

Work Breakdown Structure: Purpose, Process and Pitfalls

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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.

Purpose

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 organise 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 to double check all the deliverables' specifics with the stakeholders and make sure there is nothing missing or overlapping.

Process

Now that we have agreed that creating a WBS will help to our project's efficiency and effectiveness, how do we go about it? First, let's look at what all we need to get started. There are several inputs you will need to get you off on the right foot:

- The Project Scope Statement
- The Project Scope Management Plan
- Organisational Process Assets
- Approved Change Requests - (PMBOK Guide)

These inputs should give you all the information you and your team needs to create your WBS. Along with these inputs, you will use certain tools as well:

- Work Breakdown Structure Templates

- Decomposition - (PMBOK Guide)

Finally, using these inputs and tools you will create the following outputs:

- Work Breakdown Structure
- WBS Dictionary
- Scope Baseline
- Project Scope Statement (updates)
- Project Scope Management Plan (updates)
- Requested Changes - (PMBOK Guide)

The first step to creating your WBS is to get all your team, and possibly key stakeholders, together in one room. Although your team is not listed as an input or tool in the above sections, they are probably your most vital asset to this process. Your team possesses all the expertise, experience, and creative thinking that will be needed to get down to the specifics of each deliverable. Next, we have to get the first two levels setup. The first level is the project title, and the second level is made up of all the deliverables for the project. At this stage it is important to function under the 100% Rule. This rule basically states that the WBS (specifically the first two levels) includes 100% of all the work defined in the project scope statement and management plan. Also, it must capture 100% of all the deliverables for the project including internal, external, and interim. In reality the WBS usually only captures between 90-95%, and 100% is our goal.

Once we have gotten the first two levels set, it is time to launch into our decomposition. Decomposition is the act of breaking down deliverables in to 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. Now the million dollar question is how specific and 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.

Now you are ready to start your team on the work of decomposition, but do not get too far ahead of yourself quite yet. As grandpa always said "There is no reason to reinvent the wheel." Occasionally, you will run into a project that is a "first of its kind," but that is not usually the case. Most of the time, you, your team, or your organisation has done a project like this one in the past. That means that there should be a WBS from the previous project that you can use as a template. This will save you a lot time and effort. Even if you have not done a project like this one before, most Project Management Offices (PMOs) have basic WBS templates that can get you started. Another great technique to make your life easier is the Post-It Note Technique. I know it sounds a little cheesy, but it actually works very well. In this technique you simply write each deliverable on a post-it note and stick them at the top of a wall. Then you and your team start to break down each deliverable into components and write each component on its own post-it note. This way, as you place them on the wall and start to create your tree structure, everyone can easily see what has been accomplished and where you are headed. Also this technique allows for easy movement of components around within the WBS.

Now the conference room wall is covered in post-it notes and Sally is frantically wanting to write everything down before they start to fall, but wait one more step before you put it into an official

(or semi-official) document. You can use your newly created WBS to look for missing or overlapping pieces of each deliverable. This will help eliminate change requests and double work down the road. Once that is completed, put your WBS on paper and log it into your project.

Many projects will also find it necessary to create a WBS Dictionary to accompany their WBS. The WBS Dictionary is simply a document that describes each component in the WBS. This helps clarify any specifics later on when team members completing the work or stakeholders viewing the deliverables have questions. Also, when creating the WBS for very large, lengthy, or complex projects, all the deliverables' specifics might not be known up front and, therefore, it is difficult to create a full WBS. In cases such as these many people use what is called Rolling Wave Planning. This is when you plan down to the level of detail currently known and go back to plan deeper once more information is acquired. Usually rolling wave planning needs to stay as least 2-3 months ahead of the actual work being done, but of course this varies slightly by industry.

Pitfalls

Lastly let's look at five common pitfalls to creating a WBS. If you can keep these few possible issues in mind when you are creating your WBS, you and your team will be much more successful at creating a useful and accurate Work Breakdown Structure.

1. Level of Work Package Detail

When deciding how specific and detailed to make your work packages, you must be careful to not get too detailed. This will lead to the project manager to have to micromanage the project and eventually slow down project progress. On the other hand, work packages whose details are too broad or large become impossible for the project manager to manage as a whole.

2. Deliverables Not Activities or Tasks

The WBS should contain a list of broken down deliverables. In other words, what the customer/stakeholder will get when the project is complete. It is NOT a list of specific activities and tasks used to accomplish the deliverables. How the work is completed (tasks and activities) can vary and change throughout the project, but deliverables cannot without a change request, so you do not want to list activities and tasks in the WBS.

3. WBS is not a Plan or Schedule

The WBS cannot be used as a replacement for the project plan or schedule. A WBS is not required to be created in any type of order or sequence. It is simply a visual breakdown of deliverables.

4. WBS Updates Require Change Control

The WBS is a formal project document, and any changes to it require the use of the project change control process. Any changes to the WBS change the deliverables and, therefore, the scope of the project. This is an important point to help control scope creep.

5. WBS is not an Organisational Hierarchy

The WBS and Organisational Hierarchy chart are never the same thing. Although often similar in appearance, these two documents are very different. The Organisational Hierarchy shows things like chain of command and lines of communication, but the WBS is restricted simply to a project and shows only the deliverables and scope of that project.

We hope that this article has helped you better understand the Work Breakdown Structure's purpose, process, and common pitfalls. The WBS is an extremely valuable tool to the project management methodology. It can make or break a project. It sets the foundation for the rest of the project planning. A solid WBS helps ensure proper project baselines, estimating, resource use, scheduling, risk analysis, and procurement.

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