Accounting System

In support of program management and Earned Value Management, the accounting system must be able to relate costs incurred to work accomplished. Not all accounting systems are designed to do this and, if a Work Breakdown Structure (WBS) has not been used, the capability may not exist. Instead, the system may only generate costs of labor, material, and other direct and indirect costs incurred by organizational elements. **EIA-748** provides the characteristics required of accounting systems on major defense contracts.

The WBS provides a structure that represents the work to be performed and its integration with the Organization Breakdown Structure (OBS) to form control accounts provides a logical place to collect costs. For that reason, control accounts are often called cost accounts and that term is used in earned value applied by the Department of Defense.

From the control account, management information, including costs, can be summarized by WBS and by OBS enabling higher levels of management to look at performance both by element of work and by organization. Significant changes to the accounting system should not be necessary, although a WBS/OBS coding scheme must be adopted to facilitate summarization of data.

At the conclusion of this lesson, you will be able to recall information the accounting system must provide to facilitate EVM.

Accounting System

''Accounting System'' used in this lesson refers to the Contractor's accounting system, or the Supplier's accounting system. It is important to recognize that the EVMS data is contractor or supplier based information.

Work Breakdown Structure (WBS)

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

Organization Breakdown Structure (OBS)

The hierarchical arrangement (organization chart) of a company's management structure, graphically depicting the reporting relationships. Normally limited to showing only managerial positions, but may depict lower organizational levels.

Control Account

A management control point where actual costs can be accumulated and compared to earned value. A control account is a natural point for cost/schedule planning and control since it represents the work assigned to one responsible organizational element for one work breakdown structure element. Also referred to as a cost account. A key element of an EVMS control account is that a single control account will not allocate costs to more than one WBS element and one organizational element.

Labor Costs

Labor charges normally occur at the work package level as man-hours are recorded on time cards (or equivalent) and accumulated for the control account. Since the control account manager must manage to a budget, labor cost variances should be reviewed both in terms of those variances related to performance (more hours used than planned) and those related to rates (higher cost per hour than planned). Therefore, labor hours should be priced out at the control account level to permit such analysis. In a work-team environment, which involves participants from different functional organizations, labor rates will vary and must be applied within the control account for accurate accounting.

Labor Cost Variances

Labor cost variances can be either favorable or unfavorable and can be a combination of variances in usage and variances in labor rates. It is often useful to determine which variance is influencing the overall cost variance, so appropriate management action can be taken. A similar concept exists for material cost variances (material usage variance and material price variance).

Material Cost

Material costs can be more difficult to deal with for a number of reasons. There are many different kinds of materials, they are purchased and controlled differently and there are several points in time when material costs can be recorded. For example, at the time a purchase order is placed with a supplier, valuable cost information is available because it is known at that time whether the materials are going to cost more or less than planned. At the time the materials are received, performance of the vendor can be measured. When vendors are paid, the material costs are recorded in the general books of account and contractors can bill the customer. Raw materials costs or miscellaneous items purchased in economic lot quantities may be charged (BCWP earned) to the program when issued from stores or applied to work in process. In some cases involving production of common parts for various programs, parts are manufactured, put in inventory, and reissued when needed for assembly. The costs may be allocated (BCWP earned) as the parts are made or they may be held back until the parts are assigned to a specific program, depending on a variety of factors. The approach used should be the approach that more accurately depicts physical progress toward completion of a product.

Material Costs Can Be Recorded

Within the EVM system, performance (BCWP) can be measured at the following points; 1) Material Delivery; 2) Withdraw from inventory to apply on the floor; 3) Progress accomplished prior to final delivery of a key component (subcontract).

(Assumes progress payments are based on physical accomplishment and not simply payment of actual costs incurred.)

Figure 9-1: Material Time Phasing

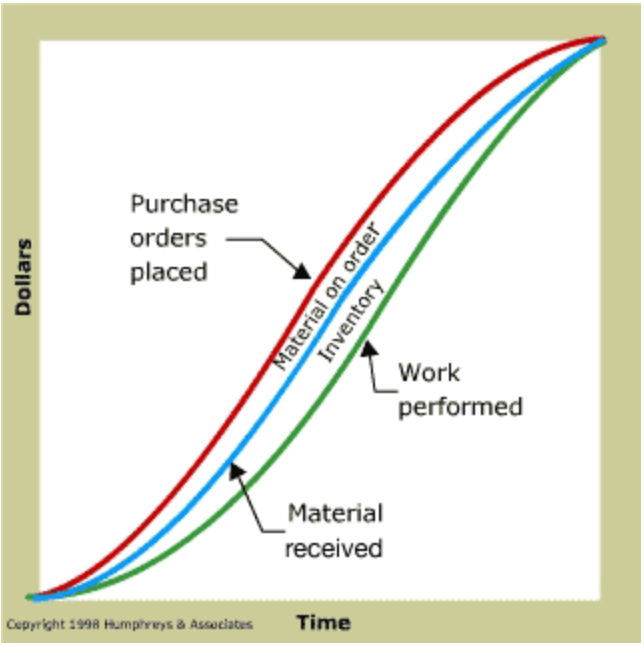

Figure 9-1 illustrates the time phasing associated with the material acquisition process.

As with labor, material costs should also be analyzed in terms of two components: price variance (materials cost more than planned) and usage variance (more materials used than planned). The price variance can be determined when the purchase order is placed. The usage variance is determined when the work is being done.

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Long Description

Figure 9-1: Material Time Phasing graphs the relationship (cost over time) for material received (material on order and inventory), work performed, and purchase orders placed.

Price and Usage Variance

An Earned Value Management system should reveal whether work performed is costing more or less than it was planned to cost. Material costs, like labor, should be recorded only when the work is performed. This approach, however, delays the visibility of material cost problems. Again, the portion of the material cost problem related to price is available at the time the purchase order is placed. Material price variances should be surfaced and incorporated into program cost estimates at that time even though the actual costs are still a long way from entering the books of account.

A rational approach that accommodates Earned Value Management considerations is to record the costs of most materials at the time the materials are received. Material deliveries do represent progress of work and earned value can logically be taken at that time. However, the actual costs used for Earned Value Management would have to be "estimated actual costs", based on purchase order, invoice or other information, since the actual costs will not enter the formal books until the suppliers are paid. If necessary, an accounting adjustment can be made to ensure compatibility with the books of account after payment. Raw materials cost could continue to be booked and their value earned when they are issued to work in process.

Material costs can be recorded by work package, but it is more common to charge those costs directly to the control account. Other direct costs, such as travel costs, may also be charged directly to the control account. Eventually, labor, material and other direct costs must be expressed in dollars and all elements can be converted to dollars at the control account level, whereas labor may be recorded only in terms of hours at the work package level.

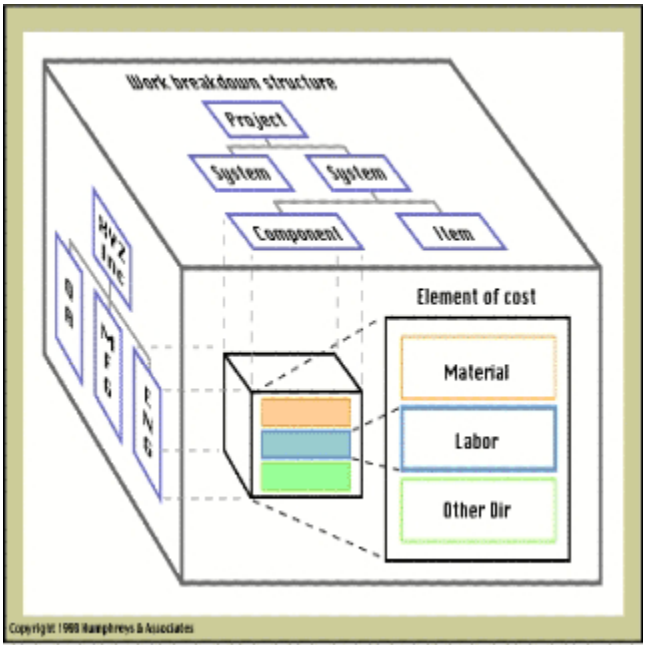
Subcontractor Reports

Major subcontractors may receive a "flow down" of performance requirements and their reports must be integrated into the prime contractor's system and reports. Large subcontracts can be treated as separate WBS elements; others may be integrated with the WBS at the control account level. One problem that must be dealt with, though, is the lag time associated with subcontractor reporting. It may not be possible to align the accounting period cut-off dates so as to incorporate subcontract reporting in the current month.

Consequently, users of the cost performance reports must understand that the bottom line may not represent the total program as of the reporting cut-off date. This should not be a big problem unless the subcontractor is experiencing significant difficulties. In these cases, a "flash" report from the subcontractor may be in order and the prime contractor should highlight the problem in the narrative portion of the program performance report. Electronic data interchange can also improve the timeliness of subcontractor reporting.

Suppliers that get progress payments based on costs incurred and evidence of physical accomplishment must also be represented in the baseline plan. Budgets can be based on the progress payment plan with earned value and actual costs based on milestone accomplishments and actual payments made. Unlike prime contractor cost reporting, subcontractor costs include fee or profit, as applicable, which represents cost to the prime.

Figure 9-2: WBS/OBS/Cost Element Identification



The WBS/OBS integration and cost element delineation within the control account provides a structure that allows detailed visibility of cost information.

Figure 9-2 illustrates how the engineering direct labor costs for a specific WBS element can be easily identified within the system. Indirect costs are normally collected in overhead pools at a summary organizational level and then allocated back to programs and contracts using rates that are based on a ratio of direct to indirect costs. Indirect cost impacts may or may not be visible to the control account manager depending on individual company practices.

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Long Description

Figure 9-2: WBS/OBS/Cost Element Identification illustrates how the engineering direct labor costs for a specific WBS element can be easily identified within the system. It is a 3-D representation showing how the WBS and OBS intersect with the labor, material, and other cost elements.

Accounting Knowledge Review

Which of the following describes information the contractor's accounting system must be able to provide to facilitate the use of EVM within a management system?

- Calculations of the value of work performed to work planned.
- Identification of the exact dates the work is planned to complete.
- Specification of the long term manufacturing goals relative to a contract.
- (•) The relationship of actual costs incurred to work accomplished.

Correct. Relating actual cost and the work accomplished describes information that the contractor's accounting system must be able to provide.

End of Lesson

You must click the **Next** button in order to receive credit for this lesson.