What It Is

A project management technique that measures project performance and progress by combining scope, schedule and costs into a single integrated system of monitoring and reporting.
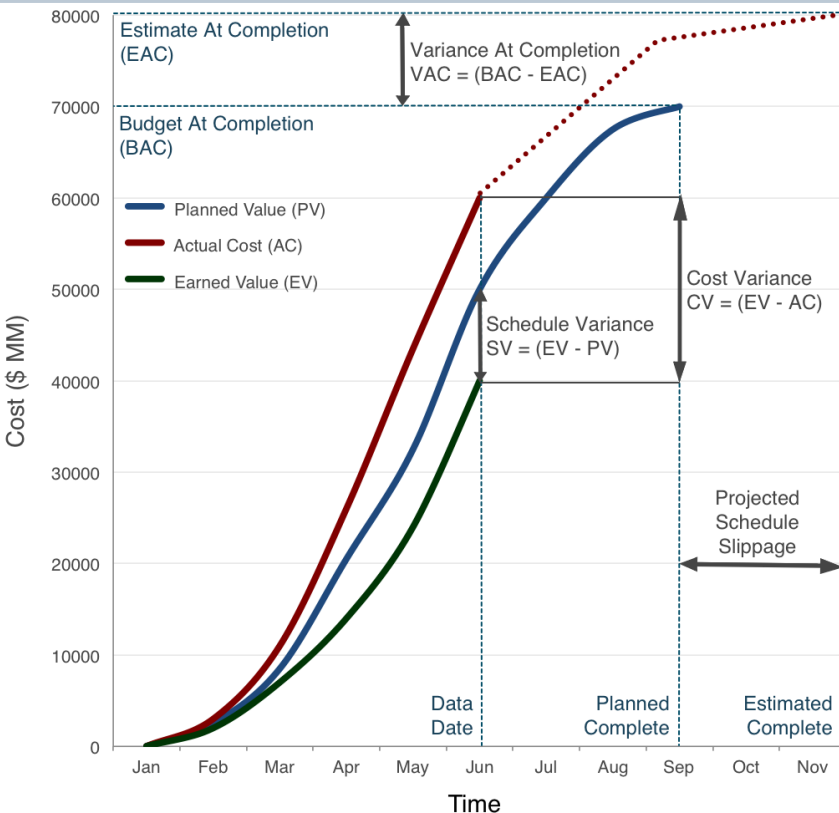
Why You Need It

EVM is the industry standard method of tracking project progress on capital projects. It improves communication, reduces project risk, provides better forecasting, better progress tracking and better project visibility.

What You Need

1. A Project Plan
   (schedule, scope, costs)

2. What you plan to spend and what you expect to have done for the $$$ spent
   X Activities Done by Y Date will cost $MM

3. Metrics to quantify work % complete
   X Activities of equal effort or weighted

4. Method to track work execution on Activities
   Actual % Complete   Actual Costs
   Actual Hours Spent   Actual Start / Finish

5. Formulas to calculate EV, CV and SV
   See back of page

6. Reports on $ Expenditure vs. Time
   Planned, Actual, Earned, Variances

Reading an S-Curve Report

Estimate At Completion (EAC)

Variance At Completion
VAC = (BAC - EAC)

Budget At Completion (BAC)

— Planned Value (PV)
— Actual Cost (AC)
— Earned Value (EV)

Cost Variance
CV = (EV - AC)

Schedule Variance
SV = (EV - PV)

Projected Schedule Slippage

Data Date | Planned Complete | Estimated Complete

Cost ($ MM) vs. Time (Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov)

Data Date
When is this project data as of?

Planned Value > Earned Value
We are behind schedule

Actual Cost > Earned Value
We are over budget

VAC = BAC – EAC (Negative Value)
How far over budget do we expect to be?

Estimated Complete Date vs. Planned Complete Date
When do we expect to finish?

Earned Value Management (EVM)
Efficiency Notes – Project Controls Series

Primary Data Points and Calculations

BAC — Budget At Completion
What you plan to spend for 100% complete

$$BAC = \text{Total Planned Cost}$$

PV — Planned Value
What you plan to spend on what you plan to be completed

$$PV = BAC \times (\% \text{ Completed Planned})$$

AC — Actual Cost
Actual cost of work performed

$$AC = SUM(Cost)$$

EV — Earned Value
What you planned to spend on what's actually done

$$EV = BAC \times (\% \text{ Complete Actual})$$

Variances and Calculations

CV — Cost Variance
How far over or under budget am I?

$$CV = EV - AC$$
(-) = over   (+) = under

CV% — Cost Variance %
How far over or under budget expressed as a %

$$CV\% = (CV) / (EV)$$
(-%) = over   (+%) = under

SV — Schedule Variance
How far ahead or behind schedule am I?

$$SV = EV - PV$$
(-) = behind   (+) = ahead

SV% — Schedule Variance %
How far ahead or behind schedule expressed as a %

$$SV\% = (SV) / (PV)$$
(-%) = behind   (+%) = ahead

VAC — Variance At Completion
Variance of total actual cost and expected cost

$$VAC = BAC - EAC$$

Performance Indices

CPI — Cost Performance Index
Ratio of planned spend on what's actually done to what's actually spent for the work delivered by reporting date

$$CPI = (EV) / (AC)$$
> 1 typically good   (cost < plan)
< 1 bad   (cost > plan)
= 1 good   (cost = plan)

SPI — Schedule Performance Index
Ratio of planned spend on what's actually done to planned spend on what you planned to have done by reporting date

$$SPI = (EV) / (PV)$$
> 1 typically good   (ahead vs. plan)
< 1 bad   (behind vs. plan)
= 1 good   (on plan)

Forecasts

EAC — Estimate At Completion
Expected TOTAL cost for 100% complete]
Atypical - assumes similar variances seen will not occur in future

$$EAC = AC + ((BAC - EV) / CPI))$$ (typical)
$$EAC = AC + (BAC - EV)$$ (atypical)

ETC — Estimate to Complete
Expected cost to finish REMAINING work

$$ETC = EAC - AC$$