Using the *Easy EVM Workbook*

The message in my two books, *Easy EVM* and *Easy CPM* is that good project controls are robust, simple and provide management with information they can action. This spreadsheet is built to support this philosophy.

mosaic *Easy EVM* Workbook

Sample Rail Bridge EVM — Update Date: 21-Feb-22 — ETC: $10,867,781.44 — EAC: $15,059,281.44 — VAC: -$59,281.44

WP #	WP Description	Baseline Values			Actual This Update					Planned Value	Earned Value	SV	SPI	CV	CPI	Errors
		Start	End	$ Budget	Start	End	Account Costs	Acrual Costs	AC	%*							
	Project totals =	15-Nov-21	15-Sep-22	$15,000,000.00	15-Nov-21	-	$3,669,000.00	$522,500.00	$4,191,500.00	-	$4,010,642.33	$4,175,000.00	$164,357.67	1.041	-$16,500.00	0.996	
1.1	Project management and overheads	15-Nov-21	15-Sep-22	$850,000.00	15-Nov-21		$266,000.00	$8,000.00	$274,000.00	32.00%	$274,013.16	$272,000.00	-$2,013.16	0.993	-$2,000.00	0.993	
1.2	Site management and services	02-Jan-22	15-Sep-22	$600,000.00	10-Jan-22		$82,000.00	$9,500.00	$91,500.00	15.00%	$117,187.50	$90,000.00	-$27,187.50	0.768	-$1,500.00	0.984	
2	Design & Approvals	15-Nov-21	31-Jan-22	$1,550,000.00	15-Nov-21	20-Jan-22	$1,558,000.00		$1,558,000.00	100.00%	$1,550,000.00	$1,550,000.00	$0.00	1.000	-$8,000.00	0.995	
3.1	Site set up	02-Jan-22	31-Jan-22	$300,000.00	15-Jan-22	10-Feb-22	$255,000.00	$60,000.00	$315,000.00	100.00%	$300,000.00	$300,000.00	$0.00	1.000	-$15,000.00	0.952	
3.2	Earth works	20-Jan-22	20-Mar-22	$1,500,000.00	25-Jan-22		$900,000.00	$210,000.00	$1,110,000.00	75.00%	$813,559.32	$1,125,000.00	$311,440.68	1.383	$15,000.00	1.014	
3.3	Manfr. & Install PC Bridge Deck	02-Jan-22	25-Jul-22	$3,900,000.00	20-Dec-21		$600,000.00	$190,000.00	$790,000.00	20.00%	$955,882.35	$780,000.00	-$175,882.35	0.816	-$10,000.00	0.987	
3.4	Concrete piers & walls	01-Mar-22	30-May-22	$2,900,000.00	15-Feb-22		$8,000.00	$45,000.00	$53,000.00	2.00%		$58,000.00	$58,000.00	N/A	$5,000.00	1.094	
3.5	Embankment works	30-May-22	10-Jul-22	$1,200,000.00													
3.6	Track works	26-Jul-22	30-Aug-22	$1,700,000.00													
3.7	Clear Site & Make Good	30-Aug-22	15-Sep-22	$500,000.00													

The instructions for using the *Easy EVM Workbook* are:

1. The worksheet is designed to process the data for a single update. After each update is complete, save a copy of the spreadsheet ready for the next update and then edit / add the new information. Adding a version number or date in YYMMDD format to the file name sorts the stored versions in date order.

2. The worksheet is protected, data can only be entered in the cells shaded light green.

3. Work package numbers and descriptions are free-form and can be edited to suit the needs of the project. Once created, these should not change.

4. It is recommended a schedule be set up for the project with the following characteristics:
   1. The schedule contains a summary activity for each work package with detail tasks below
   2. The summary activity be set up to roll up 'physical percent complete' from the activities
   3. Dates and percent complete are transcribed from the schedule

5. Baseline start and end dates are obtained from the schedule and transcribed into the relevant fields. Once entered, these should not be changed.

6. Baseline budget values are obtained from the project budget. Once entered these values should not be changed. The total budget (BAC) is summed at the top of the table for verification.

7. Any change to the baseline values should be approved and fully documented. See *Easy EVM*, Section 4.2.4.

8. The update date is entered at the top of the table, this should be the same date as used to update the schedule.

9. The actual start date for the work package is obtained from the schedule. Once entered, this should not be changed.

10. The worksheet assumes progress within the work package is uniform, therefore once started, an actual cost value and a percent complete value must be entered. $1 and 1% are acceptable.

11. The actual finish date for the work package is obtained from the schedule. Once entered, this should not be changed.

12. The Actual Cost (AC) comprises two values, the actual costs for the work package recorded in the project accounting system, plus an accrual value to cover the cost of work performed, but not yet recorded in the project accounts, the accrual will typically be an estimate revised at each update.

13. The physical percent (%) complete is either derived from the schedule (preferred) or estimated.

14. The calculated variance for each work package in progress should be reviewed and actioned. See *Easy EVM* Section 4.4.

15. Trend information is valuable, reviewing changes in a work package over several updates (saved worksheets) will indicate if the project situation is improving or deteriorating.

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The results of setting up the work packages in the spreadsheet look like this:

Expanded to a readable size:

Easy EVM Workbook

Sample Rail Bridge EVM   Update Date: **21-Feb-22**

WP #	WP Description	Baseline Values			Actual This Update					
		Start	End	$ Budget	Start	End	Account Costs	Acrual Costs	AC	%*
	Project totals =	15-Nov-21	15-Sep-22	$15,000,000.00	15-Nov-21	-	$3,669,000.00	$522,500.00	$4,191,500.00	-
1.1	Project management and overheads	15-Nov-21	15-Sep-22	$850,000.00	15-Nov-21		$266,000.00	$8,000.00	$274,000.00	32.00%
1.2	Site management and services	02-Jan-22	15-Sep-22	$600,000.00	10-Jan-22		$82,000.00	$9,500.00	$91,500.00	15.00%
2	Design & Approvals	15-Nov-21	31-Jan-22	$1,550,000.00	15-Nov-21	20-Jan-22	$1,558,000.00		$1,558,000.00	100.00%
3.1	Site set up	02-Jan-22	31-Jan-22	$300,000.00	15-Jan-22	10-Feb-22	$255,000.00	$60,000.00	$315,000.00	100.00%
3.2	Earth works	20-Jan-22	20-Mar-22	$1,500,000.00	25-Jan-22		$900,000.00	$210,000.00	$1,110,000.00	75.00%
3.3	Manfr. & Install PC Bridge Deck	02-Jan-22	25-Jul-22	$3,900,000.00	20-Dec-21		$600,000.00	$190,000.00	$790,000.00	20.00%
3.4	Concrete piers & walls	01-Mar-22	30-May-22	$2,900,000.00	15-Feb-22		$8,000.00	$45,000.00	$53,000.00	2.00%
3.5	Embankment works	30-May-22	10-Jul-22	$1,200,000.00						
3.6	Track works	26-Jul-22	30-Aug-22	$1,700,000.00						
3.7	Clear Site & Make Good	30-Aug-22	15-Sep-22	$500,000.00						

The data entry fields are shaded green; most of the data should be transcribed from the schedule. The objective measure of performance is set as physical percent complete which is also an option in most scheduling tools.

The calculated fields in the spreadsheet are:

AC = Actual cost to date, the sum of the 'account costs' and 'accrual costs'.

Planned Value (PV) = The amount of the baseline budget planned to have been accomplished by the update date. PV is $0 if the work package has not been planned to start. PV is calculated based on elapsed calendar days.

Earned Value = The value of work performed, based on the physical percent complete.

SV = Schedule Variance, the difference between the earned value and the planned value.

SPI = Schedule Performance Index, the ratio of earned value divided by planned value.

CV = Cost Variance, the difference between the earned value and the actual cost (AC).

CPI = Cost Performance Index, the ratio of earned value divided by actual cost (AC).

ETC = Estimate to complete, EAC - AC.

EAC = Estimate at completion, (BAC - EV)/CPI + AC.

VAC = Variance at Completion, budget at completion - EAC.

Errors = Calculated text identifying specific data inconsistencies.

The calculations are standard EVM and immediately highlight the opportunities for improvement. By keeping a copy of each month's update, changes over time and trends are easy to see.

21-Feb-22			ETC: $10,867,781.44	EAC:	$15,059,281.44	VAC:	-$59,281.44

%*	Planned Value	Earned Value	SV	SPI	CV	CPI	Errors
-	$4,010,642.33	$4,175,000.00	$164,357.67	1.041	-$16,500.00	0.996	
32.00%	$274,013.16	$272,000.00	-$2,013.16	0.993	-$2,000.00	0.993	
15.00%	$117,187.50	$90,000.00	-$27,187.50	0.768	-$1,500.00	0.984	
100.00%	$1,550,000.00	$1,550,000.00	$0.00	1.000	-$8,000.00	0.995	
100.00%	$300,000.00	$300,000.00	$0.00	1.000	-$15,000.00	0.952	
75.00%	$813,559.32	$1,125,000.00	$311,440.68	1.383	$15,000.00	1.014	
20.00%	$955,882.35	$780,000.00	-$175,882.35	0.816	-$10,000.00	0.987	
2.00%		$58,000.00	$58,000.00	N/A	$5,000.00	1.094	

Overall, the sample project data above shows this project is ahead of time with a relatively small negative cost variance, but if something does not happen to improve the production of the bridge deck units (SV = -$175,882.35 the current gains will be lost.

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The ***Easy EVM Worksheet*** ($20) are available from the Mosaic website: https://mosaicprojects.com.au/shop-Easy_e-Books.php.