PMP Time Management: List of Processes, Terms and Tools

Time management is one topic area covered in the PMI's PMP certification. To learn about the other areas and prepare for the certification, Phoenix TS provides official PMP training that fulfills the PMI educational hours requirement for achieving the certification.

The Time Management Process:

1. Plan Schedule
2. Define Activities
3. Sequence Activities
4. Estimate Activity Resources
5. Estimate Activity Durations
6. Develop Schedule
7. Control Schedule

Time Management Process with Each Step's Main Byproduct:

1. Plan Schedule – Schedule Management Plan
2. Define Activities – Activity List, Activity Attributes
3. Sequence Activities – Project Schedule Network Diagrams
4. Estimate Activity Resources – Activity Resource Requirements, Resource Breakdown Structure
5. Estimate Activity Durations – Activity Duration Estimates
6. Develop Schedule – Project Schedule, Schedule Baseline

7. Control Schedule – Work Performance Information, Change Requests

Breakdown of Each Process

- Process
- Before the process begins
- Resources necessary to perform the process
- Byproduct of process

1. Plan Schedule Management

Before the process begins you will need:

- Project Management Plan
- Project Charter
- Enterprise Environment Factors
- Organizational Process Assets

Resources necessary to perform the process:

- Expert Judgement
- Analytical Techniques
- Meetings

Byproduct of process:

- Schedule Management Plan

2. Define Activities

Before the process begins you will need:

- Schedule Management Plan
- Scope Baseline
- Enterprise Environment Factors
- Organizational Process Assets

Resources necessary to perform the process:

- Decomposition
- Rolling Wave Planning
- Expert Judgement

Byproduct of process:

- Activity List
- Activity Attributes
- Milestone List

3. Sequence Activities

Before the process begins you will need:

- Schedule Management Plan
- Activity List
- Activity Attributes
- Milestone List
- Project Scope Statement
- Enterprise Environment Factors
- Organizational Process Assets

Resources necessary to perform the process:

- Precedence Diagramming Method (PDM)
- Dependency Determination
  - Mandatory Dependencies
  - Discretionary Dependencies
  - External Dependencies
- Leads and Lags

Byproduct of process:

- Project Schedule Network Diagrams

- Project Documents Updates

4. Estimate Activity Resources

Before the process begins you will need:

- Schedule Management Plan
- Activity List
- Activity Attributes
- Resource Calendars
- Risk Register
- Activity Cost Estimates
- Enterprise Environmental Factors
- Organizational Process Assets

Resources necessary to perform the process:

- Expert Judgement
- Alternative Analysis
- Published Estimating Data
- Bottom-Up Estimating
- Project Management Software

Byproducts of process:

- Activity Resource Requirements
- Resource Breakdown Structure
- Project Documents Updates

5. Estimate Activity Durations

Before the process begins:

- Schedule Management Plan
- Activity List
- Activity Attributes
- Activity Resource Requirements
- Resource Calendars
- Project Scope Statement
- Risk Register
- Resource Breakdown Structure
- Enterprise Environmental Factors
- Organizational Process Assets

Resources necessary to perform the process:

- Expert Judgment

- Analogous Estimating
- Parametric Estimating
- Three-Point Estimating
    - Triangular Distribution
- Group Decision-Making Tech.
- Reserve Analysis

Byproduct of process:

- Activity Duration Estimates
- Project Documents Updates

6. Develop Schedule

Before the process begins:

- Schedule Management Plan
- Activity List
- Activity Attributes
- Project Schedule Network Diagrams
- Activity Resource Requirements

- Resource Calendars
- Activity Duration Estimates
- Project Scope Statement
- Risk Register
- Project Staff Assignments
- Resource Breakdown Structure
- Enterprise Environment Factors
- Organizational Process Assets

Resources necessary to perform the process:

- Schedule Network Analysis
- Critical Path Method
- Critical Chain Method
- Resource Optimization Techniques
- Modeling Techniques
- Leads and Lags
- Schedule Compression
    - Original Estimate
    - Crashed Estimate
- Schedule Tool

Byproduct of process:

- Schedule Baseline
- Project Schedule
- Milestone Schedule
- Bar Charts
- Project Network Diagram
- Schedule Data
- Project Calendars
- Project Management Plan Updates
- Project Documents

7. Control Schedule

Before the process begins:

- Project Management Plan
- Project Schedule
- Work Performance Data
- Project Calendars
- Schedule Data
- Organizational Process Assets

Resources necessary to perform process:

- Performance Reviews
- Project Management Software
- Resource Optimization Techniques
- Modeling Techniques
- Leads and Lags
- Schedule Compression
- Scheduling Tool

Byproduct of process:

- Work Performance Information
- Schedule Forecasts
- Change Requests
- Project Management Plan Updates
- Project Documents Updates
- Organizational Process Assets Updates

Terms and Definitions

Activity Attributes: The informational components that accompany each schedule activity. These may include information on dependencies, leads and lags, assignments, accountability, requirements, constraints and assumptions.

Activity Cost: Also known as Actual Cost of Work Performed (ACWP). A term used in earned value management. Actual cost represents the amount that has been spent by the project up to a point in time. It is often contrasted with earned value to show the difference between the amount of value earned on the project and what was spent to earn that value.

Activity List: The list of all schedule activities to be performed, derived by decomposing the work packages into their schedule components. The activity Define Activities process.

Activity Resource Requirements: The resources required to complete the activities in the activity list. Typically, these are physical, human, and organizational resources but do not include financial resources.

Analogous Estimating: Also known as "Top-Down Estimating." An estimating technique that uses the historical information from previously performed activities that are similar in nature, to estimate the effort, duration, or cost needed to complete an activity.

Analytical Techniques: A logical approach that looks at the relationship between outcomes and the factors that can influence them.

Bar Charts: A term in project management that equates to a Gantt chart. In a bar chart, horizontal bars represent lengths of time for schedule activities. A calendar of dates represents the horizontal (x) axis.

Bottom-Up Estimating: A technique for estimating overall project duration, effort, or costs by estimating the lowest levels of the schedule or work breakdown structure (WBS) and aggregating those numbers up to the summary nodes on the WBS. Bottom-up estimating is widely considered to be a relatively accurate, but often tedious, technique for estimating. This technique is the opposite of top-down or analogous estimating.

Change Requests: Any requested change to documented baseline. Change requests are typically only implemented once the scope, cost, schedule, or quality is “baselined.” Since change requests are formal, before project baselines exit a less formal method is generally used. Change requests are processed according to the change control system.

Crashed Estimate: Involves adding resources to a project activity so that it will be completed more quickly and this almost always increases costs.

Critical Chain Method: A technique for managing a project’s schedule that focuses on managing the constraints caused by limited human and material resource availability. Based on the Theory of Constraints, the critical chain method manages schedule buffers and emphasizes flexibility and keeping all resources fully working.

Critical Path Method: A technique of schedule analysis, where the schedule activities are evaluated to determine the float for each activity and the overall schedule. The critical path method uses forward pass, backward pass, and float analysis to identify all network paths, including the critical path. The reason this technique is known as the critical path method is that the path of least flexibility and highest risk is identified so that it may be managed appropriately.

Decomposition: A technique for progressively breaking down the scope into smaller and smaller components. Decomposition is performed on nodes of the work breakdown structure and typically stops when the decomposed pieces are small enough to be assigned and estimated for time and cost. These smaller nodes are later decomposed further into schedule activities.

Dependencies: The relationships between two or more activities where one activity must be started or completed before another related activity may be started or completed. A dependency may be mandatory, discretionary, or external to the organization. It is also known as a logical relationship between nodes.

Discretionary Dependencies: Discretionary dependencies are not always true. These would often be the result of best practices, and may vary organization to organization and even project to project.

Enterprise Environment Factors: Any factor outside of the project's control that influences the project. This could include organizational attitudes, culture, reporting relationships, government, the economy, laws, etc.

Expert Judgement: Using knowledge groups or individuals to assist in project decisions. Expert judgement is a highly favored technique within project management.

External Dependencies: Dependencies that must be considered but are outside of the project's control and scope

Fast Tracking: Reordering the sequence of activities so that some of the activities are performed in parallel, or at the same time. This does not necessarily increase costs, but it almost always increases risk to the project since discretionary dependencies are being ignored and additional activities are happening simultaneously.

Group Decision-Making Techniques: Techniques used by the project manager to move the group toward consensus or decision. The four popular group decision-making techniques for the exam are Unanimity, Majority, Plurality and Dictatorship.

Lags: Changing the finish-to-start relationship between two schedule activities so that the dependent activity cannot start until a given amount of time after its preceding activity finishes. Lags are used to represent calendar time that must elapse when no actual work is taking place by project resources.

Leads: Changing the finish-to-start relationship between two schedule activities so that the dependent activity can start before preceding activity finishes. Leads are used to efficiently manage the schedule and get a head start on certain activities where possible.

Mandatory Dependencies: A mandatory dependency is one that cannot be broken. Mandatory dependencies are also known as hard logic, since a mandatory dependency is considered unmovable and always true.

Meetings: Live or online sessions where the participants exchange information and collaborate in real time. A meeting is a common tool used frequently in the processes.

Milestone List: Milestones are notable events in a project. This may be a date, a project deliverable, or any significant point of interest. A milestone list is just that, a list of all major milestones related to your project.

Modeling: A tool used in time management and risk management. Modeling and simulation can help identify problems or areas of risk with the project before they actually occur. What-if scenario analysis and Monte Carlo analysis are examples of modeling techniques.

Organizational Process Assets: All historical information or knowledge that an organization has at its disposal, which may be used to help future projects. Examples of organizational process assets would include templates, forms, research results, work breakdown structures, quality standards, benchmarks, previous plans, contracts, etc.

Parametric Estimating: Using organizational process assets such as historical data to formulate estimates based on past performance or results. Parametric estimating is considered to work best on highly linear and scalable components with adequate historical information. The better the parametric model and the information coming in, the more reliable the parametric estimate will be.

Precedence Diagramming Method (PDM): The technique that uses the analysis of logical relationships to create Activity on Node diagrams.

Project Charter: The document that creates the project. It is signed by the sponsor, and it names the project manager and gives him or her the authority to manage the project.

Project Documents Updates: The process of updating documents relative to a project. This is done throughout the life of the project from start to finish. These documents can be anything from agreements to standards and processes.

Project Management Plan: The plan for how the project will be managed. A formal, approved document composed of the other planning documents.

Project Schedule Network Diagrams: Activities are simply arranged in the order they need to be performed on the project. This diagram may include a full representation of every activity in the project, or it may include summary nodes.

Project Scope Statement: The document that states the project requirements by describing objectives, deliverables, boundaries, and acceptance criteria.

Project Staff Assignments: The staff assignments show the resources assigned to an activity. When resource availability is taken into account, this can have a significant impact on how the schedule is developed.

Published Estimating Data: Some industries have extensive data available through published, recognized sources that can help in estimating.

Reserve Analysis: A technique used to determine how much cost or schedule reserve is appropriate for a given activity, work breakdown structure node, or time or funding category.

Resource Breakdown Structure (RBS): A graphical organizational chart that groups resources together by their function. The RBS is most often used for human resources but may also include material resources.

Resource Calendars: A calendar that shows the dates and project resources will be in use on the project and days when they will not be used. This facilitates making these resources available to other projects or needs within the organization.

Resource Optimization Techniques: Using optimization techniques such as resource leveling to match the schedule for when a task needs to be completed to a resource's availability.

Risk Register: The document containing all identified risks relevant to the project. The risk register, which is a component of the project plan, contains information about each risk and is updated throughout the project.

Rolling Wave Planning: A planning technique that does not seek to answer all questions or plan all project activities at the beginning. Instead, only imminent project activities are planned in detail, while activities further in the future are planned at a higher level.

Schedule Compression: Work to reduce the overall calendar time for a project. Crashing and fast-tracking are examples of schedule compression techniques.

Schedule Forecasts: Updated projections for the activities and overall schedule based on performance and actual data.

Schedule Management Plan: The plan for how the project schedule will be measured, monitored, and controlled. The schedule management plan is created in the Develop Project Management Plan process.

Schedule Network Analysis: The techniques of performing a forward pass or a backward pass through the schedule to determine early start, early finish, late start, and late finish dates along with float and free float.

Scope Baseline: The plan, created in Plan Scope Management, that describes how the other five scope management processes will be carried out.

Three-Point Estimating: A technique for estimating duration or cost. The three-point estimate uses a pessimistic, optimistic, and realistic estimate to calculate. The formula most often associated with the three-point estimate is a weighted average expressed as follows: Estimate = (Pessimistic + (4 x Realistic) + Optimistic) / 6. This formula is also commonly referred to as a PERT estimate. There are two ways of calculating a three-point estimate: beta distribution and triangular distribution.

Work Performance Data: Raw, unprocessed data about how the team has executed the work. Compare with work performance information.

Work Performance Reports: Useful and often actionable formats of work performance information.