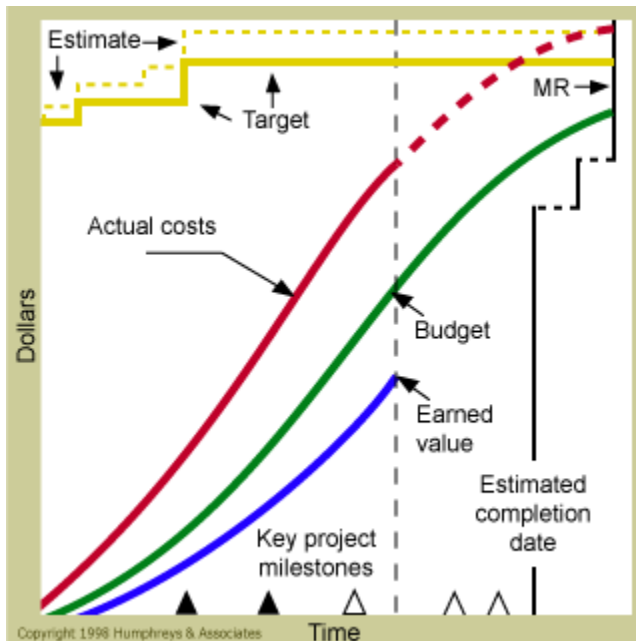




Figure 15-1: Contract Status



A single performance report provides the status of the Program at a point in time. When combined with previous reports, a much more revealing picture of the Program emerges since performance trends become visible. Trend information is useful because trends tend to continue. This gives us insight into the future.

A popular depiction of Program performance is shown in [Figure 15-1](#).

At the conclusion of this lesson you will be able to identify graphic charts for presenting performance reports.



[D](#)

Long Description

Figure 15-1: Cumulative Performance shows Budget (cost over time), and Actual costs and Earned value for Time Now with Key project milestones along the bottom and an adjusted Estimate intersected by the Estimated completion date. A solid "stairstep" line shows the increases to the Program baseline. A dashed line shows the changes to the estimated cost at completion. The estimated completion date reflects extensions to the original planned completion date.

Figure 15-1

Although the chart seems complicated at first glance, it provides a clear picture of what has happened to the Program since its inception.

The solid "stairstep" line shows the increases to the Program baseline. The dashed line shows the changes to the estimated cost at completion. The estimated completion date reflects extensions to the original planned completion date. The cumulative budget line represents the performance measurement baseline with the difference between the end of that line and the target cost indicating remaining management reserve.

The earned value reflects progress of work achieved and, when compared to the actual costs, shows the cost variance on the Program. The milestones help to put Program status in perspective. The chart shows a Program that is about 60% complete, is behind schedule and overrunning costs, and performance is getting progressively worse. There have been two changes to the Program cost target and two schedule extensions, and a key milestone has not been completed as planned.



Figure 15-2: Cost and Schedule Variance Trends

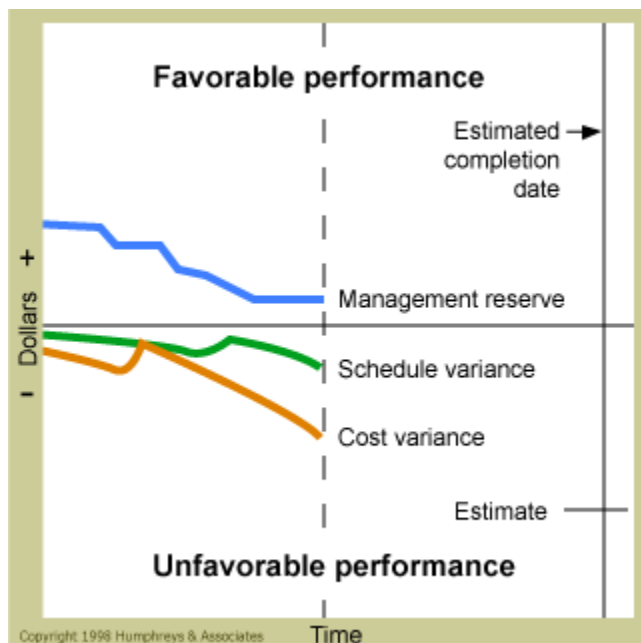


Figure 15-2 shows performance trends. The horizontal center line is earned value, (earned value minus the budget and the actual costs equals schedule and cost variances). Data plotted below the line reflects unfavorable performance.

In this example, the Program fell behind schedule early and is incurring significant unfavorable cost variances.

D

Long Description

Figure 15-2: Cost and Schedule Variance Trends graphs Cost over Time, slit into Favorable performance and Unfavorable performance. The curves for Schedule variance and Cost variance are below the line, and Management reserve is above it, all ending at the Time now point. The Estimated completion date is shown at the right.

Figure 15-2

The schedule variance trend line reflects the "sawtooth" effect often caused by baseline replanning. When the baseline is adjusted, behind-schedule work gets rescheduled into the future. When this is done, the budget is set equal to the earned value, which eliminates the schedule variance. Resetting to earned value is done because replanning takes place from where the Program really is, which is represented by the earned value, not from where it was planned to be, which is represented by the budget. Earned value and actual costs are not changed, so the cost variance trend is unaffected.

Management reserve usage is also plotted on this chart since use of management reserve tends to dampen out the cost variance. This happens because the application of reserve budget increases the value of the work to which it is applied, thus avoiding a cost variance that would otherwise appear.



Problem Indicators

Numerous problem indicators are revealed by these charts. Usually the first bad sign is an unfavorable schedule variance, which indicates that planned work is not getting done. Even though there may not be a cost variance at this point, deviating from plan almost certainly will have an unfavorable cost impact since it costs money to catch up and it costs money to stretch things out.

The second problem indicator is often the application of management reserve to compensate for the deviation from plan. An unfavorable cost variance will appear if problems persist. Baseline replanning may soon follow. This cycle tends to repeat during the life of the Program.

Another problem indicator may be the rate at which actual costs are being incurred. If the baseline is [front loaded](#) cost variances may not appear until the Program is well along. Once a level of resources (manpower) is dedicated to a Program, costs will accrue at a very predictable rate until the manpower level is reduced. The key milestones plotted in **Figure 15-1** will help to identify when significant manpower changes are feasible. Up to that point, the actual cost line will be virtually a straight line and a projection of that line should not be ignored.

Front Loaded

Front Loaded Baseline: Refer back to Lesson 6, figure 6-3 for more information on front loaded baselines.



Figure 15-3: Actual vs. Projected Performance

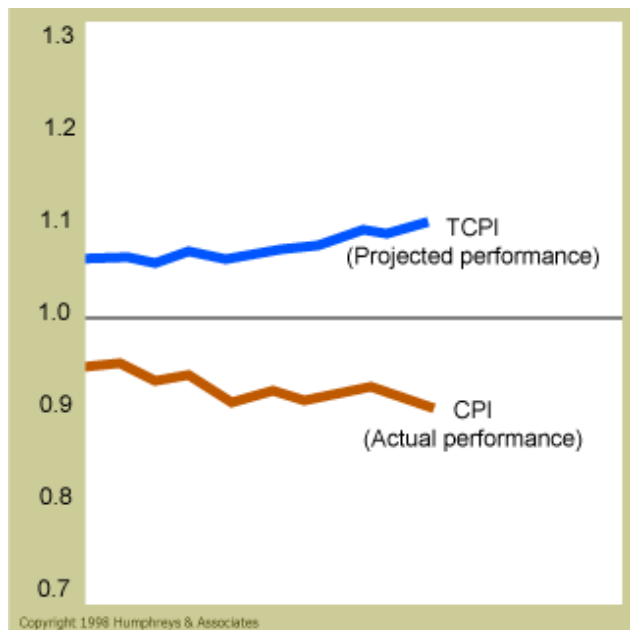


Figure 15-3 shows how to evaluate the credibility of the EAC. It compares the Cost Performance Index (CPI), which is earned value divided by actual costs, to the To-Complete Performance Index (TCPI), which is budget for work remaining divided by the estimated cost for work remaining.

CPI tells how efficient we have been in the past. TCPI tells us how efficient we must be in the future to achieve a given estimate. The chart shows a CPI of 0.9, which means that for every dollar being spent only 90 cents worth of work is getting done. The TCPI of 1.1 means that \$1.10 worth of work must be done for every dollar spent to meet the current estimate at completion. Clearly, the estimate is not based on performance to date. Any gap between the CPI and the TCPI means that future performance is projected to be different than current performance.

[D](#)

Long Description

Figure 15-3: Actual vs. Projected Performance shows a way to evaluate the credibility of the estimate at completion. TCPI (Project performance) tracks from 1.07 to 1.1 and CPI (Actual performance) tracks from 0.94 down to 0.89.



EAC Calculations and Assumptions

For further discussion of CPI and TCPI, review the PowerPoint presentation [EAC Calculations and Assumptions](#). A narrated version of this presentation is available at the following web site; [Estimate at Completion](#) (same tutorial offered in Lesson 11).

There are many other ways to organize and display the standard performance measurement data elements, but these three charts provide considerable visibility into Program performance. These kinds of charts can be prepared for individual WBS or OBS elements (as well as for the total Program) where such detail is warranted. Several automated programs exist that perform all the required calculations, produce these and other graphics, and calculate statistical estimates at completion based on various performance factors.

Follow these links, in the order shown, to review these automated programs. (These presentations are provided as a sample of how these automated analysis tools can be used to help turn EVM data into useful management information.)

[wInsight Introduction](#)

[C/S Glue \(Integrating EV and Schedule\)](#)

[Completion of wInsight](#)



Graphic Presentation Knowledge Review

Trend analysis:

- Should be avoided because it can be misleading
- Is required for program reviews
- Is useful because Program Managers prefer looking at pictures instead of numbers
- Is useful because trends tend to continue; this gives us insight into the future

Correct. Trend analysis is useful because trends tend to continue. This gives us insight into the future.



End of Lesson

You must click the **Next** button in order to receive credit for this lesson.