

# Project Management

## Topic 5.4 Earned Value



# Earned Value Management

- Earned Value is the accumulated budgeted cost of work performed for specified time period
- Comparing earned value to the plan and actual costs yields efficiency ratios for schedule and cost, respectively
- These ratios normalize the data to provide assessment of project performance, display trends, and aid in forecasting
- Always check findings against the critical path

# Earned Value & Indexes

- **PV = Planned (Budgeted) Value** of work scheduled
- **EV= Earned Value** of work accomplished
- **AC= Actual Cost** of work performed

$$SPI = \frac{EV}{PV} \qquad CPI = \frac{EV}{AC}$$

# Alternate Designations

- **Planned Value (PV)**
  - CBC: Budgeted Value of work scheduled
  - BCWS: Budgeted Cost of Work scheduled
- **Earned Value (EV)**
  - CEV: Earned Value work accomplished
  - BCWP: Budgeted Cost of Work Performed
- **Actual Cost (AC)**
  - CAC: Actual Cost of work performed
  - ACWP: Actual Cost of work performed

# Interpretation of Indexes

## Greater than 1 is Good

$$\frac{EV}{PV} > 1 \quad \text{Ahead of Schedule}$$

$$\frac{EV}{AC} > 1 \quad \text{Under Budget}$$

## Less than 1 is Bad

$$\frac{EV}{PV} < 1 \quad \text{Behind Schedule}$$

$$\frac{EV}{AC} < 1 \quad \text{Over Budget}$$

# Cost and Schedule Variances

- Cost Variance (CV)

$$CV = EV - AC$$

- Schedule Variance (SV)

$$SV = EV - PV$$

# 5.4.1 Roundtable Exercise



## Performance Indexes

- What equations did your author use to compute CPI and SPI?
- Given the following performance indexes:  
SPI=1.2, CPI=0.9, what is your project status?
- How could this have occurred?

**Share your thoughts in roundtable discussion**

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# Forecasting

- Using the project budget and certain assumptions, the Estimate At Completion (EAC) is determined
- Assuming “X” efficiency for balance of project

$$EAC = AC + [(Budget - EV)/X]$$

$$Forecasted Variance = Budget - EAC$$



# 5.4.2 Team Exercise



## Earned Value

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# Performance Trends

- Plotting the cumulative values for EV, PV, and AC reveals trends
- Whenever **EV** is **above** the **PV** line, the project is **ahead of schedule**
- Whenever **EV** is **above** the **AC** line, the project is **under budget**

# 5.4.3 Team Exercise



## Performance Trends

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