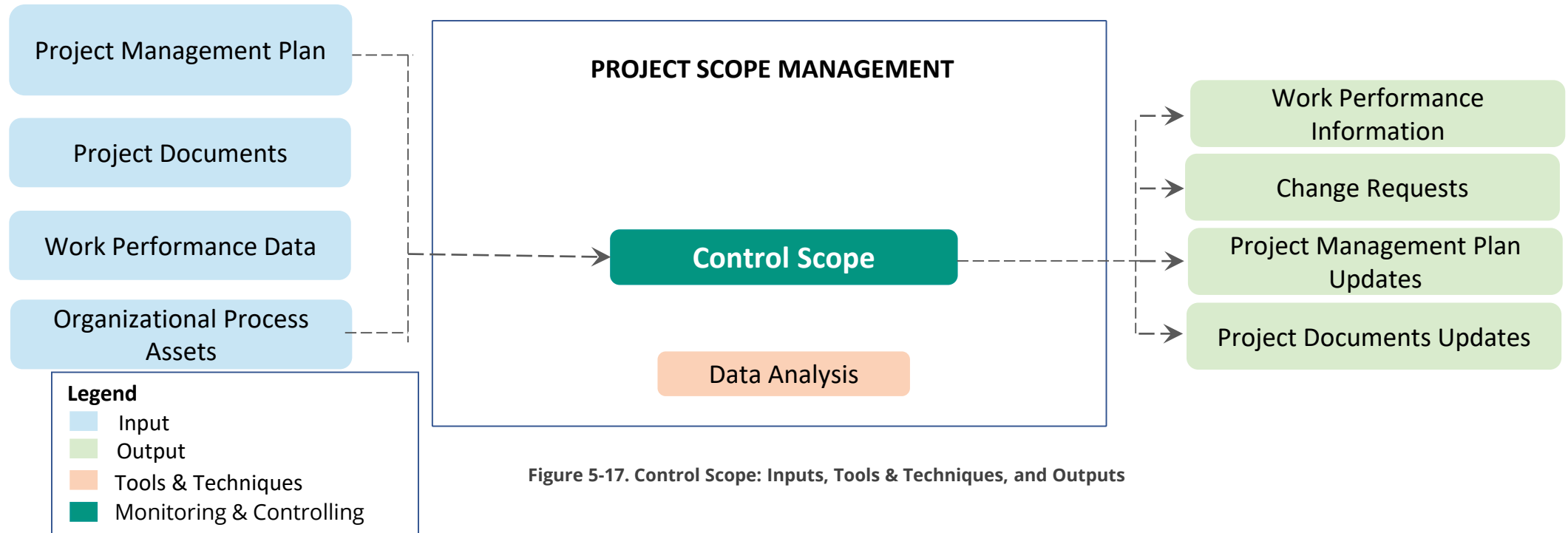


Figure 5-17. Control Scope: Inputs, Tools & Techniques, and Outputs



Understand the creation of WBS to answer concept-based questions.

Important Outputs

Given below are important outputs from Project Scope Management:

Work Performance Information

The performance data collected from controlling processes, analysed in comparison with project management plan components, project documents and other work performance information. Work performance data becomes work performance information after the tools and techniques of a process have been applied.

Accepted Deliverables

These are deliverables that have been verified and are ready for validation against the project scope at which point they are accepted.

Change Requests

When validating project scope, new requirements might be discovered, for example, adding an email notification when a password is changed. These requirements should be documented as change requests.

Business Scenario

PROBLEM STATEMENT



- Brian, the project manager in a strong-matrix organization, has been leading projects for his company for 10 years.
- The company has made a decision to streamline its operations and create policies and procedures to cultivate a culture that is more centered on driving customer excellence. The company leaders and staff members are slowly adapting to this shift in mindset.
- Brian's current project is 25% complete, ahead of schedule, and currently under budget.
- Every two weeks, Brian schedules a meeting with key stakeholders to review the project reports and metrics.
- During the last stakeholder meeting, Brian was asked by one of the key stakeholders to add a new feature to the scope of work in the form of a formal change request.
- This stakeholder had just returned from an industry conference where he gained insight on some advanced technology that would improve the company's competitive position and result in a large increase in market share. This advanced technology may benefit customer and user experience. How should Brian handle this change request?

Business Scenario

SOLUTION



- As this is a formal request by a key stakeholder, Brian should follow the agreed upon Change Request process.
- This would include analyzing the costs and benefits of the proposed request and providing alternatives to minimize the impact to cost and schedule.
- Once this analysis is complete, Brian can present his findings to the sponsor and stakeholders for their decision. He can also present them to the customer so that he gets insights about new features.



Key Takeaways

- ▷ Project Scope Management includes the processes required to ensure that a project includes all and only the work essential to complete the project successfully.
- ▷ Product scope refers to the features and functions that characterize a product, service, or result, while project scope refers to the work that must be performed to deliver a product, service, or result with the specified features and functions.
- ▷ WBS breaks the project scope into smaller and more manageable pieces called work packages
- ▷ WBS dictionary contains the explanation of the terms used in WBS.
- ▷ The six Project Scope Management processes are Plan Scope, Collect Requirements, Define Scope, Create WBS, Validate Scope, and Control Scope.

Additional Reading

(Refer to the exercises provided in the PMP Classroom Exercises)



- Exercise 7
- Exercise 8



Quiz

Quiz



1. In which Project Management Process Group is the project scope defined?

- A ▶ Planning
- B ▶ Initiating
- C ▶ Executing
- D ▶ Monitoring and Controlling

Quiz



1. In which Project Management Process Group is the project scope defined?

- A ▶ Planning
- B ▶ Initiating
- C ▶ Executing
- D ▶ Monitoring and Controlling



The correct answer is: **A**

There are only six processes in scope management. Four are in Planning Process Group and two are in Monitoring and Controlling Process Group. Project scope is defined in Planning Process Group.

Quiz



2. During a project meeting, one of the team members suggests a new feature that customers may like. The project manager says no to this feature, indicating the project should focus on only what is required to complete the project. This is an example of_____.

- A ► Scope Management
- B ► Change Management
- C ► Project Management
- D ► Quality Management

Quiz



2. During a project meeting, one of the team members suggests a new feature that customers may like. The project manager says no to this feature, indicating the project should focus on only what is required to complete the project. This is an example of_____.

- A ► Scope Management
- B ► Change Management
- C ► Project Management
- D ► Quality Management



The correct answer is: **A**

Scope management is about doing only the work needed for the project.

Quiz



3. What is the most important thing that a project manager should ensure during the Validate Scope process?

- A** ▶ Accuracy
- B** ▶ Timeliness
- C** ▶ Acceptance
- D** ▶ Completeness

Quiz



3. What is the most important thing that a project manager should ensure during the Validate Scope process?

- A ► Accuracy
- B ► Timeliness
- C ► Acceptance
- D ► Completeness



The correct answer is: **C**

Scope validation involves formal acceptance of the work deliverables.

Quiz



4. The WBS for your project has been prepared and distributed to the project team members. When execution begins, which document will provide the detailed descriptions of the WBS elements?

- A ► Scope Statement
- B ► Project Management Plan
- C ► WBS dictionary
- D ► Project Statement of Work

Quiz



4. The WBS for your project has been prepared and distributed to the project team members. When execution begins, which document will provide the detailed descriptions of the WBS elements?

- A ► Scope Statement
- B ► Project Management Plan
- C ► WBS dictionary
- D ► Project Statement of Work



The correct answer is: **C**

The WBS dictionary provides detailed descriptions about the deliverables listed in the WBS.

Quiz



5. Which of the following is not true regarding subdividing the work in the WBS?

- A ➤ Subdivide until it has a meaningful conclusion
- B ➤ Subdivide until it can be done by a single person
- C ➤ Subdivide until it cannot be logically subdivided further
- D ➤ Subdivide until it can be realistically estimated

Quiz



5. Which of the following is not true regarding subdividing the work in the WBS?

- A ▶ Subdivide until it has a meaningful conclusion
- B ▶ Subdivide until it can be done by a single person
- C ▶ Subdivide until it cannot be logically subdivided further
- D ▶ Subdivide until it can be realistically estimated



The correct answer is: **B**

WBS need not be decomposed until it can be done by a single person.

Quiz



6. Validate scope is the process of formalizing acceptance of the completed project deliverables. When should this process be done?

- A** ▶ During quality control
- B** ▶ During the planning processes
- C** ▶ At the end of each phase of the project
- D** ▶ At the end of the project

Quiz



6. **Validate scope** is the process of formalizing acceptance of the completed project deliverables. When should this process be done?

- A ▶ During quality control
- B ▶ During the planning processes
- C ▶ At the end of each phase of the project
- D ▶ At the end of the project



The correct answer is: **C**

Validate scope is a monitoring and controlling process which can be performed throughout the project. At the end of each phase of the project, you would perform validate scope to achieve the formal acceptance of the completed project deliverables.

Quiz



7. Which are the effective forms of Requirements Gathering documents?

- A** ▶ Use Cases
- B** ▶ User Stories
- C** ▶ Product Backlog Items
- D** ▶ All of the above

Quiz



7. Which are the effective forms of Requirements Gathering documents?

- A ▶ Use Cases
- B ▶ User Stories
- C ▶ Product Backlog Items
- D ▶ All of the above



The correct answer is: **D**

Use Cases, User Stories, and Product Backlog Items (PBIs) are all valid forms of requirements. User Stories and PBIs are agile forms of requirements documentation.

Quiz



8. Javed is a project manager for a custom-manufacturing company that has recently completed the testing of a new Bluetooth-enabled digital thermometer. The internal testing team has signed off stating that the product meets requirements and specifications. At which state are the deliverables?

- A ► Verified
- B ► Accepted
- C ► Inspected
- D ► Validated

Quiz



8. Javed is a project manager for a custom-manufacturing company that has recently completed the testing of a new Bluetooth-enabled digital thermometer. The internal testing team has signed off stating that the product meets requirements and specifications. At which state are the deliverables?

- A ► Verified
- B ► Accepted
- C ► Inspected
- D ► Validated



The correct answer is: **A**

The project deliverables are “verified” and ready for the Scope Validation process, where they will be inspected, validated, and accepted if the users feel they meet requirements and specifications.

This concludes
“Project Scope
Management.”



The next lesson is
“Project Schedule
Management.”

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