

Tools and Techniques for Activity Duration Estimating

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Critical Thinking

Without question, the process of estimating the time required to complete a task requires critical thinking, expert judgment, historic records from the Organizational Process Assets and some good old fashion luck. In this short paper I will discuss the challenges associated with estimation activity durations as well as some the tools and techniques recognized by the Project Management Institute (PMI). We will begin by discussing some of the challenges.

Lots of Moving Parts

Think about it. You start each day with a set of know variables. How long to get to work. How much time you have for lunch. General expectations of how long routine tasking will take and so on. However, when we look at each task in a work package all of sudden estimating how long a specific activity or task is going to take on whole new level of difficulty.

You know your estimates are going to reflect cost, schedule and performance criteria. An estimate that takes longer than originally planned, introduces risk. Customer expectations can be strained and so on. We will discuss some reasons why this happens next.

AAARG! I Should Have Thought About That

Over and under estimation happens on every project for number of reasons. The resources that are executing tasks may be unfamiliar with the processes or simply lack the required skill sets indivertibly taking longer than a similar task properly staffed would. Other reasons include:

- Late and early material delivery
- Weather

- State and Federal laws and regulations
- Enterprise environmental factors
- Poor quality control
- Resource levels

Obviously this is far from a complete risk, but it does beckon the question. “What is a Project Manager to do”?

Take a Look in the Tool Box

PMI (2008) provides a list of tools and techniques the PM and Project Team Members can use to make their activity durations estimates more accurate. For Example:

Analogous duration estimating uses historical information and expert judgment when there are many unknowns about the project. This method also employs the use of OPAs to compare actual duration of past tasks as the basis for estimating the duration of future tasks. Analogous duration estimating is most dependable when members of the team have past experience and expertise (p. 149).

Parametric estimating is a technique used to look at the current variables and compare statistically to historical data. According to PMI “ The basis for activity durations can be quantitatively determined by multiplying the quantity of work to be performed by the productivity rate. For example, productivity rates can be estimated on a design project by the number of drawings times labor hours per drawing, or a cable installation in meters of cable times labor hours per meter. The total resource quantities are multiplied by the labor hours per work period or the production capability per work period, and divided by the number of those resources being applied to determine activity duration in work periods” (p. 149).

Three Point Estimates are described by PMI (2008) as a way of evaluating a particular outcome. The technique calls for users to ensure risk is weighted into every activity duration estimate. The better the risk assessment, the better the duration estimate. PMI describes three types of estimates:

- **Most likely.** The duration of the schedule activity, given the resources likely to be assigned, their productivity, realistic expectations of availability for the schedule activity, dependencies on other participants, and interruptions.
- **Optimistic.** The activity duration is based on a best-case scenario of what is described in the most likely estimate.
- **Pessimistic.** The activity duration is based on a worst-case scenario of what is described in the most likely estimate (p.149).

Understanding the Three-Point Estimate technique can result in better estimates than what a single estimate may provide.

References

Project Management Body of Knowledge (PMBOK Guide) (4th ed.). (2008). Newton Square, PA: Project Management Institute.