11.7 Pert Charts

The US Navy developed Program Evaluation and Review Technique (PERT) in the 1950s to manage the Polaris missile project. This technique is still used in many industries as the major project tool to this day to track and order tasks.

In a PERT chart, each task is represented by a box that contains a brief description of and duration for the task. Milestones are represented with boxes that have rounded corners. Related tasks are connected with lines. If one task must be completed before a second task can be started, they are connected with a line originating from the right edge of the first task and connected the left edge of the second task, as show in Figure 11.1. In this example, the duration is noted in terms of days, and if your team needs a component from a vendor, the task of ordering the component and shipping it have to proceed before anything else can be done. Unrelated tasks are not connected on the PERT chart.

The PERT analysis shows pathways of tasks. Some tasks have to be done in series, and others can be done in parallel. These series can be laid out as the overall project plan is laid out.

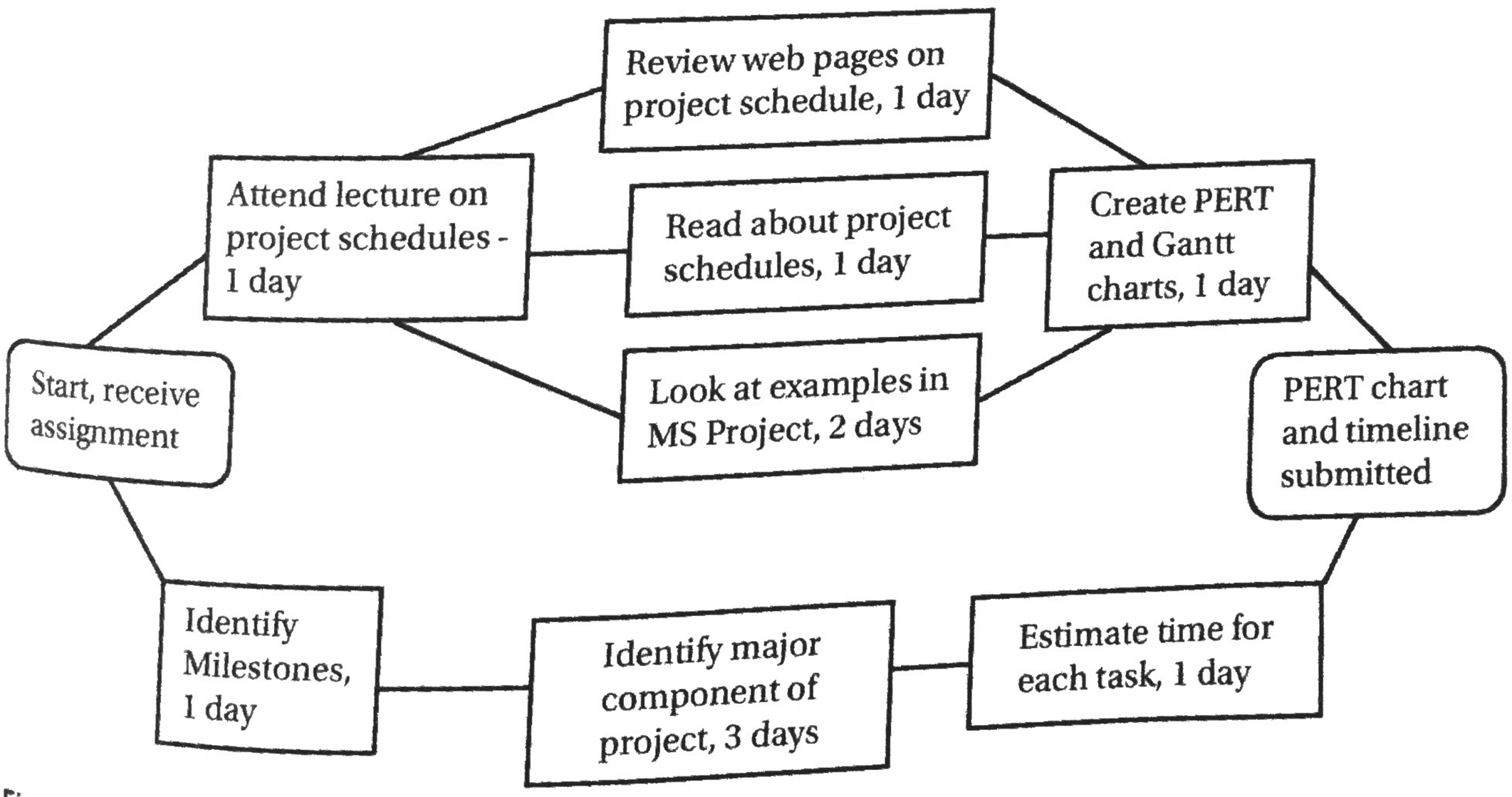


Figure 11.1 PERT chart for project planning.

PERT charts are great "what-if" tools during the initial planning stage. Post-It notes, 3x5 cards, chalk boards or whiteboards, or project management software can be used to capture the process flow, to find ways to reduce project completion time, and to utilize the available resources and people. What needs to be done when and by whom? By mapping out the process, a team can spread its resources and allow process tracking. The planning process using this tool can help people think of parallel tasks and what can be going on at the same time.

The sum of the times along each path gives length or duration for each path. The longest path is the critical path. The critical path will set the project length unless the task times can be reduced.

11.9 Gantt Charts

While the PERT chart is for organizing tasks and placing priorities on timing and resources, it may be difficult to interpret for a project with many tasks, especially for people outside your team. A Gantt chart is another popular project management charting method and is easier for people to understand where your team's progress relative to your plan.

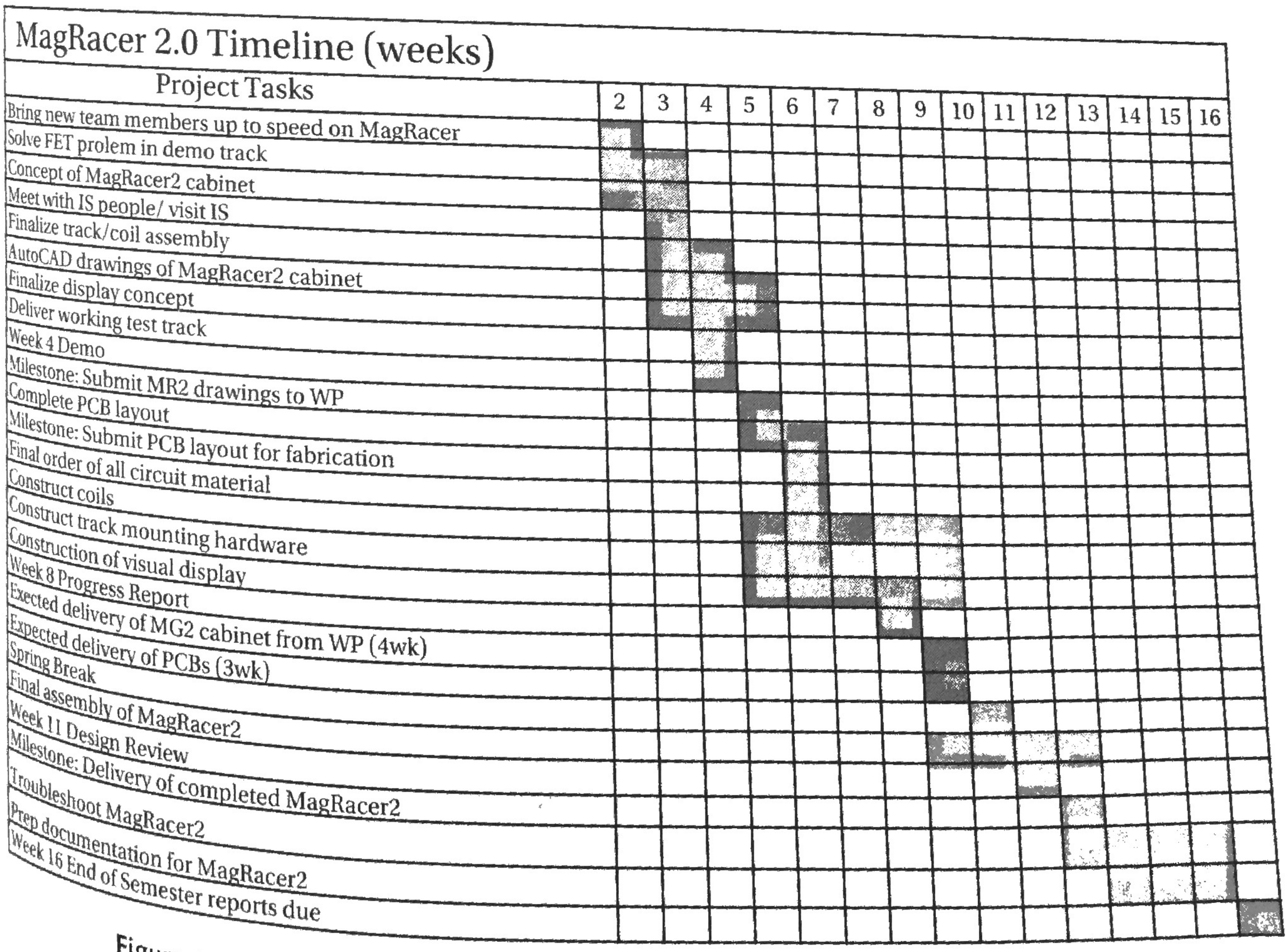
A Gantt chart is a horizontal bar chart frequently used in project management where tasks are plotted versus the time. Henry L. Gantt, an American engineer and social scientist, developed the Gantt chart in 1917, and it has become one of the most common project planning tools. In a Gantt chart, each row represents a distinct task. Time is represented on the horizontal axis. Typically, dates run across the top of the chart in

increments of days, weeks, months, or a timescale that you and your classmates have determined. A bar represents the time when the task is planned for with the left end representing the expected starting time for each task and at the right end for the end of each task. Tasks can be shown to run consecutively with one starting when the previous one ends. They can be shown to run in parallel or overlap. An example of the Gantt chart, created with Excel, is shown in Fig. 11.2.

Notice that tasks and milestones are included on the Gantt chart. Significant milestones and reports are represented with different colors. As progress is made, the cells in the spreadsheet can be changed to a different color so that someone can easily see the progress at any time in the project. If a project is partially completed, that bar can be shaded in proportion of the work done on that task. If the task is half finished, half of that bar will be shaded. A vertical line can be drawn for the current date, and progress can easily be checked based on the line. Tasks that show completion to the right of the line are ahead of schedule and those to the right of the vertical line are behind schedule.

An additional column can be added to the right of the task descriptions to show who is responsible for each task. The Gantt chart is an excellent way to see who is committed to which tasks during the project to ensure that each person has responsibilities over the entire project, and no one is being asked to do too many tasks at one time.

Many teams will use a PERT chart to arrange tasks and identify the critical path. They then transfer the tasks to a Gantt chart for project management. To make a presentation



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