



Understanding the Differences Between Earned Value and Accounting Practice for Measuring and Reporting Performance

YOUR PRESENTER

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Metrics available in both systems for measuring and reporting performance .

Budget At Completion [BAC] — the sum of all budgets established for the work to be performed on a project or a work breakdown structure component or a schedule activity. The total planned value for the project. (*PMBOK® Guide*)*

(Used By Both EVPM & Job Cost Accounting Systems)

Estimate At Completion [EAC] — the expected total cost of a schedule activity, a work breakdown structure (WBS) component or the project when the defined scope of work will be completed. The EAC may be calculated based on performance to date or estimated by the project team based on other factors, in which case it is often referred to as the latest revised estimate. (*PMBOK® Guide*)*

(Used By Both EVPM & Job Cost Accounting Systems)

Note : At the project start the **EAC = BAC**

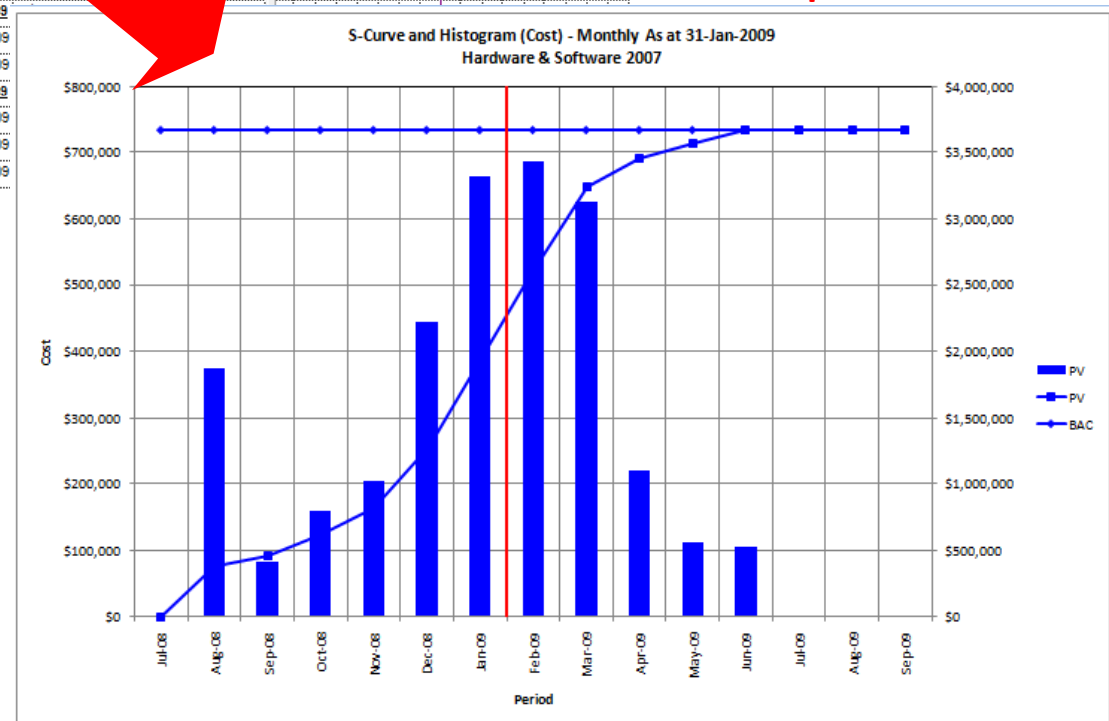
Note : As the project progresses the **EAC ≠ the BAC**

Note : **EAC = AC + ETC**

Planned Value [PV] Metric data source (Used by both EV and Advanced Accounting Systems)

WBS	CA	"OBS"	Task Name	Baseline Duration	Baseline Start	Baseline Finish	BAC	BACW	BACQ	Gantt Chart												Baseline Start	Baseline Finish	BAC	
										Half 2, 2008				Half 1, 2009				Half 2, 2009							
1	1	100	RH	Overhead & Profit	236 days	4 Aug '08	29 Jun '09	\$236,000.00	0 hrs	0	[Gantt bars for Overhead & Profit]												4 Aug '08	29 Jun '09	\$236,000.00
2	2			Project Capital Costs	236 days	4 Aug '08	29 Jun '09	\$3,437,150.00	24,080 hrs	45	[Gantt bars for Project Capital Costs]												4 Aug '08	29 Jun '09	\$3,437,150.00
3	2.1			Phase 1 - System Design	111 days	4 Aug '08	5 Jan '09	\$756,950.00	5,440 hrs	0	[Gantt bars for Phase 1 - System Design]												4 Aug '08	5 Jan '09	\$756,950.00
4	2.1.1	200	BJ	Start-up Payment	1 day	4 Aug '08	4 Aug '08	\$300,000.00	0 hrs	0	[Gantt bar for Start-up Payment]												4 Aug '08	4 Aug '08	\$300,000.00
5	2.1.2	200	BJ	Preliminary Design	50 days	5 Aug '08	13 Oct '08	\$142,750.00	1,800 hrs	0	[Gantt bar for Preliminary Design]												5 Aug '08	13 Oct '08	\$142,750.00
6	2.1.3	200	BJ	Detail Design	60 days	14 Oct '08	5 Jan '09	\$314,200.00	3,840 hrs	0	[Gantt bar for Detail Design]												14 Oct '08	5 Jan '09	\$314,200.00
7	2.2			Phase 2 - Hardware Design & Prototype	65 days	14 Oct '08	12 Jan '09	\$153,600.00	1,120 hrs	0	[Gantt bars for Phase 2 - Hardware Design & Prototype]												14 Oct '08	5 Jan '09	\$314,200.00
8	2.2.1	300	BJ	Hardware Design	30 days	14 Oct '08	24 Nov '08	\$98,400.00	480 hrs	0	[Gantt bar for Hardware Design]														
9	2.2.2	300	BJ	Hardware Supply	40 days	18 Nov '08	12 Jan '09	\$55,200.00	440 hrs	0	[Gantt bar for Hardware Supply]														
10	2.3			Phase 3 - Manufacture, Test & Supply	80 days	16 Dec '08	6 Apr '09				[Gantt bars for Phase 3 - Manufacture, Test & Supply]														
11	2.3.1	400	RH	Manufacture Batch 1	40 days	16 Dec '08	9 Feb '09				[Gantt bar for Manufacture Batch 1]														
12	2.3.2	400	RH	Manufacture Batch 2	50 days	27 Jan '09	6 Apr '09				[Gantt bar for Manufacture Batch 2]														
13	2.4			Phase 4 - Installation & Commission	100 days	10 Feb '09	29 Jun '09				[Gantt bars for Phase 4 - Installation & Commission]														
14	2.4.1	500	RH	Install & Commission Equip. Batch 1	50 days	10 Feb '09	20 Apr '09				[Gantt bar for Install & Commission Equip. Batch 1]														
15	2.4.2	500	RH	Install & Commission Equip. Batch 2	50 days	21 Apr '09	29 Jun '09				[Gantt bar for Install & Commission Equip. Batch 2]														
16	2.4.3	500	RH	Equipment Fully Operational	0 days	29 Jun '09	29 Jun '09				[Gantt bar for Equipment Fully Operational]														

Data Requirements



Planned Value (PV) — the authorized budget assigned to the scheduled work to be accomplished for a scheduled activity or work breakdown structure (WBS) component. Also referred to as the budgeted cost of work scheduled (BCWS). (*PMBOK® Guide*)*

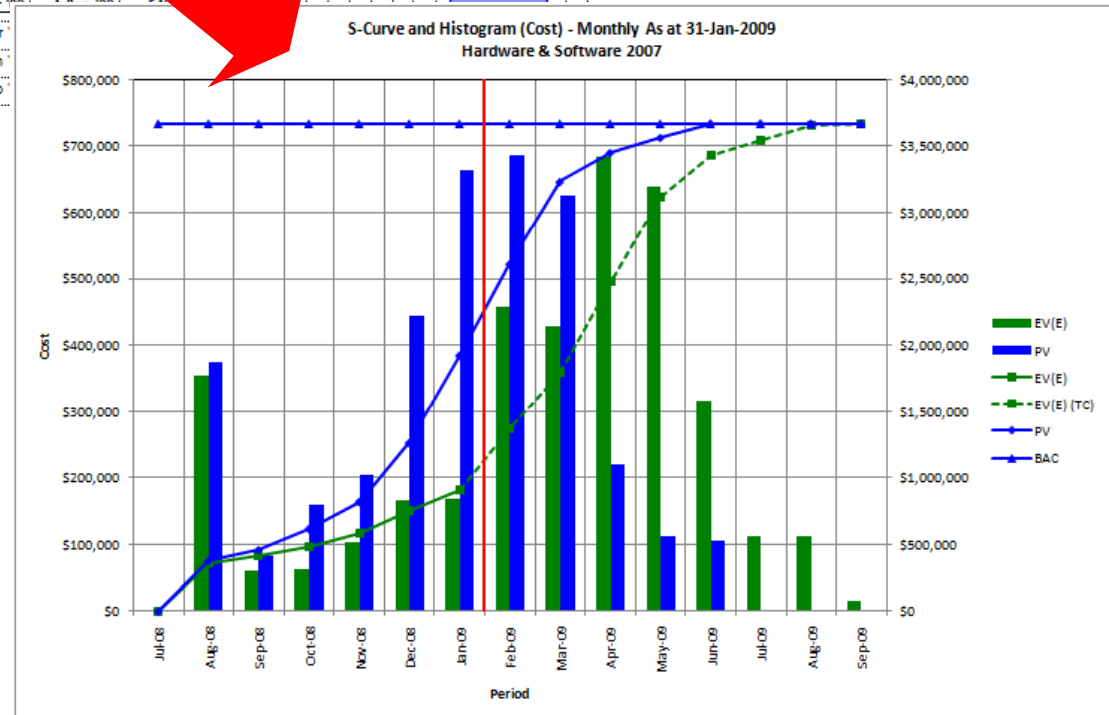
At completion PV = BAC

Earned Value [EV] Metric data source (Used by EV systems only)

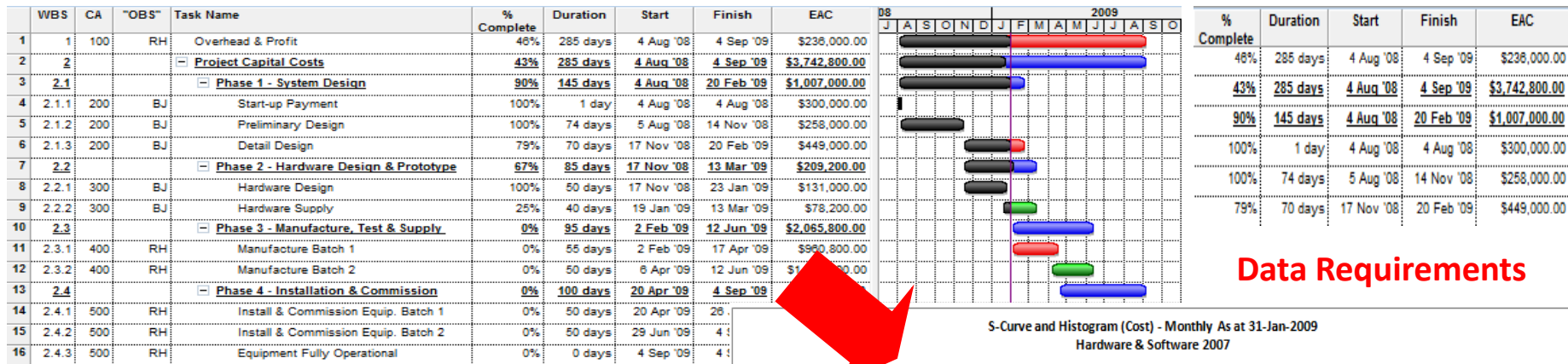
WBS	CA	"OBS"	Task Name	% Complete	Duration	Start	Finish	BAC
1	1	100	RH Overhead & Profit	48%	285 days	4 Aug '08	4 Sep '09	\$238,000.00
2	2		Project Capital Costs	43%	285 days	4 Aug '08	4 Sep '09	\$3,437,150.00
3	2.1		Phase 1 - System Design	90%	145 days	4 Aug '08	20 Feb '09	\$756,950.00
4	2.1.1	200	BJ Start-up Payment	100%	1 day	4 Aug '08	4 Aug '08	\$300,000.00
5	2.1.2	200	BJ Preliminary Design	100%	74 days	5 Aug '08	14 Nov '08	\$142,750.00
6	2.1.3	200	BJ Detail Design	79%	70 days	17 Nov '08	20 Feb '09	\$314,200.00
7	2.2		Phase 2 - Hardware Design & Prototype	67%	85 days	17 Nov '08	13 Mar '09	\$153,600.00
8	2.2.1	300	BJ Hardware Design	100%	50 days	17 Nov '08	23 Jan '09	\$98,400.00
9	2.2.2	300	BJ Hardware Supply	25%	40 days	19 Jan '09	13 Mar '09	\$55,200.00
10	2.3		Phase 3 - Manufacture, Test & Supply	0%	95 days	2 Feb '09	12 Jun '09	\$2,065,800.00
11	2.3.1	400	RH Manufacture Batch 1	0%	55 days	2 Feb '09	17 Apr '09	\$980,000.00
12	2.3.2	400	RH Manufacture Batch 2	0%	50 days	8 Apr '09	12 Jun '09	\$1,085,800.00
13	2.4		Phase 4 - Installation & Commission	0%	100 days	20 Apr '09	19 Jun '09	\$1,000,000.00
14	2.4.1	500	RH Install & Commission Equip. Batch 1	0%	50 days	20 Apr '09	19 Jun '09	\$500,000.00
15	2.4.2	500	RH Install & Commission Equip. Batch 2	0%	50 days	29 Jun '09	19 Aug '09	\$500,000.00
16	2.4.3	500	RH Equipment Fully Operational	0%	0 days	4 Sep '09	4 Sep '09	\$500,000.00

Data Requirements

Earned Value (EV) — the value of work performed expressed in terms of the approved budget assigned to that work for a schedule activity or work breakdown structure (WBS) component. Also referred to as the budgeted cost of work performed (BCWP). (PMBOK® Guide)*
 At completion EV = PV = BAC
 $EVPM = \%C \times BAC$
 $Accounting\ EV = (AC/EAC) \times BAC$

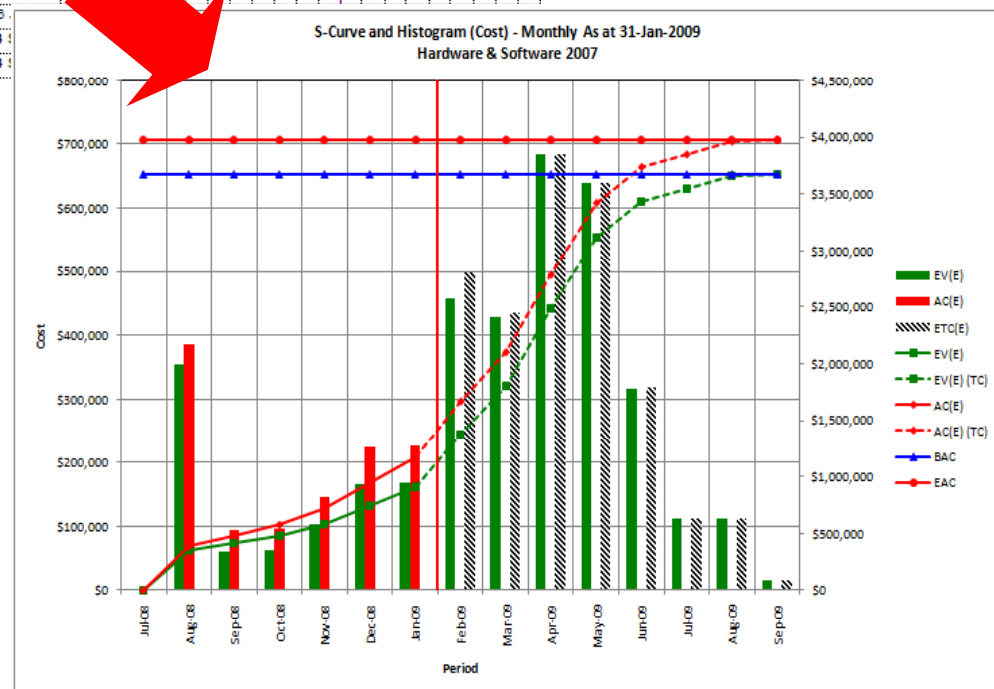


Actual Cost [AC] Metric data source (Used by both EVPM & Job Cost Accounting Systems)



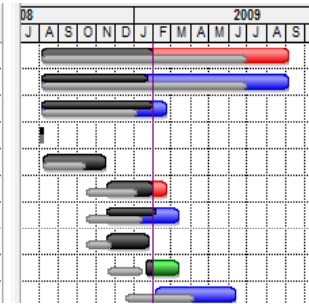
Actual Cost (AC) — total costs actually incurred and recorded in accomplishing work performed during a given time period for a schedule activity or work breakdown structure component. Actual cost can sometimes be direct labor hours alone, direct costs alone or all costs including indirect costs. Also referred to as actual cost of work performed (ACWP). (PMBOK® Guide)*

At completion the AC = EAC
 EAC = AC + ETC

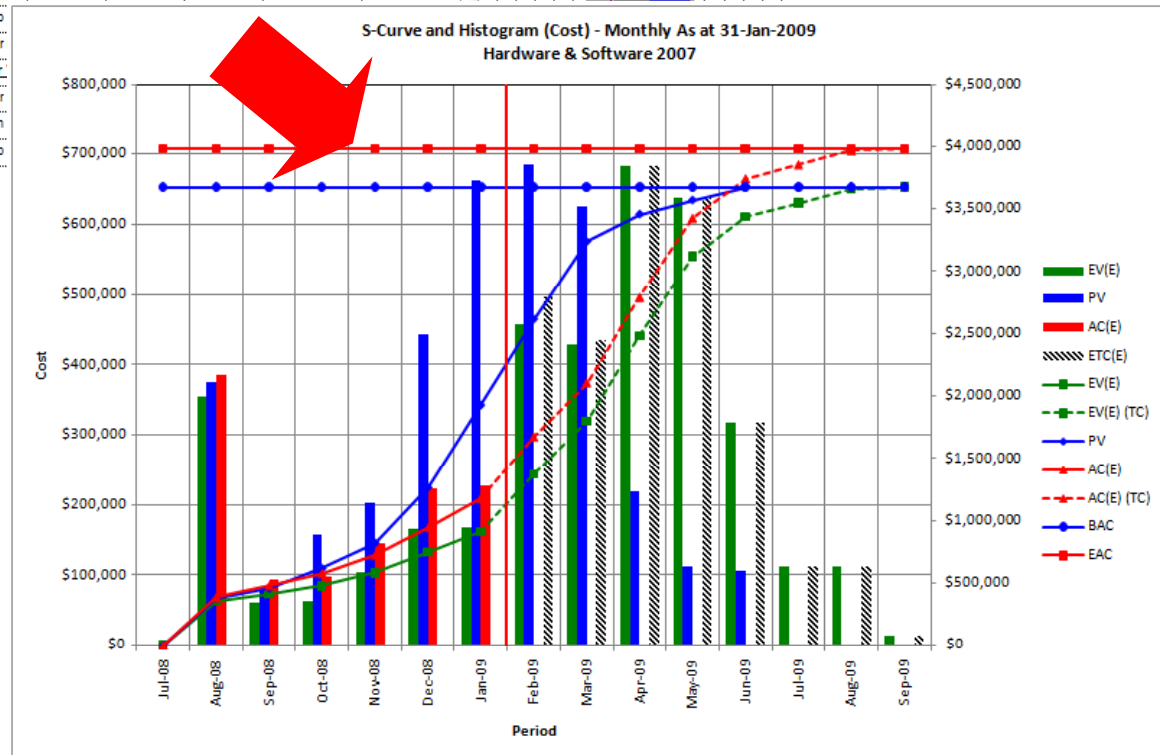


Combined Metrics become the source data for Indicators and Predictors

WBS	CA	"OBS"	Task Name	% Complete	Duration	Start	Finish	Baseline Start	Baseline Finish	BAC	EAC	
1	1	100	RH	Overhead & Profit	46%	285 days	4 Aug '08	4 Sep '09	4 Aug '08	29 Jun '09	\$236,000.00	\$236,000.00
2	2			Project Capital Costs	43%	285 days	4 Aug '08	4 Sep '09	4 Aug '08	29 Jun '09	\$3,437,150.00	\$3,742,800.00
3	2.1			Phase 1 - System Design	90%	145 days	4 Aug '08	20 Feb '09	4 Aug '08	5 Jan '09	\$756,950.00	\$1,007,000.00
4	2.1.1	200	BU	Start-up Payment	100%	1 day	4 Aug '08	4 Aug '08	4 Aug '08	4 Aug '08	\$300,000.00	\$300,000.00
5	2.1.2	200	BU	Preliminary Design	100%	74 days	5 Aug '08	14 Nov '08	5 Aug '08	13 Oct '08	\$142,750.00	\$258,000.00
6	2.1.3	200	BU	Detail Design	79%	70 days	17 Nov '08	20 Feb '09	14 Oct '08	5 Jan '09	\$314,200.00	\$449,000.00
7	2.2			Phase 2 - Hardware Design & Prototype	67%	85 days	17 Nov '08	13 Mar '09	14 Oct '08	12 Jan '09	\$153,600.00	\$209,200.00
8	2.2.1	300	BU	Hardware Design	100%	50 days	17 Nov '08	23 Jan '09	14 Oct '08	24 Nov '08	\$98,400.00	\$131,000.00
9	2.2.2	300	BU	Hardware Supply	25%	40 days	19 Jan '09	13 Mar '09	18 Nov '08	12 Jan '09	\$55,200.00	\$78,200.00
10	2.3			Phase 3 - Manufacture, Test & Supply	0%	95 days	2 Feb '09	12 Jun '09	16 Dec '08	6 Apr '09	\$2,065,800.00	\$2,065,800.00
11	2.3.1	400	RH	Manufacture Batch 1	0%	55 days	2 Feb					
12	2.3.2	400	RH	Manufacture Batch 2	0%	50 days	6 Apr					
13	2.4			Phase 4 - Installation & Commission	0%	100 days	20 Apr					
14	2.4.1	500	RH	Install & Commission Equip. Batch 1	0%	50 days	20 Apr					
15	2.4.2	500	RH	Install & Commission Equip. Batch 2	0%	50 days	29 Jun					
16	2.4.3	500	RH	Equipment Fully Operational	0%	0 days	4 Sep					



* All of these **PMBOK® Guide** references together with the others in this Guide are taken from the Project Management Institutes **Project Management Body of Knowledge (PMBOK® Guide) — Fourth Addition**. For more information www.pmi.org.



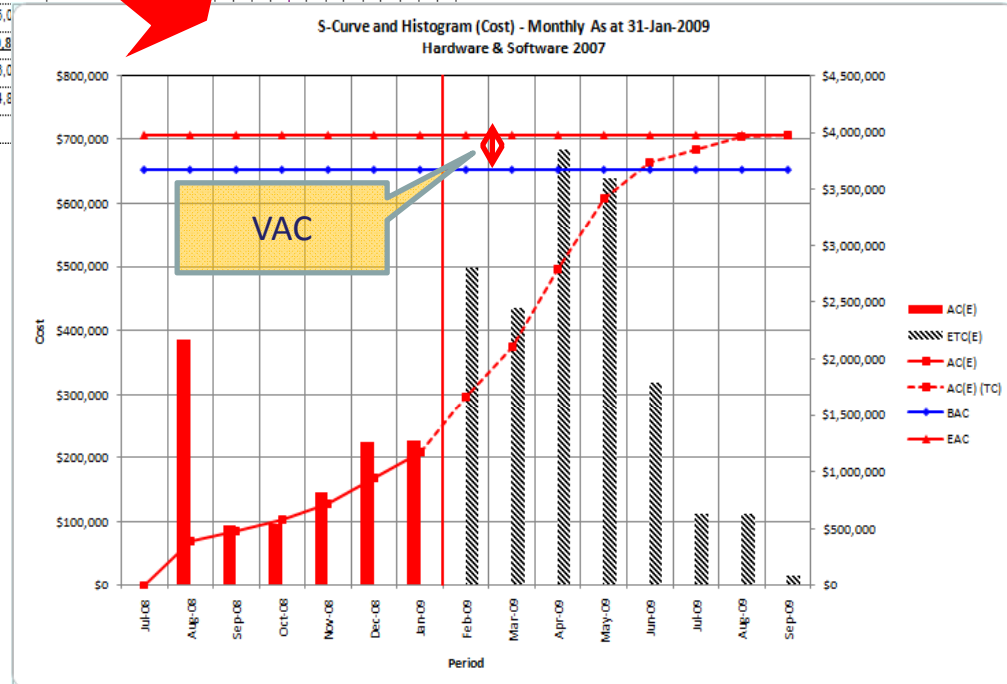
Variance At Completion [VAC] Indicator (Used by both EVPM & Job Cost Accounting Systems)

WBS	CA	"OBS"	Task Name	% Complete	Duration	Start	Finish	BAC	EAC
1	1	100	RH Overhead & Profit	48%	285 days	4 Aug '08	4 Sep '09	\$238,000.00	\$238,000.00
2	2		Project Capital Costs	43%	285 days	4 Aug '08	4 Sep '09	\$3,437,150.00	\$3,742,800.00
3	2.1		Phase 1 - System Design	90%	145 days	4 Aug '08	20 Feb '09	\$756,950.00	\$1,007,000.00
4	2.1.1	200	BJ Start-up Payment	100%	1 day	4 Aug '08	4 Aug '08	\$300,000.00	\$300,000.00
5	2.1.2	200	BJ Preliminary Design	100%	74 days	5 Aug '08	14 Nov '08	\$142,750.00	\$258,000.00
6	2.1.3	200	BJ Detail Design	79%	70 days	17 Nov '08	20 Feb '09	\$314,200.00	\$449,000.00
7	2.2		Phase 2 - Hardware Design & Prototype	97%	85 days	17 Nov '08	13 Mar '09	\$153,800.00	\$209,200.00
8	2.2.1	300	BJ Hardware Design	100%	50 days	17 Nov '08	23 Jan '09	\$98,400.00	\$131,000.00
9	2.2.2	300	BJ Hardware Supply	25%	40 days	19 Jan '09	13 Mar '09	\$56,200.00	\$88,200.00
10	2.3		Phase 3 - Manufacture, Test & Supply	0%	95 days	2 Feb '09	12 Jun '09	\$2,065,800.00	\$2,735,800.00
11	2.3.1	400	RH Manufacture Batch 1	0%	55 days	2 Feb '09	17 Apr '09	\$960,800.00	\$960,800.00
12	2.3.2	400	RH Manufacture Batch 2	0%	50 days	6 Apr '09	12 Jun '09	\$1,105,000.00	\$1,105,000.00
13	2.4		Phase 4 - Installation & Commission	0%	100 days	20 Apr '09	4 Sep '09	\$460,800.00	\$460,800.00
14	2.4.1	500	RH Install & Commission Equip. Batch 1	0%	50 days	20 Apr '09	28 Jun '09	\$256,000.00	\$256,000.00
15	2.4.2	500	RH Install & Commission Equip. Batch 2	0%	50 days	29 Jun '09	4 Sep '09	\$204,800.00	\$204,800.00
16	2.4.3	500	RH Equipment Fully Operational	0%	0 days	4 Sep '09	4 Sep '09	\$0.00	\$0.00

Start	Finish	BAC	EAC
4 Aug '08	4 Sep '09	\$238,000.00	\$238,000.00
4 Aug '08	4 Sep '09	\$3,437,150.00	\$3,742,800.00
4 Aug '08	20 Feb '09	\$756,950.00	\$1,007,000.00
4 Aug '08	4 Aug '08	\$300,000.00	\$300,000.00
5 Aug '08	14 Nov '08	\$142,750.00	\$258,000.00
17 Nov '08	20 Feb '09	\$314,200.00	\$449,000.00

Data Requirements

Accounting Systems use the Estimate At Completion [EAC] where the Actual Cost [AC] representing the cumulative accrued value to the report Period, this is summed to the Estimate to Completion [ETC] for the remaining work. The combined value is then compared against the Budget At Completion [BAC] and the variance [VAC] noted. $VAC = BAC - EAC$, $CPI = BAC/EAC$



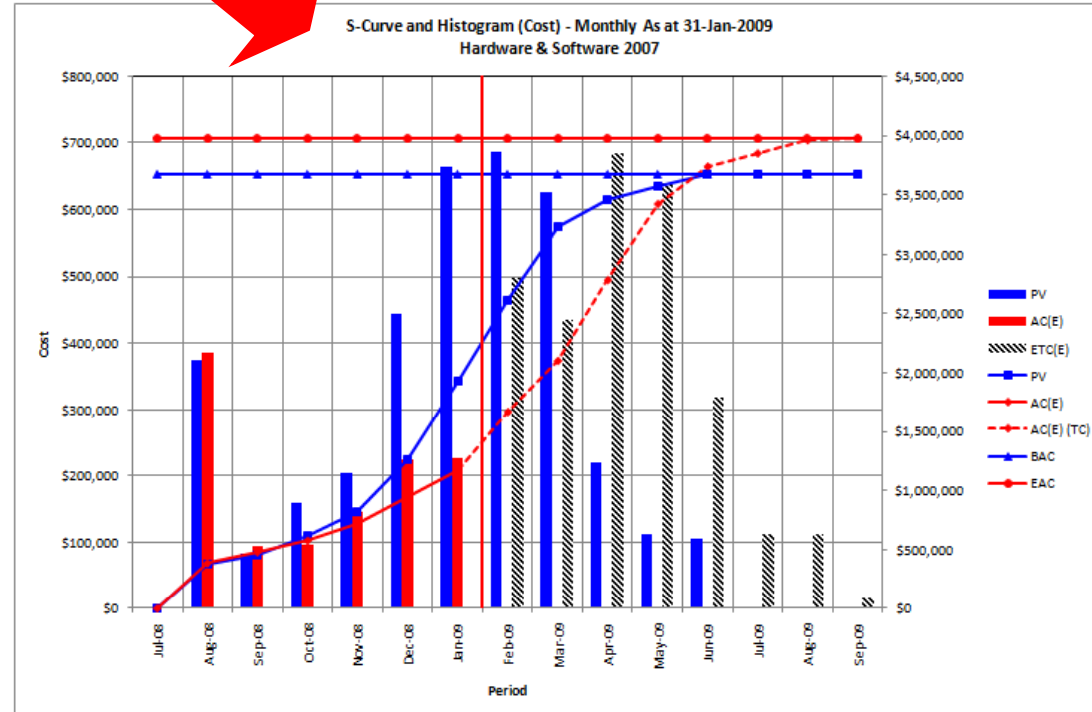
Spending Variance [SPV] Accounting Indicator (Used Accounting Systems)

WBS	CA	"OBS"	Task Name	% Complete	Duration	Start	Finish	Baseline Start	Baseline Finish	BAC	EAC	
1	1	100	RH	Overhead & Profit	48%	285 days	4 Aug '08	4 Sep '09	4 Aug '08	29 Jun '09	\$236,000.00	\$236,000.00
2	2			Project Capital Costs	43%	285 days	4 Aug '08	4 Sep '09	4 Aug '08	29 Jun '09	\$3,437,150.00	\$3,742,800.00
3	2.1			Phase 1 - System Design	90%	145 days	4 Aug '08	20 Feb '09	4 Aug '08	5 Jan '09	\$756,950.00	\$1,007,000.00
4	2.1.1	200	BJ	Startup Payment	100%	1 day	4 Aug '08	4 Aug '08	4 Aug '08	4 Aug '08	\$300,000.00	\$300,000.00
5	2.1.2	200	BJ	Preliminary Design	100%	74 days	5 Aug '08	14 Nov '08	5 Aug '08	13 Oct '08	\$142,750.00	\$258,000.00
6	2.1.3	200	BJ	Detail Design	79%	70 days	17 Nov '08	20 Feb '09	14 Oct '08	5 Jan '09	\$314,200.00	\$449,000.00
7	2.2			Phase 2 - Hardware Design & Prototype	67%	85 days	17 Nov '08	13 Mar '09	14 Oct '08	12 Jan '09	\$153,600.00	\$209,200.00
8	2.2.1	300	BJ	Hardware Design	100%	50 days	17 Nov '08	23 Jan '09	14 Oct '08	24 Nov '08	\$98,400.00	\$131,000.00
9	2.2.2	300	BJ	Hardware Supply	25%	40 days	19 Jan '09	13 Mar '09	18 Nov '08	12 Jan '09	\$55,200.00	\$78,200.00
10	2.3			Phase 3 - Manufacture, Test & Supply	0%	95 days	2 Feb '09	12 Jun '09	16 Dec '08	6 Apr '09	\$2,065,800.00	\$2,065,800.00
11	2.3.1	400	RH	Manufacture Batch 1	0%	55 days	2 Feb '09	17 Apr '09	16 Dec '08	9 Feb '09	\$960,800.00	\$960,800.00
12	2.3.2	400	RH	Manufacture Batch 2	0%	50 days	6 Apr '09	12 Jun '09	27 Jan '09	6 Apr '09	\$1,105,000.00	\$1,105,000.00
13	2.4			Phase 4 - Installation & Commission	0%	100 days	20 Apr '09	4 Sep '09	10 Feb '09	29 Jun '09	\$460,800.00	\$460,800.00
14	2.4.1	500	RH	Install & Commission Equip. Batch 1	0%	50 days	20 Apr '09	26 Jun '09	10 Feb '09	20 Apr '09	\$256,000.00	\$256,000.00
15	2.4.2	500	RH	Install & Commission Equip. Batch 2	0%	50 days	29 Jun '09	4 Sep '09	21 Apr '09	29 Jun '09	\$204,800.00	\$204,800.00
16	2.4.3	500	RH	Equipment Fully Operational	0%	0 days	4 Sep '09	4 Sep '09	29 Jun '09	29 Jun '09	\$0.00	\$0.00

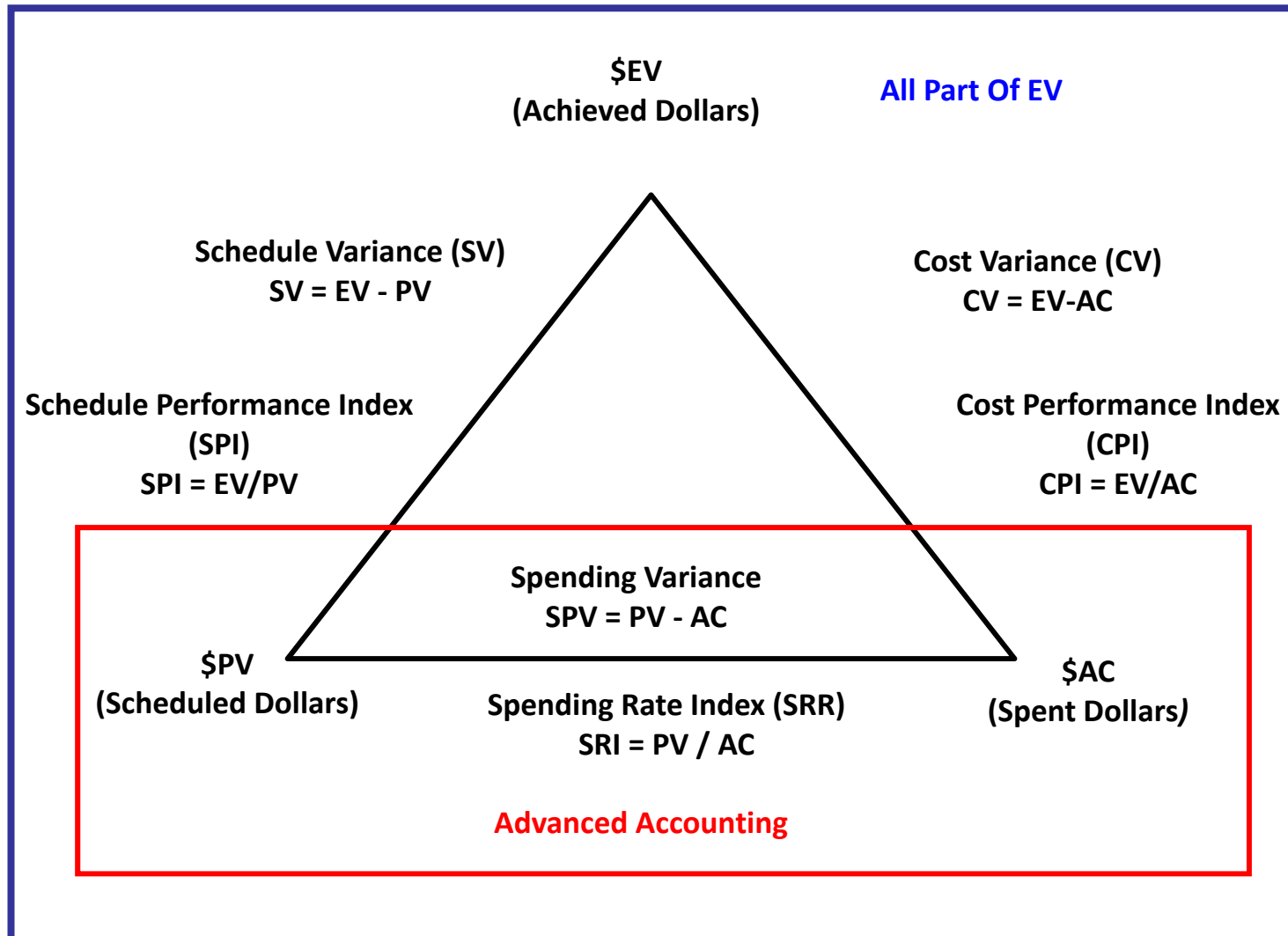
Start	Finish	Baseline Start	Baseline Finish	BAC	EAC
4 Aug '08	4 Sep '09	4 Aug '08	29 Jun '09	\$236,000.00	\$236,000.00
4 Aug '08	4 Sep '09	4 Aug '08	29 Jun '09	\$3,437,150.00	\$3,742,800.00
4 Aug '08	20 Feb '09	4 Aug '08	5 Jan '09	\$756,950.00	\$1,007,000.00
4 Aug '08	4 Aug '08	4 Aug '08	4 Aug '08	\$300,000.00	\$300,000.00
5 Aug '08	14 Nov '08	5 Aug '08	13 Oct '08	\$142,750.00	\$258,000.00
17 Nov '08	20 Feb '09	14 Oct '08	5 Jan '09	\$314,200.00	\$449,000.00

Data Requirements

Advanced Accounting Systems use the Planned Value [PV] with the Actual Cost [AC] to determine the SPV the Spending Variance. This represents whether the spending rate is under or over that planned. The technique does not take earned value into account. As represented in the example an overspend trend is not recognized until the later third of the project. $SPV = PV - AC = VAC$ on project completion.



Earned Value and Accounting Metrics and Indicators



Interpretation of Indicators

Cost Variance (CV) is defined as the variance between the EV - Earned Value and the AC - Actual Cost. The CV determines by cost amount how much each task and project overspends or under-spends its allocated budget.

CV = EV – AC (EVPM Only)	
If CV =>\$0.00	This is interpreted as either breaking even or making a cost saving.
If CV <\$0.00	This is interpreted as overspending.

Schedule Variance (SV) is defined as the variance between the EV - Earned Value and the PV - Planed Value. The SV determines by cost amount how much each task and project is behind or ahead of the baseline (Contract) plan.

SV = EV – PV (EVPM Only)	
If SV =>\$0.00	This is interpreted as either on schedule or ahead of schedule.
If SV <\$0.00	This is interpreted as behind schedule.

Spending Variance (SPV) is defined as the variance between the PV - Planned Value and the AC - Actual Cost and is used to determine the shortfall or surplus of funds available to the project where funding is provided strictly in accordance with the PV - Planned Value.

SPV = PV – AC (Accounting)	
If SPV >\$0.00	This is interpreted as a surplus of funds is available to meet actual/accrued costs.
If SPV <\$0.00	This is interpreted as there being a shortage of funds to sustain the project.

On completion of the project, the SPV = BAC - EAC = VAC as the PV = BAC and the AC = EAC.

Interpretation of Indicators

Cost Performance Index (CPI) - measures cost performance at the project task outline level.

CPI = EV/AC (EVPM Only)	
If CPI is < 1	Spending for the work completed is greater than the allocated budget indicating overspending.
If CPI is > 1	Spending is less than the allocated budget indicating a cost saving.

Schedule Performance Index (SPI) - is used to assess schedule performance at the project task outline level.

SPI = EV/PV (EVPM Only)	
If SPI is < 1	Project is behind the scheduled baseline completion and will be delivered late.
If SPI is > 1	Project is ahead of the scheduled baseline and will be delivered early.

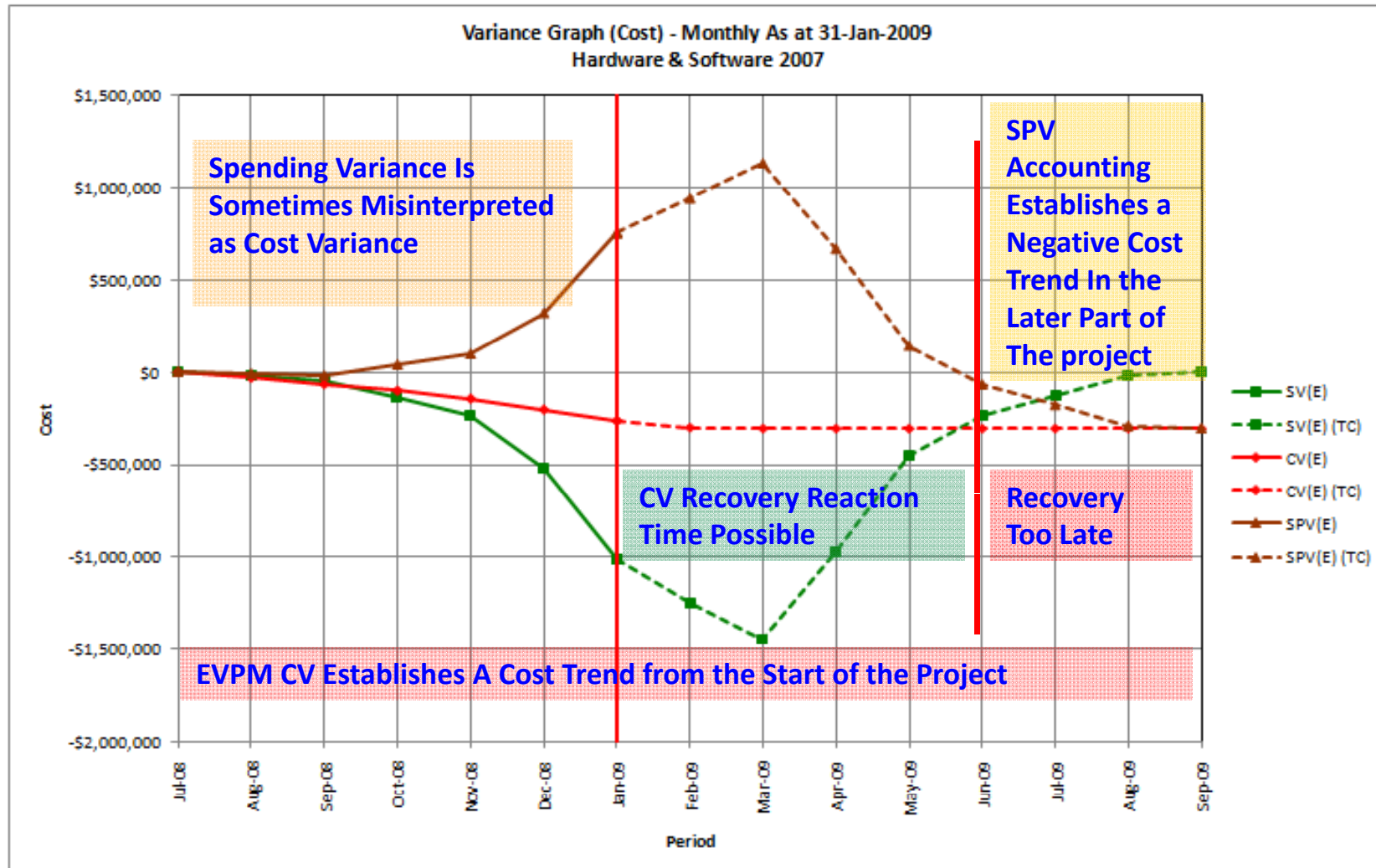
At completion of the project the SPI is always = 1.0 as the EV = PV = BAC

Spending Rate Index (SRI) - is used to assess the availability of funding to a project where funds are released in accordance with the PV - Planned Value. The SRI - Spending Rate Index should not be used as an alternative to the CPI to assess cost performance.

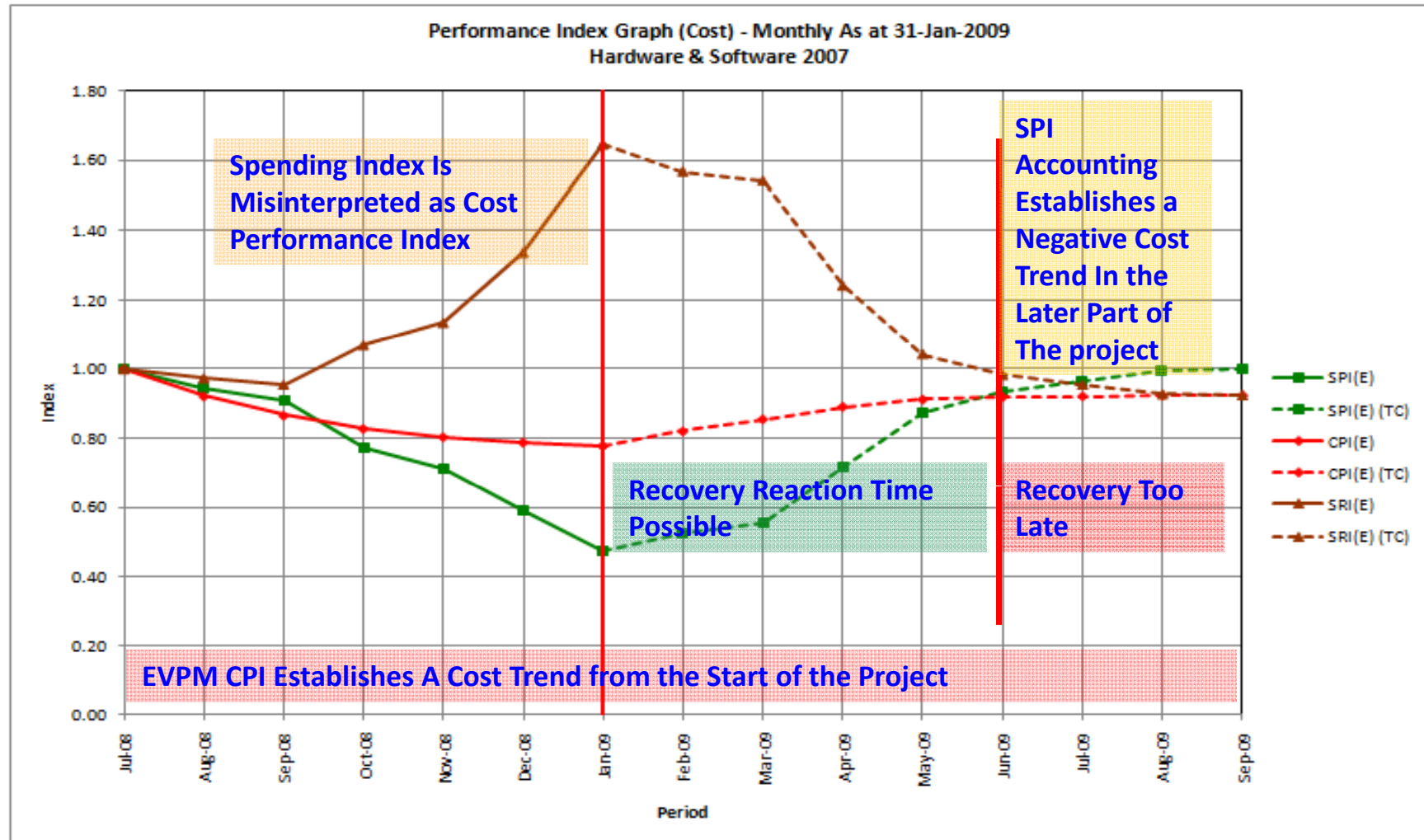
SRI = PV/AC (Accounting Only)	
If SRI is < 1	Spending is outpacing the Planned Value, indicates a shortage of funds to sustain the project.
If SRI is > 1	Spending is less than the Planned Value, sufficient funds are available to sustain the current work.

At completion of the project the SRI can be \leq \geq 1.0 as the PV = BAC, AC = EAC, SRI = BAC/EAC = CPI

Case Study – Using EV and Accounting Variance Indicators to identify early trends in poor performance



Case Study – Using EV and Accounting Indicator Indices to identify early trends in poor performance



Using EV Predictors (Not part of Accounting Practice) to forecast the expected EAC

The Independent Estimate At Completion, (IEAC) is an estimate based on attributes of past performance and how that might effect future performance. Examples include:

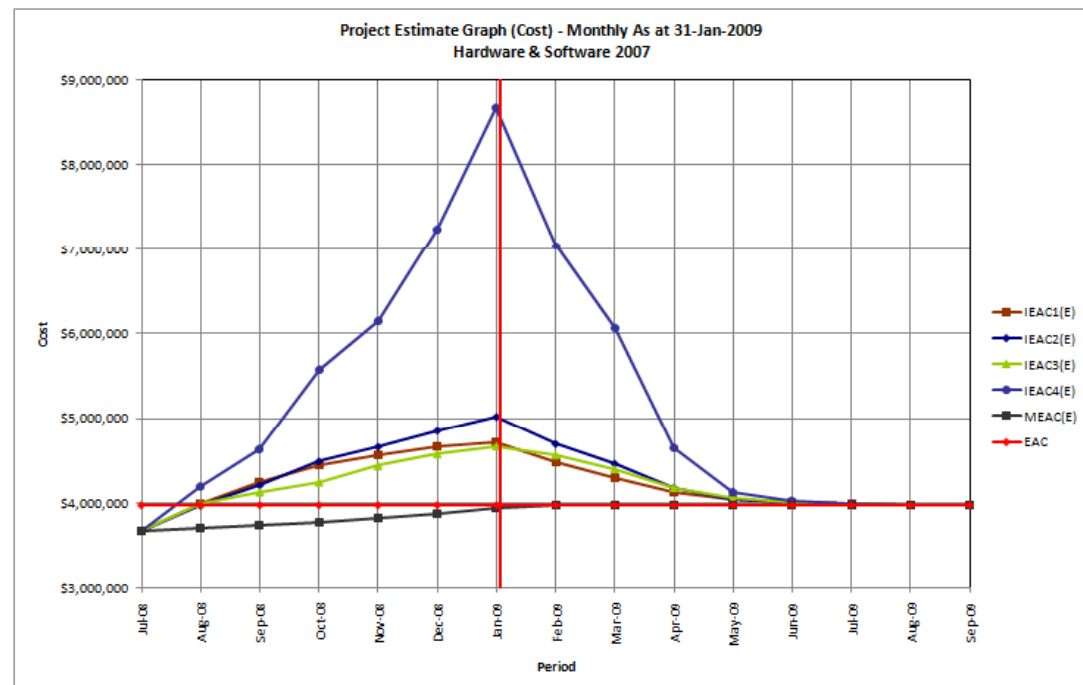
IEAC1 = $AC + (BAC-EV)/CPI$ where it is assumed the future cost performance is entirely based as that of the past.

IEAC2 = $AC + (BAC-EV)/(0.8 \times CPI + 0.2 \times SPI)$ where it is assumed the future cost performance will be influenced by 80% of the past cost and 20% past schedule performance.

IEAC3 = $AC + 3 \times (BAC-EV)/(CPI1 + CPI2 + CPI3)$ where the future cost performance will be influenced by that of the past three report periods.

IEAC4 = $AC + (BAC-EV)/(CPI \times SPI)$ where the future cost performance will be influenced by past cost and schedule performance.

The Mathematical Estimate At Completion, (MEAC) is an estimate where the future cost performance is entirely dependant on the remaining budgeted cost. Formula: **MEAC = $AC + (BAC-EV)$**



Using EV Predictors to establish the adequacy of BAC and EAC (Not part Accounting Practice)

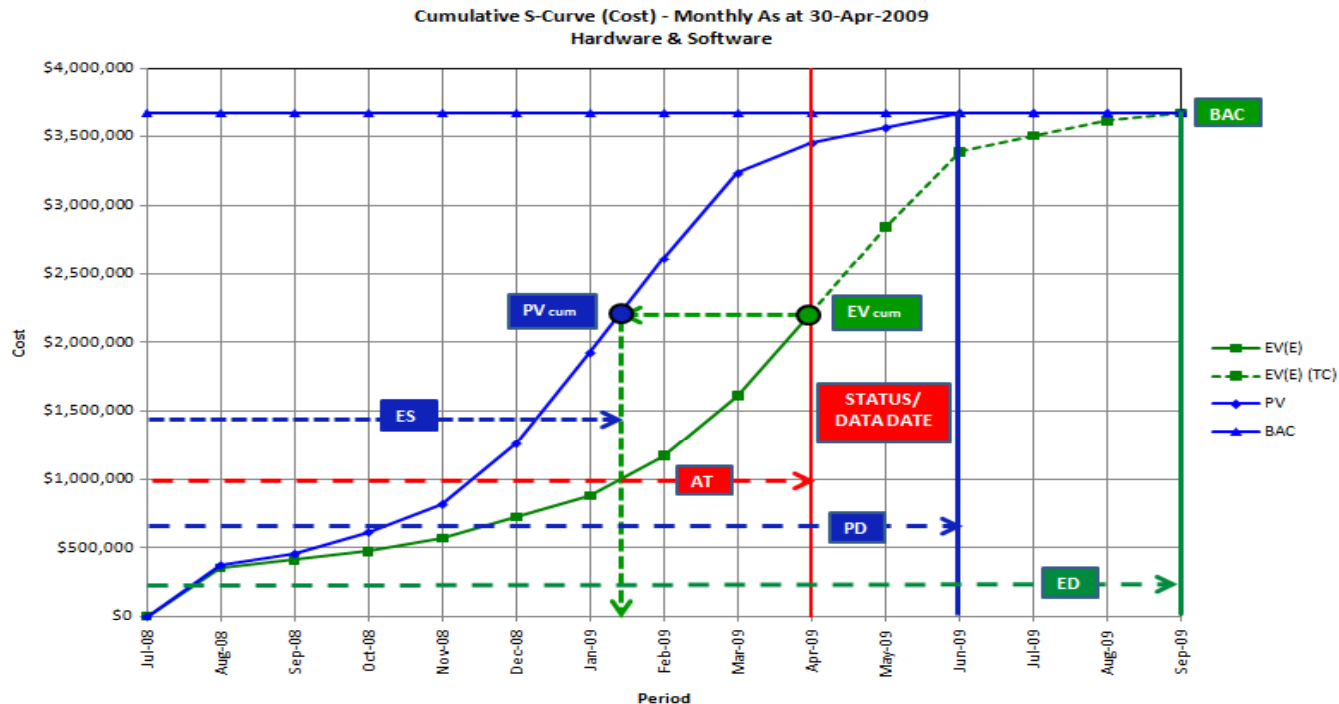
To Complete Performance Index, TCPI (BAC) determines the “Efficiency Factor” and indicates how well the project or project elements need to perform in comparison with the baseline plan from the report period to completion in order to achieve the current (BAC) Budget At Completion.

TCPI (BAC) = $(BAC - EV) / (BAC - AC)$	
If TCPI is < 1	It is <u>likely</u> that the BAC - Budget At Completion will be achieved during the remaining work periods to completion.
If TCPI is > 1	It is <u>unlikely</u> that the BAC - Budget At Completion will be achieved during the remaining work periods to completion. Indicator of an unfavorable cost performance in the future. Performance needs to be better than planned.

To Complete Performance Index, TCPI (EAC) indicates how well the project or project elements need to perform in comparison with the baseline plan from the report period to completion in order to achieve the current (EAC) Estimate At Completion.

TCPI (EAC) = $(BAC - EV) / (EAC - AC)$	
If TCPI is < 1	It is <u>likely</u> that the EAC will be achieved during the remaining work periods.
If TCPI is > 1	It is <u>unlikely</u> that the EAC will be achieved during the remaining work periods to completion. Indicator of an unfavorable cost performance in the future. Performance needs to be better than planned.

Earned Schedule Metrics (New to EV and not used by Accounting Systems)



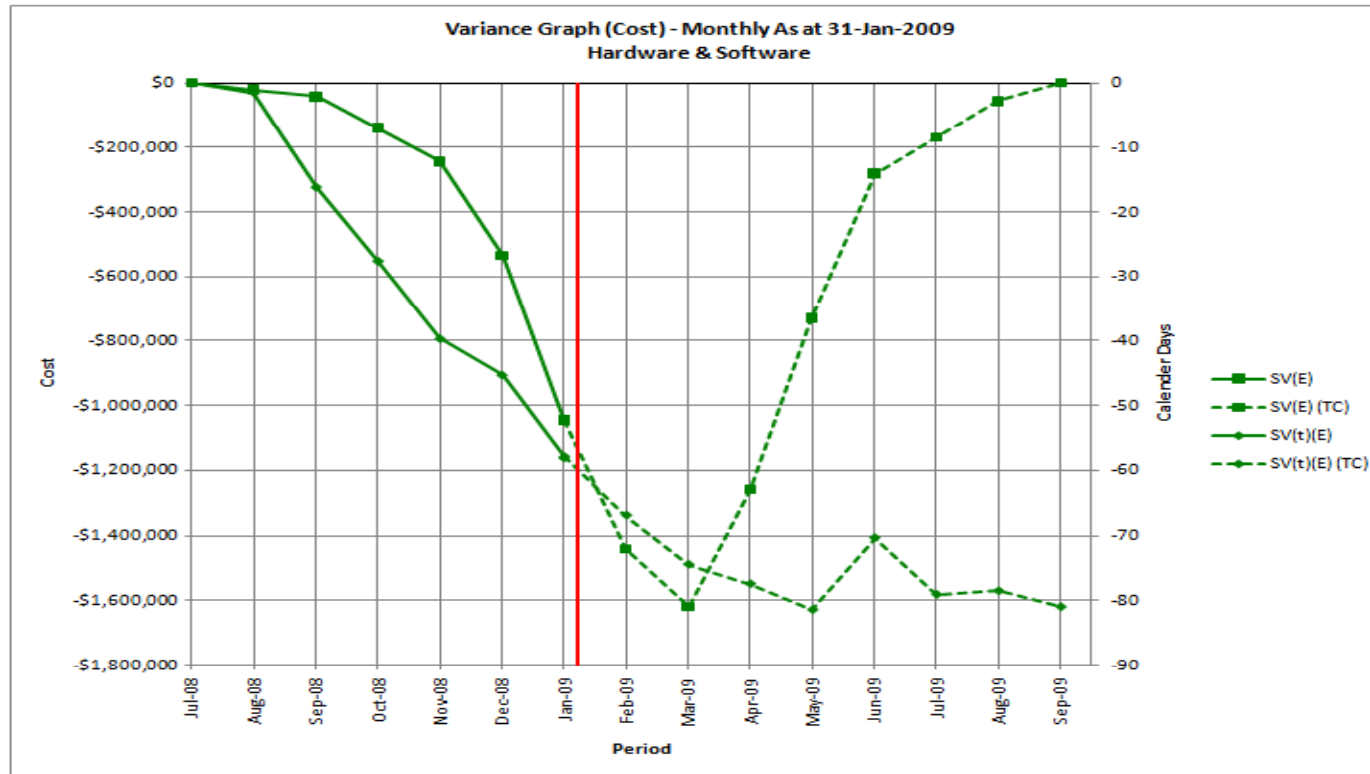
Earned Schedule [ES] is the elapsed time from the start of the project to the Planned Value [PVcum] corresponding to the report period Earned Value [EVcum]

The Actual Time [AT] is defined as the elapsed time from the start of the project to the Earned Value EVcum Report Period.

Planned Duration [PD] is defined as the elapsed time from the planned start of the project/selected work package to the planned project completion in elapsed/calendar days.

Estimated Duration [ED] is defined as the elapsed time from the scheduled start of the project to the currently scheduled project completion in elapsed/calendar days.

Earned Schedule Indicators (New to EV and not used by Accounting Systems)

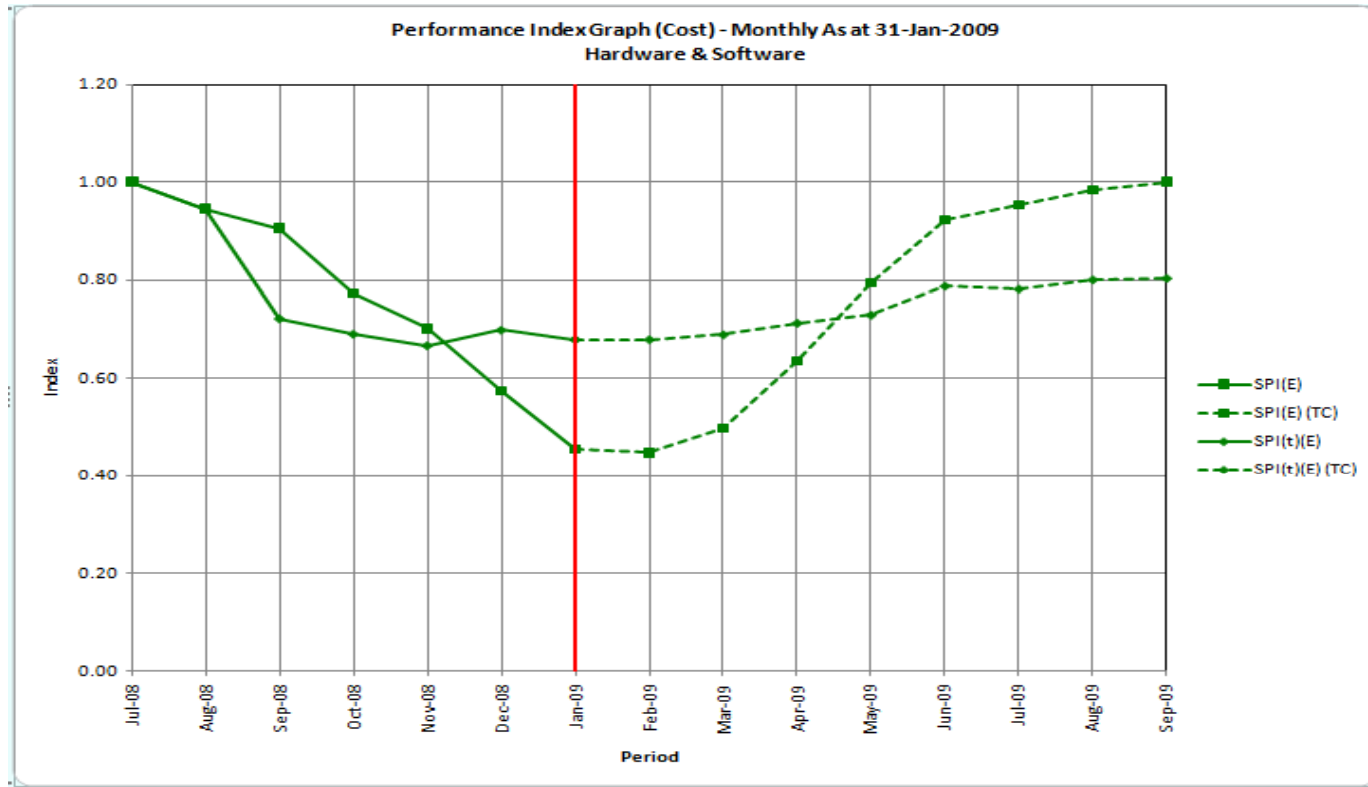


Earned Schedule Based Schedule Variance (SV(t))

The SV(t) determines the amount of time in elapsed days the project/selected work package is behind or ahead of the baseline (Contract) plan in elapsed/calendar days.

SV(t) = ES - AT	
If SV(t) =>0 Days	This is interpreted as either on schedule or ahead of schedule.
If SV(t) < 0 Days	This is interpreted as behind schedule.

Earned Schedule Indicators (New to EV and not used by Accounting Systems)



Earned Schedule Based Schedule Performance Index (SPI(t))

The SPI (t)- Earned Schedule Performance Index is used to assess schedule performance at the project, control account and task outline level using elapsed units of time in lieu of cost.

SPI (t) = ES/AT	
If SPI (t) is < 1	Project is behind the scheduled baseline completion and will be delivered late.
If SPI (t) is > 1	Project is ahead of the scheduled baseline and will be delivered early.

Earned Schedule Predictors (New to EV and not used by Accounting Systems)

The Earned Schedule based Independent Estimate At Completion, IEAC(t) is an estimate based on attributes of past schedule performance and how that might effect future performance. Examples include:

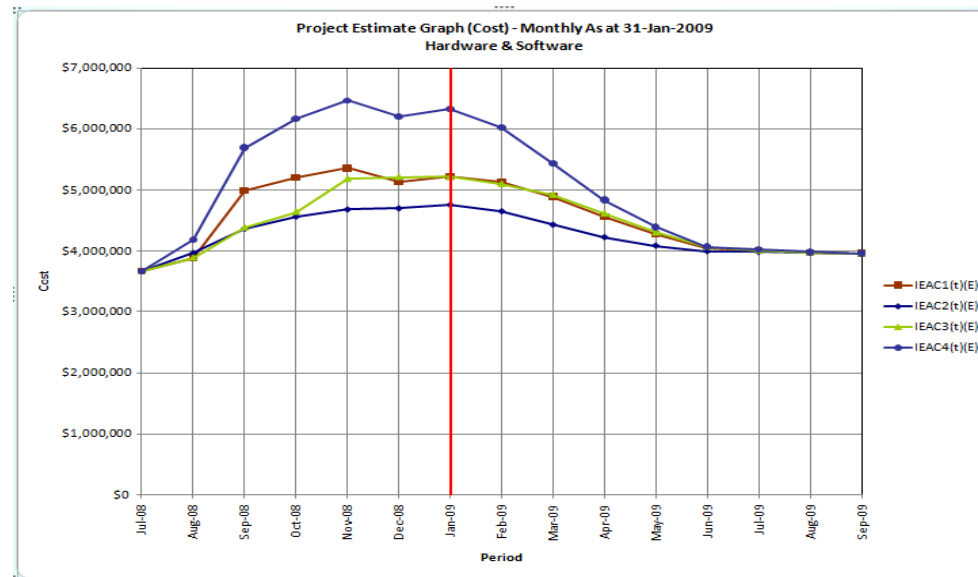
$$IEAC1(t) = AC + (BAC-EV)/SPI(t)$$

$$IEAC2(t) = AC + (BAC-EV)/(0.8CPI + 0.2SPI(t))$$

$$IEAC3(t) = AC + (BAC-EV)/(Average\ 3\ x\ SPI(t))$$

$$IEAC3(t) = AC + (BAC-EV)/(Average\ 3\ x\ SPI(t))$$

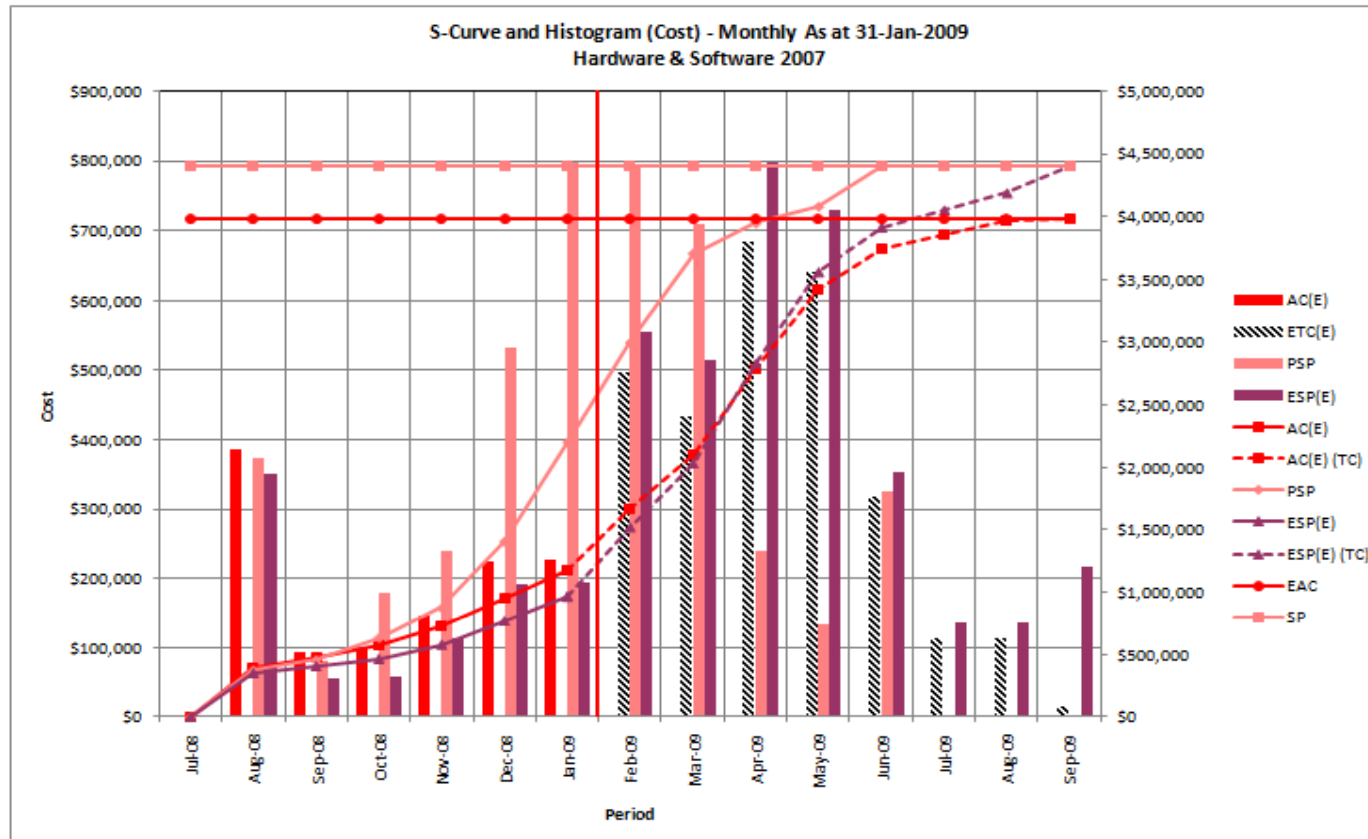
$$IEAC3(t) = AC + (BAC-EV)/(CPI\ x\ SPI(t))$$



TCPI (PD) = (PD-ES)/(PD-AT)	
If TCPI(t) is < 1	It is likely that the Baseline Completion date could be achieved during the remaining work periods to completion.
If TCPI(t) is > 1	It is unlikely that the Baseline Completion date could be achieved during the remaining work periods to completion. This is an Indicator of an unfavourable schedule performance in the future. Performance needs to be better than currently scheduled.

TCPI (ED) = (PD-ES)/(ED-AT)	
If TCPI(t) is < 1	It is likely that the scheduled completion date could be achieved during the remaining work periods.
If TCPI(t) is > 1	It is unlikely that the scheduled completion date could be achieved during the remaining work periods to completion. This is an Indicator of an unfavourable schedule performance in the future. Performance needs to be better than presently scheduled.

Commercial based Metrics used to establish and trend profit (Not Part of EV Practice)

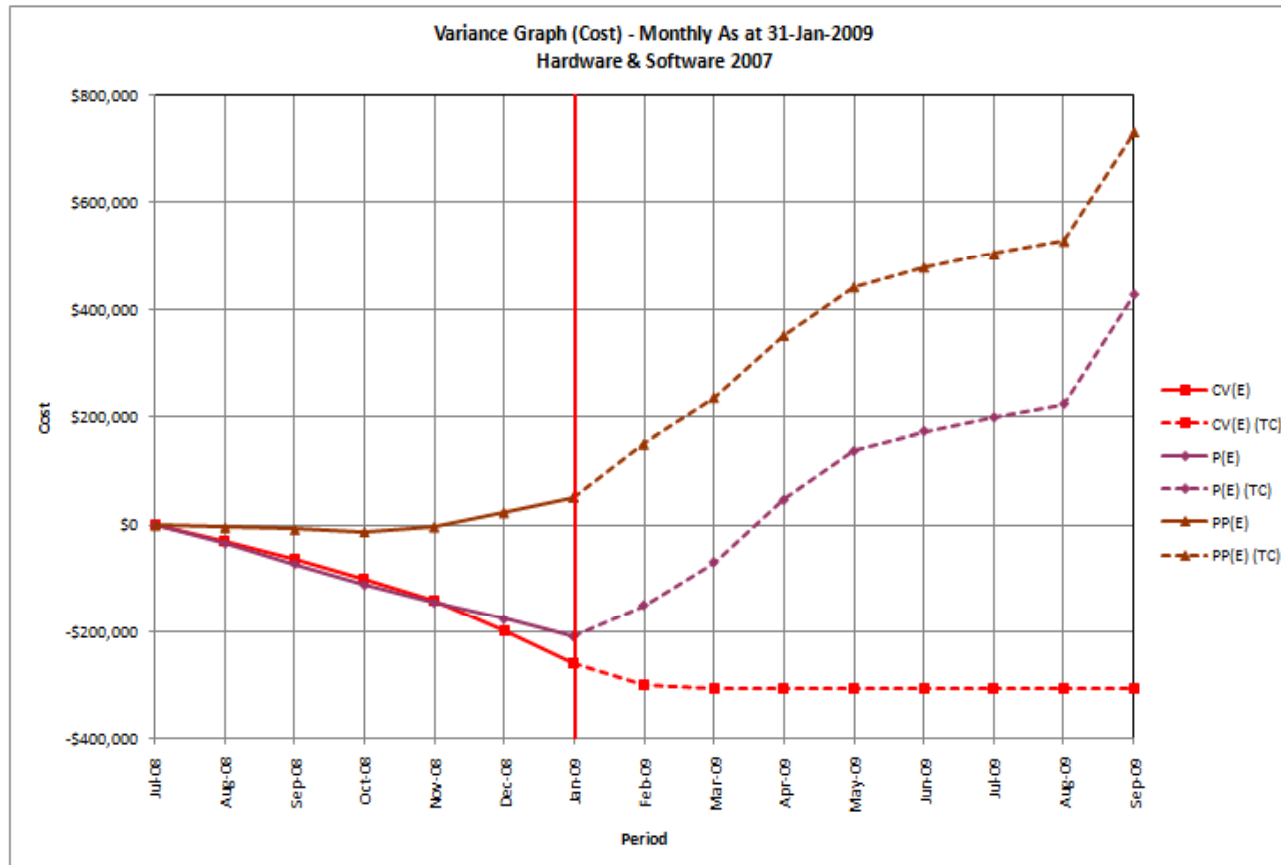


COMMERCIAL METRICS:

SP Sell Price/Revenue is generally a Multiplier of the BAC $SP = F \times BAC$, PSP Planned Revenue is treated as PV

ESP Earned Revenue is treated as EV, At Completion both the ESP and PSP = SP

Commercial based Indicators (Not part of EVPM practice)



COMMERCIAL INDICTORS:

PP Planned Profit = ESP- EV, P Profit = ESP – AC,

At Planned Completion PP =SP – BAC, At Completion P = SP – EAC

Why Earned Value results in superior reporting, forecasting and project control.

EV System Standard:

Supports Schedule & Cost Variances

Supports Schedule & Cost Performance Indices

All Data analysis is Time Phase.

Has extensive predictive algorithms based on historical performance including Earned Schedule.

EV Advanced/Extended:

Extended to Profit and Loss

Can be extended to Work and Commodity Usage Analysis.

Used for Combined Cost, Work and Commodity usage KPI's

Other:

Requires schedule and Cost resource integration.

Reporting is Both WBS, CA and OBS based.

Accounting System Standard:

Limits performance analysis to Planned Value [PV], Actual Cost [AC] and the Estimate to Complete [ETC].

Uses simplified Earned Value [EV] therefore limiting forecasting based on AC and ETC, Excludes CPI, SPI, SPI(t).

Uses Spending Variance [SPV] and Spending Rate Index [SRI] as substitutes for CV and CPI

Performance measurement and reporting limited to a Control/Cost Account. Using EV this can be done by WBS, CA, WP or any Code Grouping.

Limited Productivity based analysis. AC/AW versus Published Averages.

Cash flow analysis does not include the rigors of EV.

Simplified Baseline Control PV

Combining Earned Value with Accounting System results in a powerful Project Control and Reporting System, a One Stop Shop for Performance Data And Cost Administration

Understanding the Differences Between Earned Value and Accounting Practice for Measuring and Reporting Performance

QUESTIONS AND ANSWERS ?

ALL GRAPHS AND REPORTS PRODUCED USING
SUPERTECH'S EVENGINE MICROSOFT EXCEL ADD-IN EVPM
PROJECT CONTROL SOFTWARE

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