

The Practice of using a WBS - reading between the lines

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Using a WBS - Is it so simple ?

Various project management standards for example PMI, NASA and DOD have established that a work breakdown structure (WBS) is a basic tool and have described the methodology to be followed. However, it remains to be seen if practitioners are actually following the best practices. If we do an informal survey on how well the WBS is understood or applied we will observe that not everyone knows how to use it effectively and we have a long way to go. In my view, it is still not a standardized process across practitioners. There seems to be a gap between the processes mentioned in the standards and practices actually followed. What are the areas of differences and what could be the reasons for such a disconnect to exist?

- a) The standards do not indicate tools / techniques which can be applied specifically for a domain or situation but are generalized with a lot of scope for improvisation to suit the context
- b) The knowledge and practice on this subject is still evolving
- c) There is still some confusion on its purpose and its area of use and the way it can be applied
- d) More effort is required through training sessions and workshops to help practitioners apply it in their work

Standards for WBS

Many standards on the WBS have been developed over the years. The most well known include

- A Guide to the Project Management Body of Knowledge or PMBOK Guide 4th Edn from PMI
- Practice standard on WBS 2nd Edition from PMI
- Department of Defense (DOD) standard for WBS - MIL-HDBK-881
- WBS Reference Guide by NASA

Looking at the way a WBS has been defined in these standards, most have considered

it as a deliverables-oriented breakup of work to be done. While the PMBOK guide 4th edition and Practice standards on WBS from PMI do state that it should be deliverables oriented, examples shown do not entirely depict them as such. This is not very surprising, since there is large divergence in practice when using the WBS .

Where is the confusion ?

The lack of clarity in the use and practice of the WBS is very much like the story of the blind men and the elephant.

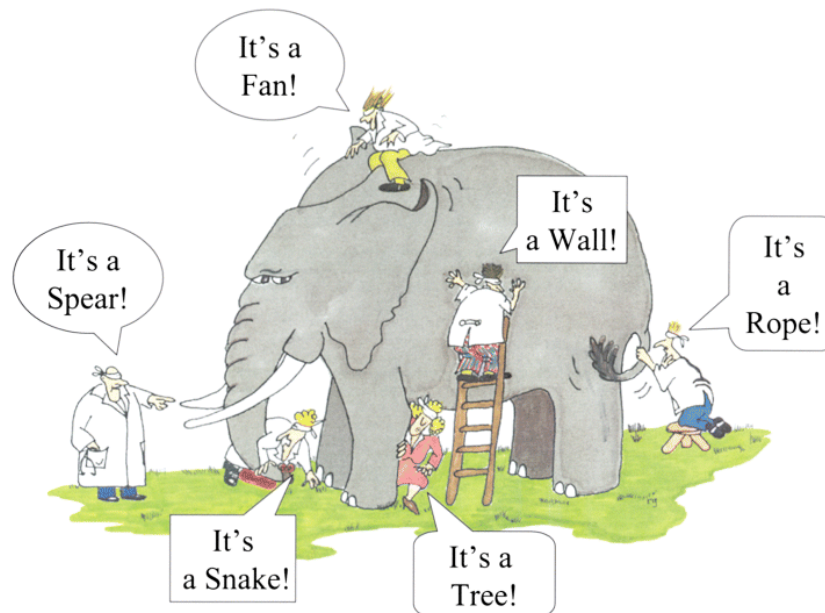


Exhibit 1- Is this the way we view a WBS ?

Some key questions

- What should be the method of decomposition?

Project management standards specify that the tool / technique or developing

- Activity / Phase
- Location / Area
- Product / Deliverables
- Resource / Effort

Further, the process can be **Top down or Bottom up** approach or both methods being followed.

The standards state that while creating the WBS, any one of the above approaches or a combination can be used as appropriate to the situation or project. However, in practice organizations tend to follow predominantly one method and do not vary their methods or use a combination even when situations are different. Some practitioners work through a mindset of schedule development when preparing a WBS with the possible reasoning that this approach helps focus on the timeline. In other cases the focus is on cost and so this becomes the basis for structuring. For some projects there is a need to ensure scope is managed effectively so this becomes the guideline while preparing the WBS.

Scope vs Schedule

WBS - is it for scope or schedule management? On this point, there seems to be divergence in practices followed by the practitioners. Some favour a time or schedule oriented approach with breakdown based on phases being commonly followed. The argument here is that it becomes easier to relate to the work to be performed at the activity level. For the same reason planners have developed a mindset of activity based approach while creating the WBS. This is in spite of the fact that most standards explicitly state and prefer a deliverable or product oriented approach. One of the ways to resolve this dilemma is to understand that top level structure can be product or deliverable oriented to make it more customer oriented whereas the bottom levels maybe activity oriented to help implementation.

An interesting way of integrating the scope and schedule while creating a WBS is the 'Scope Relationship diagram' (Brotherton, Fried, Norman).

What is the main purpose of the WBS ?

A WBS is useful in a whole lot of situations - Scope or schedule management, controlling, cost management, estimating, risk management and communicating. The PMBOK guide (and so do many other standards) clearly identifies the WBS as predominantly a scope management tool.

The status of scope management practice today

Compared to project time and cost management, developments in scope management are way behind in terms of tools software or clear cut practices. Even risk management practice is ahead since they have many quantitative tools. At the same time, scope management continues to be a key input for project success as it affects both the parameters of time and cost. While the concept of schedule and cost baselines have been in vogue for long only recently has the WBS been referred to as the scope baseline. There is a need for further dissemination of knowledge and practice in the area of scope management not only because of its importance as a key input on project outcomes but also because the state of knowledge and practice on

this front continues to be nebulous and devoid of tools and software.

A Dynamic WBS

There are varying methods of classifying components while creating a WBS and practices vary. This is primarily because practitioners prefer an approach which suits the parameter they are analyzing or the objective that they are seeking. So, while a phase or activity approach will be preferred for ensuring that projects are within the time schedule, a cost break down structure will be used with a strong cost control objective on a project. This brings us to the question - why not use the WBS structured in different ways at different stages of a project so that the type can be decided depending on the project objective or parameter used for analysis - a dynamic WBS!

To ensure that this approach is possible we have to follow a process which requires some additions in project management processes. So, in addition to the 'Create WBS' process as specified in the PMBOK guide 4th edition, the following processes need to be added.

- 1) what is the project objective?
- 2) what is being analysed?
- 3) re-organize the WBS components to suit the parameter being analyzed and the project objective
- 4) analysis based on cost, for scope completeness, work hours or milestones

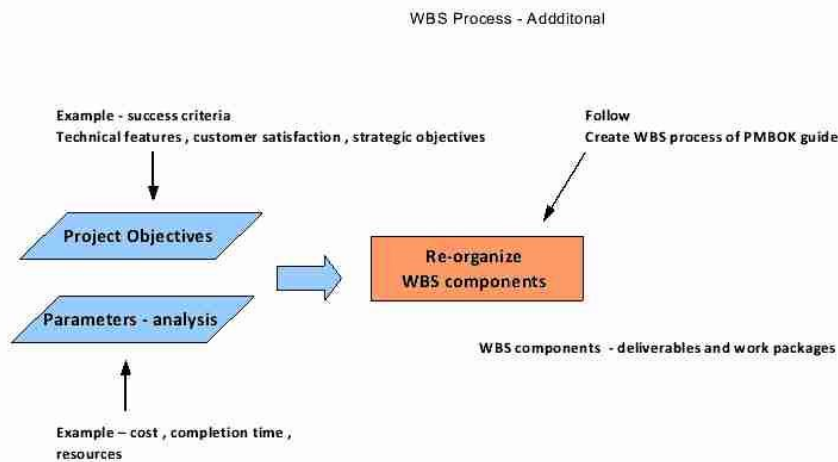


Exhibit 2 - Additional processes for WBS

Some Tips , Tricks and Traps

- The WBS is primarily a scope management tool and therefore should be used for this purpose. It is a different matter that the same can be used for high level schedule planning, communication, estimation, etc.
- Common mistake by users of Microsoft Project and similar scheduling software - a WBS should not be created by indenting /out-denting summary activities. MSP should be used for scheduling and therefore the WBS has to be prepared prior to entering data into the schedule and as a separate exercise.
- WBS planning requires brainstorming and lateral thinking to be most effective. It should involve those experienced in the work and therefore done in the form

of a workshop where there is opportunity for the project team to deliberate on various options.

- It should not be prepared by a single person (for example the Project Manager).
- A combination of a top-down and bottom-up approach is recommended. For established projects it may be easy to think through from a top-down view. However, for new projects or if information is insufficient or risk is high then a bottom-up approach of categorizing components will help. Using sticky notes can make it easy to switch between various levels while building a structure by adding or deleting components.

Conclusions, next steps and the future

- A WBS should be structured based on the project objective and parameters being analyzed. It should be considered as a dynamic tool and the process of creating a WBS reviewed as and when needed during the project lifecycle.
- An organization should decide the best approach for creating a WBS for its project, depending on objectives to be attained and parameters being analyzed.
- There is a need for more research into the practice of project scope management including tools and software so that the WBS is integrated well with other processes of this knowledge area.

References

- 1) Brotherton, S , Fried,R, Norman,E (2008) © 2008, *Applying the Work Breakdown Structure to the Project Management Lifecycle*, PMI Global Congress Proceedings - Denver, Colorado, USA
- 2) *The Guide to Project Management Body of Knowledge* 4th Edition (2008) , The Project Management Institute (PMI®), USA

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