Tishk International University
Faculty of Applied Science
Department of Information Technology

Information Technology Project Management
IT 415
2025-2026 Fall

Dr. Hala Najwan Sabeh

Information Technology Project Management

Dr. Hala Najwan Sabeh

Chapter 5:
Project Scope Management

Adapted from
Information technology Project management, Ninth Edition

Kathy Schwalbe

Learning Objectives

- Understand the importance of good project scope management
- Discuss methods for collecting and documenting requirements in order to meet stakeholder needs and expectations
- Explain the scope definition process and describe the contents of a project scope statement
- Discuss the process for creating a work breakdown structure using the analogy, top-down, bottom-up, and mind-mapping approaches

Learning Objectives (continued)

- Explain the importance of verifying scope and how it relates to defining and controlling scope
- Understand the importance of controlling scope and approaches for preventing scope-related problems on information technology projects
- Describe how software can assist in project scope management

What is Project Scope?

- **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, or meeting minutes

What is Project Scope Management?

- **Project scope management** includes the processes involved in defining and controlling what work is or is not included in a project.

- It ensures that the project team and stakeholders have the same understanding of what products the project will produce and what processes the project team will use to produce them.

Project Scope Management Processes
(Review Questions-Q1)

Six main processes are involved in project scope management:

1. **Planning scope management**
2. **Collecting requirements**
3. **Defining scope**
4. **Creating the WBS**
5. **Validating scope**
6. **Controlling scope**

Project Scope Management Processes (continued)

1. **Planning scope management**: involves determining how the project's scope and requirements will be managed.

2. **Collecting requirements**: involves defining and documenting the features and functions of the products as well as the processes used for creating them.

3. **Defining scope**: involves reviewing the scope management plan, project charter, requirements documents, and organizational process assets to create a scope statement, adding more information as requirements are developed and change requests are approved.

Project Scope Management Processes (continued)

4. **Creating the WBS**: involves subdividing the major project deliverables into smaller, more manageable components.

5. **Validating scope**: involves formalizing acceptance of the project deliverables. (Key project stakeholders, such as the customer and sponsor for the project, inspect and then formally accept the deliverables during this process. If the deliverables are not acceptable, the customer or sponsor usually requests changes)

6. **Controlling scope**: involves controlling changes to project scope throughout the life of the project.

Figure 5-1 Project scope management overview

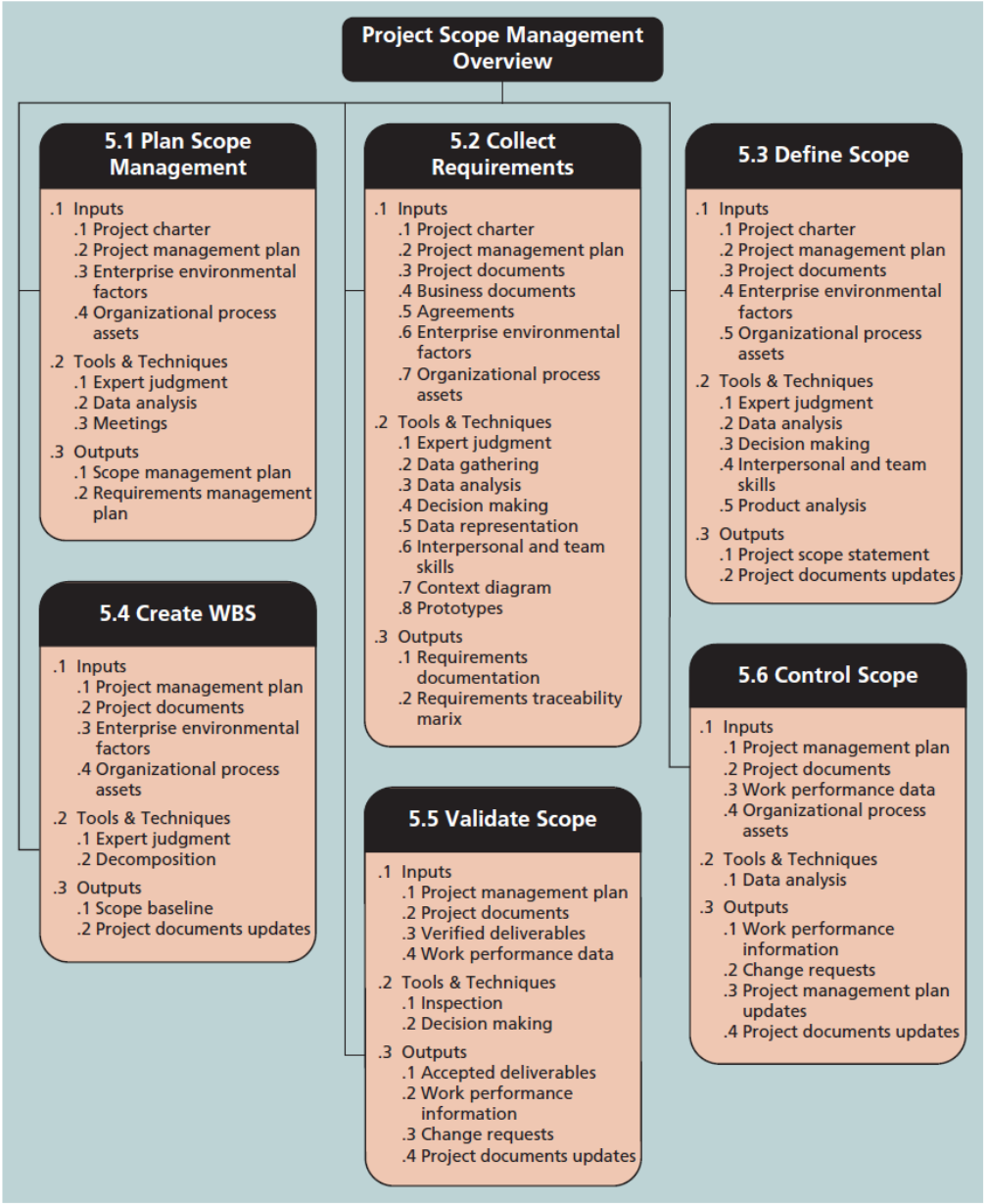


FIGURE 5-1 Project scope management overview

1. Planning Scope Management

1. Planning Scope Management

- The project team uses expert judgment and meetings to develop two important outputs: the scope management plan and the requirements management plan
- The **scope management plan** is a subsidiary part of the project management plan

Scope Management Plan Contents

- How to prepare a detailed project scope statement
- How to create a WBS
- How to maintain and approve the WBS
- How to obtain formal acceptance of the completed project deliverables
- How to control requests for changes to the project scope

Requirements Management Plan

- The PMBOK® Guide – Sixth Edition, defines a requirement as “a condition or capability that is necessary to be present in a product, service, or result to satisfy a business need.” It further explains that requirements “include the quantified and documented needs and expectations of the sponsor, customer, and other stakeholders.

- The **requirements management plan** documents how project requirements will be analyzed, documented, and managed

2. Collecting Requirements

2. Collecting Requirements

- A **requirement** is “a condition or capability that must be met or possessed by a system, product, service, result, or component to satisfy a contract, standard, specification, or other formal document” (PMBOK® Guide, 2008)

Methods for Collecting Requirements (Review Questions-Q2)

1. Interviewing
2. Focus groups and facilitated workshops
3. Using group creativity and decision-making techniques
4. Questionnaires and surveys
5. Observation
6. Prototyping

Documenting Requirements

A. **Requirements documents** are often generated by software and include text, images, diagrams, videos, and other media; they are often broken down into different categories such as functional, service, performance, quality, training requirements, and so on

B. A **requirements traceability matrix (RTM)** is a table that lists requirements, various attributes of each requirement, and the status of the requirements to ensure that all requirements are addressed

- The project's size, complexity, importance, and other factors affect how much effort is spent on collecting requirements.

Table 5-1. Sample entry in a requirements traceability matrix
(Review Questions-Q3)

A **requirements traceability matrix (RTM)** is a table that lists requirements, various attributes of each requirement, and the status of the requirements to ensure that all requirements are addressed

TABLE 5-1 Sample entry in a requirements traceability matrix

Requirement No.	Name	Category	Source	Status
R32	Laptop memory	Hardware	Project charter and corporate laptop specifications	Complete. Laptops ordered meet memory requirement.

3. Defining Scope

3. Defining Scope

- Key inputs for preparing the project scope statement include the project charter, requirements documentation, and organizational process assets such as policies and procedures related to scope statements as well as project files and lessons learned from previous, similar projects.

- As time progresses, the scope of a project should become more clear and specific

Table 5-3. Further Defining Project Scope

TABLE 5-3 Further defining project scope

Project Charter: Upgrades may affect servers . . . (listed under Project Objectives)
Project Scope Statement, Version 1: Servers: If additional servers are required to support this project, they must be compatible with existing servers. If it is more economical to enhance existing servers, a detailed description of enhancements must be submitted to the CIO for approval. See current server specifications provided in Attachment 6. The CEO must approve a detailed plan describing the servers and their location at least two weeks before installation.
Project Scope Statement, Version 2: Servers: This project will require purchasing 10 new servers to support Web, network, database, application, and printing functions. Virtualization will be used to maximize efficiency. Detailed descriptions of the servers are provided in a product brochure in Attachment 8, along with a plan describing where they will be located.

Media Snapshot

- Many people enjoy watching television shows like *Trading Spaces*, where participants have two days and $1,000 to update a room in their neighbor's house; since the time and cost are set, it's the scope that has the most flexibility
- Although most homeowners are very happy with work done on the show, some are obviously disappointed; part of agreeing to be on the show includes signing a release statement acknowledging that you will accept whatever work has been done
- Too bad you can't get sponsors for most projects to sign a similar release form; it would make project scope management much easier!

4. Creating the Work Breakdown Structure (WBS)

4. Creating the Work Breakdown Structure (WBS)

- A **WBS** is a deliverable-oriented grouping of the work involved in a project that defines the total scope of the project
- WBS is a foundation document that provides the basis for planning and managing project schedules, costs, resources, and changes
- **Decomposition** is subdividing project deliverables into smaller pieces

Figure 5-3. Sample Intranet WBS Organized by Product

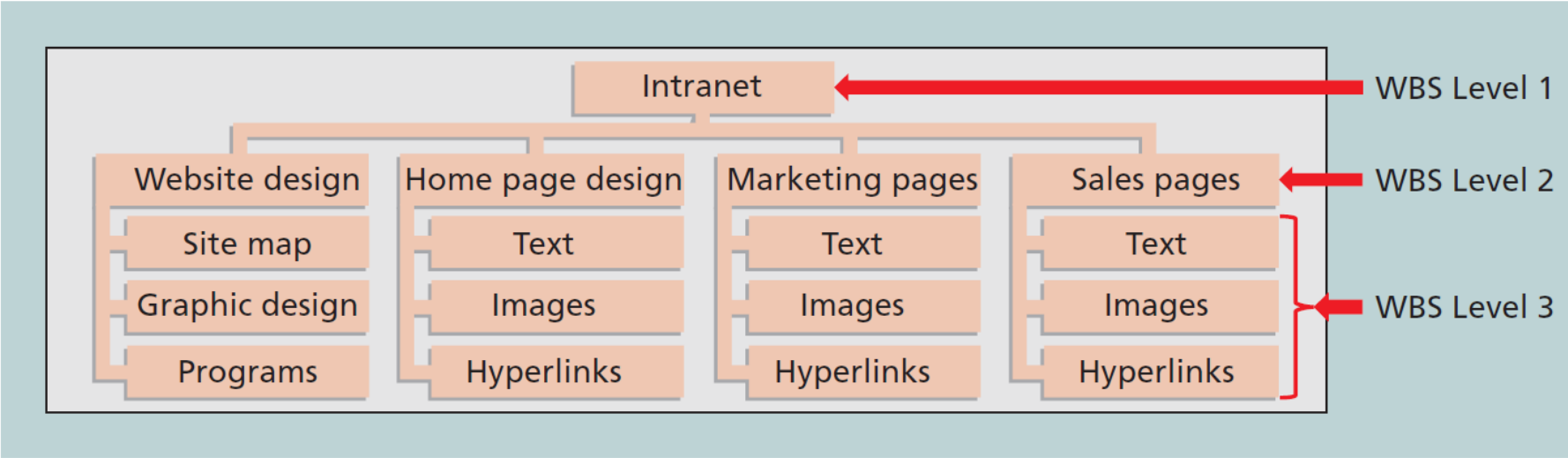


FIGURE 5-3 Sample intranet WBS organized by product

Figure 5-6. Intranet Gantt Chart Organized by Project Management Process Groups

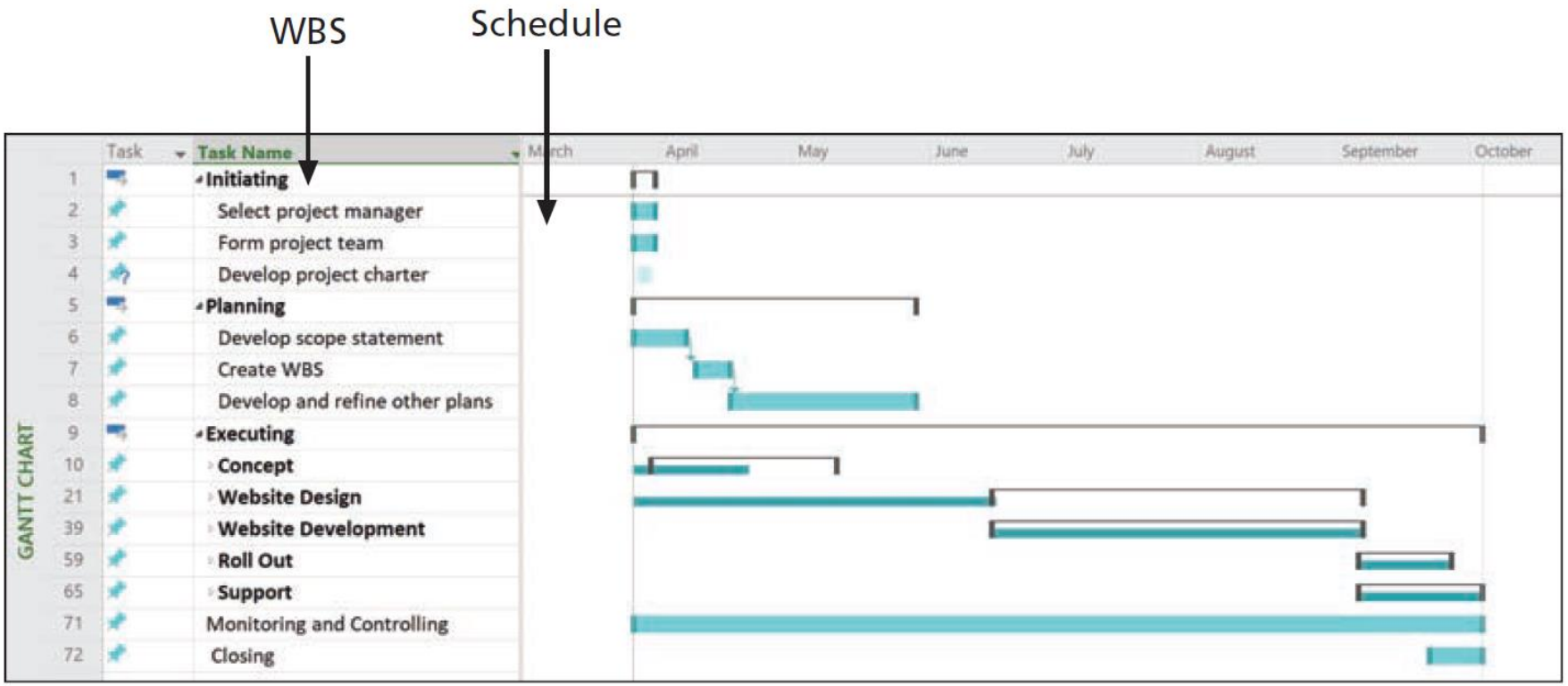


FIGURE 5-6 Website project Gantt chart organized by project management process groups

Table 5-4. Executing Tasks for JWD Consulting's WBS

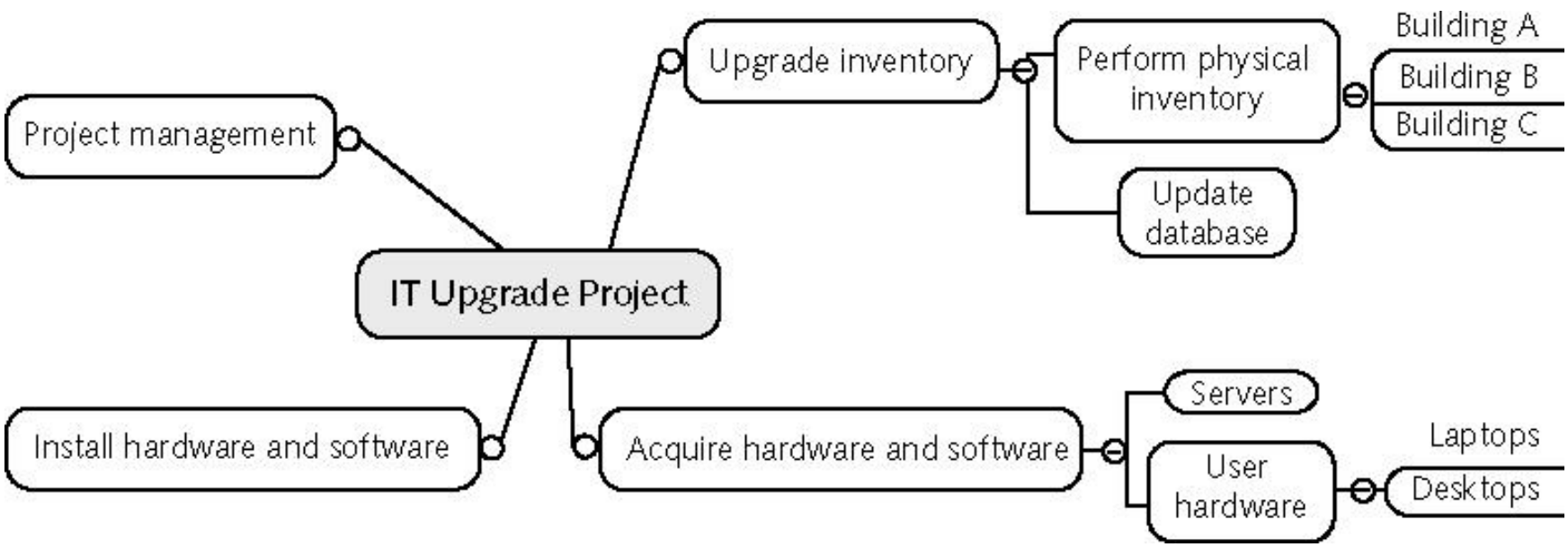
TABLE 5-5 Executing tasks for JWD Consulting's WBS

3.0	Executing
3.1	Survey
3.2	User inputs
3.3	Intranet site content
3.3.1	Templates and tools
3.3.2	Articles
3.3.3	Links
3.3.4	Ask the Expert
3.3.5	User Requests feature
3.4	Intranet site design
3.5	Intranet site construction
3.6	Intranet site testing
3.7	Intranet site roll-out
3.8	Site rollout
3.9	Intranet site roll-out

Approaches to Developing WBSs
(Review Questions-Q4)

1. **Using guidelines**: some organizations provide guidelines for preparing WBSs.
2. The **analogy approach**: review WBSs of similar projects and tailor to your project.
3. The **top-down approach**: start with the largest items of the project and break them down.
4. The **bottom-up approach**: start with the specific tasks and roll them up.
5. **Mind-mapping approach: mind mapping** is a technique that uses branches radiating out from a core idea to structure thoughts and ideas.

Figure 5-7. Sample Mind-Mapping Approach for Creating a WBS



The WBS Dictionary and Scope Baseline

- Many WBS tasks are vague and must be explained more so people know what to do and can estimate how long it will take and what it will cost to do the work
- A **WBS dictionary** is a document that describes detailed information about each WBS item
- The scope baseline includes the approved project scope statement and its associated WBS and WBS dictionary, which is used to measure performance in meeting project scope goals

TABLE 5-6 Sample WBS dictionary entry

WBS Dictionary Entry March 20
Project Title: Information Technology (IT) Upgrade Project
WBS Item Number: 2.2
WBS Item Name: Database Update
Description: The IT department maintains an online database of hardware and software on the corporate intranet. We need to make sure that we know exactly what hardware and software employees are currently using and if they have any unique needs before we decide what to order for the upgrade. This task will involve reviewing information from the current database, producing reports that list each department's employees and location, and updating the data after performing the physical inventory and receiving inputs from department managers. Our project sponsor will send a notice to all department managers to communicate the importance of this project and this particular task. In addition to general hardware and software upgrades, the project sponsors will ask the department managers to provide information for any unique requirements they might have that could affect the upgrades. This task also includes updating the inventory data for network hardware and software. After updating the inventory database, we will send an e-mail to each department manager to verify the information and make changes online as needed. Department managers will be responsible for ensuring that their people are available and cooperative during the physical inventory. Completing this task is dependent on WBS Item Number 2.1, Physical Inventory, and must precede WBS Item Number 3.0, Hardware and Software Acquisition.

Advice for Creating a WBS and WBS Dictionary

- A unit of work should appear at only one place in the WBS
- The work content of a WBS item is the sum of the WBS items below it
- A WBS item is the responsibility of only one individual, even though many people may be working on it
- The WBS must be consistent with the way in which work is actually going to be performed

Advice for Creating a WBS and WBS Dictionary (continued)

- Project team members should be involved in developing the WBS to ensure consistency
- Each WBS item must be documented in a WBS dictionary to ensure accurate understanding of the scope of work included and not included in that item

5. Validating Scope

5. Validating Scope

- It is very difficult to create a good scope statement and WBS for a project.
- It is even more difficult to Validate project scope and minimize scope changes.
- **Scope validation** involves formal acceptance of the completed project scope by the stakeholders.

5. Validating Scope (continued)

- The main tools for performing scope validation are inspection and decision-making techniques.
- The customer, sponsor, or user inspects the work after it is delivered and decides if it meets requirements.
- Acceptance is often achieved by a customer inspection and then sign-off on key deliverables.
- Even when the project scope is fairly well defined, many IT projects suffer from **scope creep**—the tendency for project scope to keep getting bigger and bigger.

6. Controlling Scope

6. Controlling Scope

- Scope control involves controlling changes to the project scope
- Goals of scope control are to:
  - Assure changes are processed according to procedures developed as part of integrated change control
  - Manage changes when they occur
- **Variance** is the difference between planned and actual performance. (For example, if a supplier was supposed to deliver five special keyboards and you received only four, the variance would be one keyboard.)

Best Practices for Avoiding Scope Problems (Review Questions-Q6)

1. Keep the scope realistic. Don't make projects so large that they can't be completed. Break large projects down into a series of smaller ones.
2. Involve users in project scope management. Assign key users to the project team and give them ownership of requirements definition and scope verification.
3. Follow good project management processes. As described in this chapter and others, there are well-defined processes for managing project scope and others aspects of projects.

Suggestions for Improving User Input

Lack of user input leads to problems with managing scope creep and controlling change. How can you manage this important issue?

The following suggestions can help a project team improve user input:

(Review Questions-Q7)

1. Develop a good project selection process and insist that sponsors are from the user organization
2. Have users on the project team in important roles (Some organizations require project managers to come from the business area of the project instead of the IT group. Some organizations assign co-project managers to IT projects, one from IT and one from the main business group.)
3. Have regular meetings with defined agendas, and have users sign off on key deliverables presented at meetings

Suggestions for Improving User Input (continued) (Review Questions-Q7)

4. Deliver something to users and sponsors on a regular basis
5. Don’t promise to deliver when you know you can’t

Using Software to Assist in Project Scope Management (Review Questions-Q8)

1. Word-processing software helps create several scope-related documents
2. Spreadsheets help to perform financial calculations and weighted scoring models and to develop charts and graphs
3. Communication software like e-mail and the Web help clarify and communicate scope information
4. Project management software helps in creating a WBS, the basis for tasks on a Gantt chart

Chapter Summary

- Project scope management includes the processes required to ensure that the project addresses all the work required to complete the project successfully
- Main processes include:
  1. Planning scope management
  2. Collecting requirements
  3. Defining scope
  4. Creating the WBS
  5. Validating scope
  6. Controlling scope

References

- Schwalbe, K. (2018). Information technology Project management. Cengage Learning.

Review Questions

- Q1:List the five main processes involved in project scope management and then briefly describe one of these processes.
- Q2: The second process that is involved in project scope management is “collect requirements”. There are several methods to collect requirements for IT projects. List these methods.
- Q3: Define the requirements traceability matrix (RTM) and then provide an example of the RTM entry for the IT upgrade project.
- Q4: List and briefly describe the five approaches for creating work breakdown structures.

Review Questions

Q5: Fill in the blanks with suitable terms

1. **Scope validation** involves formal acceptance of the completed project scope by the stakeholders.
2. Acceptance is often achieved by a customer inspection and then sign-off on key deliverables.
3. **scope creep** can be defined as the the tendency for project scope to keep getting bigger and bigger.
4. Variance is the difference between planned and actual performance.

Review Questions

- Q6: Explain the three best practices that the project manager needs to follow to avoid scope problems.
- Q7: Lack of user input leads to problems with managing scope creep and controlling change. List five suggestions that can help a project team improve user input.
- Q8: List four types of software that are used to assist in project scope management, and then explain one of them briefly.