

PROJECT MANAGEMENT SOFTWARE- AN OVERVIEW

Joydeep Kundu, Tanmoy Kumar Bishoi, Manasija Bhattacharya and Anupam Chowdhury

Abstract

Project management software is a term covering vast types of software, including estimation and planning, scheduling, cost control and budget management, resource allocation, collaboration software, communication, quality management and documentation or administration systems, which are used to deal with the complexity and different aspects of large projects.

Since the project management is one of the core functions of a business organization, the project management function should be supported by software. Before software was born, project management was fully done through papers. This eventually produced a lot of paper documents and searching through them for information which was not a pleasant experience.

Once software came available for an affordable cost for the business organizations, software development companies started developing project management software. This became quite popular among all the industries and these software were quickly adopted by the project management community.

Key Words: Planning, Information, collaboration, budget, Inventory, quantity and resource.

INTRODUCTION

The origins of project management software are rooted in the 1950s when Dupont Chemical collaborated with mainframe computer maker Remington Rand (Univac) to devise the Critical Path Method of network scheduling (CPM). This method was tested in 1958 with the construction of a major new chemical plant. In parallel, the US Navy working together with Lockheed Aerospace devised the automated Project Evaluation Review Technique (PERT) for the Polaris Missile program that ran on the IBM mainframe. Mainframe and Mini computers dominated the project management software arena until the early 1980s when PC computers began to proliferate across business and government circles alike.

Purpose of project Management software

Scheduling

One of the most common purposes is to schedule a series of events or tasks and the complexity of the schedule can vary considerably depending on how the tool is used. Some common features include:

Events, which depend on one another in different ways or dependencies.

Scheduling people/staff to work on, and resources/material required by, the various tasks, commonly termed resource scheduling.

Dealing with risks in the estimates of the duration of each task.

Dealing with project related information

Project planning software can be expected to provide information to various people or stakeholders, and can be used to measure and justify the level of effort required to complete the project(s). Typical requirements might include:

- Tasks list for people, and allocation schedules for resources.
- Overview information on how long job will take to complete.
- Early warning of any potential risks to the project.
- Information on workload, for planning holidays.
- Historical information on how projects have progressed, and in particular, how actual and planned performances are related.
- Cost re estimation and maintains.

Gain visibility and insight

Visibility means you can easily find, analyze and

report on all types of information about your projects. This introduces features to help you gain visibility of your project's deliverables, dependencies, schedule drivers, and changes to data. It includes -

- Share a list of project's deliverables
- Identify factors affecting task schedules
- Show the impact of your changes
- Produce charts, graphs, and diagrams of project data
- Create more visually effective reports with calendar enhancements and 3-D Gantt bars

Communicate and collaborate

The project management software enhances information sharing and coordination among project teams for better participation, progress reporting, and collaboration. Project provides improved coordination across teams via its automated notifications, integration with other programs, and Web portal access, which enables users to easily view, update, and analyze project information.

Productivity

Software development productivity is difficult to measure because there are qualitative as well as quantitative factors. Many of these measures can be as part of project management process i.e. efficient personnel utilization, timeliness of management of reports etc. But if we use project management software then though initially we will not be able to measure the gain in productivity, but in long run easily it can be measured.

Quality

Software project management activity must be highly organized and thoroughly planned. Efficient project management software will greatly improve the overall output.

Categories of project management software

Desktop application

Project management software can be implemented as a program that runs on the desktop of each user. It typically gives the most responsive and graphically intense style of interface. Desktop applications typically store their data in a file (preferably text file), although some have the ability to collaborate with other users, or to store their data in a central database. Even a file-based project plan can be

shared between users if it's on a networked shared drive and only one-user accesses it at a time.

Desktop applications can be written to run in a heterogeneous environment of multiple operating systems.

Web-based Applications

Project management software can be implemented as a Web application, accessed through internet. There are some advantages and disadvantages of web applications:

- Can be accessed from any type of computer without installing software on user's computer because original software is installed on a application server.
- Ease of access-control.
- Supports multi-user access.
- Only one software version and installation to maintain.
- Centralized (or even distributed) data repository.
- Typically slower to respond than desktop applications.
- Works in client-server mode.
- Project information not available when the user (or server) is offline.

Personal Application

A personal project management application is one used at home, typically to manage lifestyle or small home projects. There is considerable overlap with single user application, although personal project management software typically involves simpler interfaces than web-based interface.

Collaborative Applications

A collaborative system is designed to support multiple users modifying different sections of the project at once, for example, updating the areas they personally are responsible for. Web-based tools generally fall into this category, but have the limitation that they can only be used when the user has live Internet access. To address this limitation, some software tools using client-server architecture provide a Thick client that runs on users' desktop and replicate project and task information to other project team members through a central server when users connect periodically to the network.

Non-specialized tools used in project

While specialized software may be common, and heavily promoted by each vendor, there are a wide range of other software) tools used to plan and schedule projects.

Calendar software can often handle scheduling as easily as dedicated software.

Spreadsheets are very versatile, and can be used to calculate things not anticipated by the designers. It is now one of the frequently used tools in small projects.

Issues which a project management software could not handle properly

Surprisingly some people may achieve better results using simpler technique, (e.g. pen and paper), so they feel pressured into using project management software by company policy. Though it is difficult to believe but it is proved fact sometimes. More over, when there are multiple larger projects, project management software can be very useful. Nevertheless, one should probably not use management software if only a single small project is involved, as management software incurs a larger time-overhead. Additionally, project management software Focuses primarily on the planning phase and does not offer enough functionality for project tracking, control and in particular plan-adjustment. There may be excessive dependency on the first paper printout of a project plan, which is simply a snapshot at one moment in time. The plan is dynamic, as the project progresses the plan must change to accommodate tasks that are completed early, late, re-sequenced, etc. Efficient management software should not only facilitate this, but assist project

manager with impact assessment and communication of plan changes. But above all, a particular project management software may not be consistent with all different project management methods i.e. Traditional waterfall vs. agile.

Comparisons of project management software

The following table will give a basic idea about the relative merits/demerits of some well-known software project management tools

Microsoft Office Enterprise Project Management (EPM) Solution

Here we will introduce you to the benefits of using Microsoft Project 2007 to help you manage simple to complex projects. Microsoft Project gives you robust project management tools that are usable and flexible, so you can manage projects more efficiently and effectively. You can keep yourself on top of project work, schedules, and finances using this single software, giving you more time to keep project teams aligned and be more productive. Additionally, Microsoft Project 2007 integrates with other familiar Microsoft Office programs that help you create powerful reporting and analysis tools. Here, you will learn how to enter tasks, assign dates, assign resources, and manipulate Gantt chart details to help you with strategizing and tracking a project. You will also find out the way to import existing projects into a centralized project plan, find and apply templates, as well as develop graphs and charts for reporting.

Now let us try a small example, step by step to practice each of the options about how to create a project using MS Project. We are going to use a small set of tasks (Table Below) related to the initial phases of System Testing Plan

Table 1

Software	Scheduling	Project portfolio Mgmt.	Resource Mgmt.	Document Mgmt	Workflow	Reporting	Web based	License
24SevenOffice	No	No	No	No	NA	NA	Yes	Proprietary
Microsoft Project	Yes	No	Yes	No	No	Yes	No	Proprietary
codeBeamer	No	No	No	Yes	No	No	Yes	Proprietary
Collabtive	No	No	No	No	No	No	Yes	Open source
dotProject	No	No	No	Yes	No	No	Yes	Open source
MantisBT	No	No	No	No	No	No	Yes	Open source
Copper Project	Yes	Yes	Yes	Yes	No	Yes	Yes	Proprietary and SaaS
DeskAway	Yes	No	Yes	Yes	No	No	Yes	SaaS
Dolibarr ERP/CRM	No	Yes	Yes	Yes	No	No	Yes	Open source
Doolphy	Yes	Yes	Yes	Yes	No	Yes	Yes	SaaS
DynaRoad	Yes	No	Yes	No	Yes	Yes	No	Proprietary
Endeavour Software Project Management	Yes	Yes	Yes	Yes	No	No	Yes	Open source
Easy Projects .NET	Yes	Yes	Yes	Yes	No	No	Yes	Proprietary
eGroupWare	No	Yes	Yes	Yes	No	No	Yes	Open source
Exia Process	Yes	Yes	Yes	Yes	Yes	Yes	No	Proprietary
FastTrack Schedule	Yes	No	Yes	No	No	No	No	Proprietary
FIT Issue Management	Yes	Yes	Yes	Yes	No	No	Yes	Proprietary
FogBugz	Yes	No	Yes	No	No	No	Yes	Proprietary

Table 1 Case study

Activity	Predecessor	Responsibility	Effort(in dys)	System testing Phase
Task A	SRS (software requirement specification)	Test Manager Project Manager Test Leader	3	Definition phase
Task B	Task A	Test Manager Test Leader Tester E	5	Design phase
Task C	Task B	Tester A Tester B	8	Design phase
Task D	Task C	Tester A Tester B	5	Design phase
Task E	Task D	Tester A Tester B	3	Design phase
Task F	Task E	Tester A Tester B	1	Design phase
Task G	Task F	Tester A Tester B	3	Design phase
Task H	Task G	Test Manager Test Leader Tester E	2	Design phase
Task I	Task G	Tester A Tester B Tester E	1	Design phase
Task J	Task H	Tester A Tester B Tester E	1	Design phase

Solution of case study using microsoft project 2007

Step 1

1. Create a new file “project1”
2. Assign the start date of the project to be sept-17-2011

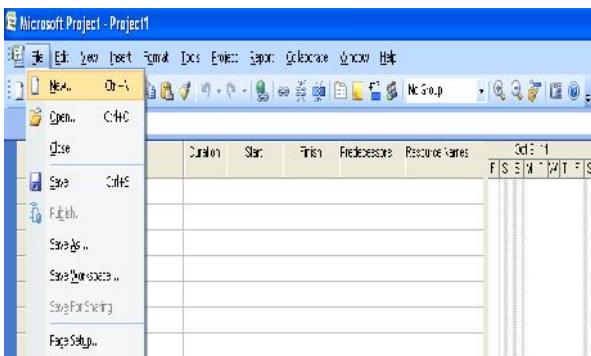


Figure 1

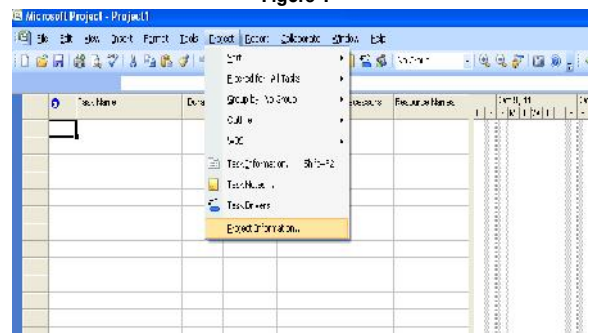


Figure 2

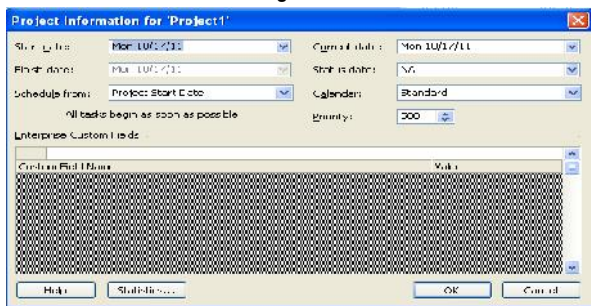


Figure 3

Step 2

1. Write the name of each task in the spreadsheet using the column “Task Name”
2. Write the duration in days of each task in the spreadsheet using the column “Duration”
3. Group the tasks by the Phase according to the table of tasks shown before, and add a group that encloses the phases named “Sample test plan” this will represent the plan as a whole
4. Write the predecessors of each task in the spreadsheet using the column “Predecessors”
5. To convert a Task in a Milestone, just double click the Task and go to the tab “Advanced” then check the box that says “Mark Task as a Milestone”

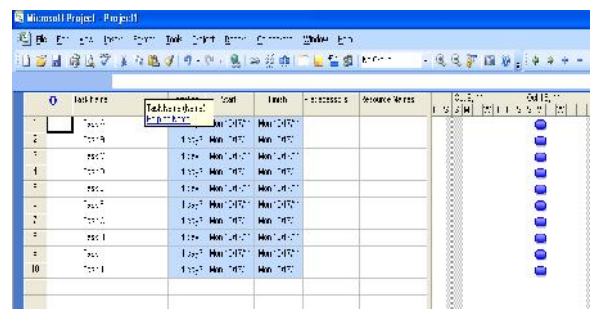


Figure 4

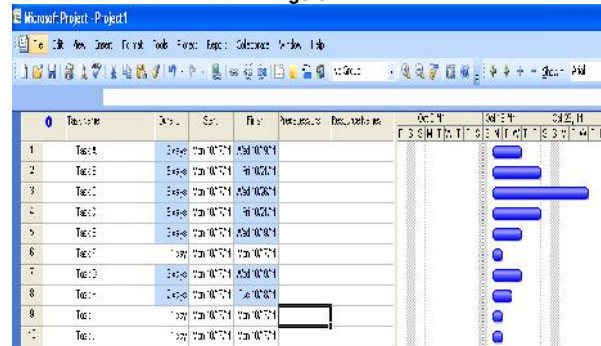


Figure 5

Step 3

Insert a new task at the beginning that will group everything

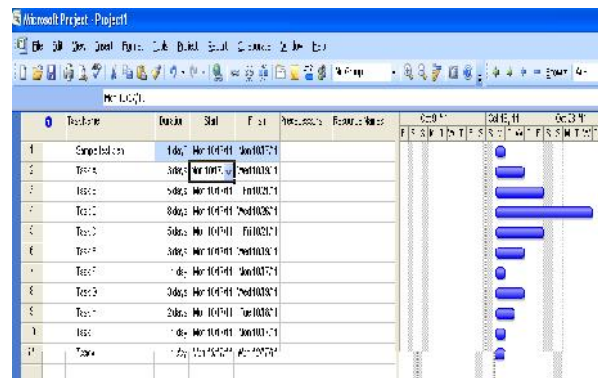


Figure 6

Highlight the tasks that are going to be added as subtask

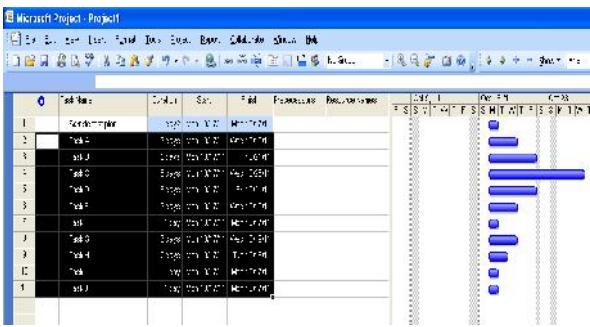


Figure 7

Click on the option "Outline - Indent"

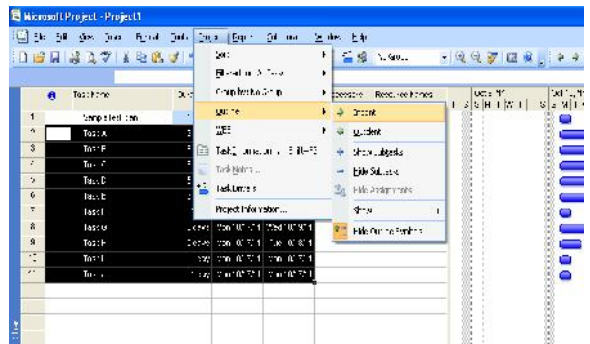


Figure 7

The final result should look like this, now repeat this steps to create the Subgroups that will represent the phases (Definition and Design)

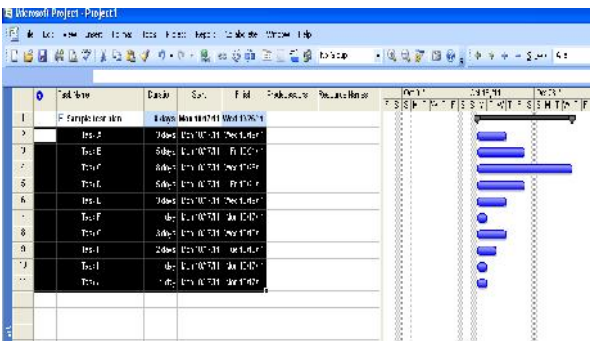


Figure 8

Again insert a new task at the beginning of the Tasks A

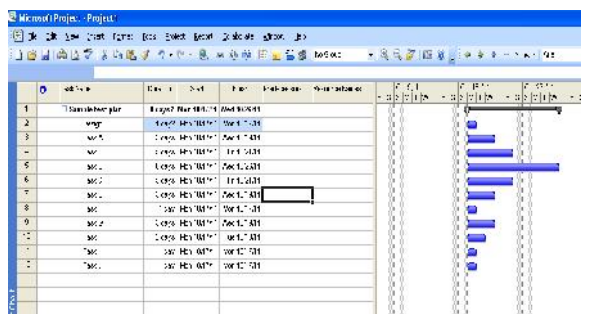


Figure 9

Highlight the tasks that are going to be added as subtasks

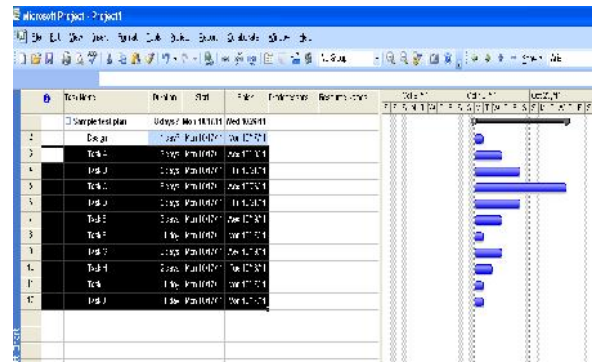


Figure 10

Click on the option "Outline - Indent"

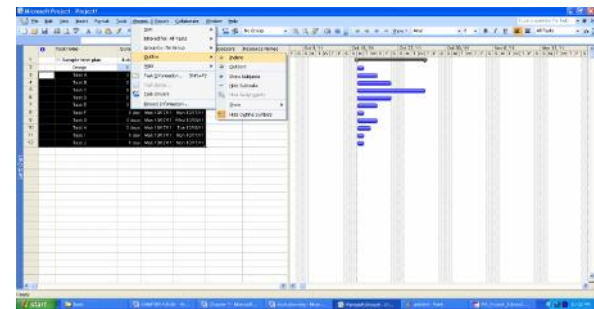


Figure 11

The final result should look like this, now repeat this steps to create the Subgroup that will represent the phase "Design"

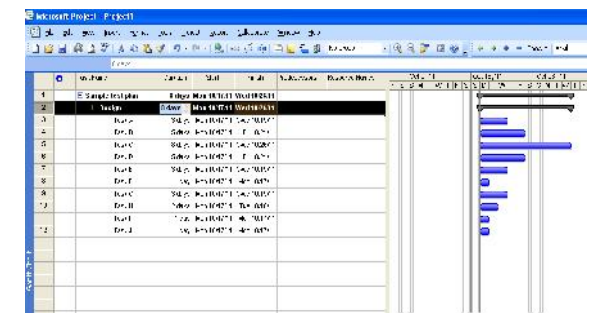


Figure 12

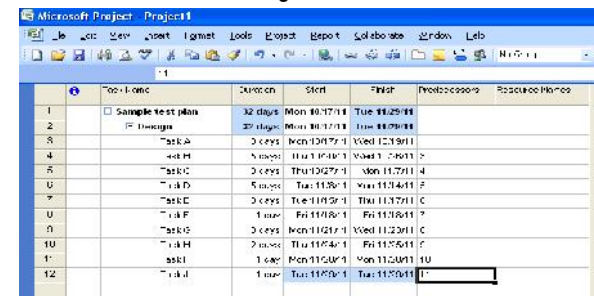


Figure 13

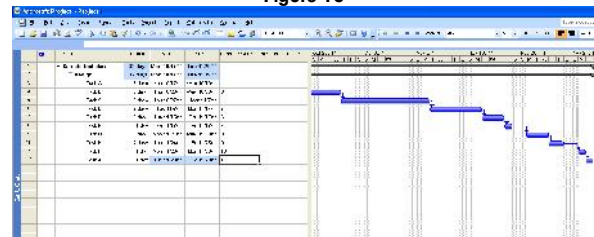


Figure 14

Step 4

Add the predecessors respectively.
Mark the last task as milestone.

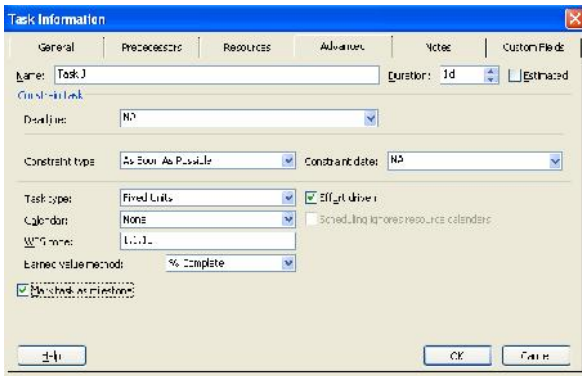


Figure 15

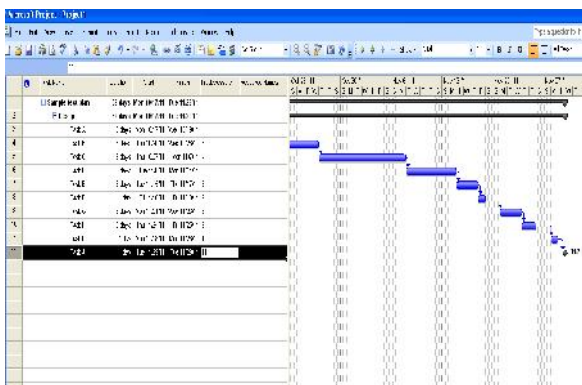


Figure 16

Step 5

1. Got to the view “Resource Sheet”
2. Add the necessary resources to the “Resources Sheet”, we are going to use only the Name, Initials and Standard Rate in \$/hr. The resources are going to be taken from the table showed at the beginning of the example, more Specifically from the column “Responsibilities”.
3. Now, with the Resources already register in the project file, go back to the View “Gantt Chart”

Resource Name	Type	Hours	Cost	Max Units	Std Rate	Acc. Acc	Over Cost	Acc. Acc	Base Cost	Task
Resource A	Wk	72	100%	500000	10000	100%	100%	100%	100%	100%
Resource B	Wk	72	100%	300000	10000	100%	100%	100%	100%	100%
Resource C	Wk	72	100%	200000	10000	100%	100%	100%	100%	100%
Resource D	Wk	72	100%	250000	10000	100%	100%	100%	100%	100%
Resource E	Wk	72	100%	300000	10000	100%	100%	100%	100%	100%
Resource F	Wk	72	100%	300000	10000	100%	100%	100%	100%	100%

Figure 17

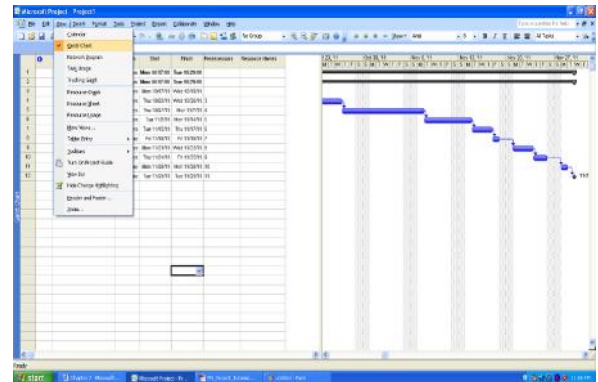


Figure 18

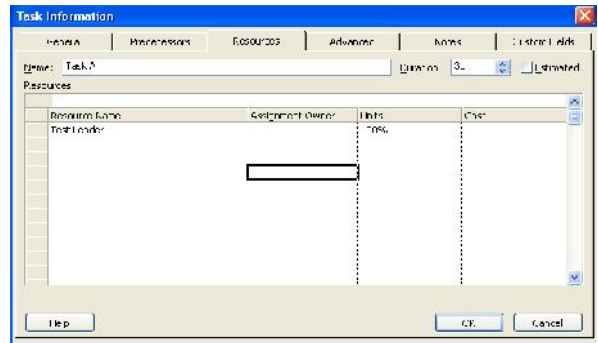


Figure 19

1. Now, we are going to use the Detailed Gantt Chart to view the Critical Path, because this option also shows the Slack Time of the activities that don't belong to the critical path, therefore first we have to select the option “More Views”.
2. Then we have to select the Detail Gantt to obtain the view desired.

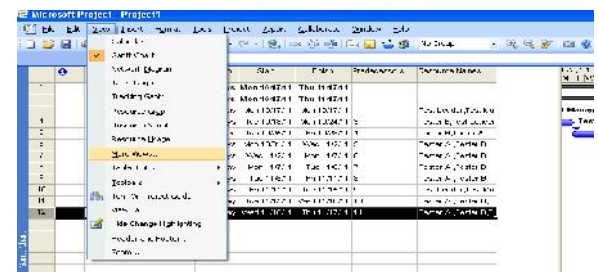


Figure 20

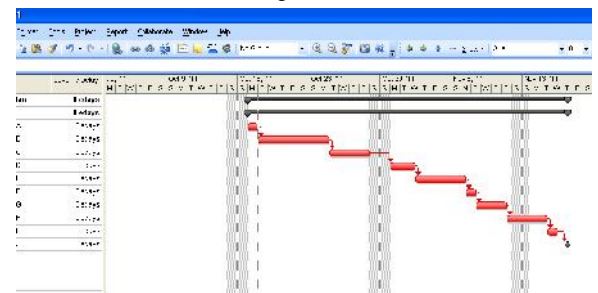


Figure 21

Step 7

1. We can show more information, related to the tasks, in the spreadsheet, one column i.e cost, to

do this first perform a Right Click on top of the spread sheet (Specifically In the titles of the Columns), a pop-up menu should appear showing several options, chose the one that says "Insert Column".

2. Then lookup the column named "Cost" and then press the "Ok" button

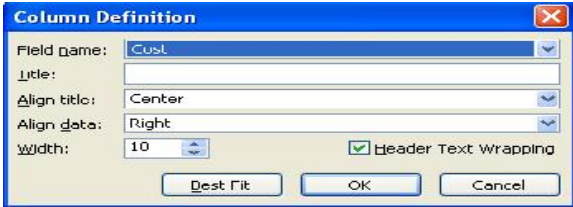


Figure 22

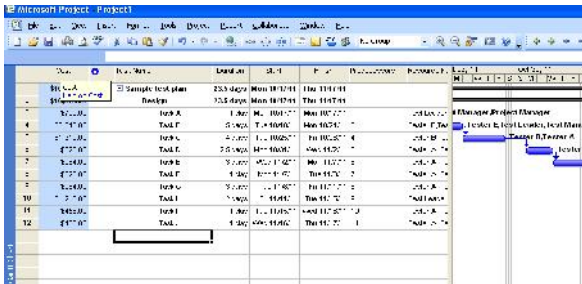


Figure 23

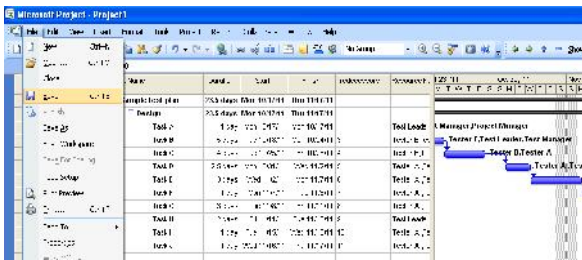


Figure 24

Step 8

For this example we are saving the file at the end, but it is recommended that you save the file frequently while you are working to avoid losing data as a result of problems such as a Power Failure for instance.

CONCLUSION

Modern project management practice requires the assistance of project management software. The modern project management practice is complicated to an extent that it cannot operate without the use of software. When choosing the correct project management software for your purpose, you need to evaluate the characteristics of software and match with your project management requirements. Never choose one with more feature than you require, as usually project management software come with a high price tag. In addition, having more than the required features could make confusions when using the software in practice.

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