

# Tracking Down Project Performance Using Baseline Compliance Analysis

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There are many measures available to track how well a project is performing with regards to the budget, but few place emphasis on how closely the project is executing on schedule. Furthermore, most traditional methods fall short of the true insight necessary for understanding performance quality and identifying opportunities for improvement. This paper will present a method that allows for a quick determination of whether your project is being executed as planned, and if not, how to identify where the areas and time periods of non-compliance are.

The technique is applicable to both project execution as well as post-execution for keeping the project on track and determining lessons learned. It is also a powerful means of understanding root cause of project delays during a project forensics exercise.

## Traditional Project Performance Tracking

There are numerous techniques for tracking the performance of a project: that is “how well is the project being executed relative to a given plan of work?” This can be relative to project expenditure or project schedule, or even quality of the project deliverable.

## Percent Complete

The most simplistic measure of performance or status is to track projects using what is known as percent complete. While there are many variations around the calculation of percent complete, the basic premise is to track performance by determining how much work, progress, or time relative to a given quantity—has been achieved.

While a common technique, it is widely seen as falling short with regards to true performance tracking, as it does not give any indication as to the context of the progress. For example, if an activity is 90% complete, it cannot be determined from this metric alone whether performance is good or bad – the activity may be very close to completion but months later than expected.

## Earned Value & Earned Schedule

Earned value is a cost-based measure that compares three bases (planned, earned and actual) within a project, so as to determine relative performance indicators. By comparing how much work or progress has been achieved (earned) with how much should have been achieved (planned), and additionally, with how much it took to achieve this status (actual), we are able to determine performance factors and ratios that give insight as to whether performance is better or worse than planned.

Unfortunately, earned value is a cost-based measure only and the effort required to capture the data for the three bases can be seen as a drawback to this method.

When the goal is to track schedule performance for projects, using an earned value-type approach, there is the option known as Earned-Schedule. Similar to Earned Value, earned schedule looks at how much progress has been achieved (earned) relative to how much was planned, with regards to the schedule.

While earned schedule provides schedule-based performance insight, it doesn’t actually enable us to determine how close to the

(baseline) plan the execution of the project actually fell. Instead, it focuses on execution efficiency. Net efficiency on a project may calculate at 100%, but what if the sequence of work was executed completely out of sync from the plan, for example?

You may be wondering “so what if the sequence of execution was not to plan, or so what if half the activities were delayed and the other half were early? The net result was still a successful project, right?” Wrong... The whole purpose of project management is to set a realistic plan and then use this plan to accurately track execution through to completion. If compliance to the plan is not upheld, then the likes of delays, disputes regarding payment milestones, or potential litigation surrounding cause and effect of change all become too commonplace in a project. These “To-be-avoided pitfalls” are the reason behind using baseline compliance analysis

**Introducing Baseline Compliance Analysis**

Baseline Compliance Analysis compares (on a per-period basis) what was originally planned and what is actual reality in the current schedule. By examining variance surrounding activity starts and finishes relative to a given basis (baseline), this approach provides insight as to whether the project is being executed to plan, or alternatively suffering from delayed starts and/or delayed completions.

A fundamental aspect to the analysis is that the comparison is not simply a “is the current activity date later than its corresponding baseline date?” Instead, phases or periods of time are used as thresholds to capture whether an activity is early, late or on-time. For example, if running an analysis based on months on an activity that was scheduled to start on March 5th and didn’t start until March 31st, this activity would still be classified as “starting on time” within the context of the monthly reporting cycle. Figure 1 shows the 5 different outcomes from a baseline compliance analysis for a single activity. These are all measured using start and finish variance.

The results of the baseline compliance analysis are then summarized using compliance metrics:

- Start compliance is a measure of how many activities start on time relative to a given baseline (within the confines of a given phase such as months). This gives insight into the knock-on effect of previous period delays. If start compliance is low, then few activities are able to start on time due to their predecessors causing delay.
- Finish compliance is a measure of how many activities finish on time relative to a given baseline (within the confines of a given phase such as months). This is a strong indicator of execution performance.

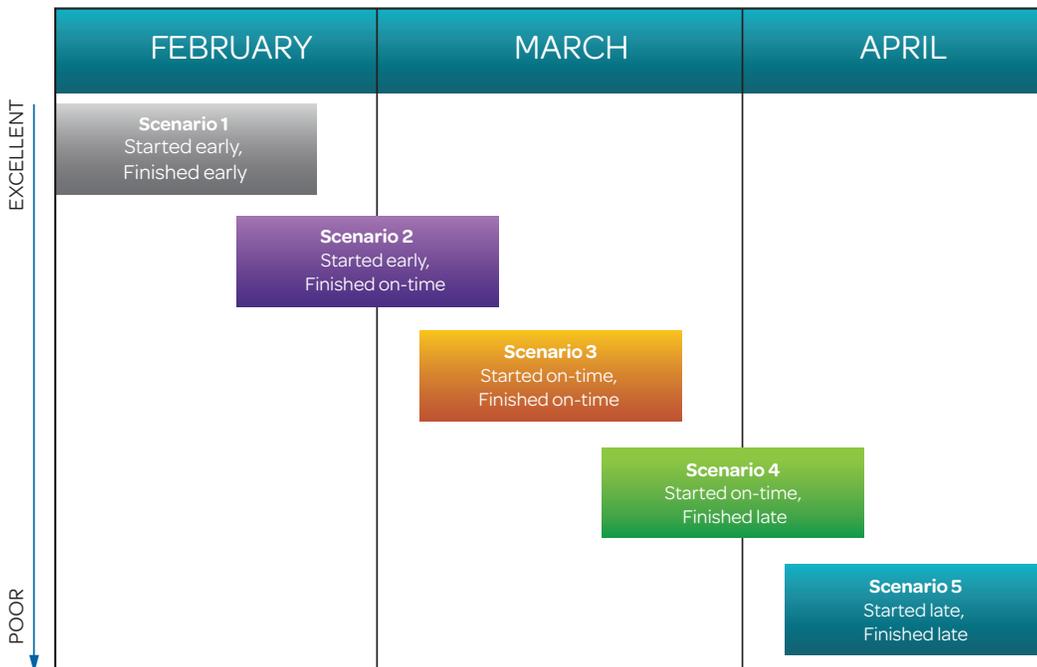
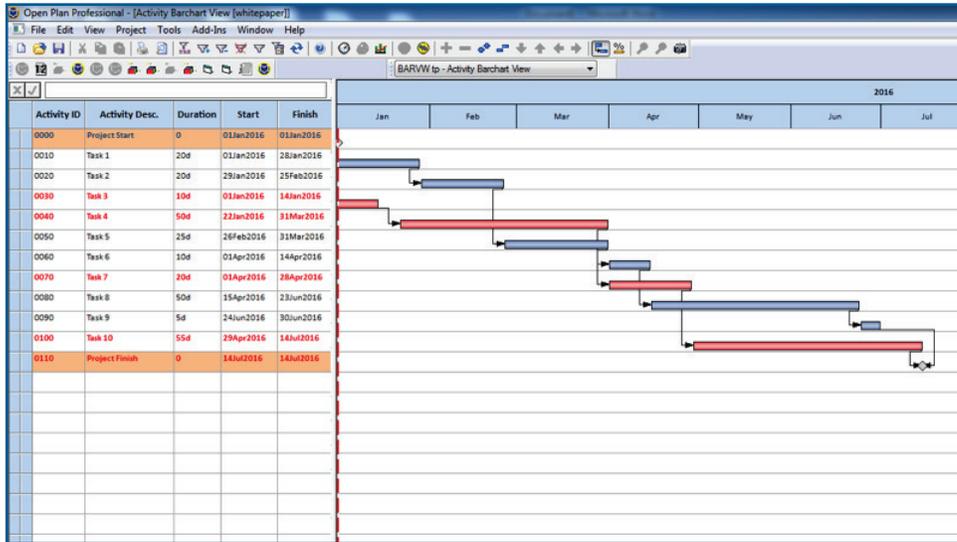


Figure 1 – Early, On-Time, Late Scenarios

How Is Baseline Compliance Measured?



Consider a baseline schedule as shown in Figure 2. The schedule contains ten activities. There are two paths through the network.

Figure 2 – Example Schedule

Firstly, metrics pertaining to the baseline are calculated so as to create a basis:

- 1. **Scheduled to Start:** # of activities scheduled to start in a given period
- 2. **Scheduled to Finish:** # of activities scheduled to finish in a given period



Figure 3 – Metrics Applied to the Baseline Schedule

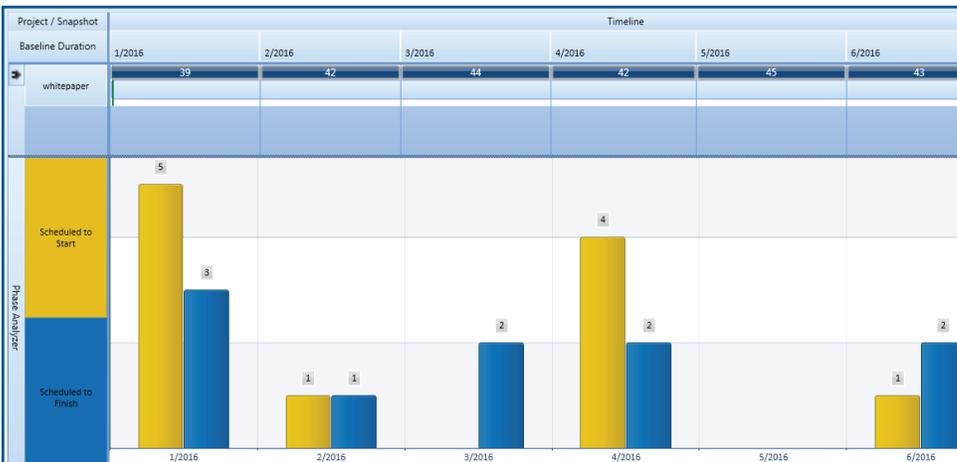


Figure 4 shows how the two scheduled to start/finish metrics vary per month. Interestingly, while several activities span the month of May (Figure 3), none are planned to either actually start or finish in this month (Figure 4).

Figure 4 – Baseline Metrics Applied to the Schedule

Now consider an updated version of the schedule created during execution. Changes have occurred with regards to the sequence, duration and dates of the activities in the schedule. This results in a schedule very different from the baseline (see figure 5).

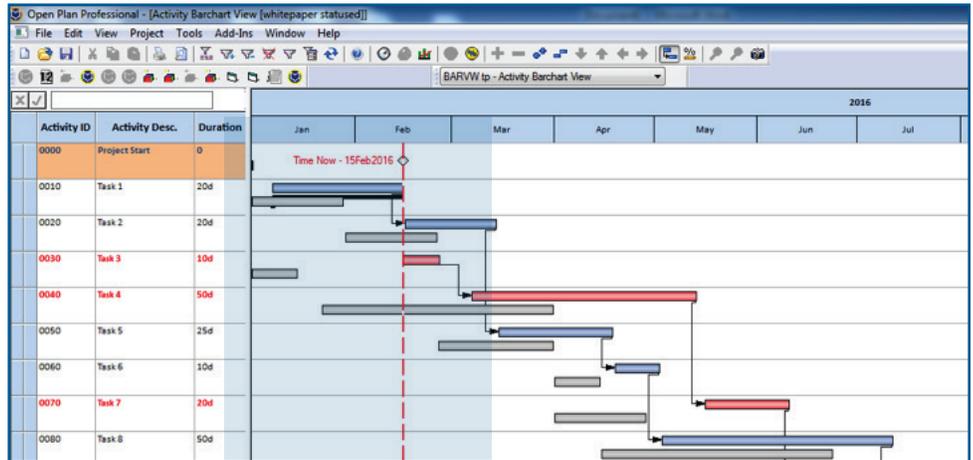
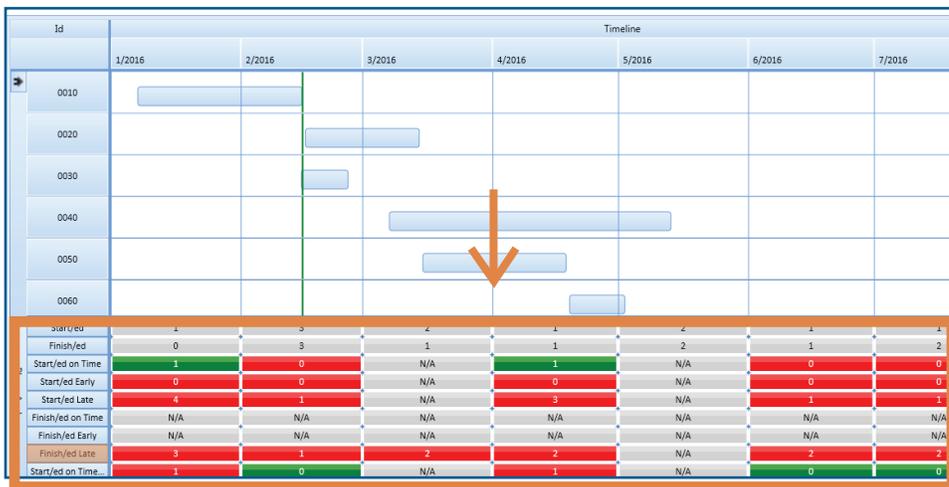


Figure 5 – Updated, Stated Schedule Showing Baseline Comparison



When the equivalent metrics for number of starts and number of finishes are applied to the updated schedule so as to calculate early, on-time and late starts and finishes, the result is very different (Figure 6).

Figure 6 – Metrics Applied to the Actual Schedule

Once the analysis has been completed, Baseline Start and Finish Compliance can quickly be calculated as a percentage of activities that uphold the baseline (i.e. those activities that don't trigger a start or finish variance). Figure 7 shows a summary of these results.

Figure 7 - Baseline Compliance metrics applied to updated schedule



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**Baseline Compliance in Deltek Acumen**

Fortunately, tracking schedule compliance against the baseline during execution doesn't have to be a manual process. Deltek Acumen includes a complete set of Baseline Compliance metrics. This allows you to calculate compliance across the project as a whole, or utilize Acumen's robust filtering and grouping options to zero-in on specific groups of activities.

For more information on Deltek Acumen, or to request a free trial, visit: <http://www.deltek.com/products/ppm/schedule/acumen-fuse>

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