

Ch 11: Project Control Using Earned Value Analysis

1. Recall that project control is exercised by comparing performance to plan at *status reviews* to assess where the project stands with respect to all four PCTS measures (i.e., on time, within budget, meet defined scope, and meet performance requirements).

a) When there is a deviation, why should we determine the cause for the deviation?

b) When there is a deviation, what four actions can be taken?

2. One of the hardest things to do in managing projects is to actually measure progress. Why is the progress of a partially complete task only an estimate?

3. Why does the difficulty of measuring progress NOT justify the conclusion that it shouldn't be done?

4. Why is progress involving knowledge work (e.g., designing something or writing software) harder to estimate?

5. Why is work quality most likely to be sacrificed when deadlines are tight?

6. Why should project managers pay special attention to the quality variable in spite of the difficulty of tracking it?

7. Project cost control is concerned with ensuring that projects stay within their budgets, while getting the work done on time and at the correct quality. *Earned value analysis* or *variance analysis* allows the project manager to determine trouble spots in the project and to take corrective action. Earned value analysis definitions:

- *cost variance* - compares deviations and performance work.
- *schedule variance* - compares planned and actual work completed.
- *BCWS (Budgeted Cost of Work Scheduled)* - the budgeted cost of work **scheduled to be done** in a given time period or the level of effort that is supposed to be performed in that period.
- *BCWP (Budgeted Cost of Work Performed)* - the budgeted cost of work **actually performed** in a given time period or the level of effort actually expended. BCWP is also called *earned value* and is a measure of the dollar value of the work actually accomplished in the period being monitored.
- *ACWP (Actual Cost of Work Performed)* - the amount of money (or effort) actually spent in completing work in a given period.

Given that *variance* is any deviation from the plan, using the above terms to define each of the following:

a) Cost variance =

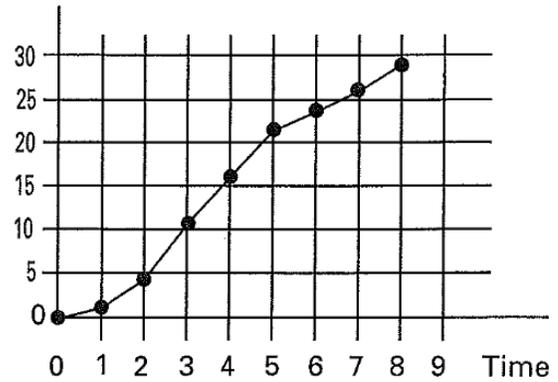
b) Schedule variance =

8. Variances are often plotted using spending curves. A BCWS curve shows the *cumulative spending planned* for the project and is often called the *base-line plan*. Figures 11-2 shows the budgeted spending for the plan and the resulting BCWS cumulative spending curve:

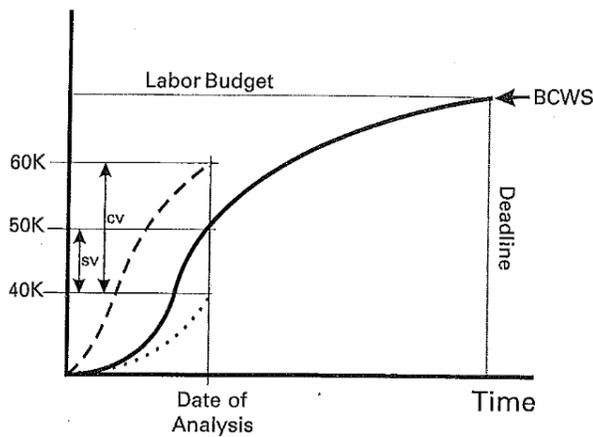
Figure 11-2. Bar chart schedule illustrating cumulative spending.

Task A	(40 Hrs/Wk)(20 \$/Hr) = \$800/Wk					
Task B	(100 Hrs/Wk)(30 \$/Hr) = \$3,000/Wk					
Task C	(60 Hrs/Wk)(40 \$/Hr) = \$2,400/Wk					
Weekly Spending	800	3,800	6,200	5,400	5,400	2,400
Cumulative Spending	800	4,600	10,800	16,200	21,600	24,000

Figure 11-3. Cumulative spending for the sample bar chart.



9. I think there might be a typo in the text describing the following Figure 11-4.

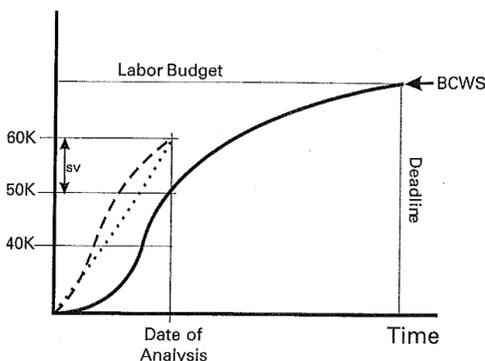


cv = cost variance - - - - - ACWP
 sv = schedule variance ······· BCWP

Consider the curves shown in Figure 11-4. On a given date, the project is supposed to have involved \$40,000 (40K) in labor (BCWS). The actual cost of the work performed (ACWP) is 60K. These figures are usually obtained from Accounting and are derived from all the time cards that have reported labor applied to the project. Finally, the budgeted cost of work performed (BCWP) is 40K.

- What is the typo?
- Is the project under or over budget?
- Is the project ahead or behind schedule?

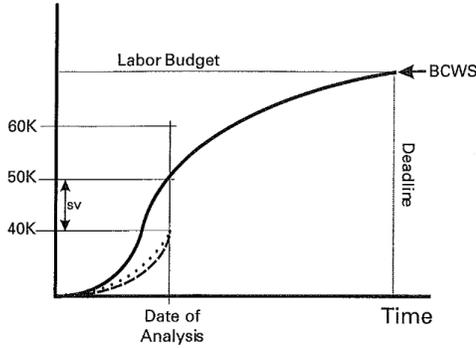
10. Consider the following curves.



cv = cost variance - - - - - ACWP
 sv = schedule variance ······· BCWP

- Is the project under or over budget?
- Is the project ahead or behind schedule?
- What might cause this situation?

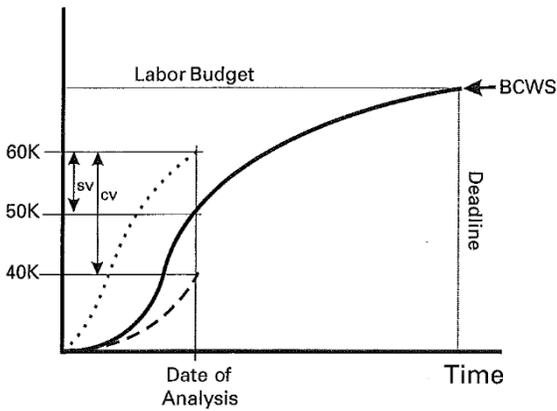
11. Consider the following curves.



cv = cost variance - - - - - ACWP
 sv = schedule variance ······ BCWP

- a) Is the project under or over budget?
- b) Is the project ahead or behind schedule?
- c) What might cause this situation?

12. Consider the following curves.



cv = cost variance - - - - - ACWP
 sv = schedule variance ······ BCWP

- a) Is the project under or over budget?
- b) Is the project ahead or behind schedule?
- c) What might cause this situation?

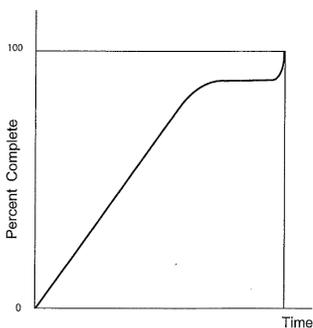
13. Acceptable variances vary depending on the type of project:

- ± 3 - 5% for well-defined construction projects
- ± 10 - 15% for research and development projects
- much higher ??? for pure research (e.g., developing a cure for HIV)

Why should an organization develop their own tolerance from experiences?

14. The most common way to measure progress is to simply estimate the percentage complete. Why does the typical curve tend to look like graph shown.

Figure 11-8. Percent complete curve.



Exercise

Consider the report in Figure 11-9, showing earned value figures for a project. Answer the questions by analyzing the data. Answers are provided in the Answers section at the back of the book.

Figure 11-9. Earned value report.

WBS #	Cumulative-to-date			Variance		At Completion		
	BCWS	BCWP	ACWP	SCHED.	COST	BUDGET	L. EST.	VARIANCE
301	800	640	880	-160	-240	2,400	2,816	-416

Questions:

1. Is the task ahead or behind schedule? By how much?
2. Is the task overspent or underspent? By how much?
3. When the task is completed, will it be overspent or underspent?

Ch 12: Managing the Project Team - Key Points

- Teams don't just happen -- they are built. (Want team members committed to the project and not just involved)
- Having the entire team participate in planning is one way to start the team-building process.
- Deal with goals (what? why?), roles and responsibilities (who? when?), procedures (how?), and relationships in that order.
- So-called personality conflicts are often caused by team members' poor interpersonal skills. For teams to function well, all members should receive training in this area.
- The style of leadership appropriate for a team depends on its stage of development.
 - In the *forming* stage, it is *directive* (give structure by providing a sense of direction, help them to get to know each other, and help get them started).
 - In the *storming* (members question goals and leadership -- on right track?), it is *selling/influencing* (use influence or persuasion to assure them that they are indeed on track).
 - At the *norming* stage (members beginning to see themselves as a team since they are involved in the work and are becoming supportive on each other through their cooperation), switch to a *participative* style (share decision making with team).
 - Finally, when the team reaches the *performing* stage (its a real team now), you can be *delegative* (sit back and concentrate on what-if analysis of team progress, planning for future work, etc.).

Ch 13: The Project Manager as Leader - Key Points

- The more agile you become in leading others, greater the chance for project success. (adjust to people, situation and circumstances)
- It is important to "walk the talk" and establish consistency in your working relationships. Engender trust and respect by encouraging risk taking, eliminating fear of failure, and establishing a positive culture of dissent will make you a more effective project leader.
- It is your job to keep the momentum going by knowing your team and ensuring high morale. (e.g., celebrate accomplishments big or small)
- As a project leader, you need to be able to identify and develop team member roles, determine the appropriate approach to conflict resolution, lead project status meetings, and work with virtual teams.