



by Simon Dekker

President and CEO – Dekker, Ltd.

Technical Performance Measurement (TPM) represents the missing link within project management and Activity Based Costing Systems. All too often, scheduler and cost professionals try to adapt their individual databases to address technical performance resulting in a great deal of complexity and confusion. In order to understand the ramifications of TPM it will be important to understand the subtle differences between scheduling, costing, and technical accomplishment.

Scheduling

Scheduling represents a process flow of events that are necessary to provide a service or product to customers. It defines these events in terms of what needs to transpire, the order in which events must occur, and stipulates start and end dates. Scheduling measures elapsed time and addresses the age old question of, "How long will it take?" Its input and output focus on elapsed time to derive dates for each specific task within a schedule, and for an entire process, or project, as a whole.

Costing

From scheduling comes cost. Once the process flow is defined for a product or project, it is possible to "load" the schedule with consumable resources. Typically these resources include labor, equipment, and materials necessary to achieve the schedule. Resources represent input to be consumed by an activity so that tasks can be completed. Cost and burden rates are associated in some way to each resource on a per unit basis. The amount of resources that are consumed by tasks puts a price tag on the effort required. Resource and Costing addresses the question of, "How much will it cost?" Resource and Costing disciplines enable management to view budgets and progress from a common denominator - MONEY!

What is Technical Performance Measurement?

Technical Performance Measurement addresses the evolution of a product or a service. Its purpose is to monitor specifications or the number of units completed for a given task. It also allows management to see how specifications, or unit values, evolve over "time". Measurements are always recorded in technical format and are typically associated to physical units of measurement such as speed, weight, size, power, number of units completed or some other technical attribute. Because TPM measures the evolution of a product/service over time, it is directly related to the process flow, or schedule. This relationship to the schedule, however, is only to determine which product oriented measurement can be expected at a certain point in "time".

To track technical performance, it is necessary to describe the key features that a product or service will contain. This "key feature" is called a Technical Performance Parameter, or TPP. A few examples will enhance the definition of a TPP and its delineation from the scheduling and costing disciplines.

TPM is a discipline that collects data on the evolution of a product or service, or a means to determine the output goals for activity cost drivers. Technical Performance Parameters are established for a product, related to activities for time phasing, and stated in specific product oriented terms. TPM starts by establishing a schedule.

Let's consider a Management Software development project such as the one seen above in bar chart format. Note the design, programming, quality assurance, and other related tasks affiliated with the first release of product X software. Under Programming, there are various tasks describing when certain attributes of our software product will be finished. These include events for programming screens, reports, processors, and graphics. These tasks are described in terms of features that might be confused as technical parameters. They are and you must keep in mind that the schedule represents the process flow and elapsed time necessary to put the software together. Schedules do not represent the measurable attributes of the software product and when there is an attempt to incorporate TPPs as part of the schedule it becomes overly complex to establish and maintain. Because both Scheduling and TPM are related to the same project, there will be overlapping descriptions, but this is the only commonality between the two disciplines.

Let's take a closer look at a feature to be developed in the software. This feature might be a "Scheduler Processor". A couple of subordinate TPPs for this feature are displayed in the following diagram:

TPP#	TPP Description	Target Value	Units
1	Scheduler Processor		
1.1	Maximum Activities Per Project	32000	Tasks
1.2	Maximum Processing Time @ Max Activities	60	Minutes

These TPPs do not measure the time it takes to program the desired feature. They do measure criteria in terms of the feature itself.

As another example, suppose you were building a car. You might have defined TPPs such as: Maximum Speed measured in Miles per Hour, Mileage measured in Gallons per Mile, Range measured in Miles per Tank, and so forth. TPPs are just like a product library composed of target measurements for product oriented criterion.

Another use for TPP's is unit tracking. Sometimes, especially within ABC systems, it is necessary to have the capability to track activities not just in terms of duration, but by the number of units produced within an activity cost driver. In other words, if an event is allowed to consume time and resources as inputs, what is the targeted and actual output from that event? Consider a manufacturing environment with an assemble line where one station on the line might have a worker putting two parts together. This station could be defined as an event cost driver where TPM would establish a TPP to compare the number of parts expected to pass through the station with the actual number. Because the station is an event that consumes resources, TPM can be used to quickly determine a per unit cost.

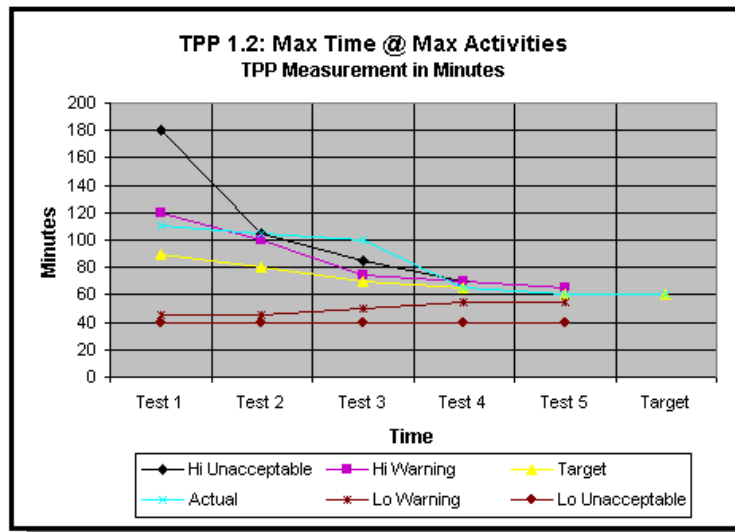
Per unit costing is not only used in manufacturing environments. Increasingly, management scrutiny is placed on understanding costs associated to service-oriented burden rate categories such as General and Administrative overheads. For example, an administrative task, such as purchasing-that could be split into government and commercial purchasing functions, where both tasks consume a business unit's resources thereby causing them to become event cost drivers. If TPPs were measured in terms of purchase orders processed per week for each activity, it would be possible to evaluate a per unit cost on purchase order issued in support of commercial or government contracts.

Timephased Technical Parameter

There is another dimension to TPM. Target values associated with TPPs need to be evaluated over time for the purpose of metering technical progress. Each TPP can be measured over time at various intervals within an activity. These measurements are called Time-phased Technical Parameters, or TTPs.

A TTP relates directly to a TPP for a description much like a resource associated to a task is related to the master resource library. TPPs represent Timephased Target Values that converge over time on the desired Target Value for a TPP. A TPP loosely defines a product attributive purposes and captures Target and Actual Values each time the parameter is metered. TPP 1.2 in

our Schedule Processor example is the Maximum Processing Time at the Maximum Number of Activities. The TPP Target Value can change over time until it coincides with the final value of 60 Minutes. There are threshold tolerance bands for low and high warnings and unacceptable report levels. Finally, Actual Measurements are recorded over time. The first test, though high, fell within the unacceptable limits. The second test fell on the unacceptable borderline. The third test completely failed, but improved slightly with respect to the Target Value. And the fourth test was acceptable and on the mark for the TPP Target Value at the Test 4 timeframe.



From this example it is easy to identify the strategic significance in tracking time-phased data associated with actual versus desirable features/functions of a product or service. It helps solve the problem of delivering output that does not meet the customer's original design specifications and assists with rapid response to changing marketplace demands. In addition, TPM provides a systematic approach in establishing product and service evolution, and to provide a traceable means to determine per unit costing. It allows management to establish goals with technical performing entities on a team oriented basis. TPM greatly reduces scheduling complexity, and helps a business unit understand desirable outputs for activity cost drivers.

About the Author...

Mr. Dekker is the author of the Dekker TRAKKER® System, which covers a wide array of business decision support applications such as scheduling, resourcing, costing, earned values management, and reporting, Activity Based Costing, and Technical Performance Measurement. He is currently CEO and President of Dekker, Ltd. which serves more than 500 corporate clients.