Project Management: Part 3

Earned Value Management

- How much work you planned to have accomplished by now (in dollars or hours) called the **Planned Value**
- How much you have actually spent by now (in dollars or hours), called **Actual Cost**
- The value, in terms of your baseline budget, of the work accomplished by now (in dollars or hours), called the **Earned Value**!

Idea is to link schedule and cost together to monitor both in the same “units” of value

Earned Value Management

- Planned value (PV) - the value of all resources needed to meet the project's objectives
  - Each objective of a project has an associated planned value
- Budgeted (cost) at completion (BAC) - The sum of all the PVs
- Earned value (EV) - the amount of value completed at any point during the project
- Actual Cost (AC) - actual amount of money you have spent so far. In a perfect project AC and EV are the same.

Earned Value Management Example

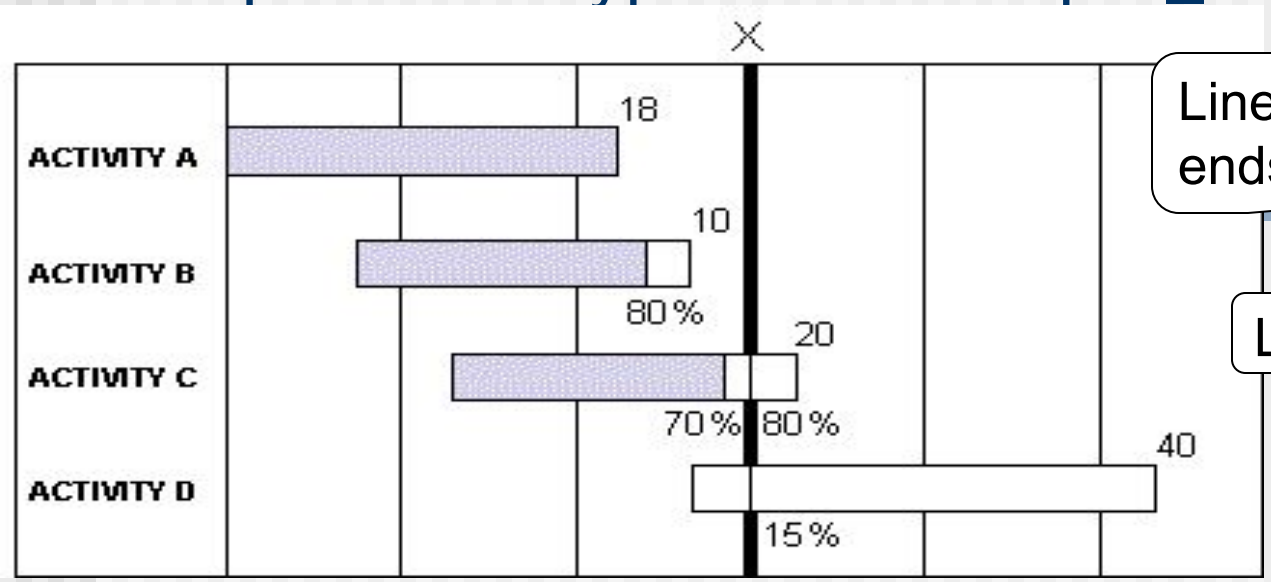
- We've budgeted $200 to buy, setup, network and test a new system
  - Our planned values (PVs) of each task are:
    - Buy - $50, Setup - $75, network - $50, test - $25
    - Our BAC is therefore $200
  - We've now completed phase one, and thus our earned value (EV) is now $50.
  - To do this we spent $60 (our actual cost (AC))

Earned Value Management Example

- Schedule performance index (SPI)
  - EV / PV --> 50/50 = 1 (perfect).
  - Our group is on schedule
- Cost performance index (CPI)
  - EV / AC --> 50/60 = 0.83
  - For every dollar spent, I get 83 cents worth of work.
- Estimated cost at completion (EAC)
  - BAC / CPI = 200 / 0.83 = $240.96
- Schedule Variance (SV) : EV - PV
- Cost Variance (CV) : EV - AC

Memorization Hint: Most equations begin with earned value

EVM Example 2 from: http://www.hyperthot.com/pm_cscs.htm



Line is at 16, blue bar ends at 14

Line is at 6

- **PLANNED VALUE (Budgeted cost of the work scheduled) = 18 + 10**

What is planned value at time X?

- **EARNED VALUE (Budgeted cost of the work performed) = 18 + 8 +**

What is earned value at time X?

- **ACTUAL COST (of the work performed) = $45 (Data from Acct. System)**
- Therefore:
  - **Schedule Variance =**

Earned – Planned. Perfect is?

  - **Schedule Performance Index = 40 / 50 = 0.8**

What is earned value?

- A. The amount of money you get upon completion of a task
- B. The value of an activity
- C. The value of the work completed by now in the schedule
- D. The value of all activities planned to be completed by now in the schedule

Why do you use earned value management?

- A.It is required by my contract
- B. Measuring value give you more information than measuring cost or time alone
- C. I don’t use it
- D. It guarantees my project will be done on time

Scope Creep

- The scope of your project is all the work you initially planned to do.
- Scope creep is when your project gets new tasks throughout it's lifetime without adding more resources to handle new tasks. The scope is "creeping" up…
- Scope changes are OK, and really unavoidable… that's fine. However you must update the resources (time, features or people accordingly)

Why would scope changes occur?

- A. You get more money to do more things
- B. The customer asks you to do something extra because “it is critical for success”
- C. A competing product has a feature that you must have to be competitive
- D. All of these

Scope Change versus Creep

Change is good!

Your company has a $1million dollar contract with a defined scope.

Scope change:

Customer: please add all these requirements, and I'll increase the contract to $2million dollars

Manager: Certainly! 😊

Scope creep:

Customer: please add all these requirements, and I'll be really happy.

Manager: Certainly! ☹️

Which are causes of scope creep?

- A. poor change control
- B. lack of proper initial identification of what is required to satisfy project objectives
- C. a weak project manager
- D. all of these

Source: Wikipedia: Scope Creep

Managing Scope

Scope

- How to deal with the inevitable “Scope creep”?
- Joint Application Development and prototyping
- Formal change approval
- Defer additional requirements as future system enhancements

Managing Risk

- Document your risks in a risk management plan
  1. Description of risk
  2. Likelihood of occurrence (0-100%)
  3. Impact - 1(low) □ 5 (high), or cost $20,000
  4. Exposure = Impact * Likelihood
  5. Mitigation strategy
     - How to lessen the impact of the risk
     - How to lessen the likelihood
     - An action plan if risk occurs
- Update and track your risks
- Communicate your risks to upper management

Projects get into trouble when…

- Software people don't understand their customer's needs.
- The product scope is poorly defined.
- Changes are managed poorly.
- The chosen technology changes.
- Business needs change [or are ill-defined].
- Deadlines are unrealistic.
- Users are resistant.
- Sponsorship is lost [or was never properly obtained].
- The project team lacks people with appropriate skills.
- Managers [and practitioners] avoid best practices and lessons learned.

Common-Sense Approach to Projects

- *Start on the right foot.* This is accomplished by working hard (very hard) to **understand the problem** that is to be solved and then setting realistic objectives and expectations.

- *Maintain momentum. The* project manager must **provide incentives** to keep turnover of personnel to an absolute minimum, the team should **emphasize quality** in every task it performs, and senior management should do everything possible to stay out of the team's way.

- *Track progress.* For a software project, progress is tracked as work products (e.g., models, source code, sets of test cases) are produced and approved (using formal technical reviews) as part of a quality assurance activity.

- *Make smart decisions.* In essence, the decisions of the project manager and the software team should be to "keep it simple."

- *Conduct a postmortem analysis.* Establish a consistent mechanism for