Week 6

Wednesday, April 20, 2022 8:58 AM

PROJECT SCHEDULE MANAGEMENT

Project schedule management involves the processes required to ensure timely completion of a project. The main planning processes performed as part of project schedule management are planning schedule management, defining activities, sequencing activities, estimating activity durations, and developing the activities, sequencing activities, estimating activity durations, and developing the project schedule. The main documents produced are a schedule management plan, an activity list and attributes, a milestone list, a project schedule network diagram, activity duration estimates, a schedule baseline, a project schedule, and project calendars. Samples of several of these documents are provided later in this section.

Planning Schedule Management

The purpose of this process is to determine the policies, procedures, and documentation for planning, developing, managing, executing, and controlling the project schedule. The project team holds meetings, consults with experts, and analyzes data to help produce a schedule management plan, which becomes a component of the project management plan.

Contents of the schedule management plan can include the following:

- scheduling methodology and tools used to create a schedule model, if required
- release and iteration length, or time-boxed periods
- level of accuracy required for activity duration estimates
- units of measure, such as staff hours, days, or weeks
- organizational procedure links
- project schedule model maintenance
- control thresholds for monitoring schedule performance, such as a percentage deviation from the baseline plan rules of performance measurement and frequency for schedule reports

Creating a Milestone List

To ensure that all major activities are accounted for, project teams often create a milestone list. A milestone is a significant point or event in a project. It usually includes many activities, and therefore a lot of work, to complete a milestone. Unlike a deliverable, which is the output of activities, and unlike an activity, which is the actual project work, a milestone is simply a marker to help in identifying necessary activities. There is usually no cost or duration associated with a milestone. Milestones are like the mile markers on a highway. Either you pass them or you do not. It is good practice to have enough milestones to keep the project team on track, similar to mile markers providing motivation and feedback for runners in a long race.

Milestones are useful tools for setting schedule goals and monitoring progress, and project sponsors and senior managers often focus on major milestones when reviewing projects. For example, milestones for many projects include sign-off of key documents, completion of specific products, or completion of important process-related work, such as awarding a contract to a supplier. Milestone names are generally written in past tense, such as “Contract awarded” and are indicated on a Gantt chart as diamond shapes with no cost, duration, or resources.

SEQUENCING ACTIVITIES

After defining project activities, the next step in project schedule management is activity sequencing.

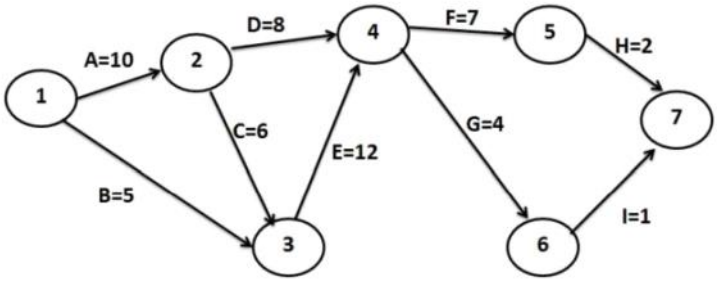
Activity sequencing involves reviewing the activity list and attributes, project scope statement, and milestone list to determine the relationships or dependencies between activities. It also involves evaluating the reasons for dependencies and the different types of dependencies.

A dependency, or relationship, relates to the sequencing of project activities. For example, does a certain activity have to be finished before another one can start? Can the project team do several activities in parallel? Can some overlap? Determining these relationships or dependencies between activities has a significant impact on developing and managing a project schedule.

There are four basic attributes of dependencies among project activities:

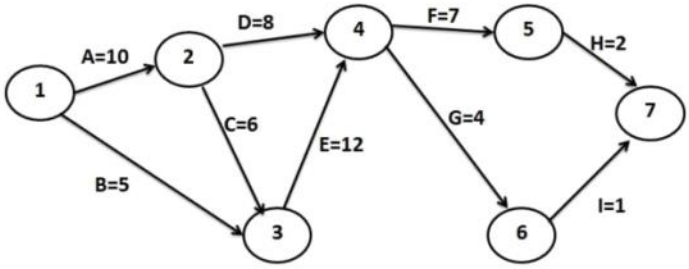
- **Mandatory** dependencies are inherent in the nature of the work being performed on a project. They are sometimes referred to as hard logic because their relationships are unavoidable. For example, you cannot hold training classes until the training materials are ready, and the training materials cannot be created until the objectives of the course are determined.
- **Discretionary** dependencies are defined by the project team. For example, a project team might follow good practice and not start detailed design work until key stakeholders sign off on all the analysis work. Discretionary dependencies are sometimes referred to as soft logic and should be used with care because they might limit later scheduling options.
- **External** dependencies involve relationships between project and non-project activities. The installation of new software might depend on delivery of new hardware from an external supplier. Even though the delivery of the new hardware might not be in the scope of the project, it should have an external dependency added to it because late delivery will affect the project schedule. External dependencies can be either mandatory or discretionary.
- **Internal** dependencies are within the project team's control, such as testing a machine that must be first assembled, where all the work is done inside the team. Note that an activity can have two of these attributes, such as an internal mandatory dependency or an external discretionary dependency. As with activity definition, it is important that project stakeholders work together to define the activity dependencies that exist on their project. If you do not define the sequence of activities and estimate their durations, you cannot use some of the most powerful schedule tools available to project managers: project schedule network diagrams and critical path analysis.

PERT charts



Note: Assume all durations are in days;
A=10 means Activity A has a duration of 10 days.

Figure 5-6. Activity-on-arrow (AOA) network diagram for Project X



Note: Assume all durations are in days.

Path 1: A-D-F-H	Length = 10+8+7+2 =27
Path 2: A-D-G-I	Length = 10+8+4+1=23
Path 3: A-C-E-F-H	Length = 10+6+12+7+2=37
Path 4: A-C-E-G-I	Length = 10+6+12+4+1 = 33
Path 5: B-E-F-H	Length = 5+12+7+2=26
Path 6: B-E-G-I	Length = 5+12+4+1=22

Figure 5-12. Critical path calculation for Project X