Project Control

Anne Banks Pidduck

Project Control

- Ongoing effort to keep your project on track
- 4 primary activities:
  - 1. Planning performance
    - A SDP, schedule, and a control process
  - 2. Measuring status of work performed
    - Actuals
  - 3. Comparing to baseline
    - Variances
  - 4. Taking corrective action as needed
    - Response
- Prerequisite to good control is a good plan

Project Control

- "Control"
  - Power, authority, domination. No.
  - Guiding a course of action to meet an objective. Yes.
- Principles
  - Work is controlled, not workers
    - Control helps workers be more effective & efficient
  - Control based on work completed
    - Use concrete deliverables
  - Balance
    - Appropriate level between too much and too little
    - Includes:
      - » Micro-managing vs. neglect
      - » Too much tracking detail vs. too little

Progress Monitoring

- The 3 key Progress Monitoring Questions
  - What is the actual status?
  - If there's a variance, what is cause?
  - What to do about it?

- Possible responses
  - 1. Ignore
  - 2. Take corrective action
  - 3. Review the plan

Progress Monitoring

- Monitoring rates
  - Daily, weekly, monthly
  - If problems occur – then adjust
    - You may have to monitor problem areas more closely
    - For some period of time
    - Almost always there's one or more areas under closer scrutiny
- Status Reporting
  - Part of the communications management plan
    - Which is usually just a section of SDP

Status Reports

- From team to PM, from PM to stakeholders
- Typical format for latter
  - Summary
  - Accomplishments for this period (done)
    - Tasks, milestones, metrics
  - Plans for next period (to-do)
  - Risk analysis and review
  - Issues & Actions
- Shoot for weekly updates
  - Email notes, then hold brief meeting
  - More frequently during crises

Programming Status Reporting

- A programmer reports that he's 90% done.
  - What does this mean?

- A programmer reports completing 4,000 LOC on estimated 5,000 LOC effort.
    - Is this 80% complete?
    - Quality?
    - Ratio, estimated to completed?
      - Your estimates could have been wrong
    - If you can't measure scope or quality you don't know "reality"
    - You really only know cost (hours spent)
    - How can you improve this?

Binary Reporting

- Work packages (tasks) can only be in one of 2 states: complete or incomplete
  - No partial credit
- Preferred to anything subjective!
- "90% Complete Syndrome"
  - Software is 90% complete 90% of the time
- Use lower-level task decomposition
- Tangible exit criteria
- Plan for 4-80 staff hours of effort per task

Earned Value Analysis (EVA)

- a.k.a. Earned Value Management (EVM)
- a.k.a. Variance Analysis
- Metric of project tracking
- "What you got for what you paid"
  - Physical progress
- Pre-EVA 'traditional' approach
  - 1. Planned time and costs
  - 2. Actual time and costs
  - Progress: compare planned vs. actual
- EVA adds third dimension: value
  - Planned, actual, earned

Earned Value Analysis

- Forecasting
  - Old models include cost & expenditure
  - EVA adds schedule estimation

- Measured in dollars or hours
  - Often time used in software projects

- Performance Measurement Baseline (PMB)
  - Time-phased budget plan against which contract performance is measured
  - Cost & schedule variances go against this
  - Best via a bottom-up plan

Earned Value Analysis

- Different methods are available
  - Binary Reporting
  - Others include
    - Based on % complete
    - Weights applied to milestones
- EVA can signal errors as early as 15% into project
- Alphabet Soup

Earned Value Analysis

– 3 major components

- BCWS: Budgeted Cost of Work Scheduled
  - Now called "Planned Value" (PV)
  - "Yearned"
  - How much work should be done?
- BCWP: Budgeted Cost of Work Performed
  - Now called "earned value" (EV)
  - "Earned"
  - How much work is done?
  - BCWS * % complete
- ACWP: Actual Cost of Work Performed
  - Now called "Actual Cost" (AC)
  - "Burned"
  - How much did the work done cost?

Derived EVA Variances

- SV: Schedule Variance
    - BCWP – BCWS
    - Planned work vs. work completed
- CV: Cost Variance
    - BCWP – ACWP
    - Budgeted costs vs. actual costs
- Negatives are termed 'unfavorable'
- Can be plotted on 'spending curves'
    - Cumulative cost (Y axis) vs. Time (X axis)
    - Typically in an 'S' shape
- "What is the project status"?
    - You can use variances to answer this

Earned Value Analysis
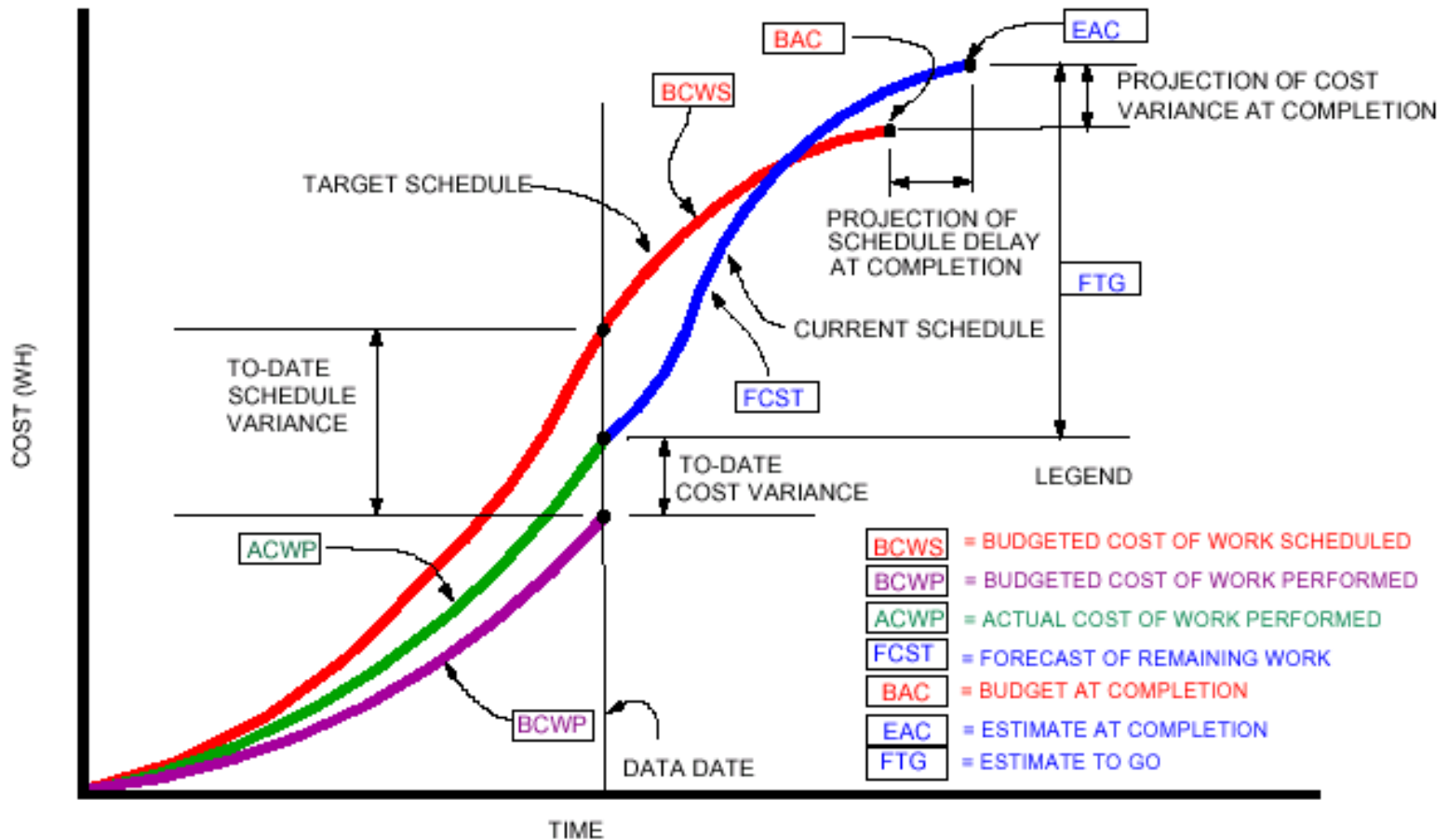
Derived EVA Ratios

– SPI: Schedule Performance Index

  – BCWP / BCWS

– CPI: Cost Performance Index

  – BCWP / ACWP

– Problems in project if either of these less than 1 (or 100%)

Earned Value Analysis

- ## Other Derived Values
    - ### BAC: Budget At Completion
        - Sum of all budges (BCWS). Your original budget.
    - ### EAC: Estimate At Completion
        - Forecast total cost at completion
        - EAC = ((BAC – BCWP)/CPI) + ACWP
        - Unfinished work divided by CPI added to sunk cost
        - If CPI < 1, EAC will be > BAC
    - ### CR: Critical Ratio
        - SPI x CPI
        - 1: everything on track
        - > .9 and < 1.2 ok
        - Can be charted

EVA Example

Project Data	Completion Date		Cost	
WBS Milestone	Planned	Actual	Planned	Actual
A	1-Apr	20-Apr	25,000	20,000
B	1-May	28-May	15,000	10,000
C	1-Jun	18-Jun	10,000	15,000
D	1-Jul		15,000	
E	1-Aug		10,000	
Totals			75,000	45,000

As of 1-July where are we?

BCWS

BCWP

ACWP

EVA Example

Project Data	Completion Date		Cost	
WBS Milestone	Planned	Actual	Planned	Actual
A	1-Apr	20-Apr	25,000	20,000
B	1-May	28-May	15,000	10,000
C	1-Jun	18-Jun	10,000	15,000
D	1-Jul		15,000	
E	1-Aug		10,000	
Totals			75,000	45,000

CV

SV

CPI

SPI

CR

Earned Value Analysis

- BCWS
  - Use 'loaded labor' rates if possible
    - Direct pay + overhead
- Remember it's an aggregate figure
  - May hide *where* the problem lies
  - Beware of counterbalancing issues
    - Over in one area vs. under in another

Earned Value Analysis

- Benefits
  - Consistent unit of measure for total progress
  - Consistent methodology
    - Across cost and completed activity
    - Apples and apples comparisons
  - Ability to forecast cost & schedule
  - Can provide warnings early
- Success factors
  - A full WBS is required (all scope)
  - Beware of GIGO: Garbage-in, garbage-out