Network Plan and Structure

A Network Plan is a visual representation of a project's schedule and relation between the different tasks that ought to be performed in a scheduled manner within a project. Hence, for the purpose of analytical treatment, to get solutions for scheduling and controlling the activities of the project we have created the following network diagram based on the Work Breakdown Structure (WBS). The methodology used for developing the Network Diagram is Critical Path Method (CPM).

The essential technique for using CPM is to construct a model of the project that includes the following:

1. A list of all activities required to complete the project (categorized within a work breakdown structure),
2. The time (duration) that each activity will take to complete,
3. The dependencies between the activities and
4. Logical end points such as milestones or deliverable items.

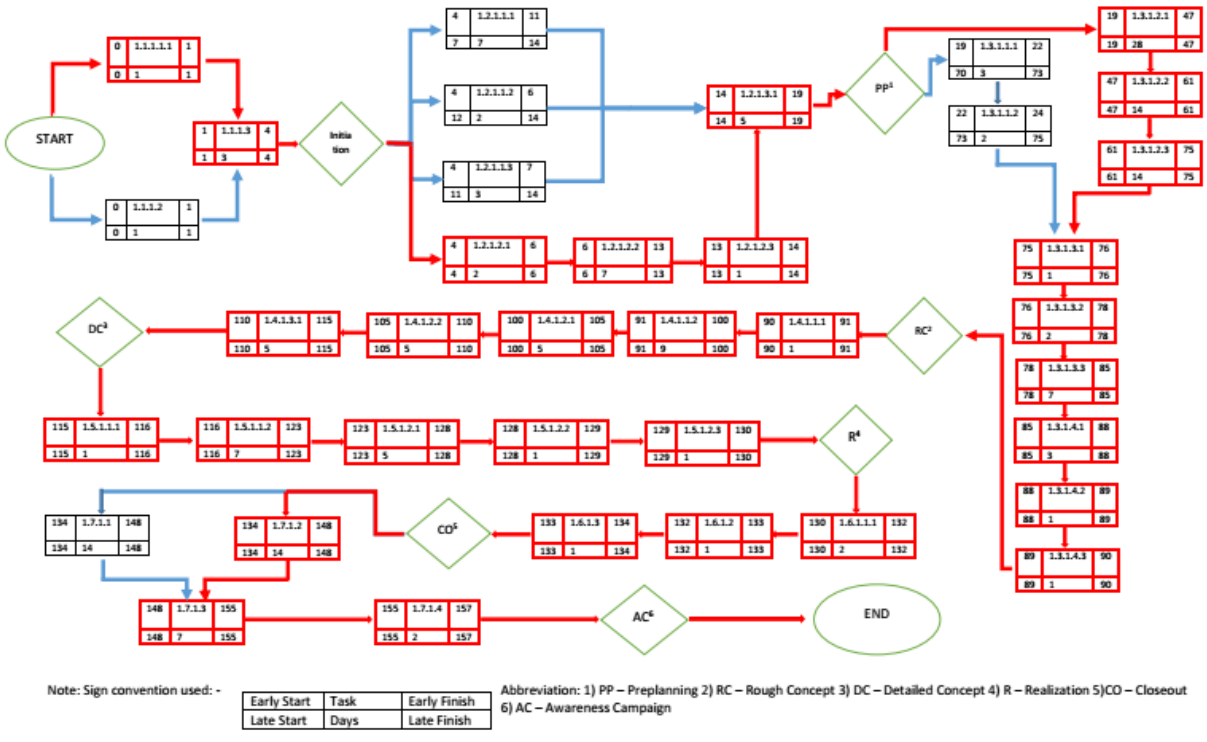

Figure 1: Network diagram along with Critical Path

The above network diagram follows the scheduled task name code (WBS code ID) as represented in WBS. The scheduled task name code contains separate tasks and their estimated duration. Every task package represented follows a tabular representation as shown in Figure 2.

Early Start	Tasks	Early Finish
Late Start	Days	Late Finish

Figure 2: Task representation

Components of represented table (Figure 2):

Early Start: Represents the earliest time schedule at which the task can be initiated.

Late Start: Represents the latest time in the timeline of the project to start the task.

Early Finish: Represents the earliest time schedule at which the task can be completed.

Late Finish: Represents the latest time in the timeline of the project to complete the task.

Days: The number of days required to complete a task.

Tasks: Includes the particular task that has to be performed.

From the WBS we get that our entire project is divided into seven phases: Initiation, Preplanning, Rough Concept, Detailed Concept, Realization, Close Out, and Awareness Campaign-PR scaled up to TUM campus (see Figure 1). A detailed description of the phases is given below:

Phase 1: Initiation

At the initiation phase, we performed the task of Brainstorming (1.1.1.1.1) and the task of assigning the Project Manager (1.1.1.2) simultaneously.

Phase 2: Preplanning

For the second phase of the project, we need to create the WBS & risk management (1.2.1.1), the Gantt Chart, Network Plan (1.2.1.1.2), Resource Plan (1.2.1.1.3) and develop the market analysis tool (1.2.1.2.1) simultaneously, as these are independent to one another. Phase 2 is completed by writing the initial syntax for internet carbon calculator (1.2.1.3.1).

Phase 3: Rough Concept

Phase 3 starts with the creation of feedback system (task 1.3.1.1.1 & 1.3.1.1.2) along with building the first stage of the carbon calculator (1.3.1.2.1) simultaneously. Both of the aforesaid mentioned work package are joined together at the stage of SRM survey (1.3.1.3.1). At the end of this phase, we get to the 2nd stage of the carbon calculator.

Phase 4: Detailed Concept

In this stage, firstly, we develop the structure of a feedback system (1.4.1.1.1) and implement the feedback system (1.4.1.1.2) into the project. Then we will create a complete master plan (1.4.1.2.2) and at the end of the phase, we will start the final stage of stress testing and updating the calculator (1.4.1.3.1).

Phase 5: Realization

We will start to teach the participants how to use the calculator correctly (1.5.1.1.1) and allow them to use it (1.5.1.1.2). Then we will collect data (1.5.1.2.1), evaluate the PR in SRM sample (1.5.1.2.2) and take a survey on users reactions and reviews after using the calculator (1.5.1.3.1).

Phase 6: Closeout

At this stage, we will continue to monitor the users data and provide feedback for improvement (1.6.1.1.1). We will wrap up the project at the end of this step.

Phase 7: Awareness Campaign- PR Scaled Up To TUM Campus

This stage will start with two simultaneous tasks: broaden the knowledge of TUM students on CO2 footprints, environmental impacts etc. (1.7.1.1) and introducing the TUM students to the calculator and provide instructions to use it (1.7.1.2). On completion of the above two tasks an evaluation of the Public Relations campaign (1.7.1.3 and 1.7.1.4) will be carried out which will conclude the entire project.

Critical Path

The critical path in a sequence of networked work packages is the path with the least amount of slack. This path is the longest and any delay in following the sequential arrangement of events

will delay the entire project. The path marked with red arrows in Figure 1 represents the Critical Path for our project. Any subsequent delay in any of these task will delay the entire project. The sequential arrangement of critical path representing the work packages is as under:

(1.1.1.1.1) ⇒ (1.1.1.3) ⇒ (1.2.1.2.1) ⇒ (1.2.1.2.2) ⇒ (1.2.1.2.3) ⇒ (1.2.1.3.1) ⇒ (1.3.1.2.1) ⇒ (1.3.1.2.2) ⇒ (1.1.1.2.3) ⇒ (1.3.1.3.1) ⇒ (1.3.1.3.2) ⇒ (1.3.1.3.3) ⇒ (1.3.1.4.1) ⇒ (1.3.1.4.2) ⇒ (1.3.1.4.3) ⇒ (1.4.1.1.1) ⇒ (1.4.1.1.2) ⇒ (1.4.1.2.1) ⇒ (1.4.1.2.2) ⇒ (1.4.1.3.1) ⇒ (1.5.1.1.1) ⇒ (1.5.1.1.2) ⇒ (1.5.1.2.1) ⇒ (1.5.1.2.2) ⇒ (1.5.1.2.3) ⇒ (1.6.1.1.1) ⇒ (1.6.1.2) ⇒(1.6.1.3) ⇒ (1.7.1.2) ⇒ (1.7.1.3) ⇒ (1.7.1.4)