Lecture 3 - Planning WBS

Comprehensive Note on Project Planning and Work Breakdown Structure (WBS)

This lecture focuses on the critical aspects of **project planning**, with a particular emphasis on the **Work Breakdown Structure (WBS)**. Project planning is essential for ensuring that a project is executed efficiently and meets its objectives. The WBS is a key tool in this process, helping to break down the project into manageable parts and ensuring all aspects are considered from the start.

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1. Importance of Project Planning

- **Why is it important?**
  - Project planning allows the team to decide in advance what the project aims to achieve, how to achieve it, and with what resources.
  - It ensures that the project is manageable by breaking it into smaller, actionable parts.
  - Effective planning enables a **proactive** approach to project management, reducing the risk of delays, cost overruns, and scope creep.
- **What is involved?**
  - Defining the project's purpose, goals, and scope.
  - Breaking down the work into tasks (WBS).
  - Estimating effort, resources, and costs.
  - Scheduling activities and allocating resources.
  - Documenting the plan for clarity and reference.
- **Outputs of Project Planning**:
  - Project definition, work breakdown, budget, schedule, monitoring plans, communication plans, and contingency plans.

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2. Project Management Components

Projects are managed through four key activities:

- **Planning**: Deciding what to do and how to do it.
- **Organizing**: Arranging resources and tasks.
- **Leading**: Guiding and motivating the team.
- **Controlling**: Monitoring progress and making adjustments.

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3. Steps in Project Planning

Project planning involves a series of steps that ensure the project is well-defined and executable:

1. **Define the Project**
    - Clarify the project's purpose, goals, and scope (what is included and excluded).
    - Use a **Project Charter** to formalize the project's objectives and limitations.
    - Set **SMART goals** (Specific, Measurable, Achievable, Relevant, Time-bound) to ensure clarity and measurability.
2. **Work Breakdown**
    - Create a **Work Breakdown Structure (WBS)** to decompose the project into smaller, manageable tasks.
3. **Estimate Effort and Resources**
    - Determine the resources needed (people, facilities, tools) and estimate the effort required for each task.
4. **Schedule Activities**
    - Develop a timeline for when tasks will be completed and resources will be used.
5. **Document the Plan**
    - Record all planning details, including the WBS, budget, schedule, and control mechanisms, to ensure clarity and accountability.

4. Importance of Documentation

- **Why Document?**
  - Provides a clear, unambiguous reference for all stakeholders.
  - Ensures continuity even if team members change.
  - Avoids conflicts by providing a traceable record of decisions and actions.
  - Key documents should be signed off by stakeholders to confirm agreement.

5. Building a Project Plan

Building a project plan involves several detailed steps:

- **Validate Project Definition**: Ensure the project's scope and goals are clear and agreed upon.
- **Determine Deliverables and WBS**: Identify what needs to be produced and break it down into tasks.
- **Set Acceptance Criteria**: Define how each deliverable will be evaluated.
- **Determine Resource Needs**: Identify the people, facilities, and tools required.
- **Acquire Resources**: Secure the necessary resources for the project.
- **Estimate Work**: Calculate the time and effort needed for each task.
- **Develop Schedule**: Create a timeline for task completion.
- **Determine Costs and Budget**: Calculate the financial requirements.
- **Establish Control Systems**: Define how progress will be measured and reported.

Additional planning elements include:

- Updating roles and responsibilities (e.g., using a **responsibility matrix**).
- Planning for change, risks, quality, communications, and procurements.

6. Defining Project Goals and Acceptance Criteria

- **Goals**: Must be **SMART** to ensure they are clear and achievable.
  - Example of a vague goal: "Finish the project as soon as possible."
  - Example of a specific goal: "Complete the project by 5 PM on June 30, 2018."
- **Acceptance Criteria**: Define the conditions under which deliverables will be accepted (e.g., quality standards, functional requirements).

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7. Determining Resource Needs

- **Types of Resources**:
  - **People**: Roles, skills, experience levels.
  - **Facilities**: Physical spaces or infrastructure.
  - **Tools/Equipment**: Software, hardware, or other tools needed for tasks.
- **Resource Management Plan**: A table or chart that outlines roles, responsibilities, and time allocations for each resource.

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8. Responsibility Matrix

- **Purpose**: Clarifies roles and responsibilities for each task or deliverable.
- **RASIC Matrix**:
  - **R**esponsible: Who will perform the task.
  - **A**pprove: Who will approve the work.
  - **S**upport: Who will assist in the task.
  - **C**onsulted: Who needs to be consulted before decisions.
  - **I**nformed: Who needs to be kept informed of progress.

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9. Iterative Nature of Planning

- Project planning is not linear; it requires multiple iterations to refine details.

- Each iteration improves clarity and accounts for interdependencies between tasks and resources.

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10. Work Breakdown Structure (WBS)

Definition

- A **WBS** is a deliverable-oriented hierarchical decomposition of the project's work. It organizes and defines the total scope of the project by breaking it into smaller, manageable sections.

Why Use a WBS?

- Makes large projects manageable by breaking them into smaller parts.
- Ensures all aspects of the project are considered from the start.
- Helps in estimating costs, assigning resources, and scheduling tasks.

Types of WBS

1. **Process WBS**: Focuses on the activities or tasks required to complete the project.
2. **Product WBS**: Focuses on the components and deliverables of the product.
3. **Hybrid WBS**: Combines both process and product elements.

Representation

- **Tree-structured graph**: Visual hierarchy showing parent-child relationships.
- **Outline/indented list**: Text-based hierarchy using numbers or indentation to show levels.

Guidelines for Effective WBS

- **100% Rule**: The sum of child elements must fully cover the parent element.
- **Deliverable-focused**: Each level should represent a deliverable or sub-deliverable.
- **Team Involvement**: Developed with input from the project team.

- **Unique Identifiers**: Assign codes to each WBS element for tracking and reporting.
- **Work Packages**: The lowest level should be small enough to estimate effort and cost reliably.
- **Include Project Management Tasks**: Ensure planning, monitoring, and control activities are part of the WBS.

When to Stop Breaking Down

- Stop decomposition when:
  - Only one person or group is responsible for the task.
  - The task produces a single deliverable.
  - Resource requirements are consistent.
  - There are no significant time gaps or specific risks within the task.

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11. Practical Examples

- **Simple WBS Example**: Building a deck, with tasks like removing old deck, preparing the site, and building the new deck.
- **WBS with ID and Time**: Adds identification numbers and time estimates to each task.
- **WBS with Effort and Budget**: Includes effort (e.g., person-days) and cost estimates for each task.

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12. Additional Concepts

- **Rolling Wave Method**: A planning technique where detailed planning is done for near-term tasks, while future tasks are planned at a higher level.
- **Scope Baselining**: Establishing a fixed reference point for the project scope, often supported by the WBS.

Summary

- **Project Planning** is a critical, iterative process that defines what the project will achieve, how it will be executed, and how it will be controlled.
- The **Work Breakdown Structure (WBS)** is a key tool that breaks the project into manageable tasks, ensuring all work is accounted for and resources are properly allocated.
- Effective planning and a well-structured WBS are essential for successful project execution, enabling proactive management and reducing risks.