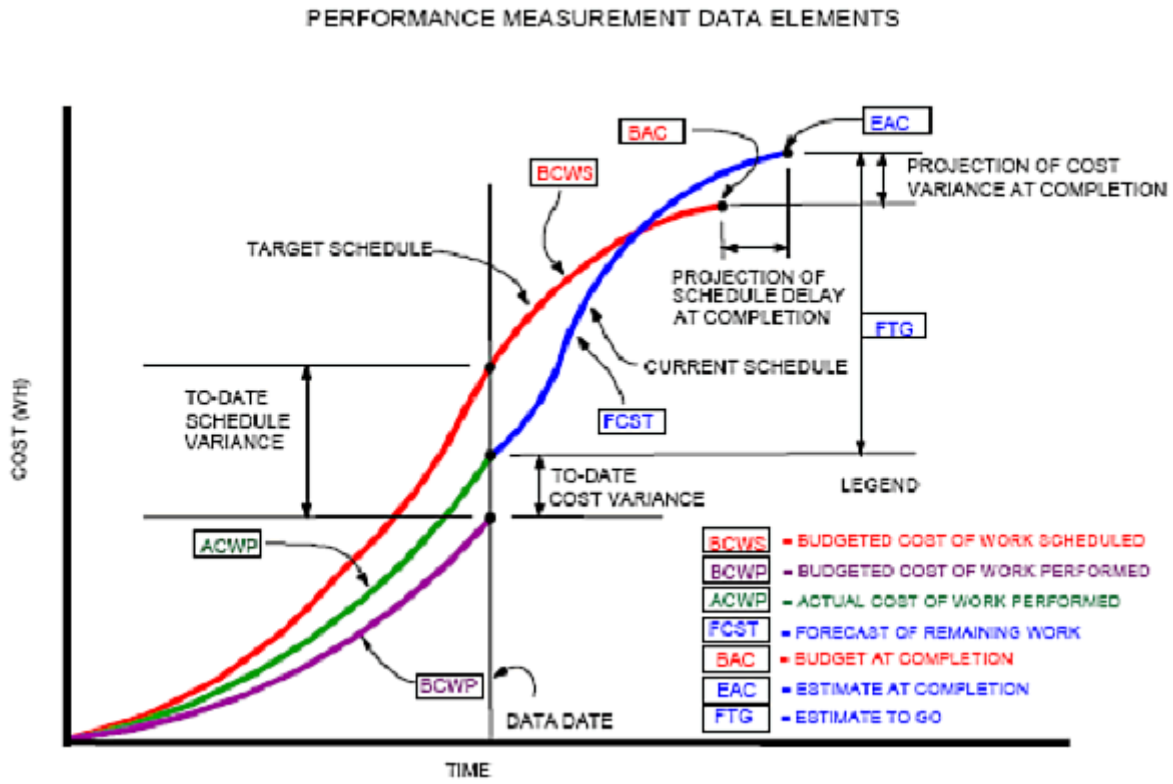
EARNED VALUE – THE BASICS



BCWS - **The Budgeted Cost of Work Scheduled**. Quite literally, it represents the budgets of the activities that were planned. It is the budget from your activities phased over the time you planned to do them. (sometimes just referred to as WS or work scheduled)

ACWP - **The Actual Cost of Work Performed**. It represents the actual cost charged against the activities that have been completed to date.

BCWP - **The Budgeted Cost of Work Performed**. This is the Earned Value. It is how much of the budget (BCWS) we have earned by completing planned activities. (sometimes just called WP work performed or EV earned value) The distinction between the BCWS and the BCWP is that the BCWS represents the budget of the activities that were planed to be completed, where as BCWP represents the budget of the activities that actually were completed.

SV - **Schedule Variance** is the Earned Value minus the planned budget for the completed work (BCWP-BCWS).

CV - **Cost Variance** is the Earned Value minus the actual cost (BCWP-ACWP).

SPI - **Schedule Performance Index** is the Earned Value divided by the planned value (BCWP/BCWS).

CPI - **Cost Performance Index** is the Earned Value divided by the actual cost (BCWP/ACWP).

EAC - **Estimate At Completion** indicates where the project cost is heading. Calculating a new EAC is one of the great benefits of Earned Value. However, the actual formula to use for this calculation is a matter of great debate. The basic form is

EAC = ((BAC-BCWP)/CPI) + ACWP

In simple English, it is total budget less what we have actually done (BAC-BCWP) or budget remaining adjusted by how good our track record is to date (CPI) to give what it likely to cost us to finish Then we add on what we have spent so far to give the projected total cost of the project.

There are four basic steps to earned value management:

1) Do your budget, usually by doing a **WBS** (or prince2 PBS) to identify all the elements and the costs associated with each. This gives us a total project budget
2) Schedule the activities to give costs phased over time. Baseline this – it is your BCWS. Plot this by reporting period as a cumulative figure. This usually gives the typical S-curve graph.
3) For a given reporting period or status date, collect actual costs to date (ACWP). Identify the activities that have been completed and total the original budget for each of these activities to give a total earned value (BCWP). For each reporting period ad these two figures to your graph. There is a variety of ways to treat the partially complete activities on the reporting date.

The 0/100 method – only allowed to include if finished
The 50/50 method – can count half the original budget when started, all when finished
The 25/75 method - 25% when started, all when finished
And any variation in between but usually that's too much work so keep it simple.

4) Report and analyse (e.g. look at EAC projection etc.)

Plot the graphs of cumulative BCWS, BCWP and ACWP. Also worth plotting CPI and SPI to spot and trends (are they getting steadily worse or better?).

One more thing to look out for is scope change (ie change to original BCWS). This is agreed changes that either add or remove budget. For an agreed scope change add or remove the activity costs from the period(s) that they occur in. Where added they become earned once done as per step 3.

One more thing to note; Studies show that CPI stabilises once you 15% into a project (i.e. if you have been too optimistic in the first 15%, you have been consistently too optimistic) and often gives an accurate EAC from then on.

CPI = {BCWP / ACWP}

< 1 means that the cost of completing the work is higher than planned (bad)
= 1 means that the cost of completing the work is right on plan (good)
> 1 means that the cost of completing the work is less than planned (good or sometimes bad).

Having a CPI that is very high (in some cases, very high is only 1.2) may mean that the plan was too conservative, and thus a very high number may in fact not be good, since the CPI is being measured against a poor baseline. Management or the customer may be upset with the planners since an overly conservative baseline ties up available funds for other purposes, and the baseline is also used for manpower planning.

SPI = {BCWP / BCWS } or
SPI = {EV / PV} - greater than 1 is good (ahead of schedule)