

# PROJECT PLANNING & CONTROL

## Lesson 8: Project Tracking

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# Chapter Description

- **Aims**

- The aim of this chapter to expose and understand students to apply basic project tracking such as Earned Value (EV) in relation to project management

- **Expected Outcomes**

At the conclusion of this chapter, the students should be able to:

- Understand the project tracking knowledge and terms.
- Apply using Earned Value and Forecasting technique for planning and control tool
- Demonstrate SMART principles to a project

- **Learning References**

- Erik W. Larson & Clifford F. (2014). Project Management: The Managerial Process (6<sup>th</sup> Ed.). McGraw-Hill Education, New York.
- Rory, B (2003), Project Management: Planning & Control Technique (3<sup>rd</sup> Ed.)New Zealand



# Content of LESSON 8

## PROJECT TRACKING

**Overview of Project Tracking**

**Baseline and Variances**

**The Tracking Gantt**

**Using the Spend and Effort Plan**

**Using Earned Value**

**Forecasting techniques**



# Overview of Project Tracking

## *Reasons & Solution for late Projects*

Overly optimistic scheduling

bad estimations during proposal or planning



Tardy identification of schedule and budget problems

noticing too late that we are late



Tardy reactions to important events

bad risk management

### **SOLUTION**

Better estimation

Better project tracking



# Objectives of Project Tracking

## SHORT TERM

- Early detection of irregular events

## LONG TERM

- Creation of preventive actions
- Improvement of estimation accuracy



# Techniques for Project Tracking

## *Baseline & Variances*

### Baseline

- what you originally plan, and set.

### variances

- Difference between the progress “now”, compared to what you originally set.

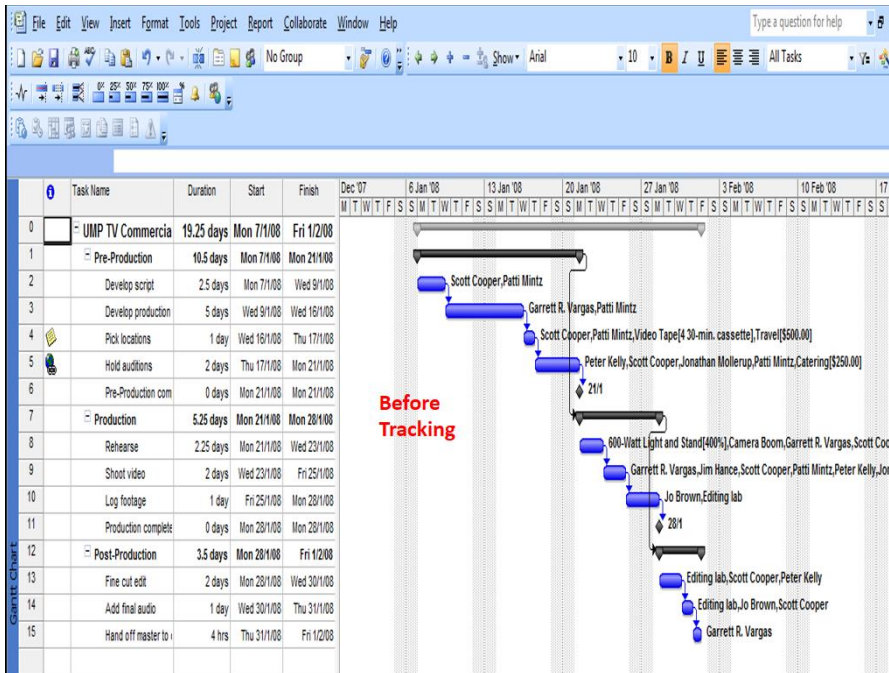
Task Name	Work	Baseline	Variance	Actual	Remaining	% W. Comp.
0 UMP TV Commercia	717 hrs	701 hrs	16 hrs	200 hrs	517 hrs	28%
1 Pre-Production	200 hrs	184 hrs	16 hrs	200 hrs	0 hrs	100%
2 Develop script	40 hrs	40 hrs	0 hrs	40 hrs	0 hrs	100%
3 Develop production	64 hrs	64 hrs	0 hrs	64 hrs	0 hrs	100%
4 Pick locations	16 hrs	16 hrs	0 hrs	16 hrs	0 hrs	100%
5 Hold auditions	80 hrs	64 hrs	16 hrs	80 hrs	0 hrs	100%
6 Pre-Production com	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	0%
7 Production	441 hrs	441 hrs	0 hrs	0 hrs	441 hrs	0%
8 Rehearse	225 hrs	225 hrs	0 hrs	0 hrs	225 hrs	0%
9 Shoot video	200 hrs	200 hrs	0 hrs	0 hrs	200 hrs	0%
10 Log footage	16 hrs	16 hrs	0 hrs	0 hrs	16 hrs	0%
11 Production complete	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	0%
12 Post-Production	76 hrs	76 hrs	0 hrs	0 hrs	76 hrs	0%
13 Fine cut edit	48 hrs	48 hrs	0 hrs	0 hrs	48 hrs	0%
14 Add final audio	24 hrs	24 hrs	0 hrs	0 hrs	24 hrs	0%
15 Hand off master to	4 hrs	4 hrs	0 hrs	0 hrs	4 hrs	0%



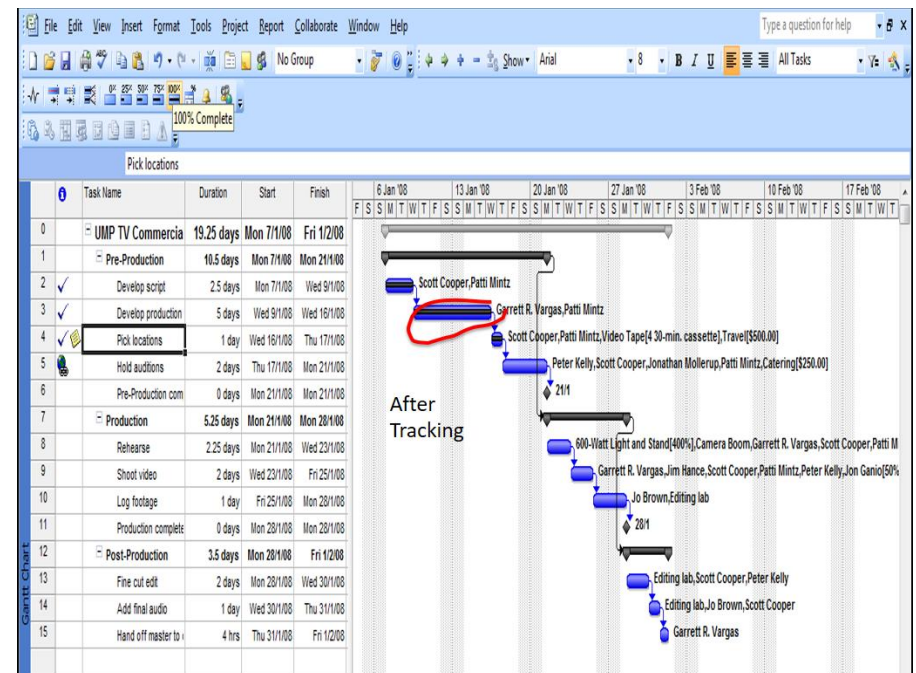


# The Tracking Gantt

- By using Gantt Charts, you can track progress.
- Gantt Charts shows you what you originally plan, and what you have done



Before Tracking



After Tracking



# Gathering & Interpreting Data

Quantitative

- This is data which is an output and therefore easy to measure. i.e. Attendance rates, number of children.

Quantitative

- This is data drawn based on people's perception, through observations, survey, etc.

- The source of data for tracking can be obtained from:
  - Progress report
  - Meeting Reports.
  - Site survey reports
  - Daily /weekly dairy reports

So, when you have the data, you can analyze/interpret it by having meetings, discussions. By using appropriate software/ tool, you update /track your progress.



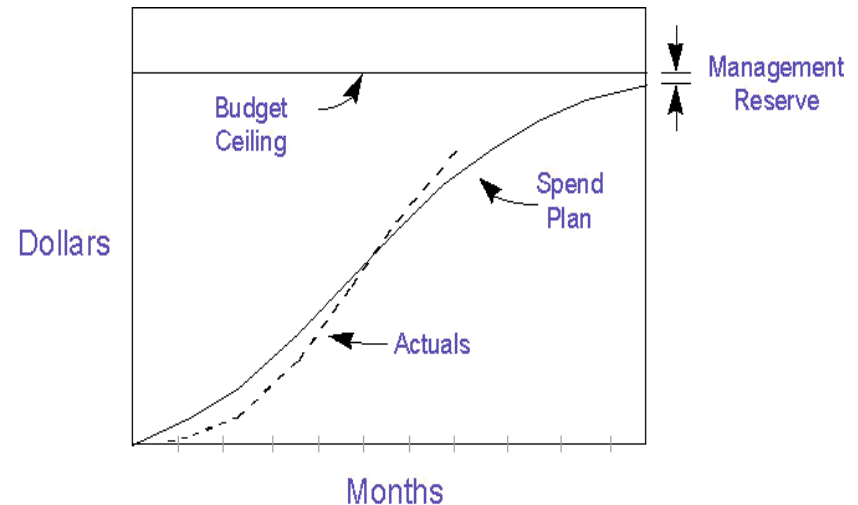
# Using the Spend & Effort Plan

Spend and effort plan can be a good way to do project tracking.

Develop a weekly or monthly cumulative **budget spend plan** and then track actual costs against the plan. You can see differences between actual spending and the spend plan.

This technique is **useful** for executive briefings, especially where you want to match expenditures to a funding stream. However, this method is simple, and for some people this technique might be way too simple.

## Budget Spend Plan



Sources:  
[http://www.hyperthot.com/pm\\_cscs.htm](http://www.hyperthot.com/pm_cscs.htm)

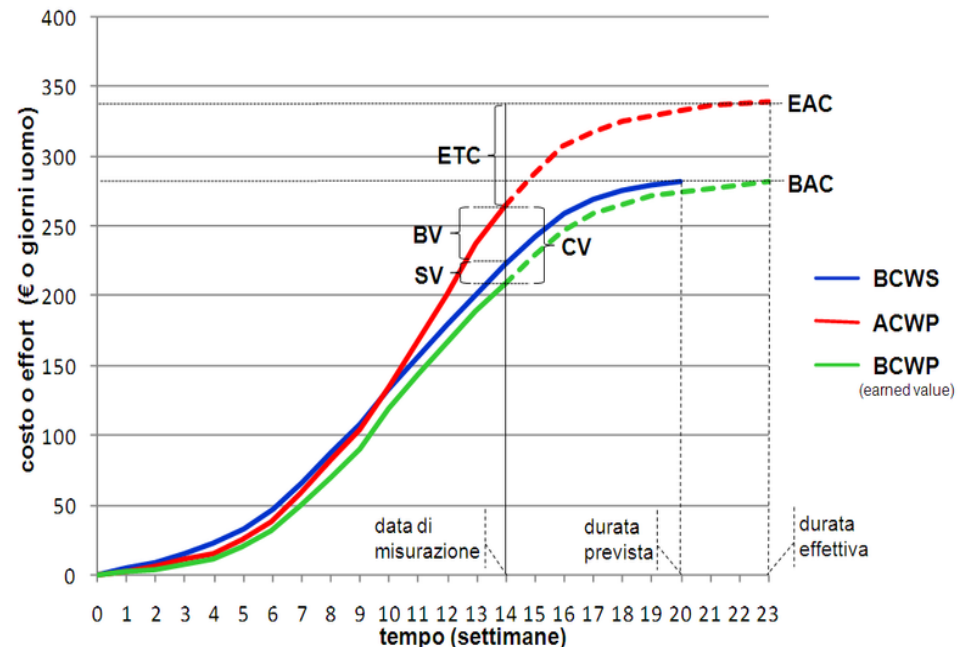


By: James R. Chapman

# Earned Value (EV)

- Earned value technique was initially set up to track the progress of cost & time and the best way for measuring progress in projects.
- There are three (3) factors in EV report in order to use it effectively.

<b>Budgeted Cost of Work Schedule (BCWS)</b>	= Planned Value (PV). What you originally planned in the baseline. This is the value of the work scheduled to be completed as of the status date.
<b>Actual Cost of Work Performed (ACWP)</b>	= Actual Cost (AC) . This is the actual cost incurred to complete each task's actual work <b>up to the status date</b> .
<b>The budgeted cost of work performed (BCWP)</b>	called <b>(BCWP)</b> or Earned value (EV). This is the portion of the budgeted cost that should have been spent to complete each task's actual performed <b>up to the status date</b> .



Source: [https://commons.wikimedia.org/wiki/File:Project\\_Management\\_\(metriche\\_di\\_progetto\).png](https://commons.wikimedia.org/wiki/File:Project_Management_(metriche_di_progetto).png)



By: *Alphamu57*

- If BCWP is above BCWS line, it means the number of tasks that are completed is greater than plan. (ahead schedule)
- If BCWP is below BCWS line, it means the number of tasks that are completed is lower than plan. (behind schedule)
- If ACWP above BCWP, means over budget at that point.



# Cost & Schedule Variance

## Cost Variance

is the amount of money that was actually spent on a project , or part of a project compared to the amount of work that was actually accomplished.

Cost variance is the budgeted cost of work performed minus the actual cost of work performed.

$$CV = BCWP - ACWP$$

$$CV = EV - AC$$

If CV is positive, good ( More budget)

If CV is negative, bad ( Less budget)

## Schedule Variance

is the difference between the work that was really accomplished (BCWP), and the planned work that was supposed to be accomplished (BCWS)

$$SV = BCWP - BCWS$$

$$SV = EV - PV$$

If SV is positive (good, means ahead of schedule)

If SV is negative (not good, behind schedule)



# Calculation Example

## Cost & Schedule Variance

### Cost Variance

Suppose a project is in progress, and as of today the ACWP is RM 190,000, BCWP is RM 210,000 and BCWS is RM 200,000. What is the cost variance?

Answer:

$$\begin{aligned} CV &= BCWP - ACWP \\ &= RM\ 210,000 - RM\ 190,000 \\ &= RM\ 20,000 \end{aligned}$$

### Schedule Variance

Suppose a project is in progress, and today the ACWP is RM 190,000; BCWP is RM 210,000 and the BCWS is RM 200,000. What is the SV?

Answer:

$$\begin{aligned} SV &= BCWP - BCWS \\ &= RM\ 210,000 - RM\ 200,000 \\ &= RM\ 10,000 \end{aligned}$$



# Forecasting Techniques

- You can forecast a project based on the performance index.
- Forecast whether a project is good/bad.

Cost Performance Index (CPI)

CPI is a measure of how well the project is doing in terms of spending the project budget.

$$\text{CPI} = \text{BCWP}/\text{ACWP}$$

= If BCWP is bigger than ACWP, the value will be >1: Good ; <1: Not Good

Schedule Performance Index (SPI)

Schedule performance index (SPI) is a measure of how well the project is doing in terms of schedule.

$$\text{SPI} = \text{BCWP}/\text{BCWS}$$

=If BCWP is bigger than BCWS, the value will be > 1: Good.(Ahead of Schedule)

Estimate at Completion (EAC)

EAC is the forecast value of the project when the project is complete.

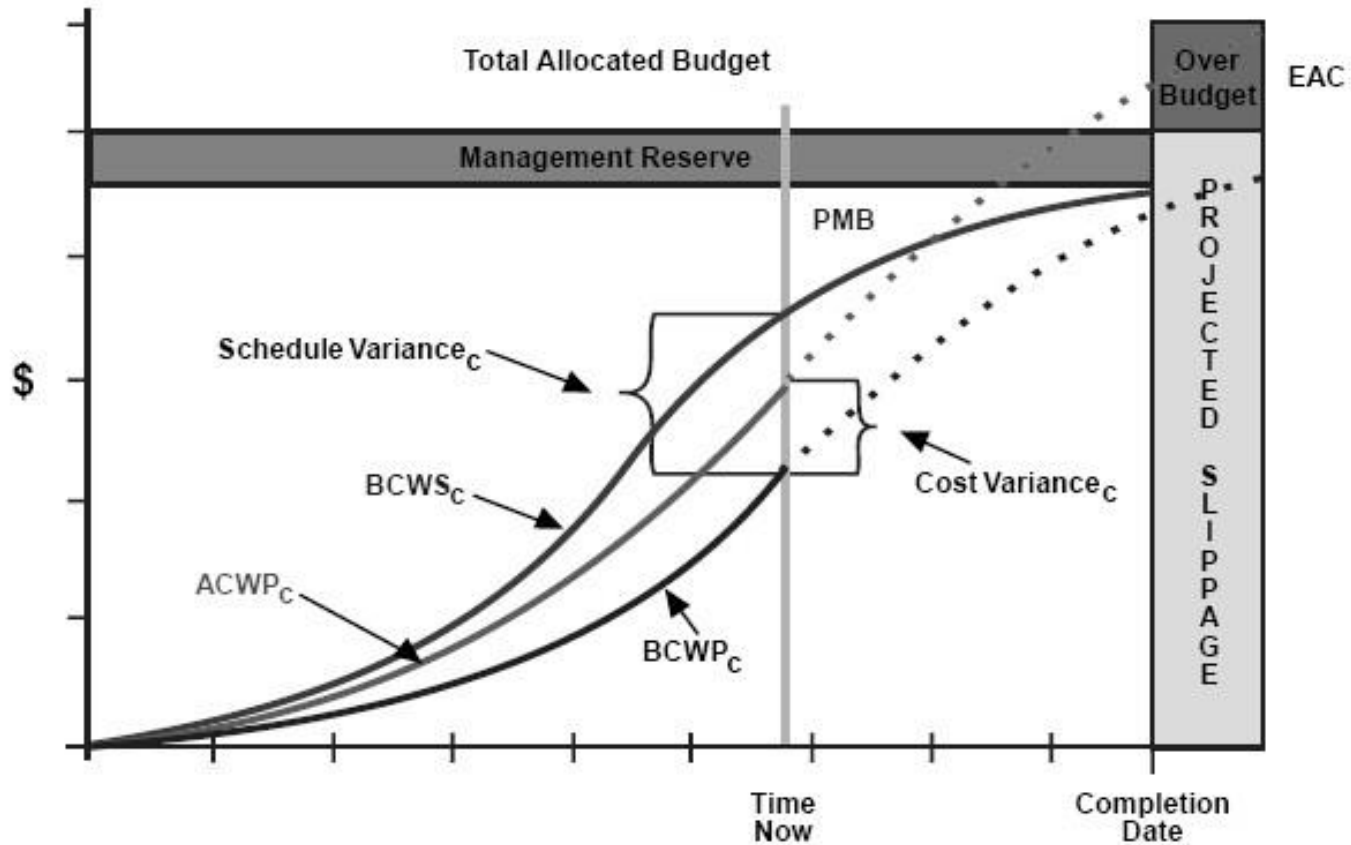
Normally is based on :

$$\text{EAC} = (\text{BAC} \times \text{ACWP})/\text{BCWP}$$





# Earned Value Concept



Source:  
[https://upload.wikimedia.org/wikipedia/commons/c/c6/Earned\\_Value\\_Concept.jpg](https://upload.wikimedia.org/wikipedia/commons/c/c6/Earned_Value_Concept.jpg)



# Conclusion of The Chapter

- **Conclusion #1**
  - Control and Gantt Chart are useful vehicles for monitoring time performance.
  - Earned value integrates cost and time or manhours and time.
  - Threshold variances can be set to flag problem areas.
- **Conclusion #2**
  - To making a tracking successfully, a PM should have:
    - Specific organisational activities being focused on
    - Different kinds of organisational goals
    - Timely corrective action
    - Communication of the mechanics of the control process



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