

# Earned Value Management

## Introduction to Earned Value Management

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STATUS Project Services, Inc. | [www.statuspros.com](http://www.statuspros.com)

# Government, EVMS & Defense Contractors

## November 2007 Report <sup>1</sup>:

Defense industry giant Lockheed Martin has lost government approval for its cost and schedule tracking systems on the Joint Strike Fighter (JSF) and F-16 programs.

The tracking system is known in the industry as the Earned Value Management System, or EVMS. Lockheed's EVMS was deemed deficient in 19 of 32 areas..

Increased pressure on defense contractors is part of the effort to turn "fat into muscle," as Pentagon industrial policy chief Brett Lambert put it...

## February 2012 <sup>2</sup>:

The Pentagon will withhold about **\$1 million** a month in billings from Lockheed's Fort Worth-based Aeronautics Division until the unit fixes longstanding shortcomings with its cost- and schedule-tracking system, said Shay Assad, the Pentagon's director of pricing.

<sup>1</sup> <http://www.militarytimes.com/forum/showthread.php?1587971-Pentagon-Action-Against-Lockheed-Martin-Part-of-Larger-Crackdown-on-Contractors>; <sup>2</sup> <http://www.star-telegram.com/2012/02/28/3770760/pentagon-to-withhold-lockheed.html#my-headlines-default>

# Earned Value Management

**Earned Value Management (EVM) is a project management technique for measuring project performance and progress in an objective manner.**

**Because EVM has the ability to combine measurements of scope, schedule and cost in a single integrated system, Earned Value Management is able to provide accurate historical and forecast measurements of project performance.**

# Earned Value

Earned Value associates a dollar value with work completed so that it can be compared with the actual spending (to determine **cost variance** – potential cost overruns), and the planned spending (to determine **schedule variance** – potential schedule slippage). In this manner, planned and actual spending are integrated with actual work performed.



# EVM Description



Earned value project management includes:

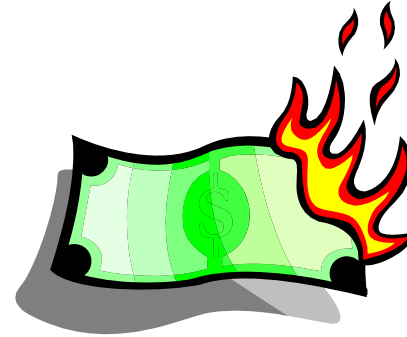
- ✓ Planning work to a manageable level of detail
- ✓ Allocating a portion of the budget to each planned work unit (work package),
- ✓ Tracking progress by the accumulated “value” of completed work units
- ✓ “Earning” work (as it is performed) on the same basis as it was planned, in dollars or other quantifiable units
- ✓ Completing the work units, which earns the budgeted value

# ANSI/EIA-748 32 EVMS Criteria

1. Establish a Work Breakdown Structure (WBS)
2. Establish an Organization Breakdown Structure (OBS)
3. Integrate WBS and OBS
4. Show Overhead Responsibility
5. Establish Control Accounts
6. Establish a Schedule
7. Set Performance Indicators
8. Time-Phase Budgets
9. Identify Cost Elements
10. Identify Work Packages (WPs) & Planning Packages (PPs)
11. Summarization of WPs & PPs Equal Control Account
12. Identify Level of Effort (LOE) Activities
13. Establish Overhead Budgets
14. Identify Management Reserve (MR) & Undistributed Budget (UB)
15. Calculate Program Target Cost
16. Ensure Budget is Consistent with Actual Cost Collection
17. Ensure WBS Control Account Summarization Integrity
18. Ensure OBS Control Account Summarization Integrity
19. Properly Allocate Indirect Cost
20. Identify Unit Costs
21. Ensure Material Accounting
22. Track Cost and Schedule Variances
23. Perform Variance Analysis
24. Track Indirect Cost Variance
25. Ensure Variance Summarization
26. Explain & Implement Corrective Actions
27. Forecast New Budget
28. Timely Incorporate Changes
29. Perform Change Control Management
30. Control Retroactive Changes
31. Ensure Authorized Revisions
32. Document Changes

# EVM vs. Traditional Tracking

Traditional project management practice tends to compare actual costs with planned expenditures, and confuses actual costs with progress.



Earned Value provides a third reference point that is an objective measurement of the work completed to date.



# Contract Performance Report (CPR)

Unclassified  
CLASSIFICATION (When filled in)

CONTRACT PERFORMANCE REPORT FORMAT 1 - WORK BREAKDOWN STRUCTURE												DOLLARS IN: Thousands			Page 1 of 1			
<b>1. CONTRACTOR</b>				<b>2. CONTRACT</b>				<b>3. PROGRAM</b>				<b>4. REPORT PERIOD</b>						
a. NAME MEGA HERZ ELEC & VEN				a. NAME MOH-2				a. NAME Mohawk Vehicle				a. FROM (CCYYMMDD) 20031201						
b. LOCATION (Address and ZIP code) 1234 Main Street Baraboo, WI 53404				b. NUMBER F04695-86-C-0050				b. PHASE RDT&E / PRODUCTION				b. TO (CCYYMMDD) 20031231						
				c. TYPE FPI		d. SHARE RATIO 20/80 20/80		c. EVMS ACCEPTANCE (CCYYMMDD) NONE										
<b>5. CONTRACT DATA</b>																		
a. QUANTITY PROD: 1 R&D: 2		b. NEGOTIATED COST \$20,796.2		c. EST COST AUTH UNPRICED WORK \$0.0		d. TARGET PROFIT/FEE \$0.0 / 1561.2%		e. TARGET PRICE \$22,459.9		f. ESTIMATED PRICE \$22,459.9		g. CONTRACT CEILING \$26,200.0		h. EST CONTRACT CEILING		i. DATE OF OTB/OTS (CCYYMMDD)		
<b>6. ESTIMATED COST AT COMPLETION</b>								<b>7. AUTHORIZED CONTRACTOR REPRESENTATIVE</b>										
		MANAGEMENT ESTIMATE AT COMPLETION (1)		CONTRACT BUDGET BASE (2)		VARIANCE (3)		a. NAME (Last, First, Middle Initial) Mr. Big Shot.				b. TITLE Controller						
a. BEST CASE		\$0.0						c. SIGNATURE				d. DATE (CCYYMMDD) 20040629						
b. WORST CASE		\$0.0																
c. MOST LIKELY		\$0.0		\$20,796.2		\$20,796.2												
<b>8. PERFORMANCE DATA</b>																		
ITEM (1)	CURRENT PERIOD						CUMULATIVE TO DATE					REPROGRAMMING ADJUSTMENTS			AT COMPLETION			
	BUDGETED COST		ACTUAL		VARIANCE		BUDGETED COST		ACTUAL		VARIANCE		COST VARIANCE (12A)	SCHEDULE VARIANCE (12B)	BUDGET (12C)	BUDGETED (14)	ESTIMATED (15)	VARIANCE (16)
	WORK SCHEDULED (2)	WORK PERFORMED (3)	COST WORK PERFORMED (4)	SCHEDULE (5)	COST (6)	WORK SCHEDULED (7)	WORK PERFORMED (8)	COST WORK PERFORMED (9)	SCHEDULE (10)	COST (11)								
a. WBS ELEMENT																		
2000 - PROJ MANAGEMENT	2	67	59	65	-8	-6	832	821	868	-11	-47					1,337	1,371	-34
3000 - PRIME EQUIP	2	1,129	1,238	1,097	110	142	3,537	3,276	3,493	-260	-216					13,351	13,660	-309
4000 - SPARES	2	47	48	43	1	5	76	76	81	0	-5					729	735	-6
5000 - DATA	2	14	18	15	4	4	86	80	83	-6	-2					121	137	-16
6000 - TEST & EVAL	2	65	65	62	1	3	590	602	605	13	-3					1,572	1,572	0
[OH] - OVERHEAD	2	0	0	0	0	0	0	0	0	0	0					0	0	0
b. COST OF MONEY	2	0	0	0	0	0	0	0	0	0	0					0	0	0
c. GEN & ADMINISTRATIVE	2	117	129	114	11	15	512	486	513	-27	-27					1,783	1,820	-37
d. UNDISTRIBUTED BUDGET	2															100	100	0
e. SUBTOTAL (Performance Measurement Baseline)		1,439	1,558	1,396	118	162	5,633	5,342	5,643	-292	-301					18,992	19,394	-402
f. MANAGEMENT RESERVE	2															1,084		
g. TOTAL		1,439	1,558	1,396	118	162	5,633	5,342	5,643	-292	-301					20,076		
<b>9. RECONCILIATION TO CONTRACT BUDGET BASE</b>																		
a. VARIANCE ADJUSTMENT																		
b. TOTAL CONTRACT VARIANCE																		



# Cumulative Element Performance

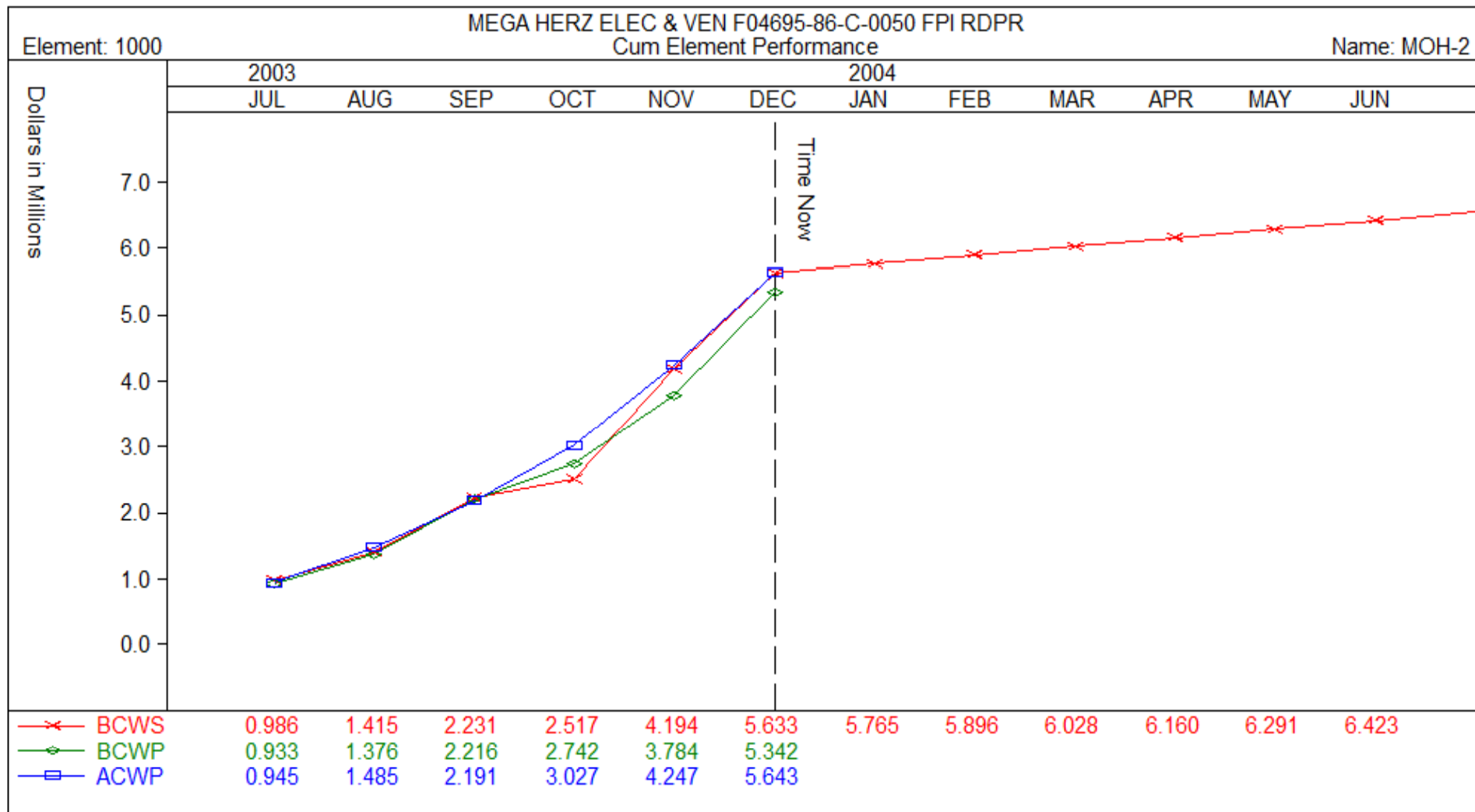


Chart from Deltek wInsight 6.4

# Results

The successful implementation of Earned Value Management principals and the integration of cost, schedule and performance provides greater visibility into the real project status for all stakeholders and provides for:

- ✓ Early determination of whether a project is in trouble
- ✓ Better visibility into program performance and what will be needed to complete program scope
- ✓ Better management of risks
- ✓ Increased communication with project team members and stake holders

# Regulations

DFAR 252.234-7001 Notice of Earned Value Management System

DFAR 252.234-7002 Earned Value Management System

DFAR 252.240-7005 Contractor Business Systems

FAR 52.234-2 Notice of Earned Value Management System - Pre-Award IBR

FAR 52.234-3 Notice of Earned Value Management System - Post Award IBR

FAR 52.234-4 Earned Value Management System

# Compliance

## For Cost/Incentive Contracts<sup>1</sup> ≥ \$50 Million<sup>2</sup>

Requirements	When Required
Compliance with EVM system guidelines in ANSI/EIA-748 <sup>3</sup>	At contract award and throughout contract performance
EVM system formally validated and accepted by cognizant contracting officer	At contract award and throughout contract performance
Contract Performance Report (DI-MGMT-81466A)	Monthly
Integrated Master Schedule (DI-MGMT-81650)	Monthly
Integrated Baseline Reviews	Within 180 days after contract award, exercise of options, and major modifications

1. The term, "Contracts," includes contracts, subcontracts, intra-government work agreements, and other agreements. "Incentive" contracts include fixed-price incentive.

2. Application thresholds are in then-year dollars.

3. ANSI/EIA-748 = American National Standards Institute/Electronic Industries Alliance Standard 748, Earned Value Management Systems

# Compliance

## For Cost/Incentive Contracts<sup>1</sup> ≥ \$20 Million<sup>2</sup> but < 50 Million<sup>2</sup>

Requirements	When Required
Compliance with EVM system guidelines in ANSI/EIA-748 <sup>3</sup> (no formal EVM system validation)	At contract award and throughout contract performance
Contract Performance Report (DI-MGMT-81466A) (tailoring recommended)	Monthly
Integrated Master Schedule (DI-MGMT-81650) (tailoring recommended)	Monthly
Integrated Baseline Reviews	Within 180 days after contract award, exercise of options, and major modifications

1. The term, "Contracts," includes contracts, subcontracts, intra-government work agreements, and other agreements. "Incentive" contracts include fixed-price incentive.

2. Application thresholds are in then-year dollars.

3. ANSI/EIA-748 = American National Standards Institute/Electronic Industries Alliance Standard 748, Earned Value Management Systems

# Compliance

## For Cost/Incentive Contracts<sup>1</sup> < \$20 Million<sup>2</sup>

Requirements	When Required
Compliance with EVM system guidelines in ANSI/EIA-748 <sup>3</sup> (no formal EVM system validation)	At the discretion of the PM based on cost-benefit analysis

1. The term, "Contracts," includes contracts, subcontracts, intra-government work agreements, and other agreements. "Incentive" contracts include fixed-price incentive.

2. Application thresholds are in then-year dollars.

3. ANSI/EIA-748 = American National Standards Institute/Electronic Industries Alliance Standard 748, Earned Value Management Systems

