PLANNING AND CONTROL

USING

MICROSOFT® PROJECT

AND

PMBOK® GUIDE

THIRD EDITION

UPDATED FOR MICROSOFT® OFFICE

PROJECT 2007

BY

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DISCLAIMER
The information contained in this book is to the best of the author's knowledge true and correct. The author has made every effort to ensure accuracy of this publication, but cannot be held responsible for any loss or damage arising from any information in this book.

SUMMARY

The book was written so it may be used as:

 ➢ A training manual for a two-day training course,
 ➢ A self teach book, or
 ➢ A reference manual.

The screen shots for the book are taken from Microsoft Office Project Standard 2007 however the book may be used to learn Microsoft Office Project Professional 2007 and all versions of Microsoft Project 2000, 2002 and 2003.

The book has been written to be used as the basis for a two-day training course and includes exercises for the students to complete at the end of each chapter. Unlike many training course publications this book may also be used by the students as a reference book after the course.

This publication is ideal for people who would like to quickly gain an understanding of how the software operates and explains how the software differs from Primavera P3 and SureTrak, thus making it ideal for people who wish to convert from these products.

SPELLING

This book is written in US English.

AUTHOR'S COMMENT

As a professional project planner and scheduler, a Certified Cost Engineer and an Approved PRINCE2 Trainer, I have used a number of planning and scheduling software packages for the management of a range of project types and sizes. There appeared to be very little literature aimed at the professional who understands how to run projects but requires a practical guide on how to use Microsoft Project in a project environment using the processes outlined in the *PMBOK® Guide*. The first books I published were user guides/training manuals for Primavera SureTrak and P3 users. These were well received by professional project managers and schedulers, so I decided to turn my attention to Microsoft Project. To produce this book I edited my Microsoft Project 2007 book to explain how Microsoft Project may be used with the *PMBOK® Guide*. I trust this book will assist you in understanding how to use Microsoft Project on your projects. Please contact me if you have any comments you may wish to make on this book.

ABOUT THE COVER PAGES

Top right   Footbridge over the Yarra River in Melbourne
Left   ConocoPhillips Refinery in the UK
Center right   ConocoPhillips Refinery in the UK
Bottom right   Reece Dam Spillway in Tasmania, the author was a section engineer
                responsible for the construction of this spillway.

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Project Planning Using SureTrak for Windows Version 2.0
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1   INTRODUCTION

1.1   Purpose

The purpose of this book is to provide you with methods of using Microsoft Project and the *PMBOK® Guide* processes in a single project environment. Not all the *PMBOK® Guide* processes are simply transposed to Microsoft Project and some may not be managed in Microsoft Project at all. This book makes some suggestions on how to best handle these areas of incompatibility and provide you with techniques to manage your projects with Microsoft Project and the *PMBOK® Guide* Processes.

The screen shots in this book were captured using Microsoft Project Standard 2003 and Windows XP. Readers using Microsoft Project Professional 2003 will have some additional menu options to those shown in this book, which will operate when their software is connected to Microsoft Project Server software. Users of Microsoft Project 2002 and 2000 will find some minor differences in how the software functions which are outlined in the relevant areas of this book and in **Chapter 23 WHAT IS NEW IN MICROSOFT PROJECT**.

When the term "Section" is used in this book it is referring to the appropriate section number in the *PMBOK® Guide Third Edition*. This book should be read in conjunction with the *PMBOK® Guide Third Edition*.

At the end of this book, you should be able to:

- Understand the steps required to create a project plan using the *PMBOK® Guide* processes.

- Set up the software.

- Define calendars.

- Add tasks that will represent the *PMBOK® Guide* **Activities**.

- Organize tasks and format the display.

- Add logic and constraints outlined in the *PMBOK® Guide* process **6.2 Activity Sequencing**.

- Use Tables, Views and Filters which create the printouts and reports to support the *PMBOK® Guide* **Project Communications Management** processes.

- Print the above reports.

- Record and track progress which support the *PMBOK® Guide* processes of **Schedule Control**, **Cost Control**, **Scope Control** and **Performance Reporting**.

- Customize the project options.

- Create and assign resources which would be used in the *PMBOK® Guide* process **6.3 Activity Resource Estimating**.

- Understand the impact of task types and effort-driven tasks.

- Status projects that contain resources, which support the *PMBOK® Guide* processes of **Schedule Control**, **Cost Control**, **Scope Control** and **Performance Reporting**.

- Understand the different techniques for scheduling.

This book does not cover every aspect of Microsoft Project, however it does cover the main features required to create and status a project schedule. It should provide you with a solid grounding, which will enable you to go on and learn the other features of the software by experimenting, using the Help files and reviewing other literature.

This book has been written to minimize superfluous text, allowing the user to locate and understand the information contained in the book as quickly as possible. It does NOT cover functions of little value to common project scheduling requirements. If at any time you are unable to understand a topic in this book, it is suggested that you use the Microsoft Project Help menu to gain a further understanding of the subject.

1.2 Required Background Knowledge

This book does not teach you how to use computers or to manage projects. This book is intended to teach you how to plan and control a project using Microsoft Project and the *PMBOK® Guide* processes. Therefore, to be able to follow this book you should have the following background knowledge:

- An understanding of how the *PMBOK® Guide* Knowledge Areas and Processes are used to plan and control a project.

- The ability to use a personal computer and understand the fundamentals of the operating system.

- Experience using application software such as Microsoft Office, which would have given you exposure to Windows menu systems and typical Windows functions such as copy and paste.

1.3 Purpose of Planning

The ultimate purpose of planning is to build a model that allows you to predict which tasks and resources are critical to the timely completion of the project. Strategies may then be implemented to ensure that these tasks and resources are managed properly, thus ensuring that the project will be delivered **On Time** and **Within Budget**.

Planning aims to:
- Identify the Products required to deliver a project

- Evaluate different project delivery methods

- Identify and optimize the use of resources

- Optimize time and evaluate if target dates may be met

- Identify risks and set priorities

- Provide a baseline plan against which progress is measured

- Communicate the plan to all stakeholders, including what is to be done, when and by whom

- Provide early warning of potential problems and enable proactive and not reactive action to be taken

- Assist management to think ahead and make informed decisions

Planning helps to avoid:

- Increased project costs or reduction in scope and/or quality

- Additional hand over and/or operation costs

- Extensions of time claims

- Loss of your client's revenue

- Contractual disputes and associated resolution costs

- The loss of reputation of those involved in a project

- Loss of a facility or asset in the event of a total project failure

1.4 Definition of Planning and Control

PMBOK® Guide defines:

- The **Planning Process** as those processes performed to define and mature the project scope, develop the Project Management Plan, and identify and schedule the project activities that occur within the project.

- The **Control Technique** as comparing actual performance with planned performance, analyzing variances, assessing trends to effect process improvements, evaluating possible alternatives, and recommending appropriate corrective action as needed.

A plan is therefore not just a Microsoft Gantt Chart (bar chart), although a Gantt Chart is an important output of the planning process.

Microsoft Project is also able to record timings, costs and targets and other basic information that may be kept in the Notes or Custom (user defined) Fields. It is not designed as a quality assurance or a document management software package; specialist packages should be considered for those processes.

1.5 PMBOK® Guide Process Groups and Knowledge Areas

Like other methodologies with time-bound processes, such as PRINCE2 which has clearly defined planning and controlling processes, the *PMBOK® Guide* has five Process Groups:

- Initiating Process Group

- Planning Process Group

- Executing Process Group

- Monitoring and Controlling Process Group

- Closing Process Group

The *PMBOK® Guide* summarizes project management processes under nine Knowledge Areas, each with three or more Processes in each Knowledge Area. These are similar to the PRINCE2 Components.

The table on the next page maps Processes to Process Groups and Knowledge Areas using the chapter numbers from the *PMBOK® Guide*:

KNOWLEDGE AREAS - Processes	PROCESS GROUPS				
	Initiating	Planning	Executing	Monitoring & Controlling	Closing
PROJECT INTEGRATION MANAGEMENT					
- Develop Project Charter	4.1				
- Develop Preliminary Project Scope Statement	4.2				
- Develop Project Management Plan		4.3			
- Direct and Manage Project Execution			4.4		
- Monitor and Control Project Work				4.5	
- Integrated Change Control				4.6	
- Close Project					4.7
PROJECT SCOPE MANAGEMENT					
- Scope Planning		5.1			
- Scope Definition		5.2			
- Create WBS		5.3			
- Scope Verification				5.4	
- Scope Control				5.5	
PROJECT TIME MANAGEMENT					
- Activity Definition		6.1			
- Activity Sequencing		6.2			
- Activity Resource Estimating		6.3			
- Activity Duration Estimating		6.4			
- Schedule Development		6.5			
- Schedule Control				6.6	
PROJECT COST MANAGEMENT					
- Cost Estimating		7.1			
- Cost Budgeting		7.2			
- Cost Control				7.3	
PROJECT QUALITY MANAGEMENT					
- Quality Planning		8.1			
- Perform Quality Assurance			8.2		
- Perform Quality Control				8.3	
PROJECT HUMAN RESOURCE MANAGEMENT					
- Human Resource Planning		9.1			
- Acquire Project Team			9.2		
- Develop Project Team			9.3		
- Manage Project Team				9.4	
PROJECT COMMUNICATIONS MANAGEMENT					
- Communications Planning		10.1			
- Information Distribution			10.2		
- Performance Reporting				10.3	
- Manage Stakeholders				10.4	
PROJECT RISK MANAGEMENT					
- Risk Management Planning		11.1			
- Risk Identification		11.2			
- Qualitative Risk Analysis		11.3			
- Quantitative Risk Analysis		11.4			
- Risk Response Planning		11.5			
- Risk Monitoring and Control				11.5	
PROJECT PROCUREMENT MANAGEMENT					
- Plan Purchases and Acquisitions		12.1			
- Plan Contracting		12.2			
- Request Seller Responses			12.3		
- Select Sellers			12.4		
- Contract Administration				12.5	
- Contract Closure					12.6

1.6 Project Planning

It may be seen from the previous table the Planning Process Group has many more processes than the other Process Groups, which is one indication of the importance of planning a project prior to execution.

The plans indicated in the Planning Processes above would often be written in a document using Microsoft Word. The activities required to create these plans and then execute them, including their associated resources and costs, could be scheduled in Microsoft Project.

The following Processes in the Planning Group, indicated in the table above, may be managed in Microsoft Project:

- **5.3 Create WBS**

- **6.1 Activity Definition**

- **6.2 Activity Sequencing**

- **6.3 Activity Resource Estimating**

- **6.4 Activity Duration Estimating**

- **6.5 Schedule Development**

The following Processes in the Planning Group may be managed in simpler projects using Microsoft Project:

- **7.1 Cost Estimating**

- **7.2 Cost Budgeting**

The planning data may then be displayed as Gantt Charts, Tables or Histograms using Microsoft Project. As work is authorized and work progresses, progress is measured and recorded in Microsoft Project and the performance may be compared to the plan.

Thus, many elements of the *PMBOK*® *Guide* Processes outlined above may be entered into Microsoft Project. This book will show which of these processes and process elements may be managed in Microsoft Project.

1.7 Levels of Planning

Projects are often planned at a summary level and then detailed out in the schedule before the work is commenced. Smaller projects may be detailed out during project planning but other large or complex projects may require several levels before the project is fully detailed out.

The main reason for not detailing out a project early is that there may not be enough information at that stage and time would be wasted in preparing detailed schedules that will be made redundant by changes. The following techniques may be considered:

- The *PMBOK*® *Guide* discusses the **Rolling Wave** technique. This technique involves adding more detail to the schedule as the work approaches, which is often possible as more is known about the scope as the project is executed. The initial planning could be completed at a high level in the **Work Breakdown Structure (WBS)**. As the work approaches, the planning may be completed at a WBS Component and then to **Work Package** level planning.

- The *PMBOK® Guide* also discusses the use of **Sub-projects**. These are useful in larger projects where more than one person is working on the project schedule. This situation may exist when portions of projects are contracted out. A sub-project may be detailed out when the work is awarded to a contractor.

- The *PMBOK® Guide* also discusses the use of **Phases**. A Phase is different than a PRINCE2 Stage as Phases may overlap in time. Phases may be defined, for example, as Design, Procure and Install. These Phases may overlap as Procurement may commence before Design is complete. The Phase development of a schedule is the detailing out of all WBS elements prior to the commencement of that Phase.

- Projects subject to many changes may require the work to be granulated out into more detail immediately prior to the work starting. For example, at the end of every week the next two weeks' work (that will have been planned at a summary level) would be planned in detail. This is a type of **Rolling Wave** development of the project. This is often found in a software-testing phase, where the next portion of work is dependent on what has passed and what has failed testing.

The *PMBOK® Guide* does not have strict definitions for levels of plans but assumes that this process is planned when decomposing the **Work Breakdown Structure** (**WBS**). There are some other models below that may be used as guidelines, such as the *PMI Practice Standard for Work Breakdown Structures*.

PRINCE2 Level of Plans
Stages in PRINCE2 are defined as time-bound periods of a project, which do not overlap and are referred to as Management Stages. Under PRINCE2 a Project Plan is divided into Stages and a Stage plan is detailed out prior to the commencement of a Stage.
PRINCE2 defines the following levels of plans:

- **Programme Plan –** which may include Project Plans or one or more portfolios of multiple projects,

- **Project Plan –** this is mandatory and is updated through the duration of a project,

- **Stage Plan –** there are a minimum of two Stage Plans, an **Initiation Stage Plan** and **First Stage Plan**. There usually would be one Stage Plan for each Stage.

- **Exception Plan –** which is at the same level and detail as a Stage Plan and replaces a Stage Plan at the request of a Project Board when a Stage is forecast to exceed tolerances, and

- **Team Plan –** which is optional and would be used on larger projects where Teams are used for delivering Products that require detailed planning. A typical example is a contractor's plan, which would be submitted during the bid process.

Jelen's Cost and Optimization Engineering
This book defines the following levels of plans:

- Level 0: This is the total project and is, in effect, a single bar spanning the time from start to finish.

- Level 1: This schedules the project by its major components. For example, a level 1 schedule for a process plant may be broken into process area, storage and handling area, site and services, and utilities. It is shown in bar chart format.

- Level 2: Each of the level 1 components is further subdivided. For example, utility systems are broken into water, electrical, gas, sanitary, etc. In most cases this schedule level can only be shown in bar chart format although a bar chart with key constraints may be possible.

- Level 3: The subdivision continues. This is probably the first level that a meaningful critical path network can be drawn. It is also a good level for the project's overall control schedule since it is neither too summarized nor too detailed.

- Levels 4-?: The subdivision continues to whatever level of detail is needed by the user. When operating at these more detailed levels, the planners generally work with less than the total schedule. In most cases these 'look-ahead' schedules span periods of 30–180 days. The user may utilize either bar chart or CPM format for these schedules.

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1.8 Monitoring and Controlling a Project

After a plan has been produced, it should be followed and the work authorized in accordance with the plan. If there is to be a change in the plan, then the plan should be formally changed. If necessary, the client should be informed and if required by the contract, approval should be sought. If this process is not followed then it may be difficult to obtain approval for extension of time claims and will make litigation more difficult.

Monitoring a project ensures:

- The required products are being produced

- The required quality is being met

- The products are being produced on time, with the planned resources and to budget

- The project products will achieve the Business Case

Controlling a project provides the next level of management with information allowing them to:

- Monitor the progress of products

- Compare the progress with the plan

- Review options

- Forecast problems as early as possible enabling corrective action to be taken as early as possible

- Record historical data for use in assisting in planning future projects

- Providing data required for preparing extension of time claims and for litigation

A number of *PMBOK® Guide* Executing and Monitoring and Controlling processes may be managed partially or completely with Microsoft Project. The extent that Microsoft Project may be used will be outlined towards the end of this chapter.

1.9 Project Planning Metrics

There are three components that are usually measured and controlled using planning and scheduling software:

- Time

- Effort (resources)

- Cost
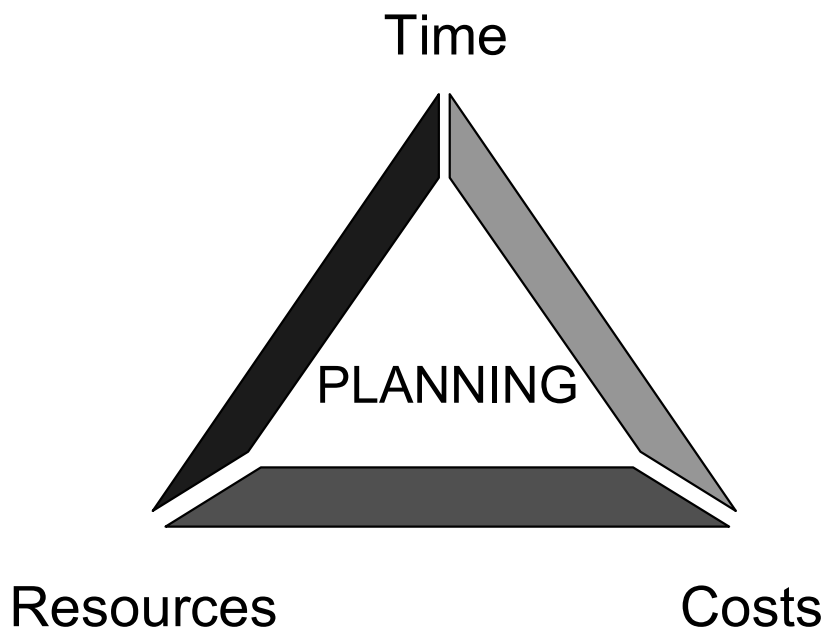
A change in any one of these components normally results in a change in one or both of the other two.

There are other project management functions that were not traditionally managed with planning and scheduling software. The development of Enterprise Project Management systems has resulted in the incorporation of more of these functions in project planning and scheduling software, including:

- Timesheets and Effort Recording

- Document Management and Control

- Issue Management

- Risk Management, and

- Collaboration Tools.

1.10 Planning Cycle

The planning cycle is an integral part of managing a project. A software package such as Microsoft Project makes this task much easier for larger and more complex projects.

When the original plan is agreed to, the Project (or at a more detailed level such as Phase or Stage) **Baseline** is set. The **Baseline** is a record of the original plan. The **Baseline** dates may be recorded in Microsoft Project in data fields titled **Baseline Start** and **Baseline Finish**.

Work should then be authorized and executed in accordance with the plan. When a plan may not be achieved then it should be revised and the revised plan approved, re-baselined and executed.

The actual progress is monitored, recorded in **Schedule Control** and **Cost Control** and the progress is compared to the **Baseline**.

The plan and progress should be evaluated, variances analyzed, understood and reported.

The plan may be amended by adding or deleting tasks and adjusting Remaining Durations or Resources. Should the current forecast timings be unacceptable, then options should be considered to bring the project back on track.

The achieved progress and the revised plan is then published as progress continues using processes defined in **10.1 Communications Planning**, **10.2 Information Distribution** and **10.3 Performance Reporting**.
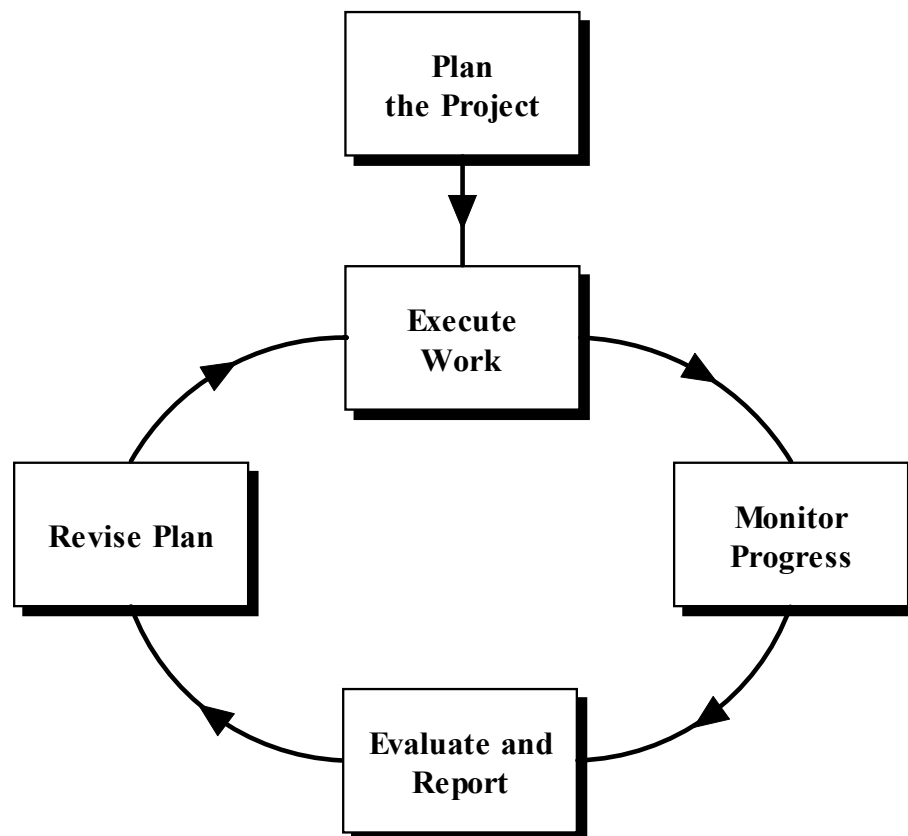
1.11 PMBOK® Guide Processes and Microsoft Project

It is possible to use Microsoft Project in almost all the *PMBOK*® *Guide* Processes, even if it is just to schedule when the work is planned to be executed and by whom. The table below explains some practical ways to use Microsoft Project in many of the processes beyond scheduling and assigning resources:

Initiating		
4.1	Develop Project Charter	This is where the planning tool such as Microsoft Project may be selected.
4.2	Develop Preliminary Scope Statement	Typically this document would be developed in a word processor. The scope may be entered into Microsoft Project as **Tasks** and notes about the scope content recorded in the **Notes** facilities. The disadvantage of using Microsoft Project for developing the Preliminary Scope Statement is that people without access to Microsoft Project, or do not know how to use it, may not be able to review the data. In that case, consider the use of a word processor or a spreadsheet. This information then may be cut and pasted from another application into Microsoft Project to develop the schedule.
Planning		
4.3	Develop Project Management Plan	Typically a word processor such as Microsoft Word would be used to create this document. Microsoft Project may be nominated in this process as a planning tool but it would not be used to define the Project Management Plan.
5.1	Scope Planning	Typically the Scope Management Plan would not be developed using Microsoft Project, however it may be used to plan the development of the **Scope Management Plan**, showing the activities and people required.
5.2	Scope Definition	The scope could be developed as **Tasks** in Microsoft Project. The **Task Notes** and user definable fields could be used to record additional information.
5.3	Create WBS	The **Outlining** feature of Microsoft Project or a **Custom Outline Code** may be used to define the Work Breakdown Structure (WBS) of a project. The *Project Management Institute Practice Standard for Work Breakdown Structures* provides guidance for the development of a project WBS. The Microsoft Project outlining feature is useful for granulating a WBS into more detail, but may not be printed as a hierarchical tree diagram for review.

6.1	Activity Definition	Microsoft Project is designed to list Activities, Milestones and additional activities that may be added for Requested changes.
		A **Customized Field** may be used to record **Requested Changes** against tasks.
		Additional information about an activity may be recorded in the **Task Notes** field.
		Some people like to keep tasks in a schedule at a summary level and then include activities as notes in the **Task Notes** form.
6.2	Activity Sequencing	Microsoft Project will handle this process, as this is one of the primary purpose purposes of the product. Outputs may be presented as a **Gantt Chart** or as a **Network Diagram.** There are other reporting facilities available.
6.3	Activity Resource Estimating	Resources may be assigned to tasks and the resource requirement viewed as tables using either the **Resource Usage** table, or **Resource Graphs** (histograms) and **Resource Graph** function, or exporting to Excel for further analysis with the **Analysis toolbar**.
6.4	Activity Duration Estimating	Microsoft Project is designed to handle this function by assigning resources, the number of resources and the quantity of work to tasks.
		It also has the ability to assign calendars to both tasks and resources to further refine the task Finish Date.
6.5	Schedule Development	This is one of the primary purposes of Microsoft Project. Various execution options may be considered and planned in Microsoft Project to optimize project timing.
7.1	Cost Estimating	Microsoft Project may be used for estimating and there are a number of functions that would assist, including Labor Resources, Material Resources and Costs.
		A user must be aware that a detailed schedule with many resources and costs is very difficult to update and maintain as the project progresses. The use of an external estimating system or a spreadsheet may be considered and then the summary costs transferred to Microsoft Project for analysis.
7.2	Cost Budgeting	Cost from a project plan may be rolled up in a number of ways using **Outlining** or the **Grouping** feature which will operate on a number of user definable fields. This will provide the costs elements of work as well as the total project cost.
		A cash flow may also be this is normally best achieved by exporting to Excel for presentation using the **Analysis toolbar**.

8.1	Quality Planning	The relevant standards for each task could be recorded in the **Task Notes** or a user definable field. Activities should be included in the schedule for checking quality.
9.1	Human Resource Planning	All people involved on a project may be entered into the **Resource Sheet**. Information about resources may be entered into either existing fields or user definable fields which may be used to identify roles, responsibilities and the project organizational structure. Resources may be grouped using the **Grouping** function and an organizational structure may be created in a table format.
10.1	Communications Planning	Once the reporting requirements have been defined then the Microsoft Project **Filters**, **Table** and **Layouts** or **Reports** may be used to create reports for project stakeholders.
11.1	Risk Management Planning	Microsoft Project is not a tool this function should be undertaken outside of Microsoft Project. A **Risk Log** item number and or description may be assigned to a task using a user definable field.
11.2	Risk Management Planning	This typically would not involve the use of Microsoft Project.
11.2	Risk Identification	This typically would not involve the use of Microsoft Project but the process of planning may assist in the identification of risks and additional activities added as part of a risk mitigation strategy.
11.3	Qualitative Risk Analysis	This typically would not involve the use of Microsoft Project but it may be used to model the effect of a realized risk on a project.
11.5	Risk Response Planning	It may be used to evaluate options and include risk countermeasure activities, but it is recommended that a risk analysis be conducted outside of Microsoft Project.
12.1	Plan Purchases and Acquisitions	Planning purchases may involve grouping several tasks under a single order. These activities may be tagged with a user defined field and grouped using the **Grouping** function, or selected and displayed together using a filter, which limits the number of tasks that can be displayed.
12.2	Plan Contracting	Planning contracts may involve grouping several tasks under a single contract. These activities may be tagged with a user defined field and grouped using the **Grouping** function, or selected and displayed together using a filter, which limits the number of tasks that can be displayed.

Executing		
4.4	Direct and Manage Project Execution	Work should be authorized and executed in accordance with the plan.
		If the plan is no longer valid then it should be changed, approved and then the revised plan followed. The process of claiming an extension of time is normally simpler when an approved plan is followed.
8.2	Perform Quality Assurance	Activities should be included in the plan to represent the Quality Assurance processes.
		When products fail Quality Tests then new activities may be added to the schedule to represent the retesting of these products.
9.2	Acquire Project Team	The requirements for resources, including people and equipment, may be calculated by Microsoft Project.
		Team Members may be added to the Resource Dictionary as they join the team.
9.3	Develop Project Team	As the project team is developed they may be recorded in Microsoft Project.
		People who are expected to use products like Microsoft Project should be trained in the use of the product. It is generally better to train a small number of specialized people to a high level than many people to a low level.
		There are many people who will never be able to master the use of any scheduling tool to a high level of competence and the training of these people is often a waste of time and money. It may be better to support these people with specialists from a project or program office.
10.2	Information Distribution	Reports designed in **Communications Planning** may be run from Microsoft Project and then distributed.
12.3	Request Seller Responses	Sellers may be requested to submit a schedule with their response.
		If a sellers' schedule is to be included in the project schedule then a template schedule should be supplied to the seller that includes the summary tasks they should schedule under, calendars, resources and any tailored Customized Fields.
12.4	Select Sellers	It is important that reporting requirements are carefully spelled out at this point so data that is used to update the project schedule is made available as and when required and in the correct format.
12.5	Contract Administration	During Contract administration the data required to update the schedule, including changes, should be supplied in accordance with the Contract and activities added to the schedule to reflect the changes.

Monitoring and Controlling		
4.5	Monitor and Control Project Work	Progress should be recorded in Microsoft Project on a regular basis. The actual performance should be compared with the planned and where there are unacceptable deviations from the plan then action should be taken to rectify the issues.
4.6	Integrated Change Control	The effects of potential changes in both cost and time may be entered into Microsoft Project, which supplies management with the appropriate data to make decisions on potential changes.
5.4	Scope Verification	Scope Verification and acceptance of the scope by all the stakeholders may be assisted by the presentation of a well-constructed and clear schedule.
5.5	Scope Control	Scope changes should be represented as Tasks in Microsoft Project by adding additional tasks to the schedule.
6.6	Schedule Control	As work progresses the task status should be recorded with **Actual Start Dates**, **Percent Completes** and **Actual Finish Dates** depending on the status of the tasks. The tasks in Microsoft Project should be updated on a regular basis.
7.3	Cost Control	As work progresses the **Actual Hours**, **Actual Costs**, **Hours to Complete** and **Cost to Compete** may be entered into Microsoft Project and a **Cost at Completion** calculated.
8.3	Perform Quality Control	Quality Control is performed throughout the delivery of products. The project plan should be updated as products are Quality Approved and accepted. The plan should be changed to reflect any changes due to the running of the Change Control Process, which may add or remove tasks from the plan.
9.4	Manage Project Team	Microsoft Project may be used to assist in the management of the team mainly by the ability to assign resources to tasks, which is, in effect, assigning work to people. The responsibility for the management of tasks may be achieved by creating a user defined field for responsibility.
10.3	Performance Reporting	Microsoft Project may produce some basic Earned Value data and date variance data for Performance Reporting.
10.4	Manage Stakeholders	Updated schedule reports may be run and distributed to stakeholders in accordance with the **Communications Plan**.
11.5	Risk Response Planning	Risk responses once planned could be scheduled in Microsoft Project.
12.6	Contract Closure	At closure the schedule should be checked to ensure all tasks are completed and all products delivered to the project.
Closing		
4.7	Close Project	The schedule should be updated to reflect the actual finish of the project and a record of the final duration of the project made available in the Lessons Learned Report and saved.

4 NAVIGATING AROUND THE SCREEN

4.1 Identify the Parts of the Project Screen

After a blank project has been created from a template, the default Microsoft Project 2007 screen will look like this:
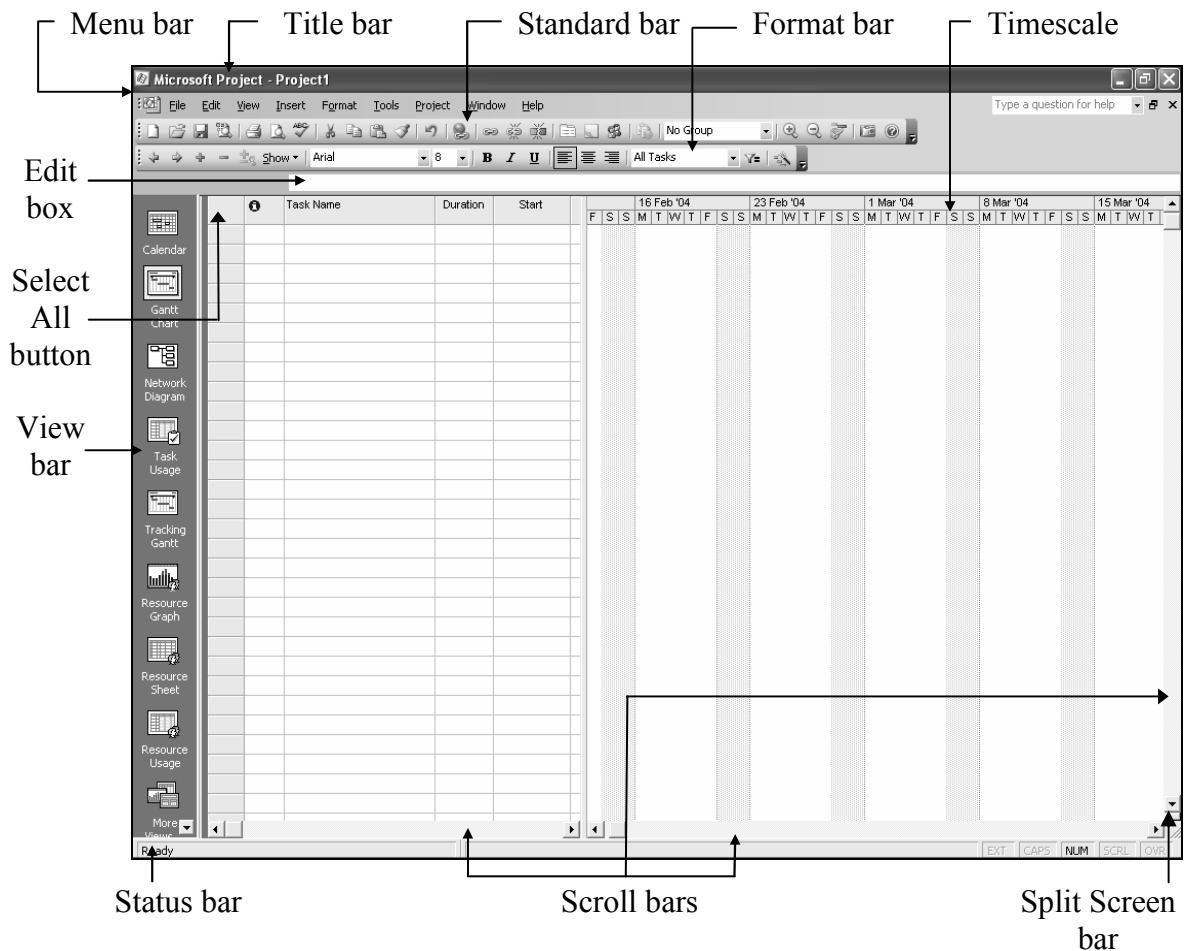
Microsoft Project has a Windows-style menu system with a typical Windows look-and-feel.

- The project name is displayed after **Microsoft Project** at the top of the left-hand side of the screen.

- The drop-down menus are just below the project name.

- The toolbars are displayed below the menu.

- The left-hand side of the line underneath the toolbars is the **Entry Bar** and **Edit Box**. Any editable data may be edited in the **Edit Box** or directly in the field.

The ☐ and ☒ icons are displayed on the left of the **Edit Box** only when performing editing, and may be used for accepting and not accepting data changes that are made from within the edit box.

- The main display has the **Bar Chart** or **Gantt Chart** on the right-hand side, with the **Timescale** above, and the **Data Columns** on the left-hand side with their column titles above them. The divider between the two areas may be dragged from side to side by holding down the left mouse button.

- The **View Bar** displays the same options as the **View** menu and is located on the far left of the screen. This may be hidden or displayed by:

  Selecting **View**, **View Bar**, or
  Holding the mouse pointer over the **View Bar**, right-clicking to display a menu, and selecting **View Bar**.

- The horizontal **Scroll Bars** are at the bottom of the screen and the **Status Bar** is below the **Scroll Bars**. The vertical **Scroll Bar** is at the right-hand side of the screen.

> ℹ️ It is recommended screens to hide the **View Bar** when using computers with small as it consumes valuable screen space that is often better utilized showing project data.

4.2 Customizing the Screen

The screen may be customized in a number of ways to suit your preferences. The toolbars and menu bar may be moved around the screen by holding down the right mouse button and dragging them to a new position on the screen.

4.2.1 Toolbars

Toolbars will not be covered in detail but significant productivity improvements may be made by ensuring that functions frequently used are available on a toolbar.

- There are many built-in toolbars in Microsoft Project. These may be displayed or hidden by:

  Using the command **View**, **Toolbar** or **Tools**, **Customize**, **Toolbars…** and selecting the **Toolbar** tab, then checking or un-checking the required boxes to display or hide the toolbars, or
  Right-clicking the mouse in the toolbar area to display a Toolbar menu.

- Icons may be added to a bar by selecting **Tools**, **Customize**, **Toolbars…**, **Commands** tab. **Toolbar Icons** may be selected from the dialog box and dragged onto any toolbar.

- Icons may be removed from the toolbars after the **Customize** (Toolbar) form is opened by holding down the left mouse button on the icon and dragging them off the toolbar.

- Icons may be reset to default by selecting **Tools**, **Customize**, **Toolbars…**, selecting the **Toolbar** tab and clicking on Reset….

- Other toolbar display options are found under **Tools**, **Customize**, **Toolbars…** and then selecting the **Options** tab.

> ℹ️ It is recommended to check the **Always show full menus** option in the **Tools**, **Customize**, **Toolbars…**, **Options** tab to ensure full menus are always displayed. This saves time waiting for the menu item you require to be displayed.

4.2.2 Menu Bar

The **Menu Bar** display options are found under **Tools**, **Customize**, **Toolbars…** and then selecting the **Options** tab.

4.3   Setting up the Options

The basic parameters of the software must be configured so it will operate the way you desire. In order for the software to operate and/or calculate the way you want, some of the defaults must be turned on, or off, or changed. These configuration items may be found under **Tools**, **Options…**.

We will discuss some of the more important options now. All the Options are discussed in the **OPTIONS** chapter. Select **Tools**, **Options…** to display the **Options** form.

Select the **View** tab:
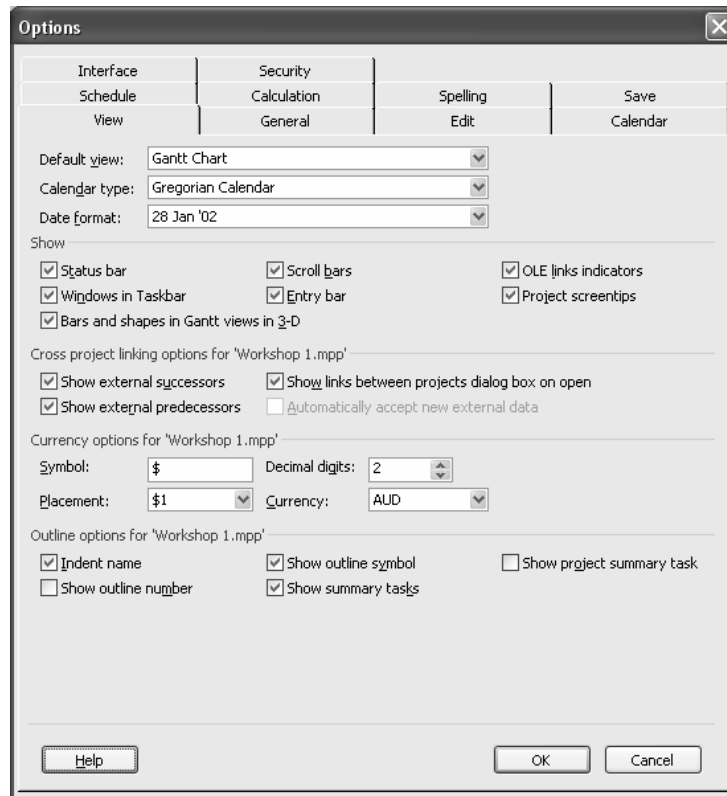
- **Date format:** This is used to select the display style of the dates for all projects. The date format will be displayed according to a combination of your system default settings and the Microsoft Project Options settings. You may adjust your date format under the system Control Panel, Regional and Language Options and the Microsoft Project settings in the Options form, which are covered in the **OPTIONS** chapter.

There is often confusion on international projects between the numerical US date style, mmddyy and the numerical European date style, ddmmyy. For example, in the United States 020710 is read as 07 Feb 10 and in many other countries as 02 Jul 10. Consider always adopting the ddmmmyy style, **06 Jan '07** or mmmddyy style, **Jan 06 '07**.

- Select the **Schedule** tab:
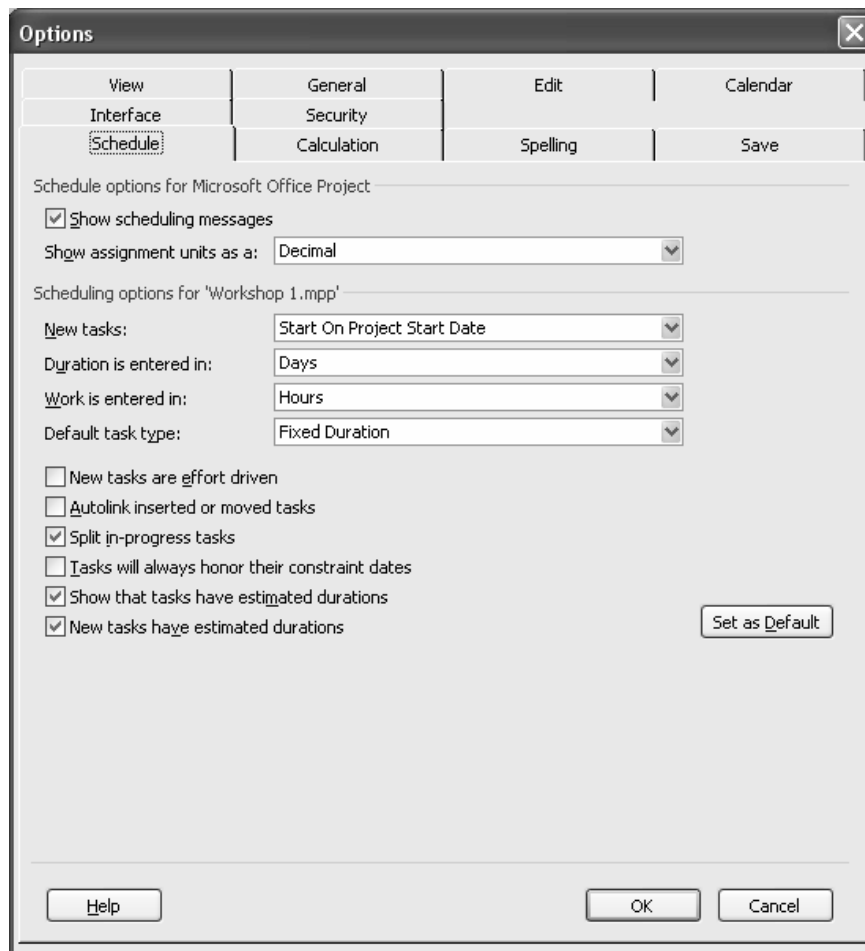
- **New tasks:** - When the option of **Start on Current Date** is selected new tasks are assigned an Early Start constraint as they are added to the schedule.

  i It is not desirable to have activities assigned constraints as they are created in a Critical Path schedule, therefore Start On Project Start Date should always be selected when creating a Critical Path schedule.

- **Duration is entered in:** – This option specifies the format in which durations are entered via the keyboard. If **Day** is selected as the default, then a duration of 2 days is entered as 2 (without the d). If **Hours** is selected as the default, then a 2-hour duration should be entered as 2h.

- It is important that both the **Autolink inserted or moved tasks** and the **Tasks will always honor their constraint dates** are both unchecked.

  Autolink inserted or moved tasks option will result in relationships being changed when tasks are dragged to another position.

  Tasks will always honor their constraint dates results in the possibility of tasks being scheduled earlier than it is technically possible.

4.4   Splitting the Screen Views and Details Forms

The screen may be split horizontally into two panes. A different **View** may be displayed in each pane. This is termed **Dual-Pane view**. To open or close the dual-pane view:

- Select **Window**, **Split** or **Window**, **Remove Split**, or

- Grab the horizontal dividing bar at the bottom of the screen (see the picture in paragraph 4.1) by holding down the left mouse button and dragging the line to resize the panes.

- Right-click in the right-hand side of the top pane and you will, in most views, be able to display a menu to open or remove the split.

- Double-click the dividing line or drag it to also remove or open the split window.
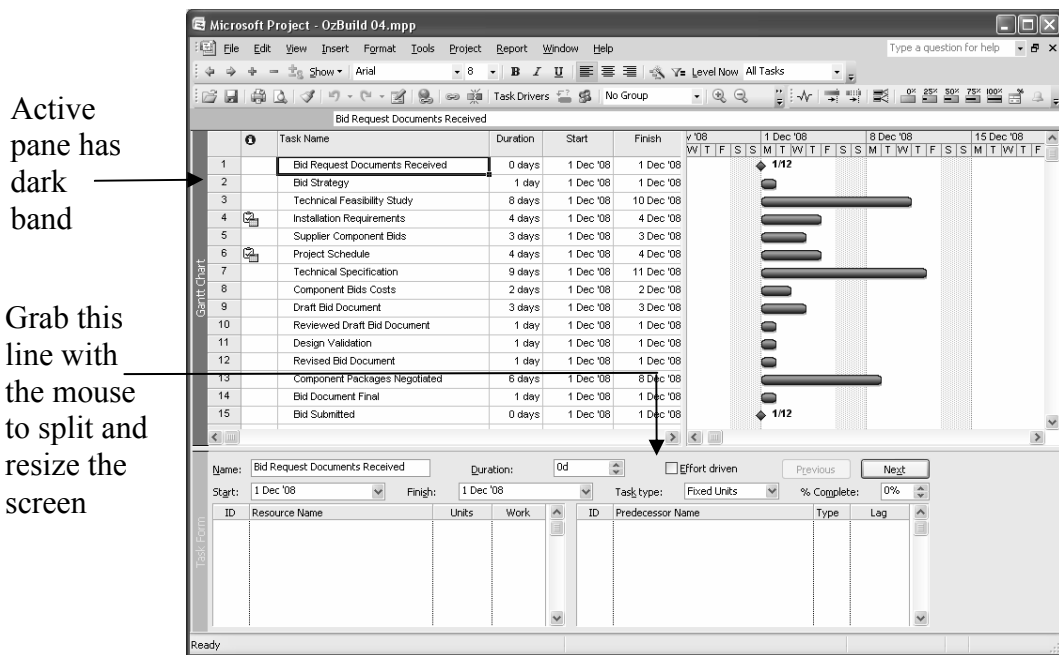
A pane needs to be **Active** before menu items pertaining to that pane become available. A dark blue band (with the standard Windows color scheme) on the left-hand side is displayed in the **Active Pane**.

The menu options will often change when different **Views** are selected in a pane.

A **Pane** is made **Active** just by:

- Clicking anywhere in the pane, or

- Pressing **F6** to swap active panes.

> *i* Not all panes may be printed and only the **Active Pane** may be printed, thus it is not possible to create a printout with a Gantt Chart and a Resource Sheet (Table) or Graphs (Histograms) with Microsoft Project.

Some **Views** displayed in **Panes** have further options for displaying data. These are titled **Details** forms. The **Details** forms may be selected, when available, by:

- Making the pane active, then

- Selecting:
  Format, **Details**, or
 Right-clicking in the right-hand side of the screen and clicking the required form.

  The example below is for the **Task Information** form:
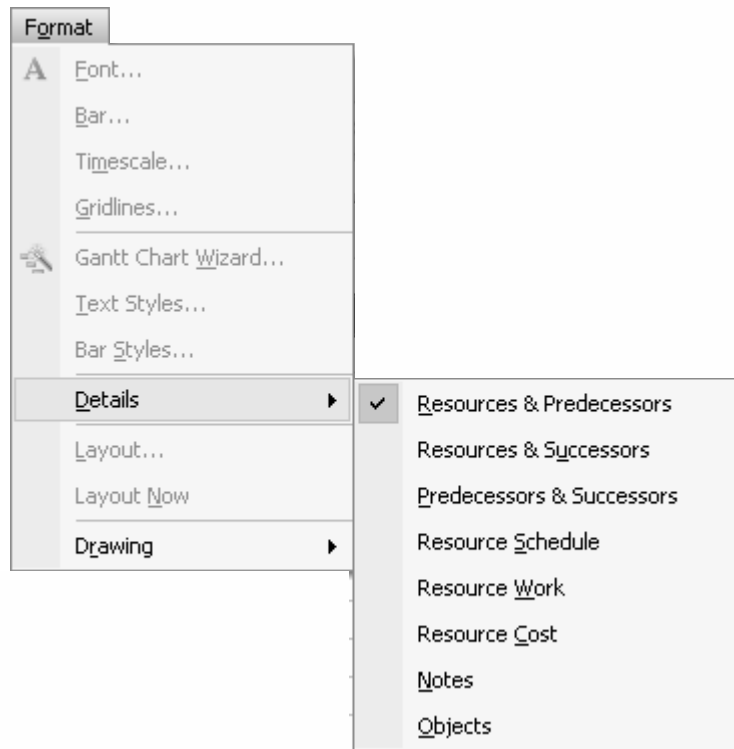
4.5   Right-clicking with the Mouse

It is very important that you become used to using the right-click function of the mouse as this is often a quicker way of operating the software than using the menus. The right-click will normally display a menu, which is often different depending on the displayed View and which pane is the Active Pane. It is advised that you experiment with each view to become familiar with the menus.

WORKSHOP 2
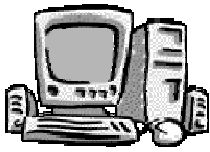
Setting Your Project Options

Background

For control purposes it is expected that all tasks will be entered in days.

Assignment

Select **Tools**, **Options…** and open the **Project Options** form. Click on each tab and familiarize yourself with the forms. set your options as follows:

Select **View** tab, set the **Date format** to:
1. "**ddmmmyy**" i.e., 28 Jan '02, or
2. "**mmmddyy**" i.e., Jan 28 '02.
   The available date format will depend on your system settings.
Select the Schedule tab and set the Schedule Options as per the picture below:

Hide and display the **Standard** and **Formatting** toolbars using the **View** menu.

To ensure full menus are always displayed (and thus save time waiting for the menu item you require to be displayed) check the **Always show full menus** option in the under **Tools**, **Customize**, **Toolbars…**, **Options** tab.

Experiment by dragging the toolbars around the screen with your mouse.

Hide and display the **View** bar by selecting **View**, **View Bar**.

Split the screen into two panes by right-clicking with the mouse in the right-hand side of the screen, and selecting **Split** from the menu.

Activate the lower pane by clicking in it; note the blue bar (or a different shade of bar if you do not have the default Windows colors) on the left-hand side of the screen has moved from the top pane to the bottom pane.

Activate the upper pane, by clicking in it.

Resize the panes by dragging the Split screen bar.

Close the Split screen by double-clicking on the horizontal dividing line.

Split the screen by double-clicking on the small bar in the bottom right-hand corner of the screen.

Save your **OzBuild Bid** Project.

7   ORGANIZING TASKS USING OUTLINING

Outlining is used to summarize and group tasks under a hierarchy of **Parent** or **Summary Tasks**. They are used to present a primary view of your project during planning, scheduling and statusing. These headings are normally based on your project **Work Breakdown Structure** (**WBS**), **Control Accounts** or **Planning Packages**. The development of the **WBS** is covered in *PMBOK® Guide* Knowledge Area **Project Scope Management** and the development of the **WBS** is covered in detail in section **5.5 Create WBS**.

Defining the project's breakdown structure can be a major task for project managers. The establishment of templates makes this operation simpler because a standard breakdown is predefined and does not have to be typed in for each new project.

Projects should be broken into manageable areas by using a structure based on a breakdown of the project deliverables, systematic functions, disciplines or areas of work. The Outline structure created in your project should reflect the primary breakdown of your project and is normally the WBS.

Microsoft Project 2000 introduced a new feature titled **Grouping**, which is similar to the **Organize** function found in Primavera software. This feature allows the grouping of tasks under headings other than the "Outline Structure." Unlike Primavera software, **Grouping** is not the primary method of organizing tasks and is covered in the **GROUPING TASKS, OUTLINE CODES AND WBS** chapter.

7.1   Creating an Outline

To create an **Outline**:

- Insert a new **Summary task** above the **Detailed tasks**:

- Then **Demote** the **Detailed tasks** below **Summary task**. (Demoting is explained in the next section.):

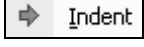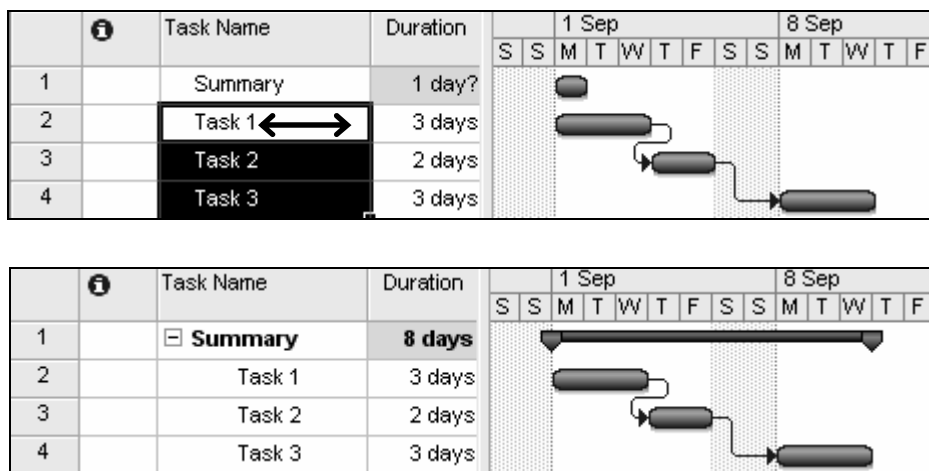The Start and Finish dates of the **Summary task** are adopted from the earliest start date and latest finish date of the **Detailed tasks**. The duration of the **Summary** is calculated from the adopted start and finish dates over the **Summary** task calendar, which is initially the **Project Calendar**.

The Duration and Finish dates of the Summary task are shaded because these were changed after Tasks 1 to 3 were demoted. This shading may be removed by pressing F9 to recalculate the schedule or saving the file.

7.2   Promoting and Demoting Tasks

Demoting or **Indenting** tasks may be achieved in a number of ways. Select the task or tasks you want to **Demote**. Ensure you have selected the whole task and not just some cells. You may use any of the following methods to **Demote a selected task**:

- Click on the Indent ⇨ button, or

- Right-click on the **Task ID** column to open the task shortcut menu, click on the ⇨ Indent button, or

- Move the mouse until you see a double-headed horizontal arrow in the task name, left-click and drag the task right. A vertical line (see lower of the two pictures below) will appear indicating the outline level you have dragged the task(s) to, or
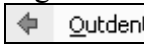

- Hold down the **Alt** and **Shift keys** and press the **Right Arrow Key** on your keyboard.

Promoting or **Outdenting tasks** uses the same principle as demoting tasks. Select the task or tasks you want to demote, ensure you have selected the whole task and not just some cells, then you may:

- Click on the Outdent ⇦ button, or

- Right-click on the **Task ID** column to open the task shortcut menu, click on the ⇦ Outdent button, or

- Move the mouse until you see a double-headed horizontal arrow in the task name column, left-click and drag the tasks left, or

- Hold down the **Alt** and **Shift keys** together and press the **Left Arrow Key** on your keyboard.

Tasks may be added under a **Detailed** task and demoted to a third level and so on.

7.3 Summary Task Duration Calculation

The Summary Task duration is calculated from the Start to the Finish over the calendar assigned to the task, thus changing the summary task calendar will change the displayed duration of the Summary Task:

	Task Name	Duration	Task Calendar	
1	⊟ Summary 1	14 days	7 Day/Week	
2	Task	5 days	5 Day/Week	
3	Task	5 days	5 Day/Week	
4	⊟ Summary 2	10 days	5 Day/Week	
5	Task	5 days	5 Day/Week	
6	Task	5 days	5 Day/Week	

7.4 Summarizing Tasks

Once you have created summary tasks, the detailed tasks may be rolled up or summarized under the summary tasks. Rolled up tasks are symbolized by the + sign to the left of the summarized task description:

- This picture shows **Detailed Task 3** rolled up.

	❶	Task Name	Duration	
1		⊟ **Summary**	**8 days**	
2		Task 1	3 days	
3		Task 2	2 days	
4		⊞ **Task 3**	**3 days**	

- This picture shows **SUMMARY TASK** rolled up.

	❶	Task Name	Duration	
1		⊞ **Summary**	**8 days**	

7.4.1 To Roll Up Summary Tasks and Show Tasks

The Outline Symbols, ⊞ and ⊟, in front of the tasks may be hidden and displayed from the **Tools**, **Options…**, **View** tab, **Show outline symbol**.

Select the task you want to roll up:

- Click on the ⊟ to the left of the Task Name, or

- Click on the **Hide Subtasks** ▬ icon, or

- Double-click on the **Task ID** (not the **Task Name** as this will open the **Task** form).

Displaying rolled-up tasks is similar to rolling them up. To do this, select the task you want to expand. Then:

- Click on the ⊞ to the left of the Task Name, or

- Click on the **Show Subtasks** ✚ icon, or

- Double-click on the **Task ID**.

7.4.2   Roll Up All Tasks to an Outline Level

A schedule may be rolled up to any Outline Level by selecting the desired Outline Level from the Show ▾ drop-down box on the **Formatting Toolbar**.
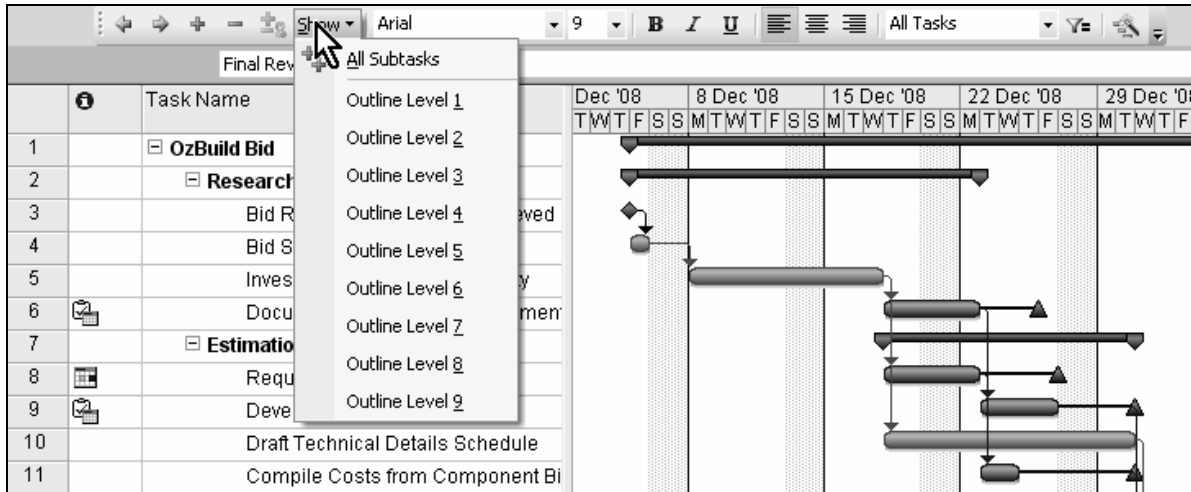
7.4.3   Show All Tasks

Select the ⁺₊ All Subtasks option at the top to display all tasks.

7.5   *Project Summary Task*

A Project Summary Task may be displayed by checking the **Show project summary task** box from the **Tools**, **Options…**, **View** tab. This task spans from the first to the last task in the project and is in effect a built-in Level 1 outline. The description of the Summary Task is the Project Title entered in the **File**, **Properties** form. A Project Summary Task is a virtual task and may not have resources, relationships or constraints assigned.