

## **Work Breakdown Structure of the Project**

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### **ABSTRACT**

**The WBS or the Work Breakdown Structure is essential as part of project's lifecycle and timeline. An important part of Project planning, the WBS begins with a hierarchy of tasks and levels that help to identify how the project will flow within a designed timeline set by the project manager .The project management institute defines the WBS as “ Representing the sum total decomposition of all work that the project encompasses, from beginning to end ” .**

**Keywords -** WBS, work breakdown structure, milestones, stakeholder.

### **1 INTRODUCTION**

A complex project is made manageable by first breaking it down into individual components in a hierarchical structure, known as the work breakdown structure, or the WBS. Such a structure defines tasks that can be completed independently of other tasks, facilitating resource allocation, assignment of responsibilities, and measurement and control of the project.

Company owners and project managers use the Work Breakdown Structure (WBS) to make complex projects more manageable. The WBS is designed to help break down a project into manageable chunks that can be effectively estimated and supervised.

Some widely used reasons for creating a WBS include:

- Assists with accurate project organization
- Helps with assigning responsibilities
- Shows the control points and project milestones
- Allows for more accurate estimation of cost, risk and time
- Helps explain the project scope to stakeholders

The introduction of the paper should explain the nature of the problem, previous work, purpose, and the contribution of the paper. The contents of each section may be provided to understand easily about the paper.

### **2 PURPOSE**

The Work Breakdown Structure (WBS) divides the entire project into its component elements in order to establish a framework for effective management control of the project scope, schedule and budget.

### **3 SCOPE**

The WBS is a product-oriented, hierarchical depiction of all work elements required to accomplish the entire work scope of the project. Project Managers are responsible for the creation of a WBS.

### **4 PROCEDURE**

#### **4.1 Structure**

A project WBS is a product-oriented grouping of project work elements that organizes and defines the total scope of the project. The WBS is a multi-level framework that organizes and graphically displays elements representing work to be accomplished in logical relationships. Each descending level represents an increasingly detailed definition/division of a project component. It is the structure and code that integrates and relates all project work (technical, schedule, and budget) and is used throughout the life cycle of a project to identify, assign, and track specific work scopes. The WBS will be established in sufficient detail so that each control account has a unique WBS element. The WBS is described in the Project Execution Plan (PEP), or attached as an appendix.

#### **4.2 Responsibility**

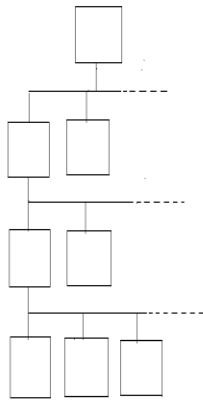
Project Managers are responsible for the creation of a WBS for their assigned projects, with input from other members of the project team.

#### **4.2.1 Constructing a Work Breakdown Structure**

To start out, the project manager and subject matter experts determine the main deliverables for the project. Once this is completed, they start decomposing the deliverables they have identified, breaking them down to successively smaller chunks of work.

"How small?" you may ask. That varies with project type and management style, but some sort of predetermined "rule" should govern the size and scope of the smallest chunks of work. There could be a two weeks rule, where nothing is broken down any smaller than it would take two weeks to complete. You can also use the 8/80 rule, where no chunk would take less than 8 hours or longer than 80 hours to complete. Determining the chunk size "rules" can take a little **practice**, but in the end these rules make the WBS easier to use.

The work breakdown structure can be illustrated in a block diagram:



*“ Fig. 1”*

#### 4.2.2 What is the WBS and Why Is It Important?

The WBS, or the Work Breakdown Structure, is essential as part of a project's lifecycle and timeline. An important part of project planning, the WBS begins with a hierarchy of tasks and levels that help to identify how the project will flow within a designed timeline set by the project manager. The Project Management Institute defines the WBS as, "Representing the sum total decomposition of all work that the project encompasses, from beginning to end."

So, didn't you already discuss this in your project initiation meetings? Weren't teams chosen and tasks assigned? Isn't everyone on the same page and ready to go?

Perhaps, but utilizing a WBS to outline where the project will start, what phases, levels, and tasks will be first, second, third, and so on, and the project's duration is essential any project's success. Skipping the WBS could cause delays, confused tasking by team members and project overruns. The WBS also helps to define the specifics of the project outlined in the project scope.

#### 4.2.3 Developing the work breakdown structure

##### 4.2.3.1 Work packages

Work package is the final product of the work breakdown structure. It is a collection of a series of related job or task, it is situated in the bottom of the work breakdown structure, something that is easy to be controlled by project team members. It is also the basis for subsequent management of projects and based on all the progress of the plan, quality management planning, cost planning, staffing is based on it is the smallest unit of project management.

In work breakdown structures, when a series of work package, we can refer to the following principles:

- Work packages are independently deliverable units, it should be clear, the only.
- Work tasks in a package should be able to explicitly implement in an organization or individual.
- Work package life cycle should be the shortest.
- Clear work packages and relationship to other work packages
- Work package to determine the actual cost of budget, human and resource needs.
- Work most of the tasks in the package on adaptability of project personnel should have the same type in the group.

##### 4.2.3.2 Key elements

In the previous section introduced in work package should note or refer some of the principles, that is when the original production work package have some reference value. When after a series of work packages are broken down, the project group on how these work packages, or, after the team got the work package, you need to do what work?

Recommendations are as follows:

- Content describes the process or activity. According to the project scope statement, for each work package describe, indicate that the nature of the work package.
- Assign responsible persons. Identify related organizations and individuals responsible for the task work package. That is, they work to complete the tasks of the package.
- Work package life cycle. That is, determine the start time and end time of the work package.
- Pursuant to a work package to develop plans or allocation of necessary resources. Such as: the progress plan for each work package, cost estimates, quality management schemes.

##### 4.2.3.3 Work breakdown structure and milestones

In the work breakdown structure element (work package, a middle-tier or work breakdown structure) when completed, will output a series of deliverables. At the same time, according to the actual situation of the project, the team can make this unit of work associated with a milestone.

Milestone marks one of the results or stages of work completed. Typically, the milestone is closely associated with and deliverables. When reaching milestones, project team members can subscribe to a project summary, reflection. If problems are found, you can take the necessary remedial measures. Milestone exists to make specific for team goals, compared with the main objective of the project and deliverables, milestones more easily and control, to reduce project risks.

According to the work breakdown structure, a point in the process of the project is running social milestone is meaningful.



### **4.3 Creating a WBS for the Project Duration**

Once we have gotten the first two levels set, it is time to launch into our decomposition or breakdown. Decomposition is the act of breaking down deliverables into successively smaller chunks of work to be completed in order to achieve a level of work that can be both realistically managed by the Project Manager and completed within a given time frame by one or more team members. This level of breakdown and detail is called the Work Package. Work packages are the lowest level of the WBS and are pieces of work that are specifically assigned to one person or one team of people to be completed. This is also the level at which the Project Manager has to monitor all project work.

The importance of defining a project's duration becomes something you and your team members can see, feel, and touch if you utilize a WBS in the project's lifecycle. Avoiding the all important work breakdown structure can be costly.

### **4.4 Why Do Project Teams Need a Work Breakdown Structure?**

The work breakdown structure has a number of benefits in addition to defining and organizing the project work. A project budget can be allocated to the top levels of the work breakdown structure, and department budgets can be quickly calculated based on the each project's work breakdown structure. By allocating time and cost estimates to specific sections of the work breakdown structure, a project schedule and budget can be quickly developed. As the project executes, specific sections of the work breakdown structure can be tracked to identify project cost performance and identify issues and problem areas in the project organization. For more information Project work breakdown structures can also be used to identify potential risks in a given project. If a work breakdown structure has a branch that is not well defined then it represents a scope definition risk. These risks should be tracked in a project log and reviewed as the project executes. By integrating the work breakdown structure with an organization breakdown structure, the project manager can also identify communication points and formulate a communication plan across the project organization.

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When a project is falling behind, referring the work breakdown structure will quickly identify the major deliverables impacted by a failing work package or late sub-deliverable. The work breakdown structure can also be color coded to represent sub-deliverable status. Assigning colors of red for late, yellow for at risk, green for on-target, and blue for completed deliverables is an effective way to produce a heat-map of project progress and draw management's attention to key areas of the work breakdown structure.

In this article we are going to look at what many project managers and project management professionals refer to as the "foundation" of the project, or at least the foundation of project planning. The Work Breakdown Structure (WBS) is defined by A Guide to the Project Management Body of Knowledge 3rd Edition (PMBOK Guide) as:

A deliverable oriented hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and create the required deliverables.

Wow! That is a lot of buzz words and jargon, but do not worry. It is not nearly as daunting as it sounds. Creating a quality WBS will require a substantial amount of energy, time, and people, but in the end is not rocket science. However, before we get too deep into how to actually create a WBS let's first look at its purpose.

#### **4.4.1 Purpose of work breakdown structure**

Why do we need to create a WBS for our projects? What purpose does it serve? Why should I waste my time writing on post-it notes and drawing charts when I could be getting my team started on the actual work of the project? Now, I know everyone reading this is a great project manager or team member, so I am sure none of you have ever said comments such as these, but I am sure you have heard them from those "other" project managers who will remain nameless.

So to answer these questions, let's take a look at what purpose the WBS serves to our project and our project team. There are three reasons to use a WBS in your projects. The first is that it helps more accurately and specifically define and organize the scope of the total project. The most common way this is done is by using a hierarchical tree structure. Each level of this structure breaks the project deliverables or objectives down to more specific and measurable chunks. The second reason for using a WBS in your projects is to help with assigning responsibilities, resource allocation, monitoring the project, and controlling the project. The WBS makes the deliverables more precise and concrete so that the project team knows exactly what has to be accomplished within each deliverable. This also allows for better estimating of cost, risk, and time because you can work from the smaller tasks back up to the level of the entire project. Finally, it allows you double check all the deliverables' specifics with the stakeholders and make sure there is nothing missing or overlapping.

The main purpose of Work Breakdown Structure is that firstly, it helps to define and organize the scope of the total project more accurately and specifically. The most common way this is done is by using a hierarchical tree structure. Each level of this structure breaks the project deliverables or objectives down to more specific and measurable chunks. The second reason for using a Work Breakdown Structure in your projects is to help with assigning responsibilities, resource allocation, monitoring the project, and controlling the project. The WBS makes the deliverables more precise and concrete so that the project team knows exactly what has to be accomplished within each deliverable.

This also allows for better estimating of cost, risk, and time because you can work from the smaller tasks back up to the level of the entire project. Finally, it allows you double check all the deliverables' specifics with the stakeholders and make sure there is nothing missing or overlapping. Besides, using the tree structure, you may also use Mind Mapping methodology, if you are familiar with it.

The very common question is how specific or small does a chunk of work need to be to still be considered a work package? Well PMBOK does not seem to give a definitive answer on that. Most project managers concur that this varies by project, but can usually be measured using the 8/80 Rule. The 8/80 Rule says that no work package should be less than 8 hours or greater than 80 hours. Notice we said that the work package is the lowest level of the WBS. Activities and tasks are not included in the WBS. They will be planned from the work packages once they are assigned.

## **5 COMMON PITFALLS AND MISCONCEPTIONS**

A WBS is not an exhaustive list of work. It is instead a comprehensive classification of project scope.

A WBS is not a project plan or a project schedule and it is not a chronological listing. It is considered poor practice to construct a project schedule (e.g. using project management software) before designing a proper WBS. This would be similar to scheduling the activities of home construction before completing the house design. Without concentrating on planned outcomes, it is very difficult to follow the 100% Rule at all levels of the WBS hierarchy. It is not possible to recover from an improperly defined WBS without starting over, so it is worthwhile to finish the WBS design before starting a project plan or project schedule.

A WBS is not an organizational hierarchy. Some practitioners make the mistake of creating a WBS that shadows the organizational chart. While it is common for responsibility to be assigned to organizational elements, a WBS that shadows the organizational structure is not descriptive of the project scope and is not outcome-oriented.

Short-term memory capacity should not dictate the size and span of a WBS tree structure. Some reference material suggests that each WBS level be limited to 5-9 elements because that is a theoretical limit to short-term memory. It is far more important to construct a logical grouping of planned outcomes than to worry about the limits of short-term human memory.

WBS updates, other than progressive elaboration of details, require formal change control. This is another reason why a WBS should be outcome-oriented and not be prescriptive of methods. Methods can and do changes frequently, but changes in planned outcomes require a higher degree of formality. If outcomes and actions are blended, change control may be too rigid for actions and too informal for outcomes.

## **6 CONCLUSION**

At the risk of sounding melodramatic, the efficiency of a project's Work Breakdown Structure can determine that project's success. The WBS provides the foundation for project planning, cost estimation, scheduling and resource allocation, not to mention risk management.

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