

The following article by Voytek Kawecki provides a good overview of how to interpret the terminology of Earned Value Measurement Methodology that will assist you to effectively manage your project. All projects, irrespective of size, should be using this method of progress measurement, trending and management. The Editors

## Interpreting the Results from Earned Value Performance Measurement

By Voytek Kawecki, (until recently Master Planner with BHP Billiton Mitsubishi Alliance (BMA))

### Introduction

Earned Value Performance Measurement (EVPM) is a proven, effective and comprehensive method for measurement of project performance. The methodology has become more popular in recent years, not only for major projects and government contracts, but also for smaller industrial projects where hard dollar contracts are used. The aim of this article is assist with the interpretation of the EVPM S-Curves and Indices that are commonly used. A better understanding will make it easier for project team members to use this powerful 'tool' to effectively manage your projects.

### EVPM S-Curves

The S-Curve is used to provide a snapshot of the project status and its performance at a given point in time.

A key benefit of an S-Curve is that it combines the budget information with the schedule information (a plot of budget versus time) to provide a graphical presentation that quickly identifies trends, enabling the project manager to take corrective measures (if necessary).

An S-Curve chart shows three different curves:

1. Planned Value (PV) Curve – is a curve generated from the sum of the Budgets (expressed either in dollars or work-hours) for the work scheduled to be accomplished within a given time period. This was previously known as Budgeted Cost of Work Scheduled (BCWS).

### Scenario A

EV is below PV, this indicates that the project is tracking behind the Plan. EV is above the AC, this indicates a Cost Underrun.

Hence, this is good news on the Cost front but bad news on the Schedule front.

2. Actual Cost (AC) Curve – is a cumulative curve generated from the sum of the costs (expressed either in dollars or work-hours) actually incurred in accomplishing the work performed. This was previously known as Actual Cost of Work Performed (ACWP).
3. Earned Value (EV) Curve – is the value of completed work expressed in terms of the Budget (expressed either in dollars or work-hours) assigned to that work. This was previously known as Budgeted Cost of Work Performed (BCWP).

### EVPM Indices

While there are a number performance indices generated from EVPM, the following indices are particularly significant and commonly employed to assess the Cost and Schedule Performance of a project.

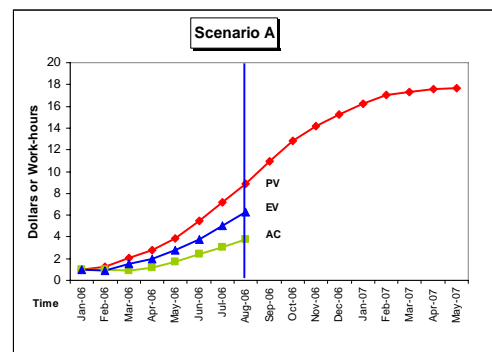
- 1) Cost Variance (CV) = Earned Value (EV) – Actual Cost (AC)
- 2) Cost Performance Index (CPI) = Earned Value (EV) / Actual Cost (AC)
- 3) Schedule Variance (SV) = Earned Value (EV) – Planned Value (PV)
- 4) Schedule Performance Index (SPI) = Earned Value (EV) / Planned Value (PV)

### Interpretation of the EVPM Information

The following is a guide to help interpret the results from EVPM analysis.

### S-Curves:

In this section, four different scenarios are analysed and interpreted:

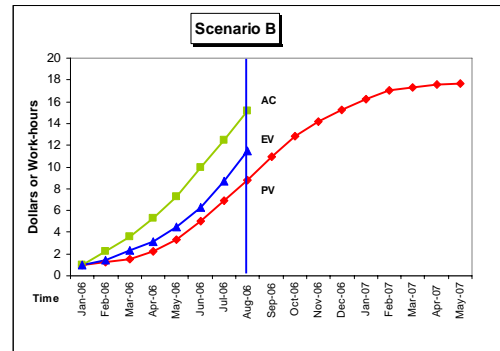


## Scenario B

EV is above PV, this indicates that the project is tracking ahead of the Plan.

EV is below AC, this indicates a Cost Overrun.

Hence, Scenario B is the reverse of Scenario A, with good news on Schedule and bad news on Costs.

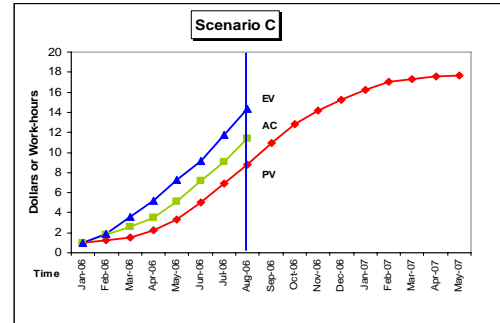


## Scenario C

EV is above PV, this indicates that the project is tracking ahead of the Plan.

EV is also above the AC, this indicates Cost Underrun.

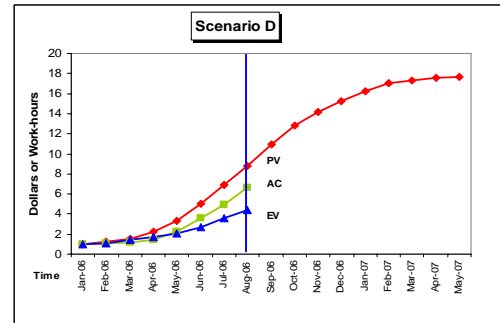
Hence, Scenario C is good on both Cost and Schedule.



## Scenario D

EV is below PV, this indicates that the project is tracking behind the Plan. EV is below AC, this indicates a Cost Overrun.

This is a double whammy with bad news on both fronts – Cost & Schedule.



## Indices:

5.

An interpretation of the EVPM Indices is as follows:

1. If  $CV (= EV - AC)$  is positive, indicates Cost Underrun
2. If  $CV$  is negative, indicates Cost Overrun
3. If  $CPI (= EV/AC)$  is greater than 1.0, indicates Cost Underrun
4. If  $CPI$  is less than 1.0, indicates Cost Overrun
5. If  $SV (= EV - PV)$  is positive, indicates that the project is tracking Ahead of the Plan
6. If  $SV$  is negative, indicates that the project is tracking Behind the Plan (Delay).
7. If  $SPI (= EV/PV)$  is greater than 1.0, indicates that the project is tracking Ahead of the Plan.
8. If  $SPI$  is less than 1.0, indicates that the project is tracking Behind the Plan (Delay).

## Conclusion

This article covers the interpretation of EVPM S-Curves and Indices. The article is intended to assist project practitioners to better understand the EVPM methodology. This article shows that the forecast outcome of a project (or at a lower level, an individual contract) can be predicted with a reasonable degree of confidence using this methodology. Use of the EVPM methodology gives the project manager early warning of poor project (or contractor) performance and provides forewarning that will enable prompt and proactive corrective action to be taken.

Every project is different, but the EVPM methodology provides a common performance measurement system based on the rigour of objective, uniform and consistent measurement of project (or contract) progress taking into account the scope, cost and schedule.

*Readers interested in EVPM are referred to the Australian Standard AS4817-2006; Project Performance Measurement using Earned Value. This is an excellent standard that covers in more detail the points raised in this article.*

*The Editors wish to thank Akin for contributing this article for publication in the **PM Newsletter**. For those of you who know Akin, you will realise that he has a passion for project management and this clearly comes across in his excellent article on the best practice approach to effective project delivery.*

## The Operation was Successful but the Patient Died

*By Akin Oni, Project Services Manager – Koala Underground Project, EKATI Diamond Mine*

Few people would agree that an operation was a success if the patient died during (or immediately after) the procedure. We would all agree that this was a failure. Yet in the project management world, many people claim exactly that - their project was a success despite its failure to meet the business objectives.

In this paper, Akin presents the best practice approach to project management by judging the project success not only on the traditional measures of 'safe execution, on time, on budget, and in accordance to specifications', but to assess the project outcome based on the 'product' success. The paper reviews empirical literature on project success across industries, the factors that ensure that project management success (i.e. successful 'surgical operation') translates into product success (i.e. 'a patient that is alive, well and fulfilling purpose after the surgeon's intervention').

The paper lists ten factors that will contribute to better outcomes from a 'product' perspective. These factors, not in any particular order of significance, are: organisational embrace of project management as a strategic asset and ongoing management support; effective stakeholder management; clear project goals and objectives; defined success measures prior to project start; user involvement; sufficient Front End Loading; effective communication; effective risk management; people (selection, competency, adequacy, empowerment, accountability, and continuity); and independent reviews.

Akin concludes that by doing due diligence at the front-end and all through its life cycle phases in accordance with the factors listed above, a project has the best chance of achieving a successful outcome. Project success is all about business benefits realisation and, in order to increase the likelihood of project's business benefits realisation, leaders of projects are encouraged to effectively lead, communicate, involve, plan, implement, integrate, control, review, and learn!

On a final note, Akin recommends that further work should be done by practicing researchers to develop a database of major and mega projects across industries and organisational settings where the outcome was successful project management but a failed 'product', and the drivers of each outcome; and also develop a proven method for evaluating the quantitative benefits of corporate project and programme practices to corporate performance.

For a full transcript of Akin's article, please download the article from the following [intranet link](#).