

Critical Path (CRM) Method:

- The critical path method (CPM) is a widely used project management technique, but CRM typically stands for Customer Relationship Management in the context of software and business.
- CPM is a project management technique used for planning, scheduling, and managing complex projects.
- It helps in identifying the critical path, which is the sequence of activities that determines the minimum duration required to complete the project.
- The critical path is the longest sequence of dependent activities that determines the overall project duration.
- Activities on the critical path have zero float or slack, meaning any delay in these activities will directly impact the project's completion date.

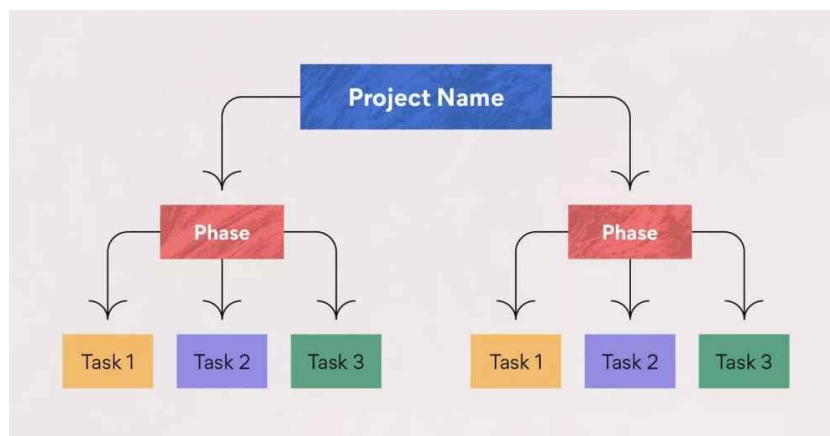
Key Concepts:

- Activity: Each task or work item in the project is represented as an activity.
- Duration: The time required to complete each activity is estimated.
- Dependencies: Activities are linked by dependencies, indicating the order in which they must be completed.
- Network Diagram: A visual representation of project activities and their dependencies is created, often in the form of a network diagram.

How to find the critical path:

1. List activities

Use a work breakdown structure to list all the project activities or tasks required to produce the deliverables. The list of activities in the work breakdown structure serves as the foundation for the rest of the CPM.



2. Identify dependencies

Based on your work breakdown structure, determine the tasks that are dependent on one another. This will also help you identify any work that can be done in parallel with other tasks.

Here are the task dependencies based on the example above:

- Task B is dependent on A
- Task C is dependent on B
- Tasks C and D can run in parallel
- Task E is dependent on D
- Task F is dependent on C, D, and E

The list of dependent tasks is referred to as an activity sequence, which will be used to determine the critical path.

3. Create a network diagram

The next step is to turn the work breakdown structure into a network diagram, which is a flowchart displaying the chronology of activities. Create a box for each task and use arrows to depict task dependencies.

4. Estimate task duration

To calculate the critical path, the longest sequence of critical tasks, you first need to estimate the duration of each activity.

- To estimate the duration, try:
- Making educated guesses based on experience and knowledge
- Estimating based on previous project data
- Estimating based on industry standards

5. Calculate the critical path

Step 1: Write down the start and end time next to each activity.

- The first activity has a start time of 0, and the end time is the duration of the activity.
- The next activity's start time is the end time of the previous activity, and the end time is the start time plus the duration.
- Do this for all the activities.

Step 2: Look at the end time of the last activity in the sequence to determine the duration of the entire sequence.

Step 3: The sequence of activities with the longest duration is the critical path.

Once you have the critical path figured out, you can build the actual project schedule around it.

6. Calculate the float

Float, or slack, refers to the amount of flexibility of a given task. It indicates how much the task can be delayed without impacting subsequent tasks or the project end date.

Finding the float is useful in gauging how much flexibility the project has. Float is a resource that should be used to cover project risks or unexpected issues that come up.

Critical tasks have zero float, which means their dates are set. Tasks with positive float numbers belong in the non-critical path, meaning they may be delayed without affecting the project completion date. If you're short on time or resources, non-critical tasks may be skipped.

Calculating the float can be done with an algorithm or manually. Use the calculations from the section below to determine the total float and free float.