

Earned Value

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Earned value (EV) is one of the most sophisticated and accurate methods for measuring and controlling project schedules and budgets. EV has been used extensively in large projects, especially in government projects. PMI is a strong supporter of the EV approach because of its ability to accurately monitor the schedule and cost variances for complex projects.

Although it is sophisticated, EV can be scaled to be appropriate for any size of project. The key is in the project planning.

There are three primary advantages to using EV:

1. Accuracy in reporting
2. Ability to deal with the uneven rate of project expenditures and work
3. The early warning it provides project managers, allowing them to take the necessary corrective action should the project be spending more money than it is physically accomplishing.

Other less professional methods for measuring budget and schedules generally only monitor the percent of the time through the schedule and make the often mistaken assumption that this is also the percent that the project should be through the budget. But cost and project progress generally are not evenly expended through a project. The reason EV stands above the alternatives is that it accurately deals with this reality. EV warning signals become available to management as early as 15 to 20 percent into a new project, in ample time to take corrective measures.

How to Implement EV

In order to employ earned value, we must have a baseline plan (including a detailed, workload leveled, progress schedule) in place that will allow us to continuously measure seven points of data. The textbooks, including the referenced ones at the end of this paper, say that this is easy. However in my reality it often is not easy because scheduling to this level of detail at the beginning of the project is challenging and dynamic.

Earned value requires the kind of data most projects have, but we may not look at the data in quite the same way. Earned value has a focus on its percent-complete position...against its (100 percent) defined scope.

In order to employ earned value we must first know at all times what the “planned value” is as at any point in time. So EV is built on a very structured project plan. It requires a detailed WBS, time and cost estimates for all of the work packages, a workload leveled

master schedule, and a meticulous change management methodology (with this last part being the hardest for my projects).

To determine the planned value, we need to calculate two important base factors, 1) how much physical or intellectual work we have scheduled to be completed as of the point of measurement, and 2) what was the budgeted value of the work scheduled.

To measure earned value we need two new points of data: 3) how much of our scheduled work have we actually accomplished? And 4) what is the budgeted value of the work actually performed?

The next item is for the earned value work we have accomplished, what 5) costs have we actually spent and/or incurred.

The Planned Value = Items 1 and 2

The Earned Value = Items 3 and 4

Actual Costs = 5

Next we need to understand 6) the “schedule variance” which in earned value is the difference between our planned value scheduled and our earned value achieved. Lastly, we need to know 7) what our “cost variances” have been. This is determined by relating our earned value accomplished against the actual costs pent or incurred.

These are the basics. There are many calculation tables, charts, at graphs that can help visual display this data, variances, and trends. These are frosting on the cake and not necessary to use EV. EV summary reports often will provide a revised estimate to complete based on the extension of the current trends.

Summary

Implementing EV is well worth the effort. The advantages of building a detailed plan, controlling and monitoring the project, and accurate reporting and forecasting are all critical to professional project management.

The biggest challenge our company experienced when implementing EV was changing our time reporting and accounting system to decompose projects, allowing time and cost to be attributed to specific project deliverables. Also, as mentioned earlier, the detailed schedule must be planned early and translated to project costs - to give us the planned value at any specific point in time.

Once armed with the EV information, the project manager and stakeholders can truly understand the current status of a project, the rates of variances, and (once significantly into the project) often accurately predict the end schedule and budget compared to the original estimates.

References/Resources

Fleming, Quentin and Koppelman, Joel from Primavera Systems (a project management software company). **Earned Value Project Management ... an Introduction.**

<http://www.stsc.hill.af.mil/crosstalk/1999/07/fleming.asp>.

Fleming, Quentin and Koppelman, Joel, **Earned Value Project Management**, Second Edition (Kay read this book in Feb. of 2001).

Milosevic, Dragan, **Project Management Toolbox**, ISBN 0-471-20822-1, Wiley Press. 2003