

Introduction

During the project's life cycle, the project manager is faced with many complex decisions, often at a time where the only constant within the project is change. How the project manager responds in this dynamic environment will determine the success or failure in meeting the project's scope, resource, and schedule constraints.

In a perfect world, everything would remain static and the project schedule would never change. Unfortunately, the world is not perfect and the schedule, resource requirements, and costs will change during the execution of the plan. Problems may occur because of technical difficulties, late deliveries of equipment or material, loss of key personnel, misunderstanding or changes in the scope, and hundreds of other reasons. Whatever the reason, you must closely track task progress and expenditures. The process of tracking the completion level of each task and the actual costs and resources expended is known as project plan maintenance.

The project manager should maintain accurate progress records on a timely basis, generally at a weekly interval. Recording the project data provides the project manager insight into how the project is performing and allows for timely identification and correction of deviations.

There are two types of tracking: tracking the schedule and tracking the resource usage. Of the two, you must always track the schedule first, so that the resource hours (and costs) are applied against the time frame in which they were incurred. While there are many different schools of thought on tracking (and PS8 does support the majority of them), this article focuses on a best practices approach to tracking, providing the most bang for your project analysis buck.

Schedule Tracking

In order to effectively track your resources' time and costs, you must track the schedule first. For instance, tasks that resources are assigned to are scheduled during a particular time period. Often times, resources end up working on the tasks outside this scheduling window. Therefore, in order to effectively record the true actuals for the assignments, you must update and track the schedule prior to entering resource actuals.

Purpose of Schedule Tracking

Your project schedule is a road map, displaying your path of action from your point of origination to your final destination. It is quite similar to a road map you would use when embarking on a long journey. As you very well may know from personal experience, when you set out along your road trip, you may make a few wrong turns. This may be due to bad weather, the fact you are in unfamiliar territory, road closures, or a variety of other reasons. However, since you have your road map, you will easily see your deviation from your original plan, make any necessary adjustments, and return along your journey to arrive at your destination as close to the time you originally planned.

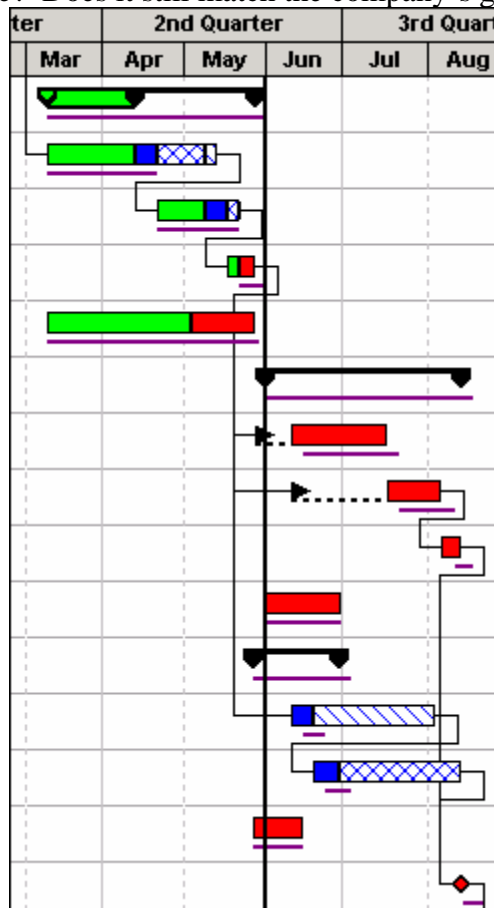
Your project schedule is not much different, only that you most likely be recording a lot more



information than you would be on your road trip. Too many schedules that end with significant cost and schedule overruns could have been prevented if proper schedule tracking had been performed. Take for instance the schedule below, which depicts a traditional approach to schedule tracking.

The solid vertical bar running through the schedule depicts today's date. After reviewing the schedule, the only solid assessment the project manager can make is that the project is behind schedule. However, there are many other pieces of information the project manager needs to know in order to effectively manage this project. For instance,

- ❑ How far behind schedule is the project?
- ❑ What is the current project completion date?
- ❑ Have the project costs changed due to some resource costs fluctuating over time? What is the current Total Cost of the project? Remaining Costs?
- ❑ Since the project is behind, what impact is there to resource usage? (Since the resources potentially are needed at a later date.)
- ❑ Since the schedule has changed, what is the new critical path? Which tasks have float?
- ❑ Is the project still feasible? Does it still match the company's goals?



None of these questions can be answered with the traditional approach to schedule tracking. Let's take a look at a more concise method of schedule tracking.



Inputs for Schedule Tracking

In order to effectively track a project's schedule, only four pieces of information are needed. What information you record for the task is dependent on the status of the tasks being tracked. There are two states a task may be in, when you are concerned with schedule tracking: either the task is in progress or it is completed. If the task has not been started, then there is no need to track the task's progress.

<i>In Progress</i>	<i>Completed</i>
Actual Start	Actual Start
% Complete	Actual Finish
Remaining Duration	

Entering Actual Start and Actual Finish Dates

Often your actual dates for tasks will vary from what you originally planned. It is beneficial to track these dates, in order to see how these changes impact your schedule. In addition, if you have baselined your project, you can then perform variance analysis on start and finish dates within your schedule.

In PS8, you can enter the dates on which a task actually starts and finishes in the *Actual Start* and *Actual Finish* task fields. Once you enter an *Actual Start* date for a task, the task is anchored to that start date and no other scheduling constraints can make it move. Similarly, you cannot change the *Actual Start* date for a task if the task *Percent Complete* is greater than 0%. This is because PS8 automatically updates the *Actual Start Date* field when percent complete is entered for a task. However, you can still lengthen or shorten a task duration until you enter an *Actual Finish* date. Once you enter an *Actual Finish* date for a task, PS8 assumes that the task is 100% complete and reflects the completion status in the spreadsheets and charts.

Because *Actual Start* and *Actual Finish* dates override other scheduling constraints, you should only enter dates in these fields for tasks that are actually in progress or are complete. If you remove the *Actual Start* and *Actual Finish* dates, the task once again becomes subject to normal scheduling constraints.

You can enter *Actual Start* and *Actual Finish* dates using any of the task spreadsheets, as well as the *Task Template*.

Delaying Tasks

If something causes the start date of a task to be postponed, you can reflect this delay in your PS8 project schedule. For example, if a worker who is indispensable to the completion of a task becomes ill, you may want to delay work on that task until the worker returns to work. To do so, you can enter a *Delay* value for the task, which causes the task to be delayed by the amount of time you have specified.



You can enter *Delay* using any of the task spreadsheets, the *Task Template (Task Scheduling tab)*, or using the mouse on the *Gantt Chart* graphics pane. PS8 reflects delay with a dashed line on the Gantt Chart.

Entering Percent Complete

One of the significant misnomers associated with schedule tracking is the use of *% Complete* at the task level. *% Complete* at the task level is a measurement of time, not effort completion. By using *% Complete* as a measurement of effort completion, project managers are faced with the schedule depicted in the figure above.

% Complete at the task level is a measurement of time completed. A project is *always* complete up through the source date of the actuals. Therefore, *% Complete*, for the task, should always be complete up through the current date. Effort *% Complete* is a measurement of work completed, which is a function of resource usage and is discussed in the resource tracking section. To place in the proper context, take a look at the algorithm for task *% Complete* as displayed below.

$$\text{\% Complete} = \text{Completed Duration} / \text{Elapsed Duration}$$

In other words, if a task has five days duration and it is the end of the third day, the task is 60% complete, *in terms of time*. This does not necessarily mean the task is 60% complete, only that 60% of its allotted time has elapsed. How much effort is completed is a function of the resources assigned and is calculated once resource tracking is performed.

Most project managers find it useful to have a percentage of the amount of effort completed displayed in their spreadsheets. This is accomplished by substituting the *% Complete* field for *% Labor Complete*. The *% Labor Complete* field is a summary of the effort completed for all the labor resources assigned to the task. It is a much more accurate representation of effort completed.

As mentioned when you enter any percent complete value greater than zero for a task, PS8 considers the schedule start date for the task to be its actual start date, and automatically records the schedule start date in the task's *Actual Start* field. The task then becomes anchored to this date and cannot be moved by any other scheduling constraints. If you enter a percent complete of 100% then PS8 will automatically record the schedule finish date in the *Actual Finish* date field as well.

Prior to entering any percent complete values for tasks, it is important to first enter the actual start date. The reason for this is that PS8 only allows you to change the actual start date if the percent complete is equal to zero. Once a percent complete value is entered, the *Actual Start* field becomes a read-only field.

As you enter a percentage complete for each task, PS8 automatically updates the *Actual Start*, *Actual Finish*, *Completed Duration* and *Remaining Duration* fields.