

[www.cvr-it.com](http://www.cvr-it.com)  
[info@cvr-it.com](mailto:info@cvr-it.com)

# Overview

## Easy Earned Value



**CVR/IT Consulting LLC**

# Introduction

Earned Value Management (EVM) is often regarded as much too complicated for use in small projects (3 to 12 months) .

But it does not have to be that way.

**Earned Value can be Easy!**

Our **EZ Earned Value** workbook simplifies EVM so that you can:

- Track project status
- Catch negative trends before they become a problem
- Provide accurate forecasts to management

and all with a minimum of effort.



# EZ Earned Value Features

## **EZ Earned Value:**

- Supports a full range of Earned Value (EV) measures
  - Status (e.g. CV, CPI)
  - Forecast (e.g. VAC, TCPI)
- Can be used in any 3 to 12 month project
- Allows a different EV rule for each project activity
- Supports Change Orders
- Provides EV measures for any week in the project after week 3
- Provides useful graphs (useful in status reports), including:
  - Project Performance Curve
  - CPI and SPI trend
- Includes step by step instructions as well as comments-based help that supports effective EV practice



# Easy to Use

EZ Earned Value requires only four simple steps

1. Build a schedule in your favorite scheduling tool (just as you always do)
2. Enter project information into the EZ Earned Value tool
  - Transfer task names, end dates and cost estimates into the tool
  - Choose an Earned Value rule for each task
  - Enter the project start date and planned duration (in weeks)
  - Adjust the graphs to reflect the duration of your project
3. At the end of each week, input project results:
  - Indicate which tasks have been started or completed
  - Enter the total cost of work in your project for the week
4. To see current EVM measures:
  - Enter the current week of your project
  - Review the EVM table (automatically calculated for you)
  - Review graphs (automatically updated with current data)



# Instructions

EZ Earned Value provides detailed instructions. A portion of the set up instructions is shown here.

## Instruction for Setup

Develop your schedule in MS Project or a similar tool. Keep tasks to a relatively high level, i.e. days, not hours. Ensure that there is an objectively measurable milestone at the conclusion of every task. For lengthy tasks, obey the 80 hour rule and allow no more than 80 work hours elapsed time between milestones within a task.

You will need the following for each task in the schedule:

- End date (the date on which the task is expected to complete)
- Earned Value rule (see comment in heading for options)
- Planned cost

You will also need:

- Project start date
- Duration of the project in weeks

Open this workbook and **Save As** a new copy for your project. Note: **only enter data in white cells**. All colored cells (e.g. blue, yellow, gray) are either informational or calculated.)

In your new workbook, remove all data from white cells on all tabs (right click and select Clear)

Go to the EV\_Setup\_\$\_Results tab and enter the following data:

- Project Start date
- Number of weeks in the project
- List of project activities (You may need to unprotect the worksheet to create indents, bold, etc. Just remember to re-protect it when you are done)
- The planned End date and Planned Cost for each activity

# Setting UP the EV Worksheet

## Earned Value Reporting Tool - Setup and Results Tables

Enter project start date and duration here

Project Name:

Your project

Project Manager:

Your name

All **Planned Value per Week** cells (blue) are automatically calculated.

### Setup Tables

Project Start Date 2/23/2009

Number of Weeks in Project 16

Project End Date 6/15/2009

These are week #1, week #2, week #3, etc.

### Project Plan Data

### Planned Value per Week

Activities	End Date	EV Rule	Planned Cost (Dollars)	1	2	3	4	5	6	7	8
<b>task 1</b>											
plan	3/4/2009	7 units; 10% per unit, 30% when completed	4,400.00		4400.0						
do	3/18/2009	20/80	12,480.00				12480.0				
check	3/27/2009	Weighted milestones; 40% midway, 60% at the end	7,280.00					7280.0			
act	3/26/2009	0/100	1,280.00					1280.0			
plan it again	4/1/2009	20/80	2,560.00						2560.0		
do it over	4/6/2009	20/80	1,440.00							1440.0	
check it twice	4/14/2009	20/80	7,100.00								7100.0
<b>task 2</b>											
plan	4/1/2009	20/80	2,560.00						2560.0		
do	4/13/2009	20/80	10,240.00								10240.0
check	4/21/2009	20/80	3,840.00								
act	4/23/2009		1,280.00								
plan it again	4/29/2009		5,120.00								

To set up the worksheet: Copy and paste schedule information into the **Activities**, **End Date** and **Planned Cost** columns. Enter an EV rule for each activity.

# Entering Project Information

Project Name:

Your project

Project Manager:

Your name

Number weeks in project	16
Project End Date	6/15/2009

Enter Actual Cost for the week here:

				Week							
				1		2		3		4	
Enter Actual Cost (AC) Here →				\$ 2,500.00		\$ 3,500.00		\$ 3,000.00		\$ 5,000.00	
Activity	End Date	Planned Cost (\$)	EV Rule	%	EV	%	EV	%	EV	%	EV
If No EV, Enter 0 here →											
task 1											
plan	3/4/2009	4400	7 units; 10% per unit, 30% when 20/80	10%	440	30%	1320	10%	440	30%	1320
do	3/18/2009	12480		20%	2496	80%	9984				
check	3/27/2009	7280	Weighted milestones; 40% midway, 60% at the end			40%	2912	60%	4368		
act	3/26/2009	1280	0/100								
plan it again	4/1/2009	2560	20/80								
do it over	4/6/2009	1440	20/80								
check it twice	4/14/2009	7100	20/80							20%	288
task 2											
plan	4/1/2009	2560	20/80								
do	4/13/2009	10240	20/80								
check	4/21/2009	3840	20/80								
act	4/23/2009	1280	0								

80/20 Rule in action

At end of every week, enter the % of EV allowed for each activity. Example: for 80/20 rule, enter 20% when an activity starts, and 80% when it ends. For weighted milestones, enter the percent earned. EV \$ is automatically calculated.



# Reviewing EVM Calculations

## Results Tables

Enter current week here:

### Project Data per Week

Current Week		9	1	2	3	4	5	6	7	8
EV	Reporting Period Earned Value		440.0	6728.0	4808.0	11592.0	1392.0	3468.0	2048.0	1152.0
Cumulative EV	Cumulative Earned Value		440.0	7168.0	11976.0	23568.0	24960.0	28428.0	30476.0	31628.0
PV	Reporting Period Planned Value		0.0	4400.0	0.0	12480.0	8560.0	5120.0	1440.0	17340.0
Cumulative PV	Cumulative Planned Value		0.0	4400.0	4400.0	16880.0	25440.0	30560.0	32000.0	49340.0
AC	Reporting Period Actual Cost		2500	3500	3000	5000	4000	2000	3500	5500
Cumulative AC	Cumulative Actual Cost		2500	6000	9000	14000	18000	20000	23500	29000
All Formulas below use Cumulative EV Data										
Cost Variance	CV = EV - AC					9568	6960	8428	6976	2628
Schedule Variance	SV = EV - PV					6688.0	-480.0	-2132.0	-1524.0	-17712.0
Cost Performance Index	CPI = EV/AC					1.68	1.39	1.42	1.30	1.09
Schedule Performance Index	SPI = EV/PV					1.40	0.98	0.93	0.95	0.64
Estimate at Complete 1	EAC 1 = BAC / CPI					83082	100862	98397	107847	128241
Estimate to Complete 1	ETC 1 = EAC 1 - AC					69082	82862	78397	84347	99241
Variance at Completion 1	VAC 1 = BAC - EAC 1					56780	39000	41465	32015	11621
Estimate at Complete 2	EAC 2 = AC + BAC - EV					130294	132902	131434	132886	137234
Estimate to Complete 2	ETC 2 = EAC 2 - AC					116294	114902	111434	109386	108234
Variance at Completion 2	VAC 2 = BAC - EAC 2					9568	6960	8428	6976	2628
To Complete Performance Index ( to reach BAC)	$TCPI_{BAC} = (BAC - EV) / (BAC - AC)$					0.92	0.94	0.93	0.94	0.98
To Complete Performance Index ( to reach EAC 1)	$TCPI_{EAC1} = (BAC - EV) / (EAC 1 - AC)$					1.68	1.39	1.42	1.30	1.09
Total Project Cost to Date			33000							

Weekly and Cumulative EV Data

Status and Forecast Data

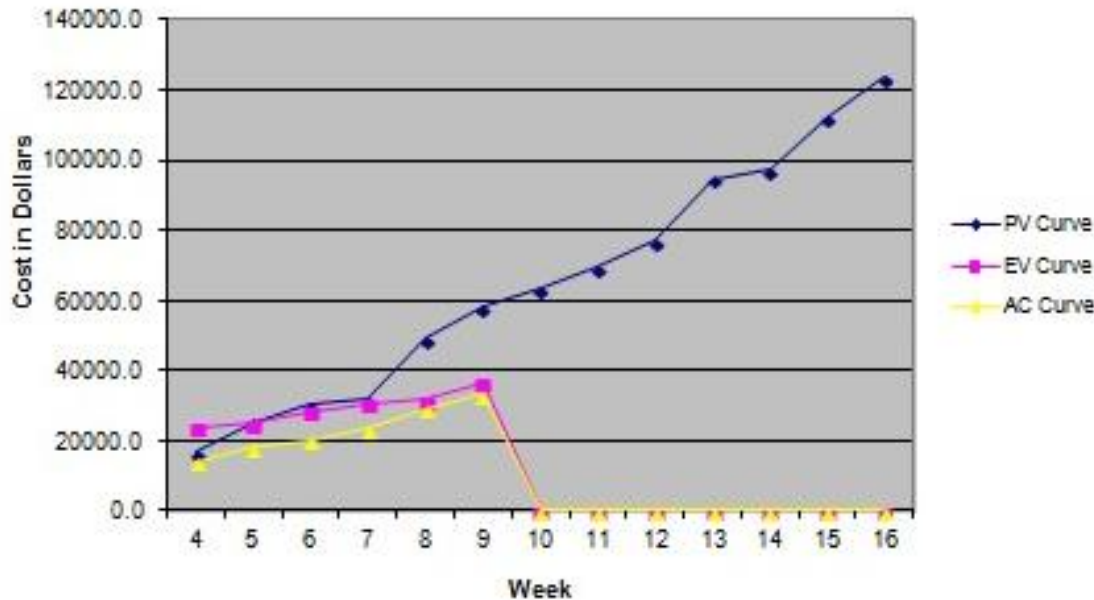
Earned Value status and forecast data are summarized here. All data in color cells are automatically calculated. The worksheet can support 52 weeks of data. In the example, data are shown through week 8.





# EZ Earned Value Graphs (1)

Project Performance Curve



## Project Performance Curve

This graph displays three types of information each plotted as cumulative curves:

- Cumulative Planned Value (PV): the planned cost for all tasks planned for completion by the end of each week of the project
- Cumulative Earned Value (EV): the planned cost for all tasks actually completed by the end of each week of the project
- Cumulative Actual Cost (AC): the actual cost for all project work (including incomplete tasks) by the end of each week of the project

The PV Curve is the project baseline. It is the planned cumulative cost for all scheduled work.

EV is the planned cost for work actually completed.

For any given week, if EV is below PV, then the project may be late. If EV is above PV, then the project may be ahead of schedule. Analysis of Critical Path data is required to get a final answer on this.

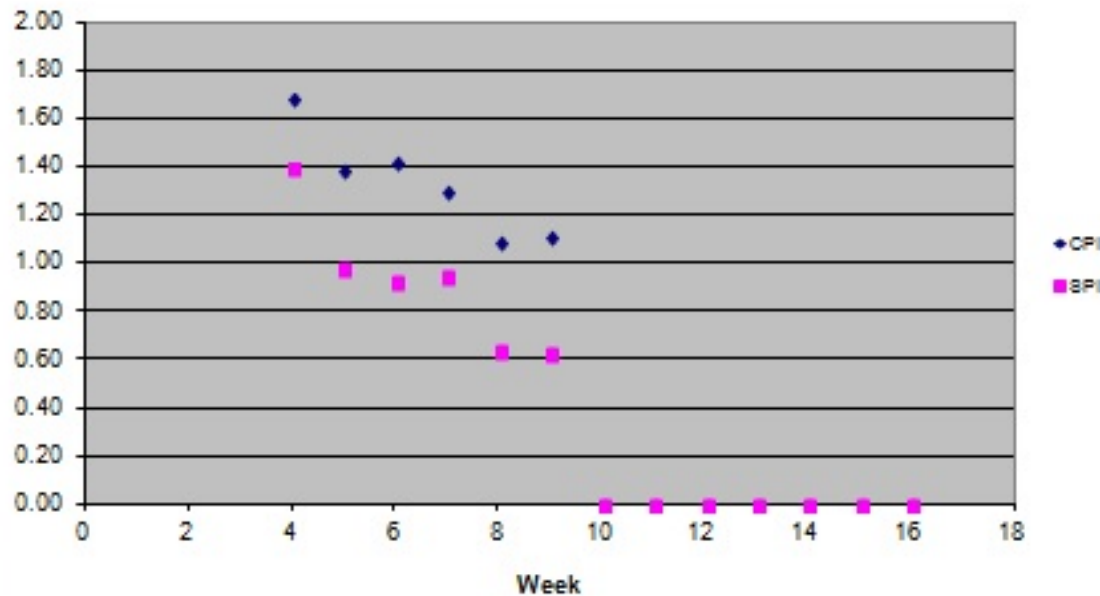
AC is actual cost. For any given week, if EV is below AC then it is costing more than expected to complete tasks. If EV is above AC then project work is costing less than expected.

## Project Performance Curve

Earned Value data are automatically graphed. The Project Performance Curve presents Planned Value, Earned Value and Actual Cost curves. In the example, data are shown through week 9. Template help text is shown to the right.

# EZ Earned Value Graphs (2)

CPI and SPI



## CPI and SPI

These are indices of cost and time, respectively.

When CPI is below 1, then on average it is taking more than one dollar to get a dollar's worth of work completed. Example: if  $CPI = 0.9$ , then the project is getting \$0.90 in value for each \$1.00 paid. When CPI is above 1, then it is taking less than one hour to complete one hour of work.

CPI is a powerful indicator of how effectively the project is being executed, and the value can be used in certain forecasting formulae (e.g. EAC).

SPI works just like CPI except it is an indicator of whether the project will complete on time.

When SPI is below 1, then on average it is taking longer than expected to complete tasks.

When SPI is above 1, then on average it is taking less time than expected to complete tasks.

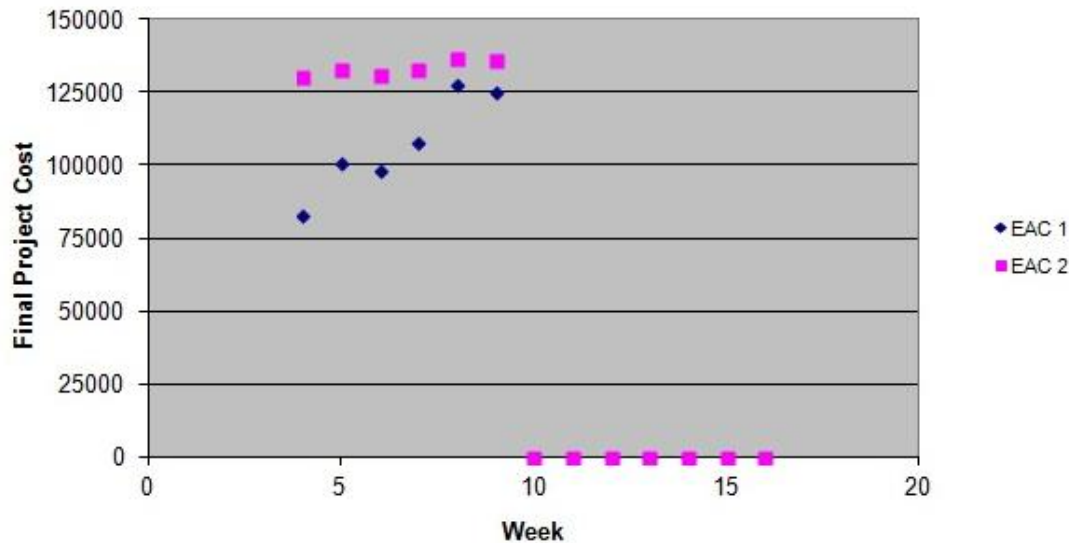
SPI is a good indicator of schedule performance, but it must be used in conjunction with review of progress of Critical Path items and other information.

## CPI and SPI Trend

Earned Value data are automatically graphed. The CPI and SPI Trend graph displays the week to week change in EVM cost and time indices. In the example, data are shown through week 9. Template help text is shown to the right.

# EZ Earned Value Graphs (3)

Estimate of Final Project Cost (Dollars)



## Estimate at Complete (EAC) - Estimate of final project cost

There are two formulae for EAC.

EAC1 is used when project costs to date are thought to be representative of what project costs will be for the remainder of the project, e.g. team effectiveness will remain the same.

EAC2 is used when there were atypical costs early in the project that are not expected to recur.

Both measures are plotted here. Truth is usually somewhere in between the two estimates.

## Estimate of Final Project Cost

Earned Value data are automatically graphed. The Estimate of Final Project Cost graph displays two estimates of the week to week change in estimated final project cost. In the example, data are shown through week 9. Template help text is shown to the right.

# Summary

The EZ Earned Value Tool is a robust, easy to use tool that can be used to:

- Track project status
- Catch negative trends before they become a problem
- Provide accurate project forecasts to management

Note: The Labor Hours version of EZ Earned Value can be used in environments where the dollar cost of in-house staff is not tracked.

EZ Earned Value is part of a package of Project Execution and Control tools available at very low cost from this source:

[http://www.cvr-it.com/PM\\_Templates/TemplateDetails5.html](http://www.cvr-it.com/PM_Templates/TemplateDetails5.html)



# About CVR/IT Consulting LLC

CVR/IT Consulting, established in 2002, provides guidance and support in the effective use of Project, Program, Portfolio Management and Business Analysis Technologies. The company provides professional consultation, training and tools in all matters related to Project Management and Business Analysis, such as:

- Implementation of governance structures and processes essential to effective Portfolio Management
- Establishment of a PMO that finds its own success solely in the success of its customers
- Delivery of flexible, customized PM and BA Methodologies and tools
- Assessment of organizational project, program, portfolio management and business analysis practice
- Training (or re-training) of the project workforce
- Implementation of Organizational Change to make it all work



[www.cvr-it.com](http://www.cvr-it.com)  
[info@cvr-it.com](mailto:info@cvr-it.com)

## Overview

# Easy Earned Value



**CVR/IT Consulting LLC**