



National Defense Industrial Association  
Integrated Program Management Division

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## Earned Value Management Systems EIA-748-D Intent Guide

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## Intent Guide Change History Log

Date	EIA Version	Change Summary/Notes
First Release Nov 2004	A	The content of this first release was the product of a joint working group effort between the NDIA PMSC, DCMA, and OSD.
January 2005	A	Revised the Purpose and Scope content with a new Appendix A.
December 2005	A	Update reflected a comprehensive review of the content and incorporated comments from industry and government throughout the document.
January 2006	A	Modified the copyright statement to conform to the GEIA copyright notice for reprinting the EIA-748 guidelines.
September 2006	A	Incorporated comments throughout the document from the intelligence community.
Second Release Nov 2006	A	This release was a culmination of comments from industry, DCMA, the intelligence community, and civilian agencies. It was formally recognized in a February 20, 2007 letter from Kenneth J. Krieg, Under Secretary of Defense, Acquisition, Technology and Logistics.
June 2009	B	<p>Update reflected the EIA-748 reaffirmation process for Version B and minor text edits. EIA Standard Guidelines 19 and 21 revisions were incorporated. Text edits included:</p> <ul style="list-style-type: none"> <li>• Purpose and Scope section to clarify the purpose of the list of typical attributes and use of the appendix. Added a definition for critical path.</li> <li>• Guideline 5, Intent edits discussing one or more responsible organizations supporting a single WBS. Added Figure 1 to illustrate.</li> <li>• Guideline 10, Attribute 1 was deleted.</li> <li>• Guideline 16, Intent edits added text to note that actual costs are typically at the control account level.</li> <li>• Guideline 21, Intent, characteristics list, item 2 edits discussing material performance measurement, and edits for list items b. and c.</li> <li>• Guideline 27, Attribute bullet 4 edits to reiterate actual costs at the control account level in relation to the estimate to complete.</li> </ul>
Third Release May 2011	B	<p>This release reflected DCMA agreement for updates to Guidelines 5, 10, and 21.</p> <ul style="list-style-type: none"> <li>• Guideline 5, Intent, second paragraph. Text was added that read: "There also may be multiple control accounts within a responsible OBS element when the effort within a WBS element must be segregated for management control purposes driven by scope and exit criteria (i.e., completion of task scope). The establishment of multiple control accounts should be determined by the control account's scope of the management tasks and consideration for planning and control of budgets, schedules, work assignments, progress assessment, problem identification, and corrective actions."</li> <li>• Guideline 10, Typical Attributes. Added an attribute bullet (new first bullet) that discussed the control account plans (CAPs) representing the work assigned to one responsible organizational element on one program WBS element. This added the text previously deleted in the June 2009 back in with an additional sentence at the end that read:</li> </ul>

Date	EIA Version	Change Summary/Notes
		<p>“Under some circumstances additional levels of detail may be needed to segregate LOE versus Discrete effort, multiple elements of cost, and multi-functional elements.”</p> <ul style="list-style-type: none"> <li>Guideline 21, Typical Attributes, bullet 4. Corrected the algorithms for material price and usage variances.</li> </ul> <p>This release of the Intent Guide was formally recognized as being consistent with DoD EVM Policy in an April 20, 2011 letter from Gary R. Bliss, Director, Performance Assessments and Root Cause Analyses (PARCA). This was the last release formally recognized by the DoD.</p>
August 2012	B	<p>Made changes to Guidelines 8 and 30.</p> <ul style="list-style-type: none"> <li>Guideline 8, Intent. Paragraphs were added at the end of the Intent section to discuss the option of establishing an internal operating budget should a customer not approve an OTB.</li> <li>Guideline 30, Intent. Sentence was added that read “The cumulative values for BCWS and BCWP will not be adjusted for routine direct and/or indirect cost rate increases or decreases.”</li> </ul>
April 2014	C	<p>Update reflected the reaffirmation of the EIA-748 and comments received on the Intent Guide provided for public comment.</p> <ul style="list-style-type: none"> <li>Incorporated updates from the EIA-748 reaffirmation process (Version C). This included changes incorporated into the standard text as well as addressing comments from the reaffirmation process that applied to the Intent Guide.</li> <li>Made consistency and clarification edits throughout and applied the standard document style used for all IPMD guides as part of IPMD three year mandatory guide review cycle.</li> <li>Removed specific references to named DID reports to use more generic terms as a result of DID updates and broader use of the Intent Guide.</li> <li>Incorporated ease of use updates such as adding short guideline descriptions and including them in the Table of Contents.</li> <li>Changed approach to Appendix A (compliance template) so it is a separate document that can be downloaded as a source MS Word file.</li> <li>Incorporated comments from industry, the intelligence community, and the DOE on the draft provided for public comment.</li> <li>Changed all NDIA PMSC references to IPMD.</li> <li>Relabeled Section 1, Purpose and Scope to “Introduction” and split into three subsections: (1.1) Purpose and Scope, (1.2) Terms, and (1.3) Applying the Guidelines to the Program Phases (new content). Added a new Figure 1 in Section 1.3.</li> <li>Added a new Figure 3 to Guideline 8.</li> <li>Added an Intent Guide Change History Log.</li> </ul>
January 2015	C	<p>Changed all instances of ANSI/EIA-748 to EIA-748 and updated the copyright for the EVMS Standard on the first page to SAE International.</p>
February 2015	C	<p>The DoD Office of Performance Assessments and Root Cause Analyses (PARCA) issued the first edition of the Earned Value Management System Interpretation Guide (EVMSIG) for the EIA-748 32 Guidelines. For legal reasons, the DoD was required to produce their own guide for EVMS</p>

Date	EIA Version	Change Summary/Notes
		compliance and surveillance instead of using the NDIA IPMD Intent Guide, an industry standard document.
August 2018	D	<p>Updates reflect the reaffirmation of the EIA-748 and comments received on the Intent Guide provided for public comment.</p> <ul style="list-style-type: none"> <li>• Updated selected guideline short titles for the table of contents.</li> <li>• Replaced Figure 3 to reflect the same image used for the EIA-748 Standard with color added.</li> <li>• Edits to reflect current terms such as “integrated master schedule” instead of “network schedule”. Other consistency edits throughout the document.</li> <li>• Incorporated comments from industry, the DOE, NASA, and the civilian agencies.</li> <li>• The Introduction section was updated to include references to other IPMD guides and to clarify the purpose of the guide.</li> </ul>

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# 1 Introduction

## 1.1 Purpose and Scope

The National Defense Industrial Association (NDIA) Integrated Program Management Division (IPMD) created this Intent Guide to provide additional insight into the EIA-748 Standard for Earned Value Management Systems (EIA-748). It is applicable to government or industry for the purpose of documenting how an earned value management system (EVMS) complies with the 32 guidelines listed in Section 2 of the EIA-748 Standard. This guide provides additional context to the EIA-748 Standard Section 3, EVMS Process Discussion, as an aid in understanding and applying earned value management (EVM) practices.

A contractor, subcontractor, or government agency that needs to demonstrate or wants assurance their system complies with the standard can use this intent guide to develop a compliance map documenting how their business processes conform to the EIA-748 EVMS Guidelines. The objective of the compliance map is to demonstrate that a contractor, subcontractor, or agency has thought through each guideline and can describe how their business process supports the guideline requirements.

Section 2 provides the management value, intent, typical attributes, and objective evidence found in typical outputs for each of the guidelines listed in Section 2 of the EIA-748 Standard. **It is unnecessary for all of the typical attributes or all of the objective evidence found in a list of typical outputs to be present for the intent of the guideline to be met.** The use of the word “typical” is intended to convey examples of ways, but not the only ways, of demonstrating the intent of a guideline has been met. This guide should not be interpreted as adding additional requirements that must be met in conforming to the EIA-748 EVMS Guidelines.

To be most effective, compliant business process and system documentation should be implemented on an organizational basis instead of project by project. Different organizations must have the flexibility to establish and apply an integrated management system that suits their management needs and business practices.

The objective is to provide integrated program management information using the organization's resources and an EVMS implementation scaled to meet the management needs of the project. A scaled EVMS applies the 32 guidelines in a way that reflects the size, complexity, and type of work effort that is necessary to successfully manage the project. This scalability allows any project to realize the benefits of earned value management. See the NDIA IPMD EVMS Guideline Scalability Guide for additional information and guidance on scaling the EIA-748 EVMS guidelines.

Other complementary systems such as Manufacturing/Enterprise Resource Planning (M/ERP), or methodologies such as Agile software development, may be integrated with the EVMS to deliver functionality and value to the customer. EVM provides a standard method for measuring progress and reporting project performance. The EVMS documentation should describe the interface content as well as the recurring control process to maintain data conformance and system compliance with the EIA-748 EVMS guidelines.

Section 3 in this document provides an example of a process description compliance map. The separate appendix document for this intent guide provides a template that can assist in the development of a compliance map. A customer or industry reviewer of an EVMS can use the compliance map as the basis for verifying compliance with the EIA-748 EVMS Guidelines.

In performing an assessment or verification that business processes and system documentation complies with the EIA-748 EVMS Guidelines, the NDIA IPMD recommends the following:

1. The process owner (a contractor or government agency) maps their business processes and system documentation to demonstrate they comply with the guideline intent, typical attributes, and typical objective evidence outputs described in this document. See Section 3 for an example.
2. A party independent from the documenting party verifies the compliance assessment.
3. The verifying party is versed in the EIA-748 EVMS Guidelines.
4. The customer recognizes this method (i.e., 1 above) as applicable for the compliance assessment verification to have meaning.
5. Customers should consider past acceptance of compliance to the EIA-748 EVMS Guidelines, business organization application policy, and surveillance activity before making a management decision to perform a compliance assessment.

This document is not a “how-to” guide; it is meant to explain the intent of each guideline regardless of the specific internal or contractual environment. Other complementary NDIA IPMD guides were produced to assist a contractor or government agency in applying EVM practices that support the EIA-748 EVMS Guideline requirements. For ongoing verification of continued compliance with the EIA-748 EVMS Guidelines, see the NDIA IPMD Surveillance Guide. Other related NDIA IPMD guides include the EVMS Application Guide, EVMS Acceptance Guide, and Integrated Baseline Review (IBR) Guide.

For additional discussion on schedule practices in an EVM environment, see the NDIA IPMD Planning and Scheduling Excellence Guide (PASEG). Additional discussion on applying earned value and other performance metrics can be found in the NDIA IPMD Guide to Managing Programs Using Predictive Measures. The NDIA IPMD Industry Practice Guide for Agile on EVMS Programs discusses best practices for integrating Agile performance data with the EVMS. These guides are available on the NDIA IPMD web site.

Submit recommended changes for this guide to the NDIA IPMD Chair or Vice Chair. Contact names can be found on the NDIA IPMD web site.

## 1.2 Terms

For definitions of common terms used in this intent guide, see Section 2.6 in the EIA-748 Standard or the Master Definitions List for IPMD Guides.

In most instances, this guide uses the term “project” to reference a contractual endeavor. The EIA-748 Guideline text uses the term “program” and is intended to be interchangeable with “project”. The term “work package and planning package (or lower-level task/activity)” is intended to provide implementation flexibility to schedule at either the work package or lower level task/activity.

An objective of this intent guide is the planning and performance measurement of project work scope in a manner that enables efficient integrated program management. As the management principles of planning and performance measurement are detailed throughout this document, the terms “effort,” “scope,” “work,” “work scope,” and “project work scope” are used interchangeably.



### 1.3 Applying the Guidelines to the Project Phases

The EIA-748 Standard and this intent guide organize the 32 guidelines into five process categories:

1. Organization;
2. Planning, Scheduling, and Budgeting;
3. Accounting Considerations;
4. Analysis and Management Reports; and
5. Revisions and Data Maintenance.

While the list of guidelines is useful for reference purposes, it is also useful to show how the guidelines are interrelated and applied during the implementation and execution phases of a project. Figure 1 illustrates this high level process flow with cross references to the applicable guideline.

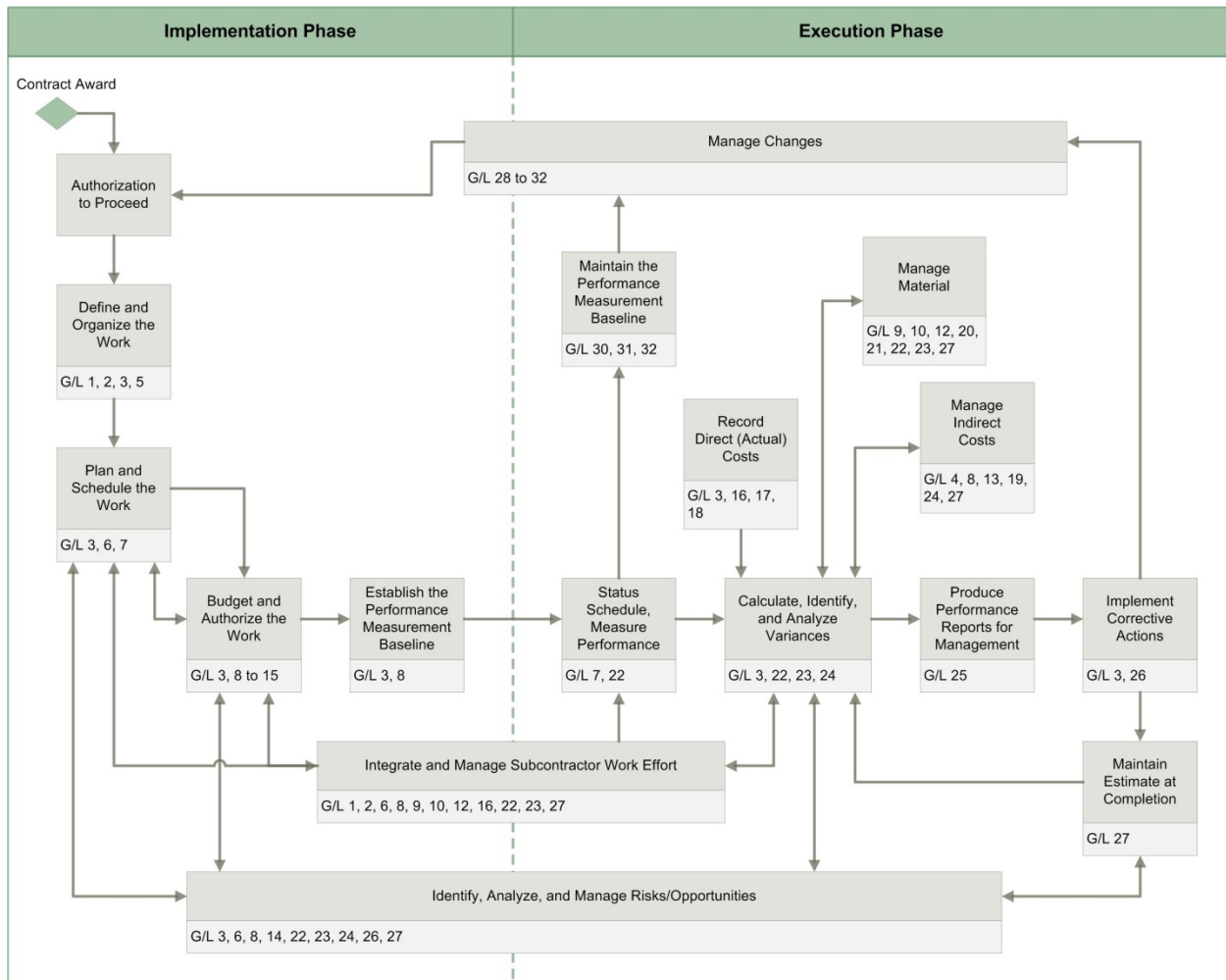


Figure 1 – Applying the guidelines to the project phases

## 2 Intent Guide to the EVMS Guidelines

### 2.1 Organization

#### Guideline 1 – Define Work Scope (WBS)

- |   |
|---|
| a) 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. |
|---|

#### Management Value

The Work Breakdown Structure (WBS) is used as the basic building block for the planning of all authorized work. The WBS is a product-oriented division of project tasks depicting the breakdown of work scope for work authorization, tracking, and reporting purposes that facilitates traceability and provides a control framework for integrated program management. It should ensure the Statement of Work (SOW) is entirely covered and allow for the integration of technical, schedule, and cost information. The WBS also facilitates communications as it establishes a common frame of reference for customers, management, and Integrated Product Teams (IPTs).

#### Intent

A WBS is a direct representation of the work scope in the project, documenting the hierarchy and description of the tasks to be performed and their relationship to the product deliverables. The WBS breaks down all authorized work scope into appropriate elements for planning, budgeting, scheduling, cost accounting, work authorization, measuring progress, and management control. The WBS must be extended to the level necessary for management action and control based on the complexity of the work. At a minimum, the WBS is extended to the level or levels at which control accounts are established. A WBS dictionary is typically used to define the work scope for each unique element in the WBS and should include cross references to the SOW or equivalent.

#### Typical Attributes:

- Only one WBS is used for management purposes per project and it contains all project work, including revisions for authorized changes and modifications.
- The WBS contains all contract line items and end items.
- The WBS identifies all WBS elements specified for external reporting.
- The WBS is extended at a minimum to the level(s) at which control accounts are established.
- The WBS elements should collectively provide a complete definition of work scope requirements.
- The WBS may evolve as the project requirements change.

#### Objective evidence may be found in these typical outputs:

- Work Breakdown Structure (WBS).
- Statement of Work (SOW) or equivalent.

- WBS dictionary (may or may not be used, but a method to reconcile the statement of work to the WBS structure must be demonstrated).

## Guideline 2 – Define Project Organization (OBS)

- b) 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.

### Management Value

The OBS helps management focus on establishing the most efficient organization by taking into consideration the availability and capability of management and technical staff, including subcontractors, to achieve the project objectives.

### Intent

Assign organizational responsibility for the project work. An OBS is used to facilitate the assignment of responsibility, accountability, and authority for all tasks to be performed. An OBS is a direct representation of the hierarchy and provides a description of the organizations established to provide resources as well as to plan and perform the work tasks. The OBS identifies the organization responsible for each segment of work, including subcontracted and inter-organizational effort. The assignment of lower-level work segments to responsible managers should provide key control points for management purposes. When effort is subcontracted, the applicable subcontractor is identified and related to the appropriate WBS element(s) and/or organization charged with acquiring the subcontracted item.

### Typical Attributes:

- All authorized work is assigned to organizational elements.
- Organization elements are work teams, functions, or whatever organization units are used by the company for execution of the project work efforts.
- Major subcontractor work efforts are integrated into the project structure.

### Objective evidence may be found in these typical outputs:

- Organization Breakdown Structure (OBS).
- OBS intersections with the WBS.

## Guideline 3 – Integrate Processes

- |   |
|---|
| c) 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. |
|---|

### Management Value

The integration of planning, scheduling, budgeting, work authorization, and cost accumulation management processes provides the capability for establishing the Performance Measurement Baseline (PMB), identifying work progress, and collecting actual costs, facilitating management analysis and corrective actions. The WBS and OBS allow summarization of cost data from the detail level through both the WBS and the OBS to the appropriate project level needed for management insight and control.

### Intent

Integrate the technical, schedule, and cost elements of the project through project plans that include schedules, budgets, authorization of work, and accumulation of costs, all consistent with the budget plan. The work tasks are assigned to a WBS and OBS and are traceable to the planning and budgeting system and the cost collection system. Establishment of a unique coding structure facilitates the linkage between the planning, scheduling, budgeting, work authorization, cost accumulation, and performance measurement processes.

### Typical Attributes

Provide a logical framework that links the products of the management processes through common data elements. Examples include cross-references between the statement of work and WBS, the integrated master schedule detail tasks and performance measurement work packages as well as control account plans.

### Objective evidence may be found in these typical outputs:

- Integrated master schedule.
- Manufacturing/Enterprise Resource Planning (M/ERP) operational schedules.
- Control account plans.
- Management performance reports by WBS and OBS.
- Responsibility Assignment Matrix (RAM).
- Statement of Work.
- Work authorizations.
- WBS and OBS.

## Guideline 4 – Identify Overhead Management

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

### Management Value

Visibility into direct and indirect costs is essential for successful management of a project. Therefore, it is important to have a documented process and organizations established specifically to manage and control indirect costs.

### Intent

Indirect costs are for common activities that cannot be identified specifically with a particular project or activity and should typically be budgeted and controlled separately at the functional or organizational manager level. Clearly identify managers who are assigned responsibility and authority for controlling indirect costs, and who have the authority to approve expenditure of resources. The process for management and control of indirect costs, including assignment of responsibility, is typically documented in the organization's approved accounting procedures.

### Typical Attributes:

- Indirect account structure and organizational assignment/authority level are clearly defined.
- Documented process clearly defines:
  - How indirect cost resources are assigned, budgets are established, and expense is controlled.
  - The personnel within the organization responsible for establishing indirect cost budgets and authorizing/controlling indirect cost expenditures.

### Objective evidence may be found in these typical outputs:

- Cost Accounting Standards (CAS) disclosure statement.
- Organizational chart.
- Chart of accounts.

## Guideline 5 – Integrate WBS/OBS to Create Control Accounts

- e) 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.

### Management Value

The careful establishment of the control account structure ensures the proper level of management is established based on the complexity of the work and the capability of the organization. It also establishes the lowest level of performance measurement necessary for program management.

### Intent

The integration of the WBS and OBS creates control accounts that facilitate schedule and cost performance measurement.

The control account is the point where the WBS tasks and OBS responsibility intersect. It is defined as the point where a single functional organization or integrated product team has responsibility for work defined to a single WBS element. There may be multiple control accounts within a responsible OBS element when the effort within a WBS element must be segregated for management control purposes driven by scope and exit criteria (i.e., completion of task scope). The establishment of multiple control accounts should be determined by the control account's scope of the management tasks and consideration for planning and control of budgets, schedules, work assignments, progress assessment, problem identification, and corrective actions.

The control account is also the primary point for work authorization, work performance management, and work performance measurement; i.e., where planned value is established, earned value is assessed, and actual costs are collected. Each control account is assigned to a control account manager. The control account manager has the responsibility, authority, and accountability to ensure the accomplishment of work in their control account and is the focal point for management control.

### Typical Attributes:

- One or more control accounts are visible at the intersection of the WBS and responsible OBS (see Figure 2).
- One or more performing organizations can support a single WBS element.
- The control account clearly identifies any supporting activities.
- The estimated costs of work performance elements are evident.

### Objective evidence may be found in these typical outputs:

- Control accounts.
- Responsibility Assignment Matrix (RAM).
- Management performance reports.

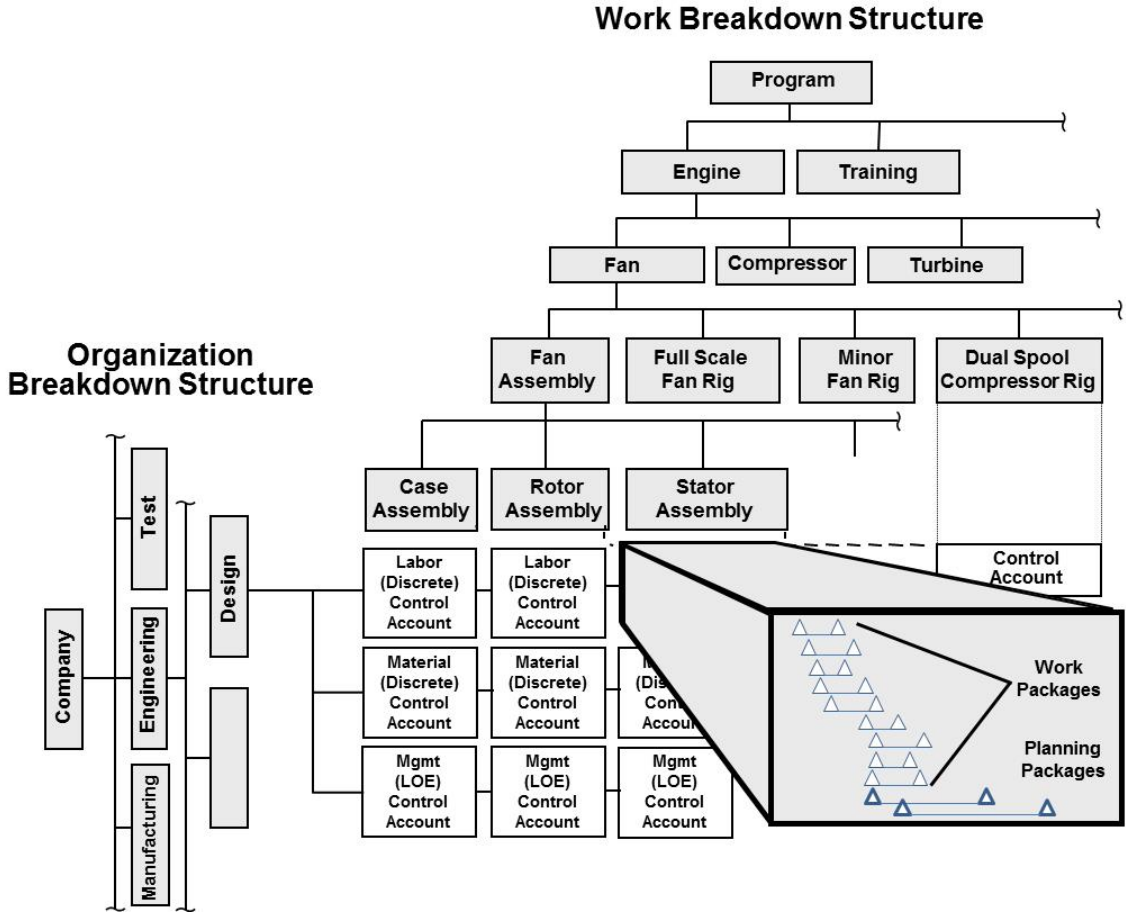


Figure 2 - Example with multiple control accounts assigned to one WBS



## 2.2 Planning, Scheduling, and Budgeting

### Guideline 6 – Scheduling Work

- a) 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.

#### Management Value

Scheduling authorized work facilitates effective planning, statusing, and forecasting, all of which provide the ability to evaluate and implement actions designed to complete the project effort within contractual parameters. The integration of the technical, schedule, and cost aspects of the project results in the:

- Expected sequence of work.
- Establishment of significant interdependencies between work packages and planning packages (or lower-level tasks/activities) that determine the critical and driving paths through the project.
- Time-phasing of authorized discrete work for use as the foundation to establish a valid performance measurement baseline.

#### Intent

The scheduling process establishes an integrated master schedule (IMS) that is the logical sequence of all authorized discrete work that leads through all key milestones, events, or decision points required to ensure completion of the project's objectives. The integrated master schedule aligns to the contractual period of performance except when an Over-Target Schedule (OTS) has been approved for implementation.

There is a clear definition of what constitutes commencement and completion of each work package and planning package (or lower-level task/activity). While no specific scheduling software is required, there must be horizontal and vertical integration of the schedule through the framework of the WBS and OBS.

Development projects or significant development efforts typically schedule the discrete authorized work through the use of an integrated master schedule. Production projects typically schedule using a Manufacturing/Enterprise Resource Planning (M/ERP) system that supports the project objectives.

The integrated master schedule must agree with the project objectives, include all key events, and reflect a logical sequence of events, taking into account identified risks and opportunities. Ensuring all team members are working to the same project schedule is essential for monitoring progress, analyzing variances, and tracking corrective actions.

#### Typical Attributes:

The scheduling system has the following characteristics:

- Distinct tasks can be summarized up through the WBS and OBS to track progress and measure performance.
- The schedule reflects all the time-phased discrete work to be accomplished that is traceable to the WBS and the Statement of Work. For certain material activities, including production related activities, not all discrete activities are planned in the

integrated master schedule as they are managed through an M/ERP system or other material management system.

- Critical target dates, project milestones, contractual events, accomplishment criteria, and project decision points are identified and are being used to plan, status, and monitor progress of the work.
- The schedule describes the sequence of work and should consider the significant interdependencies that are indicative of the actual way the work is to be accomplished. The schedule links key detail work packages and planning packages (or lower-level tasks/activities) with summary activities and milestones.
- Significant interdependences should be defined at a consistent level of detail to support development of a critical path. The minimum level linkage is at the work package and planning package level. The schedule should be designed for effective integrated program management purposes and contain a critical path for the entire contractual period of performance.
- The critical path is comprised of the longest sequence of tasks driving project completion.
- Each key project milestone (for example, System Design Review, Preliminary Design Review, Critical Design Review, Proof of Concept, or Construction Complete) must be logically linked within the integrated master schedule.
- Resource estimates from the budget plan are reasonable and resources are available to support the schedule.
- The schedule is reasonable as a baseline for achieving project requirements as demonstrated through schedule analysis techniques.
- The baseline schedule is the basis for measuring performance.
- The schedule provides current status and forecasts of completion dates for all discrete authorized work.
- The schedule should include risk mitigation activities, as appropriate.

Objective evidence may be found in these typical outputs:

- Integrated master schedule.
- M/ERP schedules, or planned order reports.
- Control account plans .
- Work authorization documents.

## Guideline 7 – Identify Products and Milestones for Progress Assessment

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

### Management Value

Objective indicators enable measurement of work accomplished, thereby allowing its accurate comparison to planned work. Meaningful performance metrics enable better management insight and decision-making, ensuring that maximum time is allowed for management action to keep the project on plan.

### Intent

The purpose for identifying objective indicators is to provide a means to measure the quantity of work accomplished – the earned value. There is a direct relationship between the budget at completion and earned value. The time-phased budget assigned to the work scope is the basis for computing the earned value for work accomplished. Performance measures are one aspect of an integrated program management system as other processes control the quality and technical content of the work performed.

Identify objective interim performance measures within control accounts or lower-level tasks/activities that align with how technical performance will be accomplished and enable accurate performance assessment each month. The integrated master schedule includes key project and contractual requirements. It enables the team to predict when milestones, events, and project decision points can be expected to occur. The integrated master schedule detail tasks/activities provide start and finish dates that are based on physical accomplishment and are clearly consistent with project time constraints.

The integrated master schedule detail tasks/activities align with the objective interim performance measures to enable accurate performance assessment. A sufficient number of interim measures are defined after the detailed schedule task/activities are established to ensure performance is measured as accurately as possible. Interim measures are based on the completion criteria developed for each increment of work and should provide a basis for objectivity, limiting the subjectivity of the measurement of work accomplished.

Accurate schedule status depends on the selection of objective measures of progress to indicate work completion. These measures are necessary to substantiate technical achievement against the schedule plan and justify progression to the next control account or lower-level task/activity. A key feature of an interdependent schedule is that it establishes and maintains the relationship between technical achievement and progress status.

### Typical Attributes:

- Objective completion criteria are determined in advance and used to measure progress to determine achievement of milestones or other indicators.
- Interim milestones and lower-tier tasks serve as indicators of progress against which the control account manager monitors progress.

### Objective evidence may be found in these typical outputs:

- Integrated master schedule that identifies contract milestones and key events.
- M/ERP production planned order reports.
- Control account plans.

## Guideline 8 – Establish the Performance Measurement Baseline

- c) Establish and maintain a time-phased budget baseline, at the control account level, against which program performance can be measured. 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. Budget for far-term efforts may be held in higher level accounts until an appropriate time for allocation at the control account level. On government contracts, if an over-target baseline is used for performance measurement reporting purposes, prior notification must be provided to the customer.

### Management Value

The time-phased performance measurement baseline that represents the planned scope of all authorized work and schedule provides the project manager a reference to assess project performance. It is controlled and reconciled to the target cost plus authorized unpriced work less management reserve. It represents the cumulative, time-phased, budgeted cost for work scheduled. The performance measurement baseline is a key component of earned value management.

### Intent

The Contract Budget Base (CBB) represents the value of all authorized work. This includes the negotiated contract cost (NCC) plus the estimated cost of any authorized unpriced work (AUW). This CBB value forms the basis for project budgeting.

The assignment of budgets to scheduled segments of work produces a plan against which actual performance can be compared. This is called the Performance Measurement Baseline (PMB). The establishment, maintenance, and use of the PMB are indispensable to effective performance measurement. The PMB should be in place as early as possible after project award or Authorization to Proceed (ATP).

The PMB represents the time-phased scope, schedule, and associated budget through the end of the contract. It is the sum of the control accounts plus any summary level planning packages (SLPP) and undistributed budget. Undistributed budget is a transient account that is distributed to control accounts, summary level planning packages, or management reserve as soon as practical after definitization, or as contractually directed.

Budgeting is the process of distributing or allocating cost targets to individual segments of work. Strict budget element relationships must exist at all times to assure that the sum of the parts is equal to the whole. The hierarchy of budget elements is illustrated in Figure 3. This shows how the intermediate summations are defined leading to the Performance Measurement Baseline, Contract Budget Base, and the Contract Target Price. For internally funded projects companies may use an alternative term for “contract”.

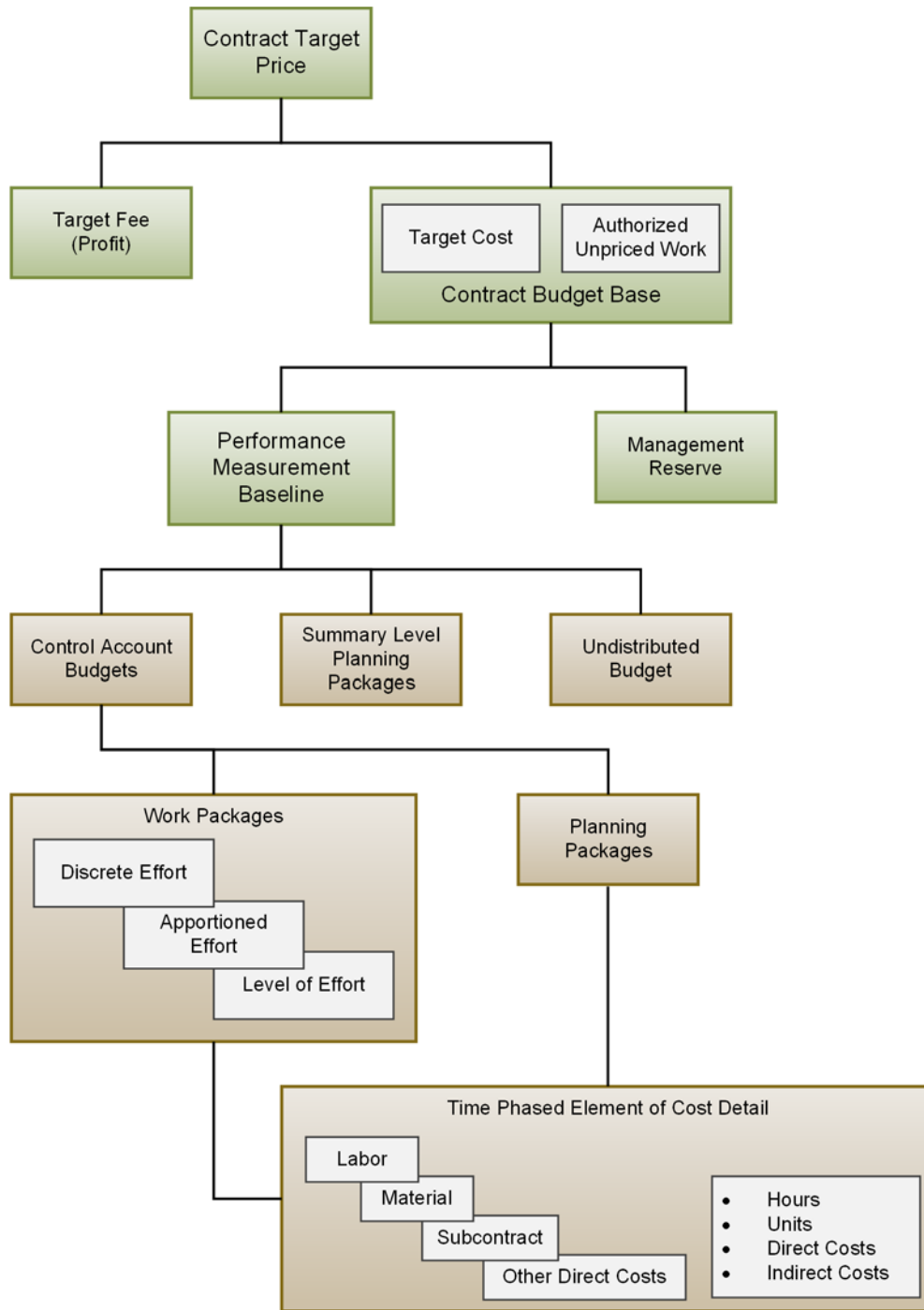


Figure 3 – Budget element hierarchy

This budget distribution is typically accomplished through the establishment of time-phased resources within control accounts. For future effort that cannot practically be identified to a control account, it is permissible to establish a temporary summary level planning package above the control account level that identifies scope, schedule, and associated budget to the end of the contract. The budget for this effort must be identified specifically to the work for which it is intended, time-phased, periodically reviewed for validity, and not used to perform other scopes of work. These summary efforts should be subdivided into control accounts at the

earliest opportunity. Planning horizons or rolling wave planning may be used to determine the appropriate time period in which to convert summary level planning packages into control accounts. Control accounts and summary level planning packages should exist from project start through the end of the contract.

Since control account budgets and schedules also establish the constraints required for baseline control, care must be exercised in the establishment of control account budgets to ensure a viable scope/effort correlation and to prevent inadvertent front-loading of the budget baseline. When establishing control accounts, factors to consider include the:

- Natural flow of work at this management control point.
- Significant project events supported by completion of the effort within the control account.
- Need to enhance objective measurement of progress by establishing shorter assessment periods.
- Rate structures related to the control account resources.

The maintenance of realistic budgets, directly tied to an established scope of work, is essential for each organization responsible for performing project effort. Eventually, all the work is planned by specific organizational elements to the control account level.

The PMB represents the formal plan for each control account manager to accomplish the authorized work assigned within the time defined by the project schedule and within the budget authorized.

During the life of a project, situations may arise whereby available budgets for the remaining work are insufficient to ensure valid performance measurement. Under these circumstances, a requirement may exist for the total budget allocated to work to exceed the recognized Contract Budget Base (CBB). The resulting value is referred to as an Over-Target Baseline (OTB).

There may also be situations where the estimated completion date extends beyond the contract completion date. Under some circumstances, it may be prudent to extend the planned completion date beyond the contractual period of performance. The result of this extension is referred to as an Over-Target Schedule (OTS).

When considering an OTB or an OTS, it is recommended the project review the contract for implementation requirements. Advance notification to the appropriate parties is essential prior to the implementation of an OTB or OTS. It is important to ensure that both internal management and the customer have a common understanding of the impact on the performance measurement metrics. There may be project situations or circumstances where a partial OTB is appropriate such as for an individual CLIN, WBS leg, or an IPT.

When the contractor and customer project managers are satisfied that the new baseline represents a reasonable plan for completing the contract, the new baseline becomes the basis for future performance measurement.

If the customer does not approve the implementation of an OTB, the contractor could:

1. Establish an internal Operating Budget (OB) for those elements that no longer have realistic budgets to foster continued early visibility. Note the Operating Budget (OB) also facilitates continued performance measurement practices by the respective control account managers. This capability allows for alternatives for effective management other than OTB, such as rework.

2. The internal Operating Budget (OB) would require internal factoring of the respective BCWS, BCWP, and BAC, so that the total WBS elements' BAC, BCWS, and BCWP values do not exceed the PMB values.

**Typical Attributes:**

- The PMB reflects the work scope, time-phased consistent with the integrated master schedule.
- The PMB reflects the budget value for the work scope in all control accounts, summary level planning packages, and undistributed budget.
- Control account budgets reflect the resources planned to perform the work and can only exceed the contract budget base when an over-target baseline is employed.

**Objective evidence may be found in these typical outputs:**

- Control account plans.
- Summary level planning packages.
- Performance measurement baseline.
- Undistributed budget logs.
- Notification to the customer of an over-target baseline or over-target schedule.
- Work authorization documents.

## Guideline 9 – Authorize and Budget by Cost Elements

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

### Management Value

An essential part of project planning and establishing a performance measurement baseline is the establishment of budgets for all the authorized work. Identification of the budget elements of cost (EOC) documents the required resources and places work scope with the performing organization.

### Intent

Through a work authorization process, establish budgets for all authorized work to be done by the responsible organizational elements. No work should begin before the effort is authorized by an initial work authorization. As budgets and schedules are established and approved for all the authorized work at the control account level, the work authorization is updated as required. The work authorization at the control account level is where the approved work scope, period of performance, and budget are integrated. The control accounts identify the appropriate cost elements (labor, subcontract, material, and other direct costs). It is important to include all resources required to accomplish the work scope.

Each control account should contain resources necessary to complete the assigned effort and budgets reflecting these resources. Budgets established at the control account level must be planned by element of cost. In addition:

- Budgets may be stated in dollars, hours, or other measurable units.
- It is necessary to use proper rates that provide a valid performance measurement baseline.
- In general, the budget process provides for the following:
  - Direct budgets allocated to organizations performing the planned work.
  - Indirect budgets allocated to specific organizations having responsibility for controlling indirect costs.
  - Identification of any management reserve or undistributed budget.

Material and subcontractor aspects must also be considered, including:

- Time-phasing of material budget should be consistent when the material is expected to be received, consumed, or paid. Guideline 21 addresses material accounting issues that may affect the time-phasing of material budgets.
- Budgets for subcontractors are time-phased to support project schedule requirements.

### Typical Attributes:

- Internal reports. Show budgets for each control account, and show that these budgets are reconcilable to the budget values shown on the latest control account/work package plans and in the work authorization documents.
- Control account/work package plans. Budgets are identified by element of cost (i.e., direct labor dollars/hours, material or subcontract dollars, and other direct costs).



- Responsibility assignment matrix (dollarized). Represents the complete project plan and budget. The budget is based on detailed estimates of the amount of labor, materials, and other resources required to complete the work associated with each control account.
- Resource plan. Identifies the resources needed to accomplish the work and assign resources to tasks in the integrated master schedule.
- Internal reports. Identifies control account budgets that can be summarized to organizational elements. Differentiation is made between direct cost budgets and those that include indirect costs.

Objective evidence may be found in these typical outputs:

- Control account plans by element of cost.
- Work authorization documents.
- Performance measurement baseline.
- Undistributed budget logs.
- Bills of Materials (BOM).
- Responsibility assignment matrix (dollarized).
- Schedules, if resourced.
- Resource plan.
- Material requirements documentation identifying when the material is expected to be used.
- Subcontractor schedules.

## Guideline 10 – Determine Discrete Work and Objective Measures

- e) To the extent it is practicable 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.

### Management Value

Budgets, established at the work package level identifying specific resource requirements in dollars, hours, or other measurable units, provide the detail for effective execution of the baseline plan. The resources are to be time-phased the way the detail work is to be accomplished. This approach provides meaningful product-related or management-oriented events for performance measurement. Where a control account cannot be planned in work package detail, the work scope, budget, and schedule requirements are held in planning packages. The integrated master schedule may have more detail below the work package/planning package level to support the development of a realistic critical path, as applicable.

### Intent

Effort contained within a control account is distributed into either work packages or planning packages. Work packages may consist of a single task or multiple tasks assigned to a performing organization for completion and are natural subdivisions of control account effort, resulting in a definable end product or event. Work package descriptions must clearly distinguish one work package effort from another. When work packages are relatively short, little or no assessment of work-in-progress is required. As work package length increases, work-in-progress measurement becomes more subjective, unless objective techniques, such as discrete milestones with pre-assigned budget values or completion percentages, subdivide them. A key feature, from the standpoint of evaluating accomplishment, is the desirability of having work packages that incorporate frequent, objective indicators of progress.

Each work package has the following characteristics:

- It represents units of work at the level where work is performed.
- It is clearly distinguishable from all other work packages.
- It is assigned to a single organizational element, or in an integrated product team environment, to a single integrated product team responsible for multiple functional disciplines performing the scope of work.
- It has scheduled start and completion dates and, as applicable, interim milestones, all of which are representative of physical accomplishment.
- It has a budget or assigned value expressed in terms of dollars, labor hours, or measurable units that is substantiated by supporting project plans.
- It is assigned an earned value technique.
- Its duration is limited to a relatively short span of time. A longer task needs objective intermediate measures to enable accurate performance assessments.
- It is consistent with detailed engineering, manufacturing, construction, or other schedules.

- It has material costs segregated from other elements of cost.
- It has subcontract effort consistent with subcontractor project plans. Subcontractor and contractor plans are directly reconcilable.

Work for a given control account that cannot be planned in detail at the outset is divided into larger segments and placed into planning packages within the control account. Planning packages are aggregates of future tasks and budgets, beyond those planned in detail that are divided into work packages at the earliest practical time. Time-phased budgets assigned to planning packages must be supported by a specified scope of work and this relationship must be maintained when detailed planning of the effort occurs.

#### Typical Attributes:

- Control Account Plans (CAPs) represent the work assigned to one responsible organizational element on one project WBS element. This is the lowest level in the structure at which the comparison of actual costs to planned budgets and earned value is normally required. It is also the cost collection point that identifies the cost elements with the factors contributing to cost or schedule variances. Under some circumstances additional levels of detail may be needed to segregate Level of Effort (LOE) versus discrete effort, multiple elements of cost, and multi-functional elements.
- Work packages represent detailed jobs, except for those that are for material items. They are units of work at levels where work is performed and are clearly distinguishable from all other work packages. They are:
  - Assigned to a single organizational element.
  - Have scheduled start and completion dates and, as applicable, interim milestones.
  - Have a budget or assigned value expressed in terms of dollars, labor hours, or other measurable units.
  - Have duration limited to a relatively short span of time, or are subdivided by discrete value milestones to facilitate the objective measurement techniques of work performed, or are LOE work packages integrated with detailed engineering, manufacturing, construction, or other schedules.
- A planning package is the logical aggregation of work within a control account, normally the far-term effort, that can be identified and budgeted in early baseline planning, but cannot yet be defined into discrete, apportioned, or level of effort work packages. Planning package plans must reflect the manner in which the work is to be performed.

#### Objective evidence may be found in these typical outputs:

- Control account plans divided into work packages and planning packages.
- Control account schedules.
- Control account time-phased budgets.

## Guideline 11 – Sum Detail Budgets to Control Account

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

### Management Value

The integrity of the performance measurement baseline requires that the budget of the control account equal the sum of its work package and planning package budgets. When the budget of the control account equals the sum of its work package and planning package budgets, it prevents duplicate recording of budgets.

### Intent

All control accounts must contain a budget, schedule, and scope of work and should realistically represent the work assigned and budgeted to the organizational units. In all cases, the value of the budget assigned to individual work packages and planning packages within the control account must sum to the total value authorized for the control account. A control account manager should not have a budget without an assigned scope of work. Conversely a control account manager should not have authorized scope without associated budget.

### Typical Attributes:

Control Account Plans (CAPs) usually represent the work assigned to one responsible organizational element on one project work breakdown structure element; they are usually at the lowest level in the structure at which the comparison of actual costs to planned budgets and to earned value are required; they are the cost collection points that identify the cost elements and factors contributing to cost or schedule performance.

### Objective evidence may be found in these typical outputs:

- Control account plan total budget.
- Work package budget.
- Planning package budget.

## Guideline 12 – Level of Effort Planning and Control

- g) Identify and control level of effort activity by time-phased budgets established for this purpose. Only that effort which is not measurable or for which measurement is impracticable may be classified as level of effort.

### Management Value

Meaningful product- or management-oriented events are critical for performance measurement. Objective measurement of Level of Effort (LOE) activity is impracticable and provides little, if any, visibility into actual performance; therefore, its use must be minimized.

### Intent

Each task on the project needs to be assessed to determine the best method to budget and measure its progress toward completion. Level of effort is defined as having no measurable output or product that can be discretely planned at the work package level. Level of effort must be limited to those activities that are unable to be measured discretely to avoid distorting project performance data. Level of effort work packages should be separately identified from discrete effort work packages and apportioned effort work packages. Budgets for level of effort activity must have supporting documentation for the estimate and be time-phased to properly reflect when work will be accomplished. LOE budgets may be planned at the same level as discrete or apportioned work packages.

### Typical Attributes

Level of effort work packages contain tasks of a general or supportive nature that do not produce definite end products, must be separately evaluated from discrete work packages within the control account, and contain time-phased budgets for planning and control.

- The amount of LOE activity will vary among performing organizations, but it must be held to the lowest practical level.
- Level of effort budgets should be separately substantiated and planned as direct labor, material/subcontract, or other direct costs. Level of effort should be budgeted on a time-phased basis for control and reporting purposes.
- Level of effort work package baseline dates, budgets, and scope are proactively managed to ensure appropriate performance measurement.
- If level of effort and discrete work packages are ever mixed within the same control account, the control account manager must ensure visibility into the earned value technique for measuring performance of the discrete effort portion.
- The earned value for level of effort work packages equals the time-phased budget.

Objective evidence may be found in these typical outputs:

- Control account plans identify level of effort work packages and budgets.

## Guideline 13 – Establish Overhead Budgets

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|--|
| h) 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. |
|--|

### Management Value

The overall value of establishing indirect budgets lies in the ability of company management to manage cost elements that cannot be directly assigned to individual cost objects (products). By comparing actual indirect expenses to established indirect budgets, the company can determine if the absorption of indirect expenses based on existing documented allocation schemes is on track or if allocation rates need to be adjusted. The accurate assignment of indirect expenses, therefore, ensures that each project only receive its fair share of indirect costs.

### Intent

Establish indirect budgets at the appropriate organizational level for each pool and cost sub-element. It is important to have an indirect budgeting and forecasting process, because indirect costs can account for a major portion of the cost of any project. As such, the budgetary control and management of this category of cost cannot be overlooked or minimized. Indirect budgets on the project are established and planned with the established direct budgets consistent with the method by which allocation of indirect costs is ultimately made to the project. This methodology is normally described in the organization's accounting procedures.

### Typical Attributes:

- Organization charts are established that identify the personnel or organizations responsible for maintaining the indirect costs.
- The organization's indirect cost policies and procedures are documented and represent a rational, traceable process.
- Cost Accounting Standards (CAS) established by the Cost Accounting Standards Board (CASB) ensures consistent and proper accounting for direct and indirect costs that are applied to government contracts. Direct costs are any cost that may be identified specifically with a particular cost objective; indirect costs are costs that, because of their incurrence for common or joint objectives, are not readily subject to treatment as direct costs.
- CAS disclosure statement defines the content and processes of the organization's management of indirect costs and generally includes a definition of indirect expenses and indirect cost pools.
- Indirect budgets are established and projected based on published rates for each organization.
- Forward pricing forecasts identify projected indirect cost rates beyond the current year.

### Objective evidence may be found in these typical outputs:

- Documented process for managing indirect costs.
- Organizational structure identifying ownership responsibility and authority levels.
- Indirect cost policies and procedures.

- Chart of accounts.
- Organizational charts.
- Forward pricing forecast (including sales forecast and business base projections).
- CAS disclosure statement, if applicable.
- Indirect budget and performance reports.

## Guideline 14 – Identify Management Reserve and Undistributed Budget

- |   |
|---|
| i) Identify management reserves and undistributed budget. |
|---|

### Management Value

Project managers must realize that the performance measurement baseline planning process contains risks and opportunities, and should identify a Management Reserve (MR) account for unplanned activity within the project scope. Unexpected work scope growth within the contract SOW, rates changes, or schedule slips are examples of situations that may make the amount of performance measurement budget assigned to an individual control account manager inadequate. This facilitates maintaining budgets for work accomplished and provides effective performance measurement data for management.

To ensure that budget for newly authorized efforts remains tied to the associated scope during the initial planning process, Undistributed Budget (UB) has been designated as the short-term holding account. Once the WBS and responsible organization(s) has been identified, the budget transfers from undistributed budget to the appropriate control account(s). This ensures budget and scope are not transferred independently.

### Intent

Identify and control management reserve and undistributed budget. Management reserve is budget set aside for unplanned events that may arise during the course of the project. Because management reserve is budget that is not yet tied to work, it does not form part of the performance measurement baseline. The management reserve budget should be commensurate with the level of risks and opportunities identified by the project or withheld for management control purposes. As such, management reserve budget is used for risk mitigation and opportunity capture activities.

Management reserve is not a contingency that can be eliminated from prices during subsequent negotiations or used to absorb the cost of project changes. The budget being held in reserve must not be viewed by a customer as a source for added work scope.

Undistributed budget is budget that is applicable to specific project effort, but has not yet been distributed below the project level either directly to control accounts or to summary level planning packages. It is a transient amount because, once it is distributed to either control accounts or to summary level planning packages, it ceases to be undistributed budget. Because undistributed budget is budget that is tied to work, it does form part of the performance measurement baseline. Undistributed budget accounts are to be cleared in a reasonably timely manner as work scope is finalized and distributed to control accounts or to summary level planning packages. This authorized work scope and budget relationship must also be maintained when work scope and the related budget is removed from the distributed budget and placed in undistributed budget pending further negotiations with the customer.

### Typical Attributes:

- Project control logs including:
  - Management reserve (showing month end values; monthly sources and applications to control accounts; and current value).
  - Undistributed budget (showing month end values; monthly sources and applications to control accounts; current value).



- Performance measurement baseline (showing month end values; monthly changes from/to management reserve and undistributed budget; current value).
- Contract budget base (showing month end values; monthly changes identifying contract modifications; current value).
- Monthly performance reports to verify that starting and ending values are consistent with various logs.

Objective evidence may be found in these typical outputs:

- Project control logs (management reserve, undistributed budget, performance measurement baseline, and contract budget base).
- Management performance reports.

## Guideline 15 – Reconcile to Target Cost Goal

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

### Management Value

A project baseline that reflects the common agreement between the two parties, for example a customer and contractor, provides a common reference point for progress assessment. It provides recognition of contractual requirements and precludes unauthorized changes to the performance measurement baseline. The project target cost must be reconciled with the performance measurement baseline and management reserve.

### Intent

Reconcile the project value (target cost plus authorized, unpriced work) with the sum of all control account budgets, indirect budgets, management reserves, and undistributed budgets. This is illustrated in guideline 8 Figure 3.

### Typical Attributes:

- Project control logs including:
  - Management reserve (showing month end values; monthly sources and applications to control accounts; current value).
  - Undistributed budget (showing month end values; monthly sources and applications to control accounts; current value).
  - Performance measurement baseline (showing month end values; monthly changes from/to management reserve and undistributed budget; current value).
  - Contract budget base (showing month end values; monthly changes identifying contract modifications; current value) reconciled to project target cost.
  - Total allocated budget reconciled to the contract budget base and any recognized over-target baseline.
- Contract and modification control logs identifying authorized target cost.

### Objective evidence may be found in these typical outputs:

- Project control logs (management reserve, undistributed budget, performance measurement baseline, and contract budget base) reconciled to project target cost.
- Management performance reports.
- Internal report showing the summarization from cost account to the performance measurement baseline.

## 2.3 Accounting Considerations

### Guideline 16 – Record Direct Costs

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

#### Management Value

Direct cost must be assigned to a project consistent with the pertinent budgets to achieve effective performance management. A project's cost-charging structure established in the accounting system should help ensure that actual costs collected are directly compared with associated budgets for that work.

#### Intent

Accumulate direct costs in the formal accounting system in a manner consistent with the way the related work is planned and budgeted. Actual costs reported in the performance reports agree with the costs recorded in the general books of account (accounting system) or can be explained as timing differences. At a minimum, actual costs are collected at the control account level to enable summarization of cost by both the WBS and OBS. Timing differences that may occur between the accounting system and project performance reports must be reconcilable.

Of particular interest is the accounting for material (i.e., at consumption, receipt, inventory acceptance, or inventory release). The basic requirement is to account for materials in a manner consistent with the way in which materials are budgeted. The use of estimated costs (estimated actuals) may be required to ensure actual costs and performance are recorded in the same accounting period.

Subcontracts also require special consideration. Subcontract costs must be accrued in a timely manner consistent with the schedule status. This may require the use of estimated costs or the equivalent import from the subcontractor's books of record or report.

#### Typical Attributes:

- Contractor's accounting manual/procedures identifying the methodology of handling various actual costs.
- Contractor's cost accounting standards disclosure statement identifying treatment of direct costs (direct material, labor, and other direct costs), indirect costs, depreciation and capitalization, and other costs and credits.
- Control account actual costs/general ledger reconciliation.
- Contractor's process to ensure actual costs and performance are recorded in the same accounting period.
- Contractor's process to use estimated actuals in the EVMS to account for the costs of work accomplished when the actual direct costs have yet to be recorded in the accounting system.

#### Objective evidence may be found in these typical outputs:

- Reconciliation of project costs with the accounting system.
- Actual costs are reported at the control account level at a minimum.

- Reconciliation of subcontract reported actual costs to subcontract payments.
- Internal and external performance reports for subcontractors.
- Subcontractor control account plans, when used.
- Estimated actuals log.

## Guideline 17 – Summarize Direct Costs by WBS Elements

- b) 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.

### Management Value

Actual costs need to be available at all levels of the WBS to support project management with performance measurement data. Cost collection accounts mapped to the WBS. The WBS roll-up structure contains no division/allocation of lower-level cost to multiple higher-level WBS elements, which helps to ensure performance measurement data integrity when summarized by WBS.

### Intent

A work order/job order/task code charge number must exist that uniquely identifies costs at the control account level at a minimum allowing for accumulation and summarization of costs to higher levels of the work breakdown structure. Through the use of this coding, allowable costs collected within the control account by element of cost roll-up from the lowest defined level through the WBS hierarchy without allocation to two or more higher-level WBS elements. Cost collection accounts map to the WBS, and the WBS roll-up structure contains no division/allocation of lower-level cost to multiple higher-level WBS elements. When common costs are collected in separate control accounts for like items or services they are allocated to appropriate control accounts in each project.

### Typical Attributes:

- Established project charge numbers to ensure actual costs are collected so that direct comparison with associated budgets can be made at the appropriate WBS level(s).

### Objective evidence may be found in these typical outputs:

- Cost collection account structure or charge number methodology.
- WBS/cost collection mapping showing the relationship between charge numbers and control accounts or work packages.
- WBS structure (roll-up scheme) showing the hierarchy of WBS elements, control accounts, and work packages.
- Management performance reports.

## Guideline 18 – Summarize Direct Costs by OBS Elements

- c) 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.

### Management Value

Actual costs need to be available at all levels of the OBS to support project management with performance measurement data. Cost collection accounts mapped to the OBS, and the OBS roll-up structure containing no division/allocation of lower-level cost to multiple higher-level OBS elements, helps to ensure performance measurement data integrity when it is summarized by OBS.

### Intent

Allowable costs collected within the control account by element of cost roll-up from the control account level at a minimum through the OBS hierarchy without allocation to two or more higher-level elements. This guideline and the one before it are identical, with the exception that this one deals with OBS data summarization while the previous one dealt with WBS data summarization. In either case the intent is the same: actual cost collected at the control account level may not be rolled up (i.e., summarized) to multiple higher-level elements. When common costs are collected in separate control accounts for like items or services, they are allocated to appropriate control accounts in each project.

### Typical Attributes:

- Established project charge numbers to ensure actual costs are collected so that direct comparison with associated budgets can be made at the appropriate organizational level(s).

### Objective evidence may be found in these typical outputs:

- OBS/cost collection mapping showing the relationship between charge numbers and control accounts or work packages.
- OBS structure (roll-up scheme) showing the hierarchy of OBS elements, control accounts, and work packages.
- Management performance reports.

## Guideline 19 – Record/Allocate Indirect Costs

- d) Record all indirect costs which will be allocated to the program consistent with the overhead budgets.

### Management Value

Visibility into direct and indirect costs is essential for successful management of a project. Therefore, it is important to have a documented process and organizations established specifically to manage and control indirect costs.

### Intent

Indirect costs are for common activities that cannot be identified specifically with a particular project or activity and should typically be budgeted and controlled separately at the functional or organization managerial level. Record all indirect costs for the project in the accounting system. Allocate them to the recorded direct costs per the documented procedure to ensure that all projects benefiting from the indirect costs receive their fair share.

### Typical Attributes:

- Cost collection account structure. Identifies the chargeable object for all cost centers.
- WBS/cost collection mapping. Identifies the responsible organization for budgeting and controlling indirect cost; time-phased budgets/forecasts established at same level as cost collection for comparison.
- WBS structure (roll-up scheme). Hierarchy scheme from point of the allocation to WBS/OBS up to the total project level.
- Cost accounting standards disclosure statement. Identifies the allocation base and indirect cost pools by functional element of cost.
- Accounting procedures. Shows that the responsible organization for incurring indirect cost corresponds to the level of management control and categorizes fixed and variable cost methods of control.
- Organization chart. Identifies management responsibility for controlling indirect staff and ability to influence indirect costs.

### Objective evidence may be found in these typical outputs:

- Cost collection account structure.
- WBS/cost collection mapping.
- WBS structure (roll-up scheme).
- Cost accounting standards disclosure statement.

## Guideline 20 – Identify Unit and Lot Costs

e) Identify unit costs, equivalent unit costs, or lot costs when needed.

### Management Value

A manufacturing accounting system capable of isolating unit and lot costs in a production environment should allow the flexibility to plan, measure performance, and forecast in a more efficient way when there are multiple projects in the same production line.

### Intent

When using equivalent units, or lot costs budgeting, ensure that the accounting system produces actual unit, equivalent unit, or lot costs for purposes of measuring cost performance. Typically, this is accomplished through the use of a charge number, the manufacturing planning systems, or equivalent capability. On production contracts or projects where multiple similar units are being delivered, or when units are taken off the line in more or less a random order according to the delivery agreements of the different customer's projects, it is sufficient to establish "equivalent unit cost" (i.e., all things being equal, each unit's cost is approximately equivalent to every other unit's cost).

### Typical Attributes:

- Cost collection account structure.
- Manufacturing/Enterprise Resource Planning (M/ERP) system supports the identification of unit costs, equivalent unit costs, or lot cost when needed including differentiation of work in process. Expressed in terms of labor, material, other direct cost, indirect cost, as well as distinguishing between recurring (e.g., production) and non-recurring (e.g., design, development, travel, and non-recurring expense) costs.
- Identify unit, equivalent unit, or lot costs by type and amount of material as necessary on production-type efforts.

### Objective evidence may be found in these typical outputs:

- Project cost collection structure.
- M/ERP system supports the identification of unit costs, equivalent unit costs, or lot costs when needed, including differentiation of work in process.



## Guideline 21 – Track and Report Material Costs and Quantities

- |    |   |
|----|---|
| f) | 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 recorded for accomplishing work performed in the same period that earned value is measured and at the point in time most suitable for the category of material involved, but no earlier than the time of actual receipt of material. |
| 3) | Full accountability of all material purchased for the project including the residual inventory.   |

### Management Value

The establishment of a valid comparison of planned material costs for completed work with the actual material costs for that work provides the basis for realistic evaluation of cost deviations and ultimately facilitates cost at complete projections. Residual inventory provides visibility into excess material for the current deliverables available for replacement of failures in the current project or future projects having similar deliverables.

High value or critical material items may require special considerations for planning and measuring progress. Contracting methods should be considered that support objectives and promote the use of progress methods to meet the needs of integrated program management.

### Intent

Material accounting systems must adhere to these three characteristics:

1. The material accounting system provides full accountability for all material (including residual inventory) purchased for the project.
2. Material costs must be accurately charged to contract control accounts using recognized, acceptable costing techniques. The need for accurate comparison of material costs to material budgets and earned value requires that the appropriate point of performance measurement for material is established. The generally acceptable points for measuring material progress are:
  - a. Point of receipt (acceptance),
  - b. Point of stock (inventory), and
  - c. Point of issue to work in process (consumption).
3. When necessary and significant, and when material actuals are not yet available, the use of estimated Actual Cost of Work Performed (ACWP) is required to ensure accurate performance measurement.

### Typical Attributes:

- Performance reports showing material cost/schedule variances, earned value claimed in the same accounting period as actual costs, material performance recorded no earlier than material receipt, issue from inventory, or material consumption.

- Control account plans showing time-phased material budgets and earned value techniques, which could include making a distinction between high value and low value material.
- The material system needs to account for various methods of charging material cost from inventory in accordance with cost accounting standards inventory costing methods; i.e., First-In, First-Out (FIFO); moving average; weighted average; standard cost; and Last-In, First-Out (LIFO). Identify accountability for all material purchased for the project including material issues to control accounts, return of unused material, scrap quantity and disposition, and residual inventory.
- Price and usage material analysis where useful. Price Variance = (Earned Value Unit Price - Actual Unit Price) x Actual Quantity. Usage Variance = (Earned Value Quantity - Actual Quantity) x Earned Value Unit Price. Quantity breakouts are most useful on projects procuring multiple items of the same part number, typical for production type contracts.
- Material unit or lot costs are identified when situations of multiple concurrent units of homogenous items make tracking individual components impracticable.

Objective evidence may be found in these typical outputs:

- Management performance reports.
- Control account plans.
- Material system reports.
- Estimated actuals log.

## 2.4 Analysis and Management Reports

### Guideline 22 – Calculate Schedule Variance and Cost Variance

- a) 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 and the actual (applied where appropriate) direct costs for the same work. This comparison provides the cost variance.

#### Management Value

Earned Value Management System (EVMS) provides performance data for management control. Visibility into project performance helps the project manager to focus resources on those areas in need of attention. Calculating cost and schedule variances allows the project manager to assess the impact of deviations from the performance measurement baseline and to determine the necessity for corrective action(s) to achieve project objectives.

#### Intent

On at least a monthly basis, generate schedule variance and cost variance data that supports management control needs by allowing the project manager to focus on those areas in need of attention. The intent of this guideline is to recognize that analysis must be accomplished on a regular, periodic basis. It is critical that the calculation of earned value (see guidelines 7 and 10) be based consistently with the manner used to establish the budgets (see guidelines 8, 10, and 12). This ensures a generation of valid variances for analysis purposes. All data analyzed must come from, or be reconcilable with, the earned value management system (BCWS, BCWP, and ACWP) and the accounting system.

#### Typical Attributes:

- Monthly performance report:
  - Budget, earned value, and actual costs.
  - Cost Variance (CV).
  - Schedule Variance (SV).
  - Variance at Completion (VAC).
- Summarized performance measurement data from control account (minimum) through WBS/OBS hierarchy to the project level.

#### Objective evidence may be found in these typical outputs:

- Monthly performance reports (cost variance, schedule variance, and variance at completion analysis).
- Variance analysis data.

## Guideline 23 – Analyze Significant Variances

- b) 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.

### Management Value

The ability to analyze deviations from the established plan permits management at all levels to rapidly and effectively implement corrective actions in an effort to regain project/contract objectives. Without this visibility into and the understanding of plan deviations, the success of the project can be jeopardized. Additionally, the variance analysis facilitates insight into future cost and schedule performance.

### Intent

The purpose of this guideline is to ensure both significant schedule and cost variances are analyzed, at least monthly, at a level of detail required to manage the effort as well as to enable management decision-making and corrective action.

Comparing the budget value of work completed to the budget value of work scheduled during a given period of time provides a valuable indication of schedule status typically in terms of dollars-worth of work accomplished. This schedule variance (SV) may not clearly indicate whether or not scheduled milestones are being met, since some work may have been performed out of sequence or ahead of schedule while other work has been delayed. Schedule variance does not indicate whether a completed activity is a critical event or if (or by how much) delays in an activity's completion will affect the completion date of the project.

A formal time-phased, time-based scheduling system must provide the means of more clearly determining the status of specific control accounts (or lower-level tasks/activities), milestones, and critical events. For significant schedule variances, the schedule analysis should address the time impact to the schedule plan. A key concept required to support schedule analysis is to ensure that work is planned in discrete elements that reflect actual accomplishment. This helps to ensure that time-based schedule variances are ultimately reported. The analysis should identify potential schedule accomplishment and milestone problems with respect to the integrated master schedule and thus help to ensure routine evaluation of the critical path, as applicable.

Comparing the budgeted value of work completed to the actual cost of that work provides a valuable indication of the cost efficiency of work accomplished. This cost variance provides management an indicator of actual cost problems and may be trended to see future impacts. Cost variance may be discussed in terms of rate impact versus efficiency (hours) impact for the significant labor elements of cost. Only variances that have a significant impact on the execution of the project should be analyzed in detail. Project procedures defining thresholds are normally used to define the significant level applicable to that situation.

### Typical Attributes:

- Schedule (time-based) and cost (budget-based) variances are identified at an actionable level.
- Variance causes and impacts are identified in sufficient detail needed for project management.

- Corrective actions are implemented in a timely manner.
- Price/usage analysis, as applicable, for production material efforts.

Objective evidence may be found in these typical outputs:

- Variance analyses (budget based schedule variances and cost variances).
- Management action plans.
- Updated schedule task completion and cost-at-completion forecasts.
- Project schedules and schedule analysis outputs.

## Guideline 24 – Analyze Indirect Cost Variances

- c) 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.

### Management Value

Ongoing indirect cost analysis provides visibility into potential indirect cost overruns and the opportunity to develop and implement management action plans to meet project objectives.

### Intent

Indirect rate forecast and control are crucial to meeting project cost objectives. This guideline requires periodic indirect cost analysis, by those assigned responsibility, comparing indirect budgets to indirect actual costs and explaining the cause of resultant variance(s). The importance of analyzing indirect cost performance requires the exercise of maximum discipline in following the established indirect cost control procedures. The results of indirect analysis are provided to project and business managers for their use in forecasting the impact to the project Estimate at Completion (EAC).

### Typical Attributes:

- Indirect cost variance analyses:
  - Budgeted cost is compared to actual costs by element of indirect cost and variances that exceed established thresholds are analyzed to include root cause, impacts, and corrective action plans.
  - The results of indirect variance analysis are provided to the appropriate level(s) of management (control account, functional, project, or other) for use in evaluating the cost variance and forecasting the EAC.
  - Variance thresholds by indirect cost category.
  - Responsible indirect cost manager identifies root cause(s) (i.e., usage variance, change in business volume, or rate variance due to a change in the direct base).
- Indirect management action plans:
  - Corrective action plans identified to reduce or eliminate variance.
  - Performance metrics.

### Objective evidence may be found in these typical outputs:

- Indirect cost variance analyses.
- Indirect cost management action plans.
- Indirect cost updated forecasts.
- Evidence of corrective actions resulting from indirect variances.

## Guideline 25 – Summarize Performance Data and Variances for Management Reporting

- |  |
|--|
| d) 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. |
|--|

### Management Value

Understanding the relationship among scope, cost, schedule, and risk is critical to successful project execution. Variances provide an understanding of project conditions, allowing the project manager to properly address project issues, risks, and opportunities. They also identify significant problem areas coming from all levels of the organization and project scope of work, derived from the same data sources. Variances provide valuable management information.

### Intent

Use the same data for internal management needs and for reporting to the customer. Since the WBS and the OBS exist as a formal and disciplined framework for project management and also provide a formal structure for the comprehensive roll-up of all data elements, they become the ideal framework for summarizing data from the control account level to the management reporting level. Summarizing performance information assists senior levels of management to focus on the significant problems that require their intervention.

### Typical Attributes:

- Variance analyses. Internal/external reporting thresholds and narrative analysis providing root cause, impact, and corrective action.
- Schedule and cost performance reports. Schedule variance, cost variance, and variance at completion from control account up through WBS/OBS reporting structure hierarchy to total project level.
- Management action plans. Corrective action plan/mitigation plan, task, milestones, exit criteria, and schedules.

### Objective evidence may be found in these typical outputs:

- Variance analyses.
- Schedule and cost performance reports.
- Management action plans.
- Updated schedule and cost forecasts.
- Risk and opportunity management plans (identification, analysis, and handling).

## Guideline 26 – Implement Corrective Actions

- |   |
|---|
| e) Implement managerial action taken as the result of earned value information. |
|---|

### Management Value

Earned value management information provides management with early insight into the extent of problems. Management action is required to mitigate the impacts on the project objectives.

### Intent

Identify and implement corrective actions based on earned value variance analysis to achieve project objectives. Regular monitoring of the performance data helps keep the project within its cost and schedule baseline objectives.

Performance measurement data should be utilized by all levels of management to promote effective project execution. Because of this, the data produced by the earned value management system must be available to managers on a timely basis and must be of sufficient quality to ensure that effective integrated program management decisions can be made as a result of its analysis. The project's internal reports and the reports forwarded to their customer must indicate the overall cost and schedule impacts of such problems on the project.

For effective management control, the corrective actions should be identified at the appropriate level and then tracked to resolution and closure. A manager's assigned action should have sufficient authority and control over the resources to effectively implement the corrective action requirements.

### Typical Attributes:

- Follow-up of the implementation to verify what was planned was implemented.
- Reasonableness of the corrective action.
- Validity of the problem identified.

### Objective evidence may be found in these typical outputs:

- To-Complete Performance Index (TCPI).
- Independent completion estimates.
- Risk and opportunity management data and similar metrics.
- Management action plans and review briefings.
- Variance analyses.



## Guideline 27 – Maintain Estimates at Completion (EAC)

- f) 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.

### Management Value

A properly established and maintained estimate at completion (EAC) ensures continuing visibility into the cost, schedule, risks and opportunities, as well as the resource needs such as labor or material for the remaining work that is essential to project success for both the customer and the contractor. Accurate estimates support the customer's ability to provide sufficient funding to the project and enhance internal management's visibility into critical issues and resource requirements.

### Intent

The control account level is where the approved work scope, period of performance, budget, and estimate at completion (EAC) are integrated. The estimates at completion are summarized up through the WBS and OBS to the project level for management visibility and control. The control account managers are responsible for maintaining the control account level latest revised estimate to complete that is assessed on a monthly basis. Periodically, a comprehensive or bottom-up estimate at completion should be prepared using all available information to arrive at the best possible estimate at completion.

For the monthly estimates to complete (ETC), the control account manager should review the status of the expended effort and the achievability of the forecast and significant changes briefed to program management. This analysis should focus on performance to date within the control account, an assessment of the effort to complete the remaining work, and an evaluation of the type and quantity of resources required to complete the effort. Issues, risks and opportunities should also be considered in this analysis. When updates are made to existing forecasts of the schedule and cost to complete, significant changes are briefed to program management. Prudent maintenance of the control account-level estimates at completion ensures that the EAC reflects a valid projection of project costs.

For the comprehensive estimate at completion, many of the same factors included in the monthly evaluation at the control account level are considered as well as:

- Evaluating both direct and indirect performance to date efficiency achieved by performing organizations for completed work and comparing it to remaining budgets and the scope of work.
- Assessing commitment values for material to complete the remaining work.
- Evaluation of subcontractor assessments of cost to complete their efforts.
- Estimating future conditions to derive the most accurate estimate at completion such as projected rate changes, process improvements that may result in reduced costs, or other economic factors that may impact future costs.

Comparisons of the estimates to complete and the budgets for the associated effort must be made frequently enough for management to ensure project performance and resource

availability is not adversely impacted. Prudent maintenance of the control account-level estimates at completion ensures that the EAC reflects a valid projection of project costs.

Projections of future costs to complete must be reported to the appropriate customer in applicable funding reports, if required.

**Typical Attributes:**

- Timely and comprehensive assessments of the effort required for completing all work packages and planning packages in the control account plan.
- Control account manager updates the EAC to reflect significant changes in the budget or schedule.
- Time-phased estimate to complete based on an analysis of remaining tasks in the integrated master schedule and projected resource plan.
- Control account manager should develop, analyze, and document the Estimate to Complete (ETC) at the work package and planning package level. The sum of the control account manager's work package and planning package ETCs are added to the control account actual cost to develop the control account EAC. Control account EACs are summarized through the WBS and OBS to the project and contract level.
- Management performance report totals for the EAC should reconcile with the corresponding time-phased resource plan.
- All emerging risks and opportunities identified in the project's risk register (or other similar database) impacting the schedule or resource plan for the remaining work should be considered in the EAC updates.
- Funding requirements resulting from EAC changes are communicated to the customer as required by contract.

**Objective evidence may be found in these typical outputs:**

- Control account plans.
- Documented process for developing EACs, including subcontractor EAC integration.
- Supporting documentation for the estimates.
- Risk and opportunity management plans (identification, analysis, and handling plans).
- Operational metrics.
- Earned value metrics.
- Updated schedule task completion and cost-at-completion forecasts.
- Material and subcontractor performance data.
- Bill of Materials (BOM) or equivalent.
- Schedule forecast dates.

## 2.5 Revisions and Data Maintenance

### Guideline 28 – Incorporate Changes in a Timely Manner

- a) Incorporate authorized changes in a timely manner, recording the effects of such changes in the 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.

#### Management Value

A properly maintained performance measurement baseline is crucial to effective program management. The timely and accurate incorporation of authorized changes to the performance measurement baseline ensures that the information generated from the execution of the baseline plan provides an accurate picture of progress and facilitates correct management actions and decisions.

#### Intent

Incorporate the work scope for authorized changes into the performance measurement baseline in a documented, disciplined, and timely manner. The timely and accurate incorporation of authorized and negotiated changes into the performance measurement baseline ensures that valid performance measurement information is generated for the new scope being executed. Adherence to this guideline helps to ensure that budget, schedule, and work remain coupled.

For unpriced change orders, the contractor develops its best estimate for planning and budgeting purposes for incorporation into the performance measurement baseline. Near term effort should be planned and have budget in control accounts. Far term effort that cannot be reasonably planned in the near term may be planned in summary level planning packages or maintained in Undistributed Budget (UB). Until contractual definitization, the near-term work is continually planned. After definitization, any budget remaining in undistributed budget is planned and budgeted within control accounts, summary level planning package packages, or management reserve, as soon as practical.

In instances where the work scope is not fully defined, distributing the budget authority for the work scope into planning packages or control accounts may not be practical. For example, technology insertions or study efforts may require the budget authority to reside in UB for a sustained period. The disposition may require time before UB is reduced following negotiations.

Incorporating changes must not arbitrarily eliminate existing cost and schedule variances. Rate changes and economic price adjustments may be applied to the authorized changes as appropriate.

#### Typical Attributes:

- Contractual change documents (external). May take various forms such as a contract modification, letter to proceed from contracts office or legal office, not-to-exceed letter, change order, engineering change order, delivery order, or basic ordering agreement that transmit and authorize the change or addition/deletion to work, budget, and schedule.
- Contractor's internal documentation such as a change request form or project directive facilitating the change. It should provide the rationale/justification, an approval process, work scope additions or deletions by integrated product team or WBS, dollars, changes to schedules, estimate at completion, and other details.

- Supporting documentation for the estimates.
- Change control logs describing the change transactions to management reserve, undistributed budget, performance measurement baseline, and contract budget base total.
- Statement of work (amendments or revisions), WBS (changes if applicable), and WBS dictionary (additions or deletions to scope).
- Work authorization documents authorizing new work scope, schedule, budget and authorization to proceed, if not already captured by the internal change request process.
- Control account/work package/planning package plans showing revised work scope, duration, and budget.
- Integrated master schedule showing revised work scope and duration, changes to linkages, and other schedule related details.
- Management reports showing timely incorporation of new work scope.

Objective evidence may be found in these typical outputs:

- Contractual change documents.
- Change control logs (management reserve, undistributed budget, performance measurement baseline, and contract budget base).
- Control account/work package/planning package plans.
- Integrated master schedule.
- Statement of work, WBS, and WBS dictionary.
- Work authorization documents.
- Management reports.

## Guideline 29 – Maintain Baseline and Reconcile Budgets

- b) 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.

### Management Value

The reconciliation of current budgets to prior budgets ensures the baseline maintains data integrity and reconciliation to the contract value.

### Intent

Budget changes are controlled and understood in terms of scope, resources, and schedule. Budgets reflect current authorized work. Budget revisions are made when work is added to the contract and are traceable from authorized contract target costs to the control account budgets or from management reserve. Management reserve may be used for authorized work that is in-scope to the contract, but out of scope to a control account. Management reserve, therefore, may not be applied to completed work packages, except to compensate for the effect of routine accounting adjustments in accordance with the organization's accounting practices.

Undistributed budget account should be distributed within a reasonable length of time subsequent to contract definitization or the project value finalization. It is recognized that some circumstances, such as delays in project direction, will affect the timely assignment of undistributed budget to control accounts.

The use of project budget logs assists in meeting the reconciliation intent of this guideline. The ability to track budget values for both the internal and external changes help to maintain the performance measurement baseline from project start to completion.

### Typical Attributes:

- Contractual change documents (external). May take various forms such as a contract modification, letter to proceed from contracts office or legal office, not-to-exceed letter, change order, engineering change order, delivery order, or basic ordering agreement, that transmit and authorize the change or addition to work, budget, and schedule.
- Contractor's internal documentation such as a change request form or project directive facilitating the change. It should provide the rationale/justification, approval process, work scope additions or deletions by integrated product team or WBS, dollars, changes to schedules, estimate at completion, and other details.
- Supporting documentation for the estimates.
- Change control logs describing the change transactions to management reserve, undistributed budget, performance measurement baseline, and contract budget base total.
- Statement of work (amendments or revisions), WBS (changes if applicable), and WBS dictionary (additions or deletions to scope).
- Work authorization documents authorizing new work scope, schedule, budget and authorization to proceed, if not already changed by the internal change request process.
- Control account/work package/planning package plans showing revised work scope, duration, and budget.

- Integrated master schedule showing revised work scope and duration, changes to revised work scope and duration, changes to linkages, and other schedule related details.
- Management reports showing timely incorporation of new work scope.

Objective evidence may be found in these typical outputs:

- Contractual change documents.
- Baseline change documents.
- Change control logs (management reserve, undistributed budget, performance measurement baseline, and contract budget base).

## Guideline 30 – Control Retroactive Changes

- c) 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.

### Management Value

Retroactive changes to the baseline may mask variance trends and prevent use of the performance data to project estimates of cost and schedule at completion.

### Intent

Control retroactive adjustments (including those in the current period), making only routine accounting adjustments, definitization of contract actions, rate changes, and economic price adjustments, customer-approved changes, or error corrections. Adjustments resulting from definitization of contract actions should be limited to affected work scope budgets. Changes that would arbitrarily eliminate existing cost and schedule variance should not be made. Rate changes and economic price adjustments are normal exceptions.

The cumulative values for the budgeted cost for work scheduled and budgeted cost for work performed are not adjusted for routine direct or indirect cost rate increases or decreases. This is necessary to ensure baseline integrity and accuracy of performance measurement data. Retroactive budget and/or performance adjustments may delay visibility of overall project variance from plan, thus reducing the alternatives available to managers for project redirection or termination.

### Typical Attributes:

- Change control process defines policy regarding retroactive changes that include conditions for use; prohibitions, approvals, and justifications; and evidence of discipline and control.
- Change control logs record change activity.
- Current and previous period dollarized, time-phased baseline plan. Compare the plans to identify any differences and to verify that all changes have been identified.
- Scheduling system reflects schedule inputs concerning times, dates, durations, percentage complete, and other schedule related details.
- Negative journal entries. When not a result of error corrections or routine accounting adjustments, they have appropriate explanations.
- Earned value input source documents. Negative or inappropriate amounts have appropriate explanations.
- Management performance reports or other management reports. Current period data on the performance reports reflect any retroactive changes with related explanations.

### Objective evidence may be found in these typical outputs:

- Change control logs.
- Baseline change documents.

- Management reports.
- Retroactive change control process including approval.



## Guideline 31 – Prevent Unauthorized Revisions

d) Prevent revisions to the program budget except for authorized changes.

### Management Value

Changes made outside the authorized baseline control processes compromise the integrity of performance trend data and delay visibility into overall project variance from plan, thus reducing the alternatives available to managers for project redirection or revisions.

### Intent

Prevent unauthorized revisions to the performance measurement baseline. Any changes to the project must be approved and implemented following the baseline management control process. This control precludes the inadvertent implementation of a budget baseline greater than the project budget. When the performance budget or schedule objectives exceed the project plan and are recognized in the performance measurement baseline, it is identified as an over-target baseline (OTB).

The decision to establish an over-target baseline may be a result of planning future work, planning in-process work, and/or adjusting cost or schedule variances. This permits an increase to the amount of budget for the remaining work. This creates a more realistic amount to adequately provide for reasonable budget objectives, work control, and performance measurement.

A thorough analysis of project status is necessary before the implementation of an over-target baseline. The organization should perform a detailed estimate of all costs necessary to complete the remaining effort. If the difference between the estimated cost to complete and the remaining budget is significant, the organization implementing the OTB should give advance notification to the appropriate parties of the need to increase the remaining budgets. It is important to consider that both organization and customer management agree to a common understanding of the over-target baseline's impact on the performance expectations.

When the organization and customer project managers are satisfied that the new baseline represents a reasonable plan for completing the contract, the new baseline becomes the basis for future performance measurement.

### Typical Attributes:

- Change control logs reflect changes to the performance measurement baseline and contract budget base.
- Control account/work package/planning package plans reflect approved budget changes.
- Work authorization documents reflect authorized changes to budget.
- Time-phased budget run reflects authorized changes to the budget.
- Management performance reports or other management reports reflect changes to the contract budget base.
- Contractual budget values (the contract budget base or total allocated budget) are only revised through contractual authorization such as a contract modification or OTB authorization.

Objective evidence may be found in these typical outputs:

- Change control logs (management reserve, undistributed budget, performance measurement baseline, and contract budget base).
- Control account/work package/planning package plans.
- Integrated master schedule.
- Statement of Work, WBS, and WBS dictionary.
- Work authorization documents.
- Management performance reports or other management reports

## Guideline 32 – Document Performance Measurement Baseline Changes

e) Document changes to the performance measurement baseline.

### Management Value

By ensuring that budget and schedule revisions are documented and traceable, the integrity of the performance measurement baseline is maintained and can be verified. This provides control account managers with valid control account plans against which to execute and measure performance.

### Intent

The performance measurement baseline should always reflect the most current plan for accomplishing the effort. Authorized changes must be promptly recorded in the system and incorporated into all relevant planning. Planning and authorization documents must be updated accordingly, prior to the commencement of new work.

### Typical Attributes:

- Change control logs (management reserve, undistributed budget, performance measurement baseline, and contract budget base) reflect changes from the original contract budget base and performance measurement baseline.
- Control account/work package/planning package plans reflect updated schedule and budget plans for all authorized changes.
- Integrated master schedule reflects incorporation of latest authorized changes.
- Time-phased budget run reflects authorized changes to the budget.
- Statement of Work, WBS, and WBS dictionary (if used) reflect incorporation of all authorized changes.
- Work authorization documents reflect incorporation of all authorized changes.
- Management performance reports or other management reports reflect incorporation of all authorized changes.

### Objective evidence may be found in these typical outputs:

- Change control logs (management reserve, undistributed budget, performance measurement baseline, and contract budget base).
- Baseline change documents.
- Control account/work package/planning package plans.
- Integrated master schedule.
- Statement of Work, WBS, and WBS dictionary.
- Work authorization documents.
- Management performance reports or other management reports.

## 3 Example Process Description Compliance Map

### 3.1 Developing a Compliance Map to the EVMS Guidelines

The purpose of this section and the separate appendix document to this intent guide is to provide an example and template that can be used as a starting point for a contractor, subcontractor, or government agency that needs to develop a compliance map to the EIA-748 EVMS Guidelines for their business process.

The example in this section uses guideline 1 to provide a sample description of how a company's business process complies with the requirements of a given guideline.

The separate appendix document provides a compliance map template for the 32 guidelines that can be tailored to a given business environment. The compliance section for each guideline must be completed based on how the company or agency does business.

## 3.2 Example Compliance Map

**The ACME Corporation**

**EARNED VALUE MANAGEMENT SYSTEM**

**PROCESS DESCRIPTION COMPLIANCE TO THE EIA-748 STANDARD**

**Guideline 1 – Define Work Scope (WBS)**

2.1 Organization

a) 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.

**Intent**

A WBS is a direct representation of the work scope in the project, documenting the hierarchy and description of the tasks to be performed and their relationship to the product deliverables. The WBS breaks down all authorized work scope into appropriate elements for planning, budgeting, scheduling, cost accounting, work authorization, measuring progress, and management control. The WBS must be extended to the level necessary for management action and control based on the complexity of the work. At a minimum, the WBS is extended to the level or levels at which control accounts are established. A WBS dictionary is typically used to define the work scope for each unique element in the WBS and should include cross references to the SOW or equivalent.

**Typical Attributes:**

- Only one WBS is used for management purposes per project and it contains all project work, including revisions for authorized changes and modifications.
- The WBS contains all contract line items and end items.
- The WBS identifies all WBS elements specified for external reporting.
- The WBS is extended at a minimum to the level(s) at which control accounts are established.
- The WBS elements should collectively provide a complete definition of work scope requirements.
- The WBS may evolve as the project requirements change.

**Objective evidence may be found in these typical outputs:**

- Work Breakdown Structure (WBS).
- Statement of Work (SOW) or equivalent.
- WBS dictionary (may or may not be used, but a method to reconcile the statement of work to the WBS structure must be demonstrated).

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**Earned Value Management System Description Compliance**

The development and maintenance of the WBS for each project is described in Section 2 of ACME corporation EVM system description. Each project must comply with the requirements described in Section 2. In summary, the requirements are as follows.

- The WBS must be created and maintained in ACME’s corporate EVM system.
- A single WBS structure must be developed and maintained per project for the entire life of the project.
- The WBS includes fields to identify and include such details as a:

- Unique WBS number for each WBS element.
- Short description.
- Parent element identification (with the exception of the top WBS element).
- Contract line item number for cross-reference to the Statement of Work.
- Reporting level required for internal management and customer reporting purposes.
- The lowest level in the WBS is the control account level (typically level 4 or 5 in the WBS structure, depending on the needs of the project).
- The WBS Dictionary online form may be used to describe the scope of work for all WBS elements. This description should include, but is not limited to, specific details such as:
  - End result or expected work product.
  - Related work to identify dependencies between elements of work.
  - Risk and opportunity factors.
  - Assumptions or limitations.
  - Technical specifications.
  - Related documents or other materials that are required for the work team to successfully complete their assignment.

Applicable process documents and desktop instructions are listed below. Who is responsible for what is also noted.

- WBS Audit. The project control team uses this process and related checklist to verify the WBS is complete as well as the cross references between the WBS elements and the Statement of Work. It is also used to verify that all WBS elements have an entry in the WBS Dictionary and that the work scope details are clear and specific. This audit is conducted as part of the initial WBS development process before the performance measurement baseline is set or when any contract modifications impact the scope of work.
- Maintaining the WBS. Desktop instructions used by the project control team for entering and maintaining the WBS data in the ACME EVM system. Only the project control team members have the authorization to create or modify the WBS data.
- Maintaining the WBS Dictionary. Desktop instructions used by the control account managers and IPT team members to enter and maintain the WBS Dictionary data.
- Maintaining Control Accounts. Desktop instructions for entering and maintaining the control account data in the ACME EVM system. Only the project control team members and the assigned control account manager have the authorization to modify the control accounts in the system.

Outputs available from the ACME EVM system for each project include:

- The work breakdown structure.
- WBS Dictionary.