Document Purpose

The purpose of this document is to provide guidance on the practice of developing a **Work Breakdown Structure** and to describe the practice overview, requirements, best practices, activities, and key terms related to this requirement. In addition, templates relevant to this practice are provided at the end of this guide.

Practice Overview

The Work Breakdown Structure (WBS) organizes and defines 100% of the scope of project work to be accomplished and displays it in a way that relates work elements to each other and to the project's goals. The Project Management Institute (PMI) Project Management Body of Knowledge (PMBOK) defines a WBS as a deliverable-oriented hierarchical decomposition of the work to be executed by the project team.

A WBS is not a project schedule. The WBS defines the "what" of a project and the project schedule defines the "When" and "Who" of a project. A WBS uses nouns and adjectives to define work, not verbs; it contains no dependencies, durations, activities, or resource assignments. A project schedule uses verbs and nouns to define scheduled activities, outlines task dependencies, and resource assignments.

A WBS provides an efficient format to define project work and for planning and tracking a project's success. The WBS organizes the necessary work by decomposing it into smaller, manageable pieces that can be scheduled, cost estimated, monitored, and controlled. Each descending level of the WBS hierarchy represents an increasingly detailed definition of the project work to be accomplished.

The PMI PMBOK defines decomposition as a planning technique that subdivides the project scope and project deliverables into smaller, more manageable components, until the project work associated with accomplishing the project scope and providing the deliverables is defined in sufficient detail to support executing, monitoring, and controlling the work. This is known as the work package level and is the lowest level in the WBS.

A WBS makes the relationship of work packages clear by decomposing larger work into smaller, more manageable components that outline the work needing to be accomplished for the project to succeed. The process of decomposing project work into a WBS involves:
- Identifying project deliverables
- Identifying work related to project deliverables
- Building a high-level WBS based on the above information
- Decomposing the high-level WBS into work packages

The resulting WBS can take a number of forms such as:
- Using major project deliverables and/or subprojects as the first level of the WBS
- Using the phases of the project life cycle as the first level of the WBS with the project deliverables inserted as the second level
- Using a combination of phases and project deliverables within each branch of the WBS

A WBS is the cornerstone of effective project planning and is an excellent team collaboration tool for identifying missing deliverables. However, excessive decomposition can actually lead to non-productive management effort, inefficient use of resources, and decreased efficiency in performing project work. The mistake of excessively subdividing the WBS into too many tasks can actually turn the WBS into an ineffective "to do" list rather than a valuable project planning tool.

A WBS can actually be decomposed to any level of detail. However, three levels are usually adequate unless the work item at that level is still considered to be high cost and/or high risk. Then it may be

necessary to further decompose the work of that specific item into additional, more manageable work packages. The WBS should be structured, at its lowest level, into elements that can be:
- Managed
- Estimated
- Measured

When developing a WBS, consider the relationship between WBS elements, project goals, and federal regulations and policies. For example, defining a WBS to the third level may be adequate for the project team to deliver on project goals. However, further decomposition may be necessary to meet federal regulations and/or policies. CPIC for example requires the WBS to also outline a project's target baseline schedule, including planned and actual dates and costs. Refer to CPIC http://intranet.cdc.gov/cpic/ for additional information. CPIC requires the WBS to address milestone areas such as:
- CPIC requirements
- Project Management
- Project Risk
- Enterprise Architecture (EA)
- Human Resource Analysis
- Performance Management
- Financial Management
- Budgeting/Funding
- Acquisition
- System Development Life Cycle (SDLC) Management

As part of developing a WBS, the project manager should also develop a WBS Dictionary. The WBS Dictionary is a document that describes each component in the WBS by describing each element and the resources and processes required to produce it. The WBS Dictionary is usually developed to the second level of the WBS and includes a brief definition of the scope or statement of work, defines deliverables, lists associated activities, milestones, and other information. It includes performance measurement criteria, statement of work paragraph number, contract line item, start and end dates, resource requirements, cost estimates, quality requirements, technical content, contact information, revision history, etc.

Developing the Work Breakdown Structure
The process of developing a WBS is primarily concerned with the actions necessary to define, organize, and subdivide work required to meet project goals to a work package level. The WBS is usually drafted jointly the Project Manager, the project team, and stakeholders.

A good WBS is not necessarily lengthy. The content of the WBS will vary depending upon the complexity of the project. The size of and time invested to develop a WBS should be balanced with the size and complexity of the project. Large, more complex projects justify a significant effort in developing a comprehensive WBS.

Both the WBS and WBS Dictionary are living documents that should be updated continually throughout the life of the project as changes occur.

Best Practices
The following best practices are recommended for **Work Breakdown Structure** development:
- **Product Elements** – Do not include elements which are not product related. The WBS addresses product requirements, not product functions or cost.
- **No Acronyms** – Use actual system names and nomenclature or acronyms to avoid confusion.
- **Make Updates** – As the project environment changes updates in the form of appended change requests should reflect any changes to the WBS and/or the WBS Dictionary.

- **Review** – Review the completed WBS with the customer before creating a schedule.
- **Jointly Developed** – The WBS should be drafted jointly by the Project Manager, the project team, and stakeholders.

Practice Activities

For projects the following practice activities are appropriate:
- Define the scope of the project on the first level of the WBS
- Project management deliverables should be outlined at level two of the WBS
- Decompose project deliverables into work packages, to a level that can be scheduled, cost estimated, monitored, and controlled
- Decompose project work packages into scheduled activities that can be used to build a schedule, estimate work effort, and assign resources
- Apply the WBS to schedule development and resource assignment
- Apply the WBS to, as needed, change control, risk, budget, cost, and communication management, etc.

Practice Attributes

This section provides a list of practice attributes to help project teams determine when and how development of a **Work Breakdown Structure** impacts a project.

Practice Owner	CDC UP Project Office – NCPHI
Criteria	All projects regardless of type or size should have some type of document that outlines how work will be structured, referred to as a WBS.
Estimated Level of Effort	Moderate
Prerequisites	N/A
Practice Dependencies	N/A
Practice Timing in Project Life Cycle	Developing a WBS is an activity that takes place early in the project life cycle with updates and refinements made throughout the project's life, as necessary.
Templates/Tools	WBS Practices Guide, WBS Template, WBS Checklist
Additional Information	http://intranet.cdc.gov/cpic/HHS_EVM_Procedures_123005_.doc http://www.nchstp.cdc.gov/informatics/content/CapPlngResources/ CDC_ITBusinessCaseTemplate_031104.doc

Key Terms

Follow the link below to for definitions of project management terms and acronyms used in this document. http://www2.cdc.gov/cdcup/library/other/help.htm

Related Templates/Tools

Below is a list of template(s) related to this practice. Follow the link below to download the document(s). http://www2.cdc.gov/cdcup/library/matrix/default.htm
- Work Breakdown Structure Practices Guide
- Work Breakdown Structure Template
- Work Breakdown Dictionary Template
- Work Breakdown Structure Checklist