IT Project Management (ITec5111)

Chapter 5

Project Scope Management

What is Project Scope Management?

- A critically important and difficult aspect of project management is defining the scope of a project
- **Scope** refers to **all the work involved** in creating the products of the project and the **processes** used to create them
- **Project scope management** includes the processes involved in *defining and controlling what 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

- Six main processes are involved in project scope management **to ensure that the project addresses all the work required**, and only the work required, to complete the project successfully
- Main processes
  1. **Planning scope management**: determining how the **project's scope** and **requirements** will be managed
  2. **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
  3. **Defining scope**: reviewing the project charter, requirements documents, and organizational process assets **to create a scope statement**
  4. **Creating the Work breakdown structure(WBS)**: subdividing the major project deliverables into smaller, more manageable components
  5. **Validating scope**: formalizing acceptance of the project deliverables
  6. **Controlling scope**: controlling changes to project scope throughout the life of the project

Planning Scope Management

- The first step in project scope management is **planning how the scope will be managed** throughout the life of the project
- Two important outputs:
  - Scope management plan
  - Requirements management plan

a. Scope management plan:

- Scope management plan includes the following information:
  - ***i. How to prepare a detailed project scope statement****: For example, are there* **templates** or **guidelines** to follow? How much detail is needed to describe each deliverable?
  - ***ii. How to create a WBS****: This section* of the scope management plan would provide **suggestions**, **samples**, and **resources for creating a WBS**.

Planning Scope Management-Scope management plan(cont'd)

iii. How to maintain and approve the WBS*:*

- The scope management plan **describes guidelines** for maintaining the WBS and getting approval for it.

iv. How to obtain formal acceptance of the completed project deliverables*: It is* extremely important to understand the process for obtaining formal acceptance of completed deliverables, especially for projects in which payments are based on formal acceptance.

v. How to control requests for changes to the project scope*: This process is* related to *performing integrated change control*.

- Organizations often have guidelines for submitting, evaluating, and approving changes to scope.
- Scope management plan would specify how to handle change requests for the project.

Planning Scope Management (cont'd)

b. Requirements Management Plan

- **Requirement**: is a condition or capability that is necessary to be present in a product, service, or result to satisfy a business need
- Thus, requirements need to be **elicited/gathered**, **analyzed**, and **recorded** in enough detail to be included in the scope baseline and be measured once project execution begins.
- For some IT projects, it is helpful to divide requirements development into categories called *elicitation/gathering*, *analysis*, *specification*, and *validation*.

- ***The requirements management plan documents how project requirements will be analyzed, documented, and managed***
- A requirements management plan can include the following information:
  - How to plan, track, and report requirements activities
  - How to prioritize requirements
  - How to use product metrics-used to evaluate the success of the product
  - How to trace and capture attributes of requirements

Collecting Requirements

- The second step in project scope management is **collecting requirements**.
- *A major consequence of not defining requirements well is **rework**, which can consume up to half of project costs, especially for software development projects.*
  - It costs much more to correct a software defect in later development phases than to fix it in the requirements phase
- Several ways to collect requirements
  - Interviewing stakeholders
  - Holding focus groups and facilitate workshops are normally faster and less expensive than one-on-one interviews
  - Utilizing questionnaires and surveys
  - Conducting observation studies
  - Generating ideas by comparing specific project practices or product characteristics (i.e., benchmarking)
- Inaccurate requirements gathering continues to be one of the main causes of project failure

Collecting Requirements (cont'd)

- 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

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

Table 5-1 Sample entry in a requirements traceability matrix

Defining Scope

- The third step in project scope management is to provide a **detailed definition of the work required** for the project.
- **Good scope definition** is very important to project success because it helps improve the accuracy of **time**, **cost**, and **resource** estimates.
  - *It defines a baseline for performance measurement and project control, and it aids in communicating clear work responsibilities*.
- The main tools and techniques used in defining scope include expert judgment, product analysis, and facilitated workshops.
- For example, a facilitator could have users, developers, and other stakeholders join a face-to- face meeting or virtual meeting to exchange ideas about developing a new product.
- **The main outputs of scope definition are the *project scope statement* and *project documents updates*.**

Defining Scope (cont'd)

- Key inputs for preparing the **project scope statement** include
  - the project charter
  - scope management plan
  - requirements documentation
  - organizational process assets such as policies and procedures related to scope statements, and lessons learned from previous
- How information from the project charter provides a basis for further defining the project scope statement?
  - The **charter describes the high-level scope**, **time**, and **cost** goals for the project objectives and success criteria,

Defining Scope (cont'd)

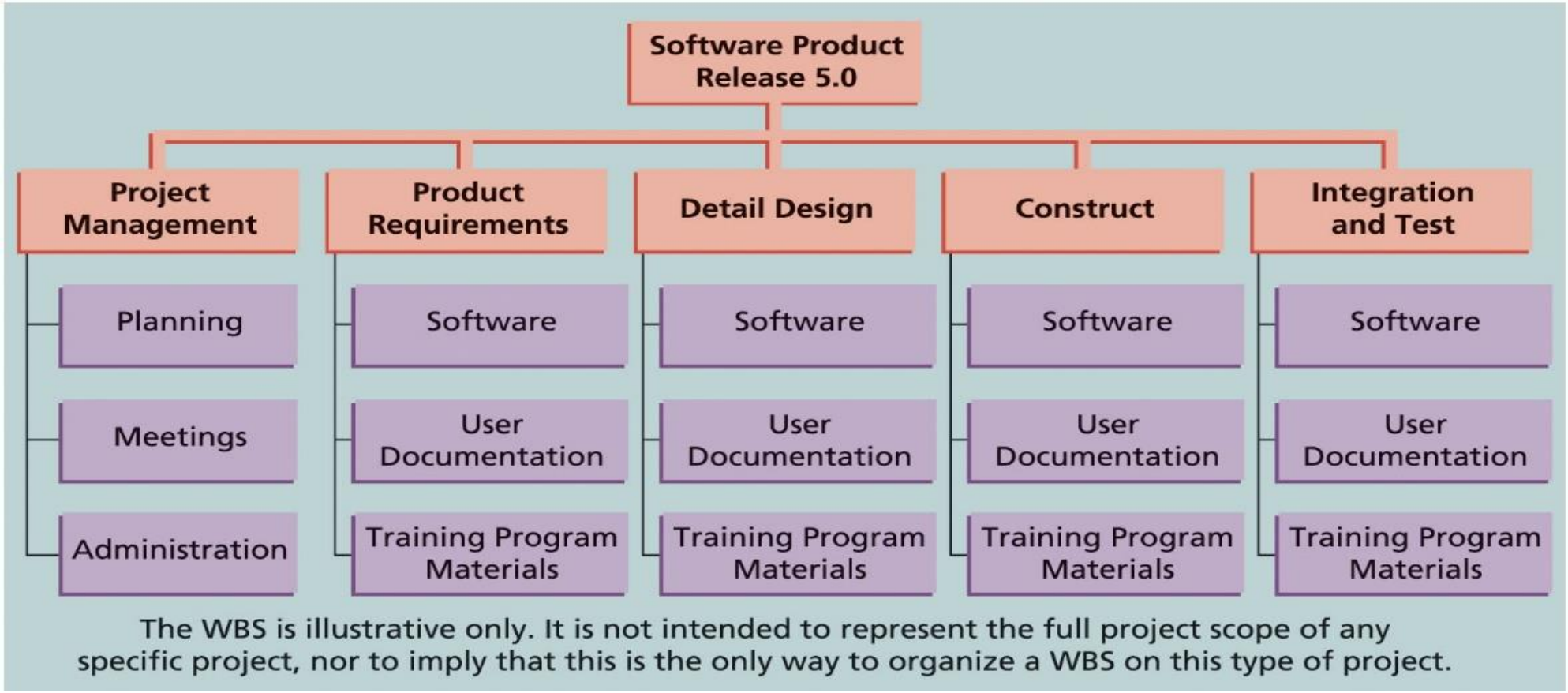
- Important elements of a **project scope statement**
  - Product scope description
  - Product user acceptance criteria
  - Detailed information on all project deliverables
- It is also helpful to document other scope-related information
  - Project boundaries, constraints, and assumptions
  - Supporting document references (e.g., product specifications)
- An **up-to-date project scope statement** is an important document for developing and confirming a common understanding of the project scope.
  - ***It describes in detail the work to be accomplished on the project and is an important tool for ensuring customer satisfaction and preventing scope creep/deviation.***

Creating the Work Breakdown Structure

- After collecting requirements and defining scope, the next step in project scope management is to create a work breakdown structure
- Work Breakdown Structure (WBS) is a deliverable-oriented grouping of the work involved in a project that **defines the total scope of the project**
  - ***Foundation document that provides the basis for planning and managing project schedules, costs, resources, and changes***
- Decomposition is the main tool or technique for creating a WBS
  - Subdividing project deliverables into smaller pieces

Creating the Work Breakdown Structure (cont'd)

- Sample WBS organized by phases



The WBS Dictionary

- Many WBS tasks are vague
  - **WBS dictionary is a document that describes detailed information about each WBS item**

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.

Table 5-2 Sample WBS dictionary entry

The WBS Dictionary (cont'd)

- Advice for creating a WBS and WBS dictionary
  - Unit of work should appear at only one place in the WBS
  - Work content of a WBS item is the sum of the WBS items below it
  - Project team members should be involved in developing the WBS.
  - Each WBS item must be documented in a WBS dictionary to ensure accurate understanding of the scope of work included and not included

Validating Scope

- It is difficult to create a good project scope statement and WBS for a project, especially on IT projects
- Many IT projects suffer from scope creep
  - A project scope that is too broad can cause severe problems
- Scope validation involves **formal acceptance** of the completed project deliverables
  - Acceptance is often achieved by a customer inspection and then sign-off on key deliverables

Controlling Scope

- **Scope control involves *controlling changes* to the project scope**
- Goals/advantages of scope control
  - Influence the factors that cause scope changes
  - Ensure changes are processed according to procedures developed as part of integrated change control
  - Manage changes when they occur

Controlling Scope (cont'd)

- Lack of user input/requirement leads to problems with managing scope creep and controlling change.
- The following suggestions can help a project team improve user input:
  - Develop a good project selection process
  - Place users on the project team
  - Conduct regular meetings with defined agendas
    - **many IT projects fail because the project team members do not have regular interaction with users.**
  - Deliver something to users and sponsors on a regular basis
  - Do not promise to deliver what the team cannot deliver in a particular time frame

Controlling Scope (cont'd)

- Some requirement changes are expected on IT projects
- But many projects have too many changes to their requirements, especially during later stages of the project life cycle when it is more difficult to implement changes.
- The following suggestions can help for reducing incomplete and changing requirements
  - Develop and follow a requirements management process that includes procedures for determining initial requirements
  - Apply techniques such as prototyping, use case modeling, and JAD to get more user involvement
  - Create a requirements management database for documenting and controlling requirements
  - Provide adequate testing and conduct it throughout the project life cycle
  - Review changes from a systems perspective, for example, ensure that project scope changes include associated cost and schedule changes
  - Emphasize completion dates to help focus on what's most important

Using Software to Assist in Project Scope Management

- Word-processing software helps create several scope-related documents
- Spreadsheets software to develop various charts, graphs, and matrixes related to scope management
- Communication software like e-mail and web-based applications can transmit project scope management information
- Project management software helps in creating a WBS; basis for creating a Gantt chart
- Specialized software is available to assist in project scope management