CSSE 372 Software Project Management:
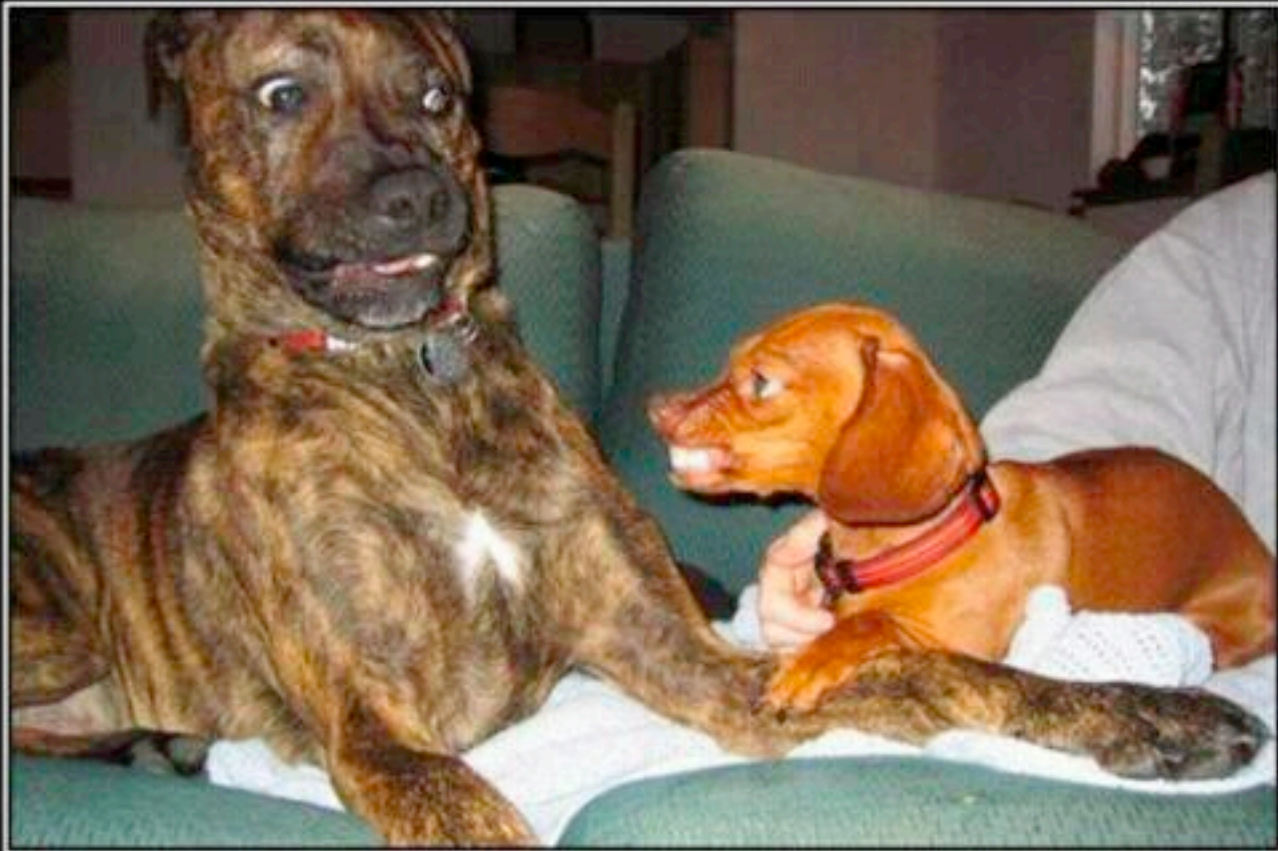# Earned Value Analysis (EVA) Exercises

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COURAGE

When force of will overpowers personal limitations

Learning Outcomes: Plan (verb)

Create a plan for an intermediate size software project and manage to the plan. Maintain a software project schedule.

- **Do some Earned Value Analysis**

- **Examine Estimated to Complete Values**

- **Determine good and bad Trends in the progress**

You have the WBS and have identified the activities. Where do you start with Earned Value Analysis?

- Think for 15.11 seconds…
- Turn to a neighbor and discuss it for a minute
- Then can we tawlk?

Earned Value Exercise (PV, AC, EV)

Task – Develop and install ten printer drivers.

- *Budget - $100,000 ($10K per printer driver)*
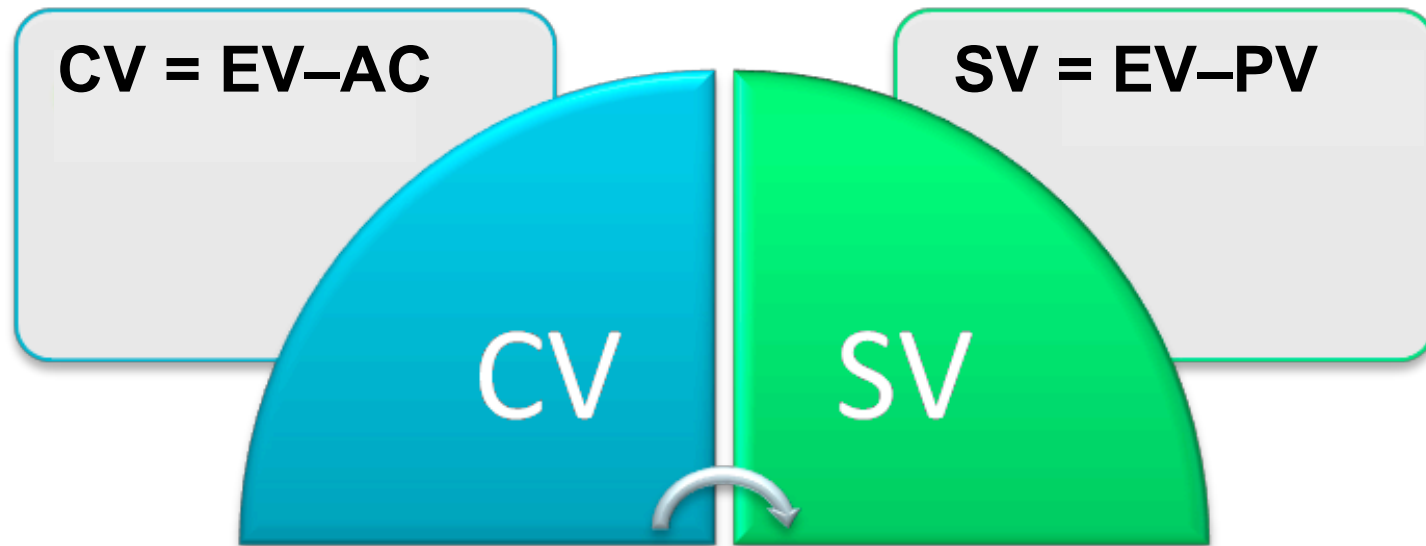- *Time – 10 weeks (1 printer driver per week)*

At week 5:

- *4 printer drivers developed and installed*
- *$47,500 spent to date*

PV = $???

AC = $???

EV = $???

Derived EVA Metrics: CV and SV

CV = EV–AC

SV = EV–PV

CV

SV

Cost Variance

- **Comparison of the budgeted cost of work performed with actual cost**
- **Negative CV means the project is over budget**

Schedule Variance

- **Comparison of work performed during a period of time to what was scheduled to be performed**
- **Negative SV means the project is behind schedule**

Earned Value Exercise (CV)

> ## Cost Variance (CV)
>
> ## $CV = EV - AC$
>
> ## $= \$???$

Good News: If CV value is **positive**, the project is currently under budget (spending less than planned for the work)

Bad News: If CV value is **negative**, the project is currently over budget (spending more than planned for the work)

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Earned Value Exercise (CPI)

Cost Performance Index (CPI)

$$CPI = EV / AC$$

$$= ???$$

Good News: If CPI value **is >1 or =1**, the project cost trend is currently under or at planned budget

Bad News: If CPI value **<1**, the project cost trend is currently over budget

Earned Value Exercise (CV%)

Cost Variance % (CV%)

$$CV\% = CV / EV$$

$$= ???\%$$

Good News: If CV% value is **positive**, the project is currently under budget by the CV%

Bad News: If CV% value is **negative**, the project is currently over budget by the CV%

Awkward!!!

Earned Value Exercise (SV)

Schedule Variance (SV)

$$SV = EV - PV$$

$$= ???$$

Good News: If SV value is **positive**, the project is currently ahead of schedule

Bad News: If SV value is **negative**, the project is currently behind schedule

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Earned Value Exercise (SPI)

Schedule Performance Index (SPI)

$$SPI = EV / PV$$

$$= ???$$

Good News: If SPI value is **>1 or =1**, the project schedule trend is currently ahead or on planned schedule

Bad News: If SPI value **<1**, the project schedule trend is currently behind schedule

Earned Value Exercise (SV%)

Schedule Variance % (SV%)

$$SV\% = SV / PV$$

$$= ???\%$$

Good News: If SV value is **positive**, the project is currently ahead of schedule

Bad News: If SV value is **negative**, the project is currently behind schedule

Earned Value Exercise

Task – Develop and install ten printer drivers.

- *Budget - $100,000 ($10K per printer driver)*
- *Time – 10 weeks (1 printer driver per week)*

At week 5:

- *4 printer drivers developed and installed*
- *$47,500 spent to date*

PV = $50,000	**CV = -$7,500**	**SV = -$10,000**
AC = $47,500	**CPI = 0.84**	**SPI = 0.80**
EV = $40,000	**CV% = -19%**	**SV% = -20%**

But, when will we complete?

Estimate at Completion (EAC)

Actual costs to date plus a new estimate for all remaining work (original plan no longer valid)

$$EAC = AC + ETC$$

(ETC ➔ Estimate to Complete)

Well, it's a little involved...

Estimate at Completion (EAC)

Actual costs to date plus remaining budget (current variances viewed as atypical of future variances)

Actual costs to date plus remaining budget modified by a performance factor (CPI) (current variances are viewed as typical of future variances)

$$EAC = AC + [(BAC - EV) / CPI]$$

$$\sim EAC = BAC / CPI$$
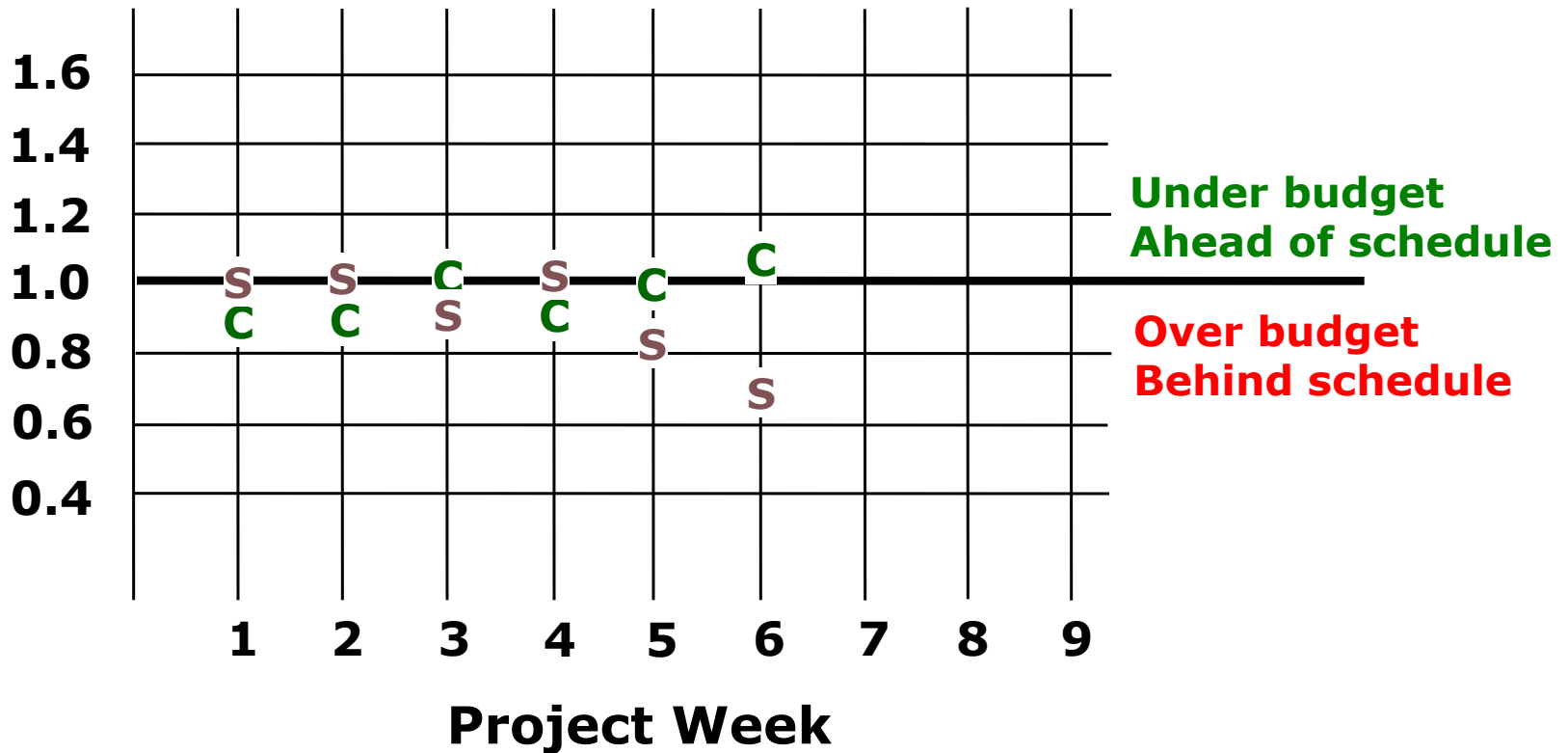
Earned Value – Performance Indices

Good Progress

Project: Alpha
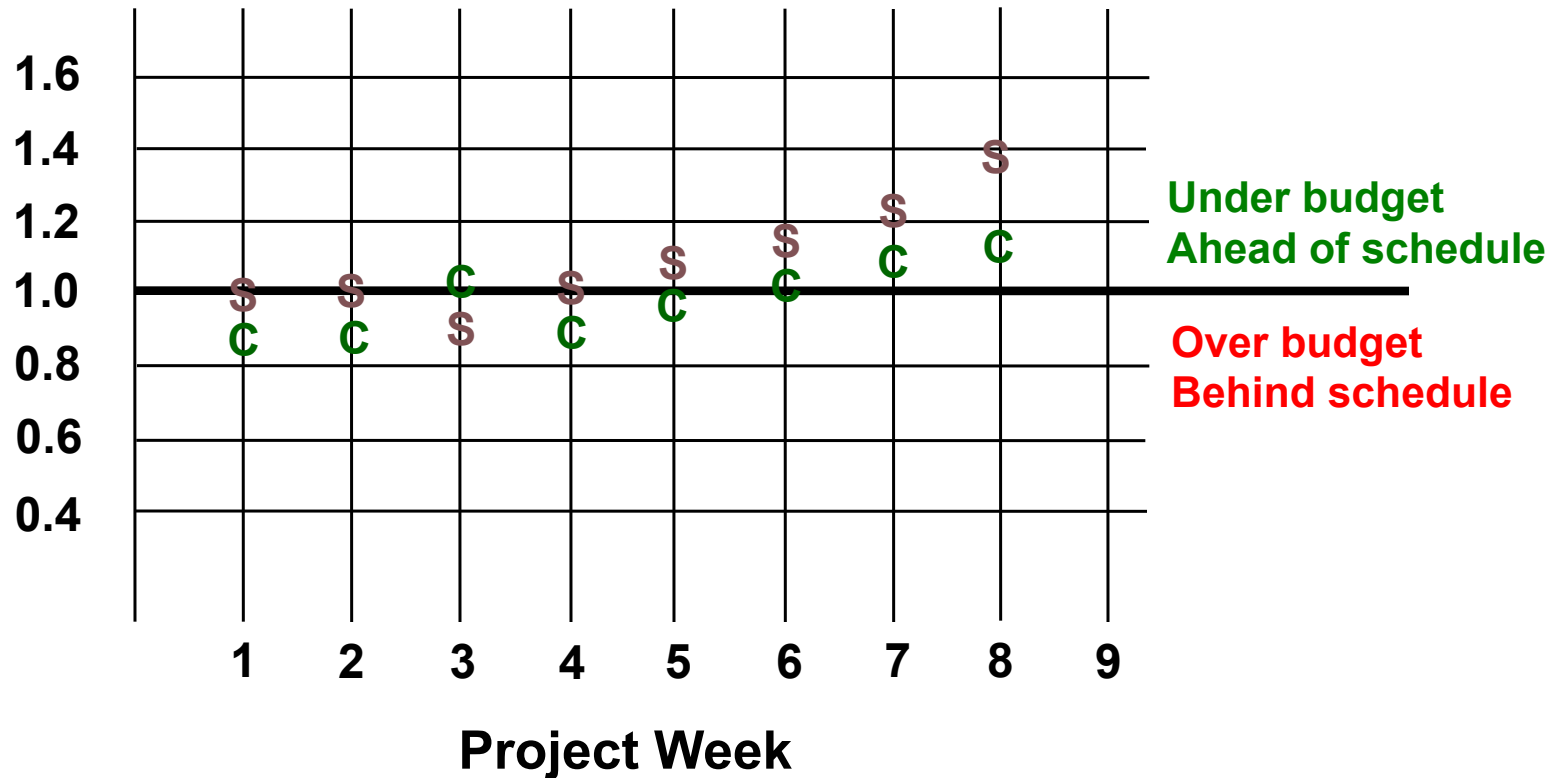
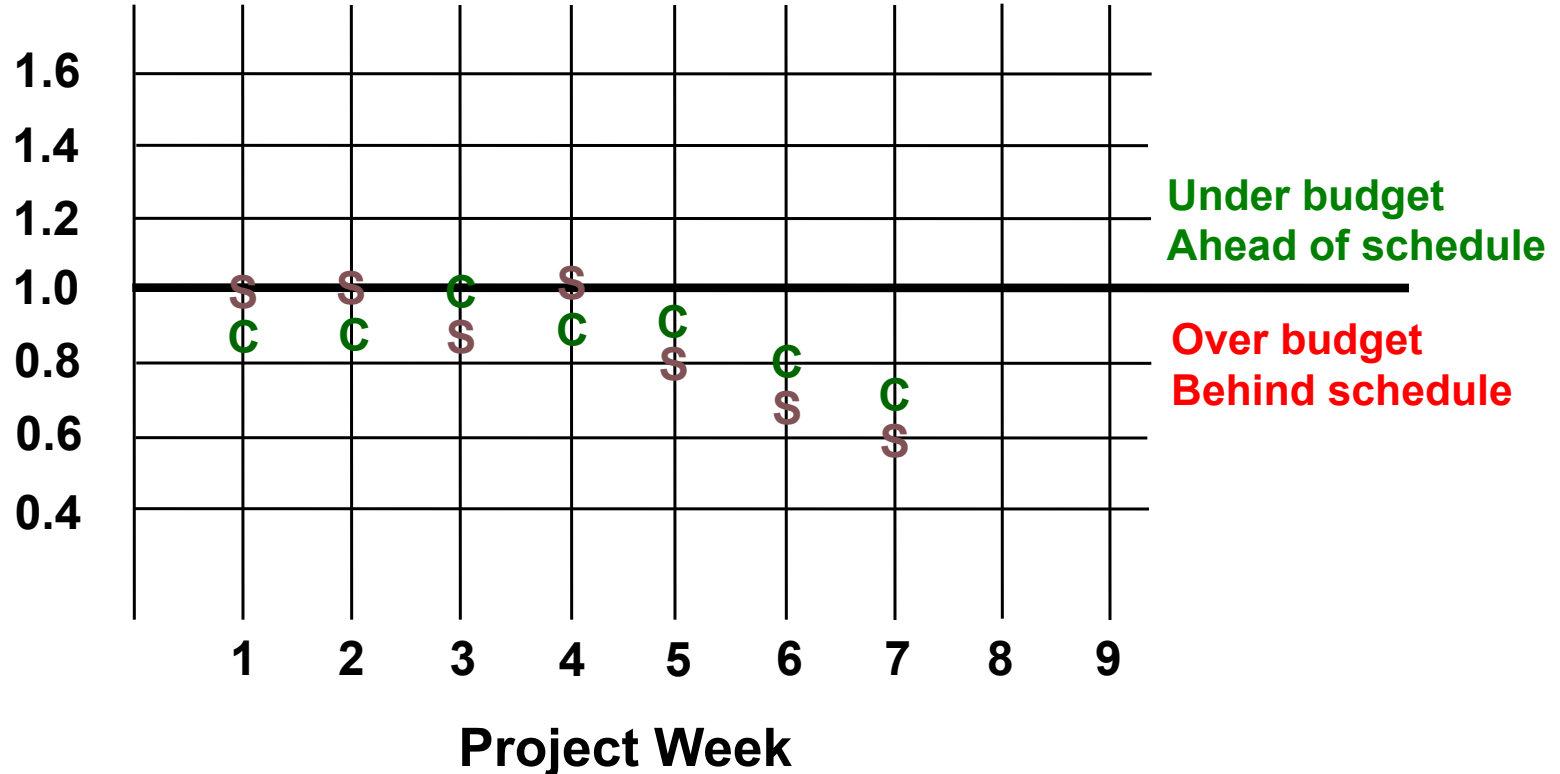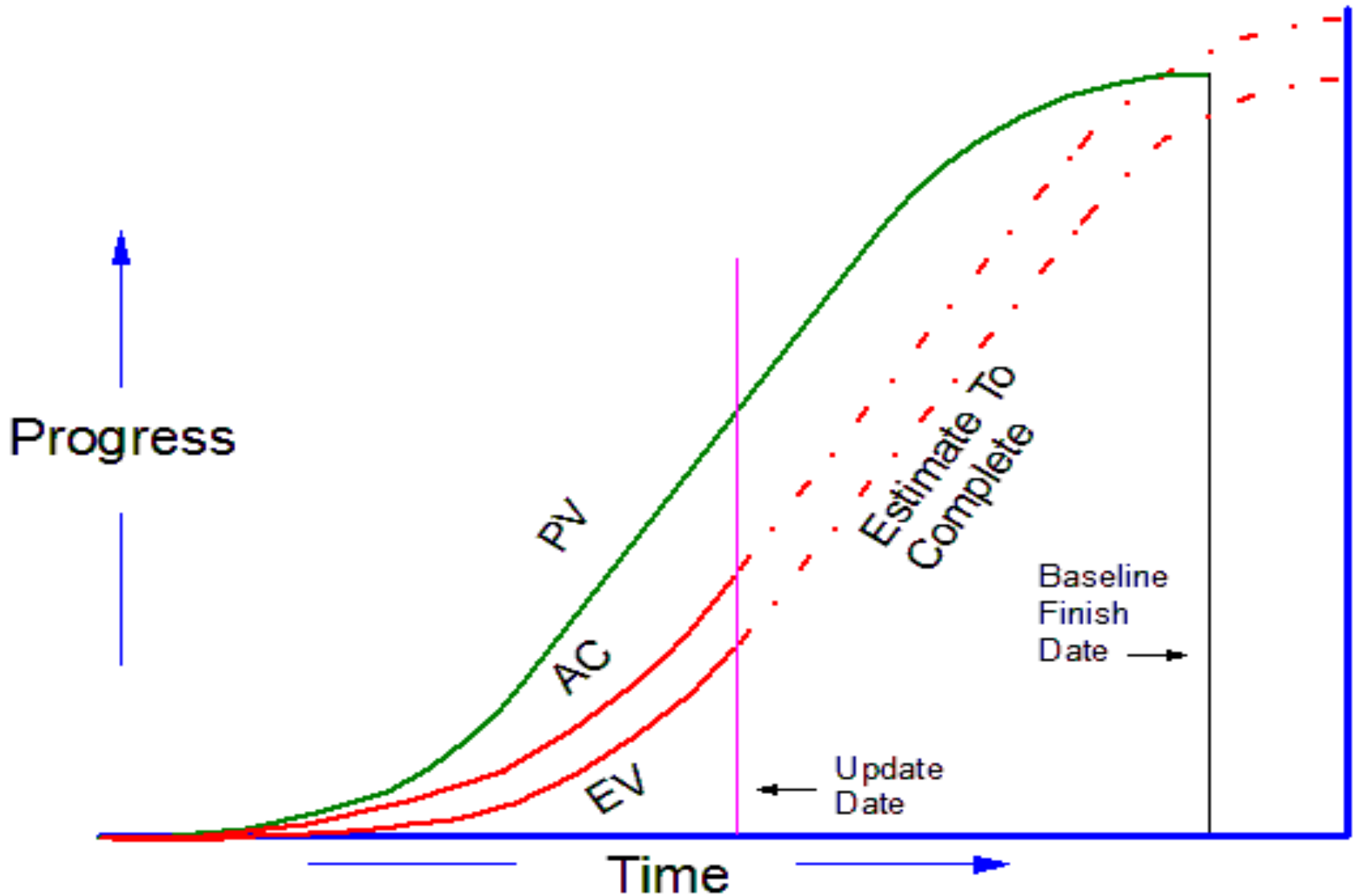# Earned Value – Performance Indices

Project: Beta

Divergent Progress

Under budget
Ahead of schedule

Over budget
Behind schedule

Project Week

Earned Value – Performance Indices

Losing Ground

Project: Charlie

Under budget
Ahead of schedule

Over budget
Behind schedule

Recall: PV, EV and AC Curves

Cost and Schedule Variance
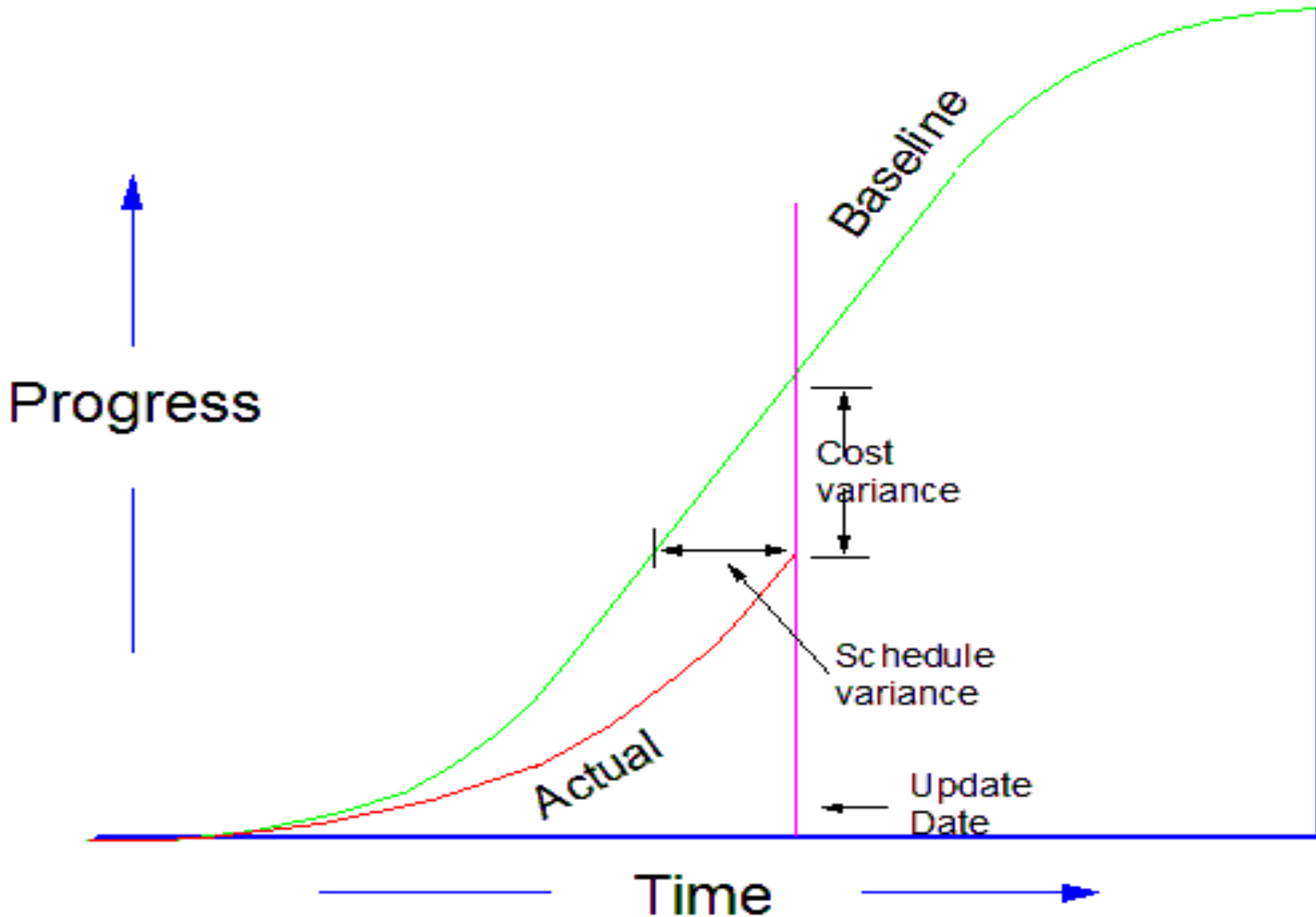
Another View of
Cost and Schedule Variance
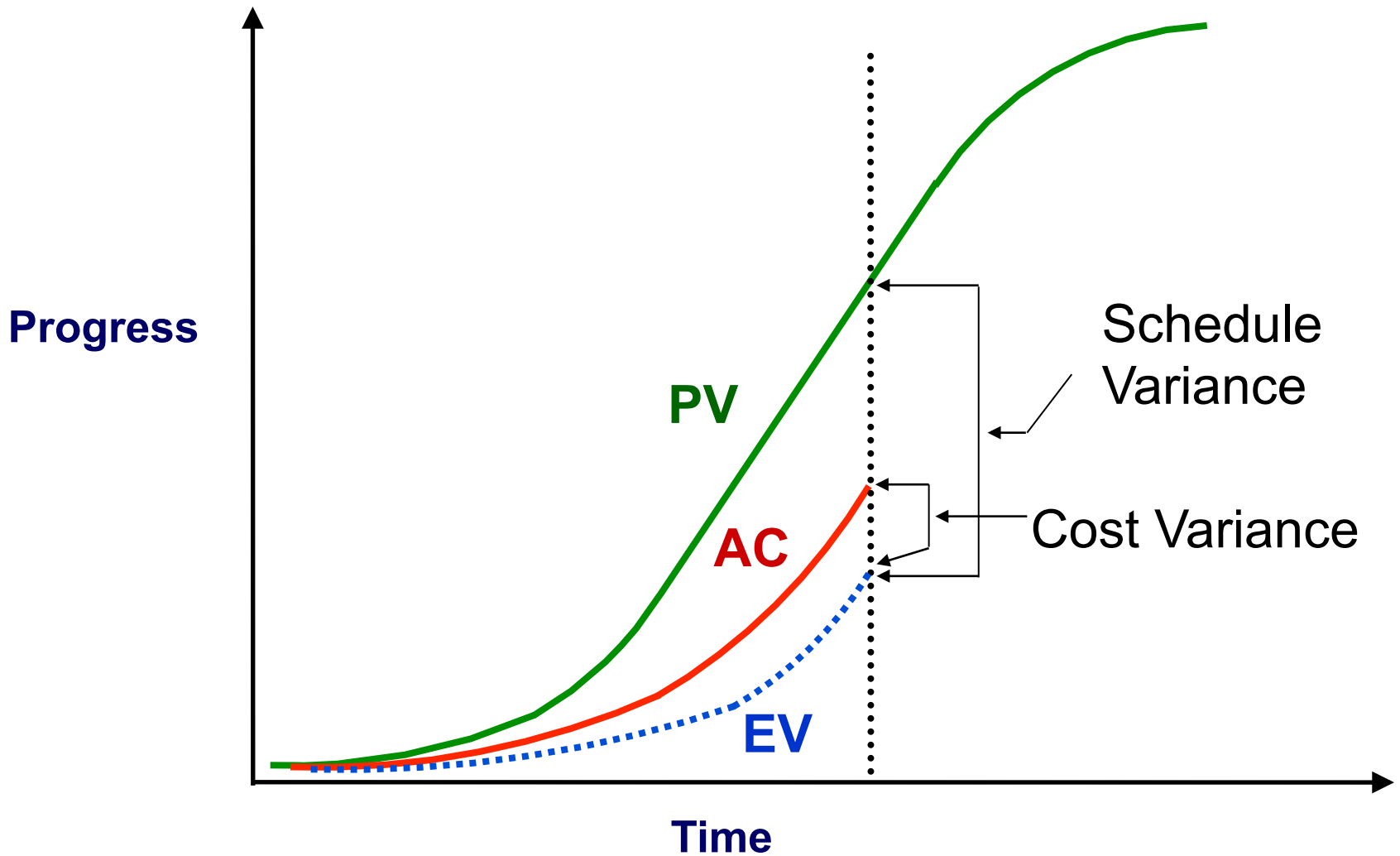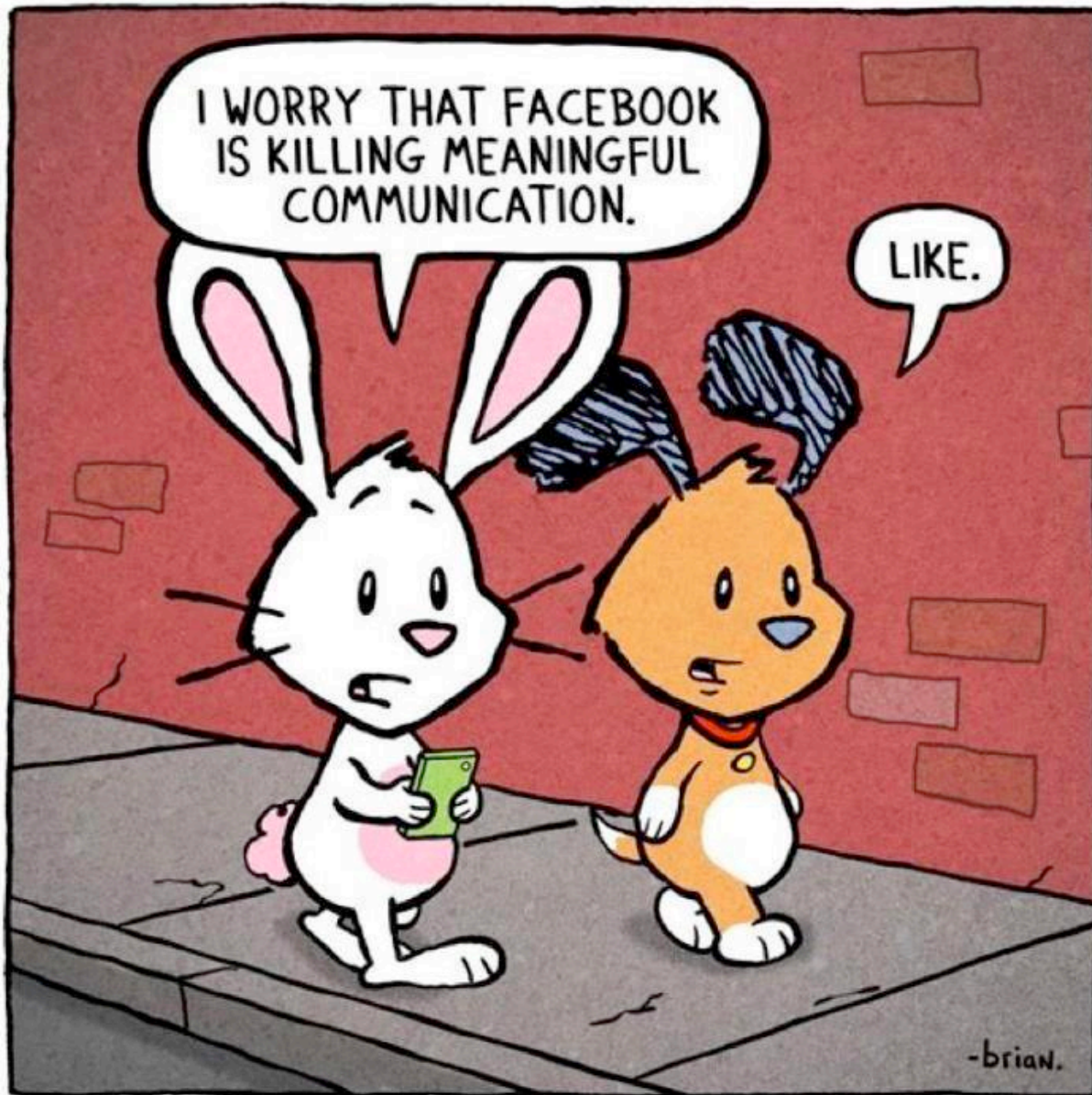
Homework and Reading Reminders

- **Read ahead with Chapter 9 of text for Monday**
- **Complete Homework 5 – Software Schedule**
  - ☐ **Due by 11:55pm, Tuesday, October 9th, 2012**
- **Final Project – SW Proj. Mgt. Plan (SPMP)**
  - ☐ **Completed by team…**
  - ☐ **Due by 11:55pm, Friday, November 2nd, 2012.**
  - ☐ **No late days –review swap with another team Complete Homework 6 – Earned Value Analysis**
  - ☐ **Due by 11:55pm, Tuesday, October 16th, 2012**

- **Have a great Fall break!**