



TenStep Supplemental Paper

11 August 2003

Earned Value Uses a Basic Set of Common Metrics as the Starting Point

Earned value is a concept that allows the progress on a project to be defined much more precisely. The information provided through the calculations can be very valuable. Unfortunately, the information can also require a rigor and reporting discipline that many organizations do not approach today. Nevertheless earned value is something that every project manager and team member should know about, even if it is not an area that you utilize in your organization today.

This is the second column in a series. In the previous column, we looked at the background and history of earned value. We also described earned value in words. This column will begin to get into the equations and the math behind earned value. We will take the math in two steps. This column will focus on the fundamental building blocks of earned value. In the next column, we'll start to combine these fundamental metrics in a way that gives you the true informational value.

Without further ado, let's get into some of the basic concepts behind earned value. Depending on which book you read, there are dozens (maybe hundreds) of earned value calculations. However, most of them involve combining a few basic earned value metrics into various permutations.

There are three metrics that form the building blocks for earned value – budgeted cost of work performed, actual cost of work performed and budgeted cost of work scheduled. Let's look at each of these in more detail.

Budgeted Cost of Work Performed (BCWP)

This term is also referred to generically as the Earned Value. The BCWP is calculated by adding up the budgeted cost of every activity that has been completed. (Remember, this is not the actual cost of the work activities. This is the budgeted costs.) Look at the following example:

Today's Date: March 31

Completed Activity	A	B	C	D
Target Date	March 10	March 15	March 31	April 5
Budgeted Cost	20	10	15	5
Actual Cost	20	5	20	10

Let's say that we have completed activities A, B, C and D. Can you guess the simple formula for finding the Budgeted Cost of Work Performed? You got it. It's $(20 + 10 + 15 + 5)$, which happens to be the convenient round number of 50.



TenStep Supplemental Paper

You might ask how you calculate an activity if it were in progress. Actually you have some discretion to set the rules up front. One option is to consider the activity as being zero percent completed until it was totally completed and then give yourself 100% of the credit. In other words, when activity B starts, the BCWP is zero. When activity B ends, the BCWP is 10.

Another option is to give partial credit. For example, when activity B starts, the BCWP is zero. When the activity is in progress, you can give 50% credit, or a BCWP of 5. When the activity ends, you give it the full BCWP of 10.

Likewise, you can get more discreet (say, giving credit in 10% increments), but each level of discretion results in more work for marginally more accuracy.

BCWP is the basic measure of how much value the project has achieved so far. By itself, it does not tell you too much. So, we use it in combination with other calculations to determine your status.

Actual Cost of Work Performed (ACWP)

To calculate this number, add up the actual cost for all the work that has been completed so far on the project. This could include the internal and external labor costs, as well as invoices paid (or perhaps purchase orders approved). If you have an automated financial system that will crank these numbers out, it is not too hard of a task. If you cannot capture all of the costs automatically, it could be very time consuming. If your project only consists of labor, then the cost and the effort will track along the same lines. If you have a lot of non-labor costs in your budget, then the project costs don't directly tie to the labor used.

Let's look at our example again.

Today's Date: March 31

Completed Activity	A	B	C	D
Target Date	March 10	March 15	March 31	April 5
Budgeted Cost	20	10	15	5
Actual Cost	20	5	20	10

The Actual Cost of Work Performed for activities A through D is $(20 + 5 + 20 + 10)$ or 55. You can see that the actual costs for the work performed is greater than the budgeted costs of the work performed. This could be a problem.

Again, if an activity is in progress, you could use the same options as we discussed in the BCWP to determine whether to include the actual cost, or some percentage allocation (0 through 100%).

Budgeted Cost of Work Scheduled (BCWS)



TenStep Supplemental Paper

This is the sum of all the budgeted estimates for all the work that was scheduled to be completed by today (or by any specific date).

Today's Date: March 31

Completed Activity	A	B	C	D
Target Date	March 10	March 15	March 31	April 5
Budgeted Cost	20	10	15	5
Actual Cost	20	5	20	10

Now we have a little more information. Since today's date is March 31, the Budgeted Cost of Work Scheduled is $A+B+C$ ($20 + 10 + 15$) or 45. We do not count activity D, since it was not scheduled to be completed by March 31.

Summary

In this column, we covered the basic building blocks of earned value – the Budgeted Cost of Work Performed (BCWP), the Actual Cost of Work Performed (ACWP) and the Budgeted Cost of Work Scheduled (BCWS). In the next column, we will start to put these numbers together in ways that will show us the progress we are making on a project today, the projected ending date and ending cost, and the trend line that shows whether we are getting closer to or farther away from our targets.