Earned Value Management (EVM)

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
   \( X \text{ Activities Done by Y Date will cost } $MM \)
3. Metrics to quantify work % complete
   \( X \text{ Activities of equal effort or weighted} \)
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

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?

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Primary Data Points and Calculations

**BAC** (Budget At Completion)
What you plan to spend for 100% complete

BAC = Total Planned Cost

**PV** (Planned Value)
What you plan to spend on what you plan to be completed

PV = BAC x (% 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 x (% 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

EAC = AC + ((BAC – EV) / CPI))  (typical)

EAC = AC + (BAC – EV)  (atypical)

**ETC** (Estimate to Complete)
Expected cost to finish REMAINING work

ETC = EAC - AC