EARNED VALUE MANAGEMENT SYSTEM CRITERIA

Organization

1. Define the authorized work elements for the program. A work breakdown structure (WBS), tailored for effective internal management control, is commonly used in this process.

2. Identify the program organizational structure including the major subcontractors responsible for accomplishing the authorized work, and define the organizational elements in which work will be planned and controlled.

3. Provide for the integration of the company's planning, scheduling, budgeting, work authorization and cost accumulation processes with each other, and as appropriate, the program work breakdown structure and the program organizational structure.

4. Identify the company organization or function responsible for controlling overhead (indirect costs).

5. Provide for integration of the program work breakdown structure and the program organizational structure in a manner that permits cost and schedule performance measurement by elements of either or both structures as needed.

Planning and Budgeting

6. Schedule the authorized work in a manner which describes the sequence of work and identifies significant task interdependencies required to meet the requirements of the program.

7. Identify physical products, milestones, technical performance goals, or other indicators that will be used to measure progress.

8. Establish and maintain a time-phased budget baseline, at the control account level, against which program performance can be measured. Budget for far-term efforts may be held in higher-level accounts until an appropriate time for allocation at the control account level. Initial budgets established for performance measurement will be based on either internal management goals or the external customer negotiated target cost including estimates for authorized but undefinitized work. On government contracts, if an over target baseline is used for performance measurement reporting purposes, prior notification must be provided to the customer.

9. Establish budgets for authorized work with identification of significant cost elements (labor, material, etc.) as needed for internal management and for control of subcontractors.

10. To the extent it is practical to identify the authorized work in discrete work packages, establish budgets for this work in terms of dollars, hours, or other measurable units. Where the entire control account is not subdivided into work packages, identify the far term effort in larger planning packages for budget and scheduling purposes.

11. Provide that the sum of all work package budgets plus planning package budgets within a control account equals the control account budget.

12. Identify and control level of effort activity by time-phased budgets established for this purpose. Only that effort which is unmeasurable or for which measurement is impractical may be classified as level of effort.

13. Establish overhead budgets for each significant organizational component of the company for expenses which will become indirect costs. Reflect in the program budgets, at the appropriate level, the amounts in overhead pools that are planned to be allocated to the program as indirect costs.

14. Identify management reserves and undistributed budget.

15. Provide that the program target cost goal is reconciled with the sum of all internal program budgets and management reserves.

Accounting Considerations

16. Record direct costs in a manner consistent with the budgets in a formal system controlled by the general books of account.

17. When a work breakdown structure is used, summarize direct costs from control accounts into the work breakdown structure without allocation of a single control account to two or more work breakdown structure elements.

18. Summarize direct costs from the control accounts into the contractor's organizational elements without allocation of a single control account to two or more organizational elements.

19. Record all indirect costs which will be allocated to the contract.

20. Identify unit costs, equivalent units costs, or lot costs when needed.

21. For EVMS, the material accounting system will provide for:
(1) Accurate cost accumulation and assignment of costs to control accounts in a manner consistent with the budgets using recognized, acceptable, costing techniques.
(2) Cost performance measurement at the point in time most suitable for the category of material involved, but no earlier than the time of progress payments or actual receipt of material.
(3) Full accountability of all material purchased for the program including the residual inventory.

Analysis and Management Reports

22. At least on a monthly basis, generate the following information at the control account and other levels as necessary for management control using actual cost data from, or reconcilable with, the accounting system:

(1) Comparison of the amount of planned budget and the amount of budget earned for work accomplished. This comparison provides the schedule variance.
(2) Comparison of the amount of the budget earned the actual (applied where appropriate) direct costs for the same work. This comparison provides the cost variance.

23. Identify, at least monthly, the significant differences between both planned and actual schedule performance and planned and actual cost performance, and provide the reasons for the variances in the detail needed by program management.

24. Identify budgeted and applied (or actual) indirect costs at the level and frequency needed by management for effective control, along with the reasons for any significant variances.

25. Summarize the data elements and associated variances through the program organization and/or work breakdown structure to support management needs and any customer reporting specified in the contract.

26. Implement managerial actions taken as the result of earned value information.

27. Develop revised estimates of cost at completion based on performance to date, commitment values for material, and estimates of future conditions. Compare this information with the performance measurement baseline to identify variances at completion important to company management and any applicable customer reporting requirements including statements of funding requirements.

Revisions and Data Maintenance
28. Incorporate authorized changes in a timely manner, recording the effects of such changes in budgets and schedules. In the directed effort prior to negotiation of a change, base such revisions on the amount estimated and budgeted to the program organizations.

29. Reconcile current budgets to prior budgets in terms of changes to the authorized work and internal replanning in the detail needed by management for effective control.

30. Control retroactive changes to records pertaining to work performed that would change previously reported amounts for actual costs, earned value, or budgets. Adjustments should be made only for correction of errors, routine accounting adjustments, effects of customer or management directed changes, or to improve the baseline integrity and accuracy of performance measurement data.

31. Prevent revisions to the program budget except for authorized changes.

32. Document changes to the performance measurement baseline.

List of Earned Value Management Terms

Actual Cost (AC) – The costs actually incurred and recorded in accomplishing the work. Also known as Actual Cost of Work Performed (ACWP).

Baseline – The cost and schedule plan.

Baseline Freeze Date (BFD) – The date when initial contract startup baseline planning terminates, and the baseline becomes subject to change control procedures.

Baseline Change Control – The system used to establish, analyze, communicate, and record approved changes to the program baseline.

Budget – Total resources (measured in dollars, man-hours, or other definitive units) that are formally allocated for the accomplishment of a specific task or group of tasks.

Budget at Completion (BAC) – The total budget established for the completion of the Program, Control Account, Work Package, or Element.

Charge Number – The account number for work at the lowest level to which a performing organization charges direct or indirect labor, materials, and other costs.

Contract Budget Base (CBB) – The original contract target cost plus the target cost or negotiated customer authorized changes and the estimated cost of authorized but unpriced changes. It is also the sum of all Control Account budgets, UBs, and MR.

Contract Data Requirements List (CDRL) – An element of the contract that specifies the data submittal requirements.

Contract Funds Status Report (CFSR) – A Department of Defense report that provides the following funding information necessary to:
- Update and forecast contract fund requirements.
- Plan and decide on funding changes.
- Develop fund requirements and budget estimates in support of approved programs.
- Obtain estimates of termination costs.

Contract Work Breakdown Structure (CWBS) – The WBS for a specific Government contract that is product-oriented and developed in accordance with MIL-HDBK-881 (Latest Revision). The CWBS provides for the subdivision of contract work into major elements.

Control Account (CA) – The focal point for planning, monitoring, and controlling tasks. The Control Account represents work within a single WBS element, and it is the responsibility of a single organizational unit.

List of Earned Value Management Terms

Control Account Manager (CAM) – The individual designated as directly responsible for the management of a Control Account. The Control Account Manager is responsible for planning and managing the resources assigned for the accomplishment of the task.

Cost Performance Index (CPI) – An indicator of cost performance. It is the ratio of the earned value (BCWP) to the actual cost (ACWP) incurred. A ratio of greater than one indicates a favorable condition (underrun); less than one indicates an unfavorable condition (overrun).

Cost Performance Report (CPR) – A contractually required report, prepared by the contractor, containing information derived from the internal system. Provides status of progress on the contract.

Cost/Schedule Status Report (C/SSR) – A performance measurement report established to capture information on smaller contracts.

Direct Costs – Any costs that may be identified specifically with a particular cost objective.

Earned Value (EV) – The quantification of the "worth" of the work done to date. Also known as Budgeted Cost of Work Performed (BCWP).

Estimate at Completion (EAC) – Inception to Date (ITD) actuals plus an objective estimate of costs for remaining authorized work.

Estimate to Complete (ETC) – The estimated cost of completing the authorized remaining work.

Inception to Date (ITD) – The time from the beginning of an activity through a specified date.

Indirect Costs – Costs, which because of their incurrence for common or joint objectives, are not readily subject to treatment as direct costs. This term is further defined in FAR 31.203.

Latest Revised Estimate (LRE) – The Control Account Manager's estimate of cost at completion by element of cost for a given Control Account, as approved by the Program Manager. While an LRE is an informal estimate, it is substantiated with supporting rational.

Level of Effort (LOE) – Effort of a general or supportive nature that does not produce definite end products.

Management Reserve (MR) – Program funds reserved for use on unknown or unforeseen problem tasks as identified by the Program Manager. MR is not included in the Performance Measurement Baseline (PMB).

List of Earned Value Management Terms

Organizational Breakdown Structure (OBS) – A functionally oriented division of the contractor's organization established to perform the work on a specific contract.

Performance Measurement Baseline (PMB) – Time phased budget plan against which contract performance is measured. It is comprised of time-phased Control Account budgets, Undistributed Budgets, and indirect budgets. Management Reserve is not a part of the PMB.

Planned Value (PV) – The sum of the budgets for all planned work. Also known as Budgeted Cost of Work Scheduled (BCWS).

Planning Package – A future segment of work within a Control Account that is not yet broken down into work packages. A planning package has a firm budget, estimated start and complete dates, and Statement of Work.

Responsibility Assignment Matrix (RAM) – A depiction of the relationship between the Contract Work Breakdown Structure elements and the organizations assigned responsibility for ensuring their accomplishment.

Total Allocated Budget (TAB) – The sum of all budgets allocated to the contract. The total allocated budget must reconcile to the contract budget base.

Undistributed Budget (UB) – UB is assigned to contractual effort that is known to exist, but has not yet been formally planned in a Control Account. It is a temporary account to be used until formal planning is completed.

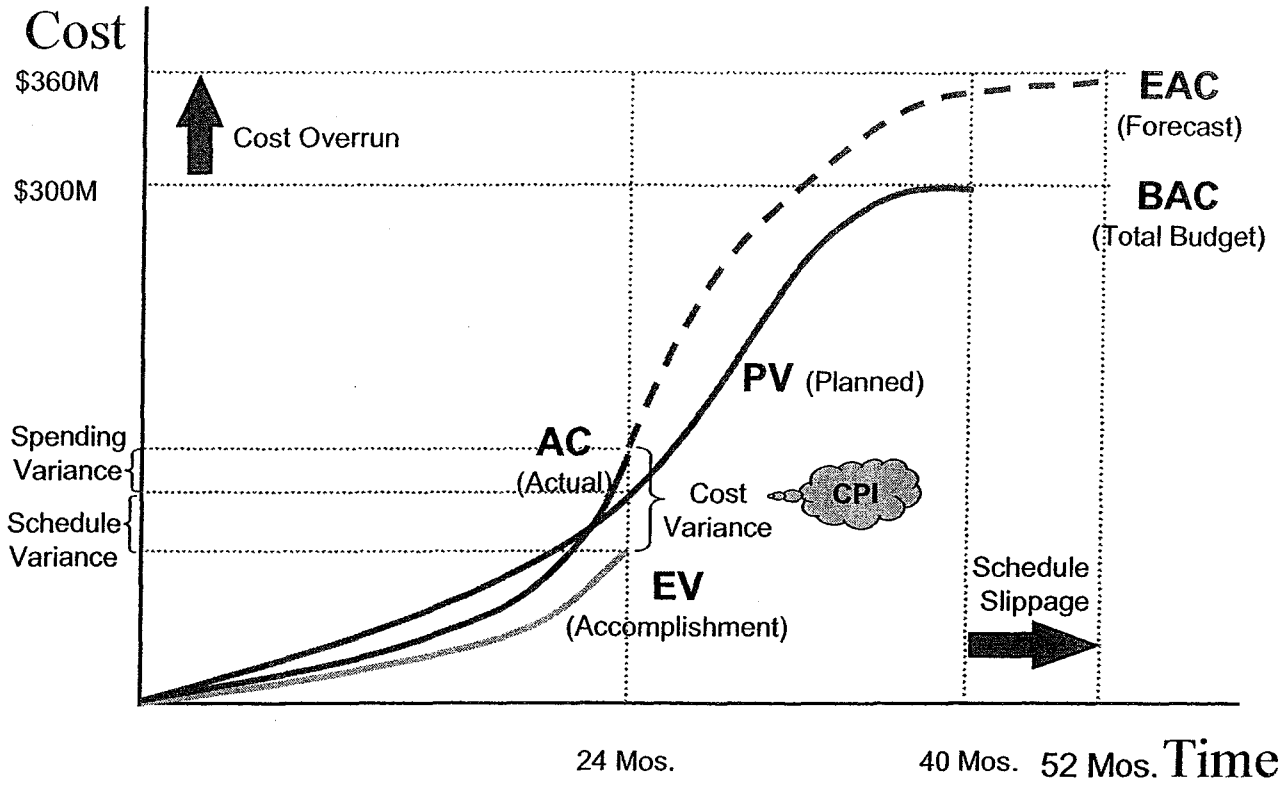
Variance at Completion (VAC) – The arithmetic difference between the Budget at Completion (BAC) and the Estimate at Completion (EAC).

Work Authorization Document (WAD) – The document that assigns responsibility and authority for a defined task within a specified schedule, budget, and statement of work.

Work Breakdown Structure (WBS) – A product-oriented family tree division of hardware, software, services, and other work tasks which organizes, defines, and graphically displays the product to be produced as well as the work to be accomplished to achieve the specified product.

Work Packages (WP) – A discrete segment of work below the Control Account level that is defined by a description or brief work statement, starting date, ending date, completion milestone, work-in-process measure, and time-phased budget expressed in direct labor (hours or dollars), or material, ODC or subcontract dollars. The duration of a work package is a relatively short span of time (normally, but not limited to, six months or less).

EVMS Desktop Reference



PV	PLANNED VALUE
EV	EARNED VALUE
AC	ACTUAL COST
BAC	BUDGET AT COMPLETION
EAC	ESTIMATE AT COMPLETION
ETC	ESTIMATE TO COMPLETE
CV	COST VARIANCE
SV	SCHEDULE VARIANCE
CPI	COST PERFORMANCE INDEX
SPI	SCHEDULE PERFORMANCE INDEX

Variances

Schedule Variance (SV) = EV - PV

Cost Variance (CV) = EV - AC

$$\text{Cost Variance (\%)} = \frac{CV}{EV} \times 100$$

$$\text{Schedule Variance (\%)} = \frac{SV}{PV} \times 100$$

Variance at Completion = BAC - EAC

Performance Indices

Schedule Performance Index (SPI) = EV/PV

Cost Performance Index (CPI) = EV/AC

Others

$$\text{Estimate at Completion (EAC)} = \frac{BAC}{CPI}$$

Estimate at Completion = AC + ETC

PV, EV and AC
COMPARISONS

Planned Value (PV)	Earned Value (EV)	Actual Cost (AC)	Calculation	Conditions
$100	$100	$100	CV = 0	On Cost
			SV = 0	On Schedule
$200	$200	$100	CV = 100	Underrun Cost
			SV = 0	On Schedule
$100	$100	$200	CV = -100	Overrun Cost
			SV = 0	On schedule
$100	$200	$200	CV = 0	On Cost
			SV = 100	Ahead of Schedule
$100	$200	$100	CV = 100	Underrun Cost
			SV = 100	Ahead of Schedule
$100	$200	$300	CV = -100	Overrun Cost
			SV = 100	Ahead of Schedule
$200	$100	$100	CV = 0	On Cost
			SV = -100	Behind Schedule
$300	$200	$100	CV = 100	Underrun Cost
			SV = -100	Behind Schedule
$200	$100	$300	CV = -200	Overrun Cost
			SV = -100	Behind Schedule