The Work Breakdown Structure (WBS)

Program Management is not easy! The larger the program, the more difficult it is, particularly where a large amount of development activity is involved. It is not unusual to see programs falling behind schedule in the early stages for a variety of reasons, one of which is that the effort required to plan the program and establish the baseline is often underestimated. It takes time to define the work and develop a realistic program baseline and it requires the involvement of key people who have the necessary experience to do it right, which means those people are not going to be available to do other things.

While the program planning process is iterative, doing step two often means redoing step one. Each progressive step brings new considerations and new limitations. A wonderful schedule plan that cannot be supported by available resources is not a good schedule because it cannot be carried out. The first step in the planning process is gaining an understanding of the full scope of the Program. Schedules cannot be developed until the work tasks have been defined and participating organizations have been identified.

A useful tool in defining the work is a Work Breakdown Structure (WBS). The WBS is referenced in the Military Handbook which is located in the course library.

At the conclusion of this lesson you will be able to identify the purpose and specific elements of the Work Breakdown Structure (WBS).

Figure 2-1: Work Breakdown Structure (WBS)

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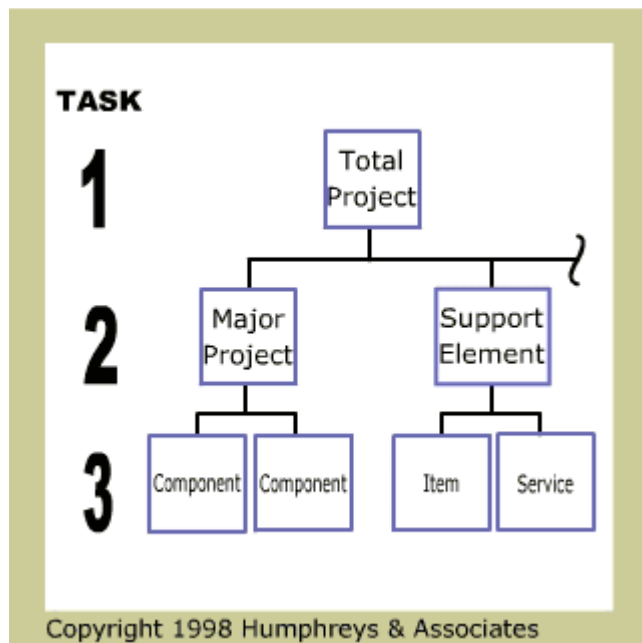
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A Work Breakdown Structure (WBS) looks like a typical company organization chart, but it is a breakdown of the products and services that constitute the Program rather than the organizations that will do the work. It is often described as a "product-oriented family tree" and looks like the illustration in Figure 2-1.

Task 1: First Level of the WBS
Task 2: Second Level of the WBS
Task 3: Third Level of the WBS

Click here for a printable version of all three tasks.

Long Description

Figure 2-1: The Work Breakdown Structure looks like a family tree beginning with a block at the top for Task 1. This task is the total project. This branches below to tasks in level 2 which may include a block for Major Product and Support Element and other blocks. Each of these branches down to level 3 blocks. These level 3 blocks may be components under the Major Product and item and service under the Support Element

Work Breakdown Structure (WBS)

MIL-HDBK-881 general definition of WBS: Work Breakdown Structure - This term is defined as: A product-oriented family tree composed of hardware, software, services, data, and facilities. The family tree results from systems engineering efforts during the acquisition of a defense materiel item. A WBS displays and defines the product, or products, to be developed and/or produced. It relates the elements of work to be accomplished to each other and to the end product. A WBS can be expressed down to any level of interest.

Task 1: First Level of the WBS

MIL-HDBK 881 Definition for WBS Level 1 is, "the entire defense materiel item; for example, an electronic system. An "electronic system" might be a command and control system, a radar system, a communications system, an information system, a sensor system, a navigation or guidance system, or an electronic warfare system. Level 1 is usually directly identified as a program or a sub-element of a program."

Task 2: Second Level of the WBS

MIL-HDBK 881 Definition for Level 2 elements are, "the major elements of the defense materiel item; for example, a fire control system or an automatic flight control system. These prime mission products include all hardware and software elements, aggregations of system level services (like system test and evaluation, or systems engineering and program management), and data."

Task 3: Third Level of the WBS

MIL-HDBK 881 Definition for Level 3 elements are, "elements subordinate to level 2 major elements. For example, a radar data processor, a signal processor, an antenna, a type of service (like development test and evaluation, contractor technical support, or training services), or a type of data (like technical publications) would be typical level 3 elements for an electronic system. Lower levels follow the same process."

The Contract WBS (CWBS)

The WBS will continue to be decomposed as necessary to arrive to an executable, manageable unit of work. The determination of what constitutes a managerially significant unit of work, or Control Account, is based on experience, scope and complexity of work, risk, visibility, and other factors relevant to the Program.

The WBS is a systematic approach to ensuring that all of the Program work is recognized and defined so that it can be developed into a viable work plan. The goal is to understand what has to be done to carry out the Program. To meet this goal, the WBS elements must be described in enough detail to not only ensure that all of the work has been identified, but to eliminate duplication and overlap where the same work seems to appear in different places. These descriptions make up a **WBS dictionary** that defines the work explicitly and provides a basis for control of scope changes during the life of the Program.

While the initial purpose of a WBS is to help define the Program work, once in place it provides a useful framework for integrating management subsystems and accumulating performance information. Disconnects and mismatches between systems can be minimized if estimates, budgets, schedules, costs, accomplishments and projections are all oriented to a common structure. The WBS can serve this purpose. In a contractual situation, the customer often proposes a summary level structure that ultimately serves as the framework for reporting on the contract. The contractor extends the summary structure in accordance with the way the work will be done. The entire WBS is then referred to as the Contract WBS (CWBS).

Control Account

Control Account (per EIA-748) - A management control point at which budgets (resource plans) and actual costs are accumulated and compared to earned value for management control purposes. A control account is a natural management point for planning and control since it represents the work assigned to one responsible organizational element on one program WBS element.

Figure 2-2: Contract Work Breakdown Structure (CWBS)

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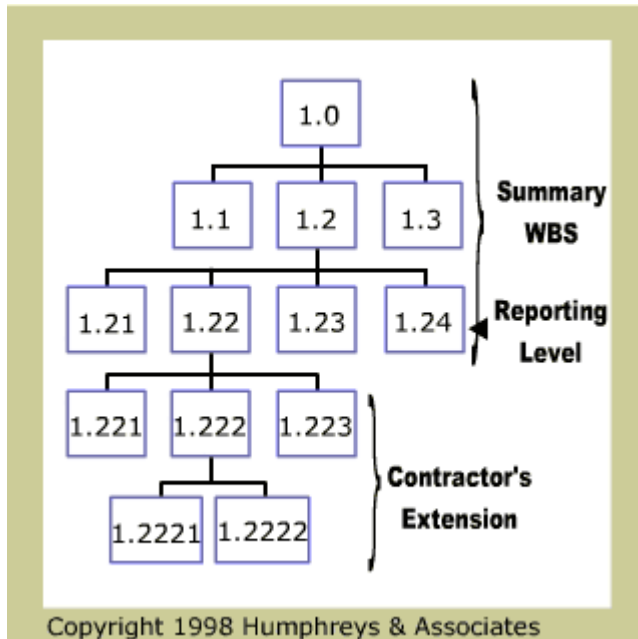
The customer's summary WBS is usually designed to satisfy specific data collection needs, perhaps because there is a desire to track certain components or subsystems, or in order to support cost estimating data bases. By delineating specific elements in the WBS, collection of information for those elements is facilitated. In most cases, there is flexibility for adjusting the customer-specified summary WBS during the negotiation process to accommodate the way the contractor plans to do the work. **Figure 2-2** illustrates the CWBS.

The Military Handbook (MIL-HDBK-881) provides guidance concerning WBSs. The handbook is for guidance only--conformance with the handbook may not be cited as a contract requirement. View the handbook from the course library.

Long Description

Figure 2-2: Contract Work Breakdown Structure (CWBS) looks like a family tree with a block for 1.0 at the top and branching down to blocks labeled 1.1, 1.2, and 1.3. Each of these can be branched down, for example, to 1.21, 1.22, 1.23, and 1.24. This third level down at the 1.21 level becomes the reporting level for the work breakdown structure. A contractor may break each of these blocks down to even finer levels such as 1.221, 1.222. and 1.223, and then even to 1.2221 and 1.2222. These last two levels at very great detail are called the contractors extension.

Understanding the Program Knowledge Review

What is the purpose and specific elements of the Work Breakdown Structure (WBS)?

○ The primary purpose of the WBS is to help define the organizational responsibilities for completing all the contract work and developing work plans. WBS elements are: Level 1 -Total Program; Level 2 – Primary Products & Supporting Services; Level 3 – Component parts and services.

○ The WBS is designed primarily to satisfy specific organizational data collection needs, because there is a desire to track organizational performance. WBS elements are: Level 1 -Total Program; Level 2 – Primary Products & Supporting Services; Level 3 – Component parts and services.

○ The WBS is a systematic approach to ensuring that the program organization structure is assigned responsibility in order to develop a viable work plan. WBS elements are: Level 1 -Total Program; Level 2 – Primary Products & Supporting Services; Level 3 – Component parts and services.

◉ The WBS is a product-oriented family tree and a systematic approach to ensuring that all of the program work is recognized and defined so that it can be developed into a viable work plan. WBS elements are: Level 1 -Total Program; Level 2 – Primary Products & Supporting Services; Level 3 – Component parts and services.

Correct. The WBS is a product-oriented family tree and a systematic approach to ensuring that all of the program work is recognized and defined so that it can be developed into a viable work plan.

End of Lesson

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