

WORK BREAKDOWN AND SCHEDULE

INTRODUCTION

- Identifies tasks and deliverables, allowing projects to be logically and efficiently planned.
- Communicates the steps necessary to task completion to the design team in addition to providing a record of any changes and delays that might cause the project to run over schedule.

STEP 1 – Identify Deliverables

1. Identify all the project deliverables and sub-deliverables.
2. Identify all the steps and components that will allow the deliverables and sub-deliverables to be accomplished. The steps and components leading up to a deliverable are often called “achievements.”
3. All the project deliverables and achievements must be clearly communicated to the design team. This can be done with a detailed list (Table 1.0).

Example: Building a Table

To construct the table, the parts must be prepared and assembled. *Constructing* the table is the **deliverable** and *preparing the parts* and *assembling the parts* are **achievements** necessary to constructing the table. Preparing parts is further divided into **sub-achievements**. Cutting the table top to size and turning the legs are necessary components to preparing the parts.

1.0	Table Designed
1.1	Dimensions determined
1.2	Drawings completed
2.0	Materials Obtained
2.1	Material calculated
2.2	Materials purchased
3.0	Table Constructed
3.1	Parts prepared
3.1.1	Top cut to size
3.1.2	Legs prepared
3.2	Parts assembled
4.0	Table Finished
4.1	Table sanded
4.2	Table stained
5.0	Table Installed

Table 1.0 – Work Breakdown

STEP 2 – Determine Resources

1. Determine the resources for each deliverable and the related achievements and sub-achievements.

2. Resources might include the following:
 - a. Human resources.
 - How many man hours are available? Consider the specific knowledge and skills of the members of the design team or other individuals who might be consulted.
 - b. Equipment resources.
 - Are all necessary tools and technology available?
 - c. Materials and supplies.
 - Will materials and supplies have to be sourced from distant suppliers? Do materials need to be tested before construction can be commenced?
 - d. Space and facility requirements.
 - Will an alternate location be necessary?
 - e. Special requirements.
3. Expand the Work Breakdown table to include the resource requirements.

STEP 3 – Determine the Critical Path

The critical path is the shortest period of time in which the project can be completed. Determining the critical path requires that the dependencies or relationships between deliverables and achievements be analyzed.

1. Determine which deliverables and achievements are necessary steps to complete the project.
2. Establish precedence or dependencies among the identified steps. For example, turning the legs might be given precedence over cutting the table top because it requires a lathe which is not immediately available to the design team. Staining the table top is dependent on it being sanded, but the design team could decide to begin sanding the table top before the table is assembled.
3. Based on precedence and dependencies of the steps, make an outline of how the deliverables will be completed. This should include the amount of time allotted to each achievement and sub-achievement.
4. Make a Work Breakdown Schedule (Table 2.0) including a Gantt chart (See Project Management, in this toolbox). List all the project tasks in the order of precedence. For each task indicate the following:
 - a. Start date.
 - b. End date.
 - c. Potential difficulties.
 - d. Dependencies.
 - e. Name of the person(s) responsible for completing the task.
5. Before finalizing the schedule, calculate the effort required by each member of the design team to complete their assigned tasks. If one member is over allocated, the project is at risk of running over schedule.
6. Keep track of all revisions made to the Work Breakdown Schedule.

Task		Start	Finish	Effort (days)	Precedence
1.0	Table Designed				
1.1	Dimensions determined	Nov 1 st	Nov 2 nd	0.5	1.1
1.2	Drawings completed	Nov 3 rd	Nov 9 th	1	1.1
2.0	Materials Obtained			0.5	
2.1	Material calculated	Nov 10 th	Nov 10 th	0.5	1.2
2.2	Materials purchased	Nov 12 th	Dec 12 th	1	2.1
3.0	Table Constructed				
3.1.1	Top cut to size	Dec 13 th	Dec 14 th	1	2.2
3.1.2	Legs prepared	Dec 13 th	Dec 16 th	2.5	2.2
3.2	Parts assembled	Dec 17 th	Dec 21 st	1	3.1.1,3.1.2
4.0	Table Finished				
4.1	Table sanded	Dec 21 st	Jan 2 nd	2	3.2
4.2	Table stained	Jan 3 rd	Jan 5 th	1.5	4.1
5.0	Table Installed	Jan. 6 th	Jan 6 th	0.5	4.2

Table 2.0 – Work Breakdown Schedule

Note, the example WBS (Table 2.0) takes into account the following:

- Turnaround time for the production of drawings.
- No work is scheduled for Nov 11th as it Remembrance and allowances are made for Christmas day.
- Time is allotted so that glue and stain can dry.