PLANNING USING

PRIMAVERA PROJECT PLANNER®

P3®

VERSION 3.1

REVISED 2006

PAUL E HARRIS

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SUMMARY

The book was written so it may be used as:

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

The book has been written to be used as the basis for a three-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 be used by the students as a reference book after the course.

CUSTOMISATION FOR TRAINING COURSES

Training organisations or companies that wish to conduct their own training may have the book tailored to suit their requirements. This may be achieved removing, reordering or adding content to the book and by writing their own exercises. This book is available in both A4 Spiral Bound, which lies flat on the desk which is suitable for training and/or self teaching and in A4 paperback as a reference manual. Please contact the author to discuss this service.

AUTHOR'S COMMENT

As a professional project planner and scheduler, 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 planning and scheduling software. 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 2000, 2002 & 2003 and Primavera Enterprise TeamPlay, P3e and P3e/c, Primavera Version 4.1 and Primavera Version 5.0. I trust this book will assist you in understanding how to use P3 on your projects. Please contact me if you have any comments on this book.

UPDATES INCLUDED IN THIS PUBLICATION

The Workshops have been updated from the previous publication so they start in late 2008, the earlier version had the exercises starting in late 2005 which would result in students undertaking workshops which started in the past. There have been a number of enhancements to the text to make the book more useful to the reader.

CURRENT BOOKS PUBLISHED BY EASTWOOD HARRIS

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5   ACTIVITY CODES

Activity codes are used to sort, select, summarize and group activities under headings. They are used to present different views of your project during scheduling and statusing. These headings are often based on your Work Breakdown Structures (WBS) and Organization Breakdown Structure (OBS).

Defining the code structure may be a major task for project managers. The establishment of templates makes this simpler as your standard codes would be predefined.

Work Breakdown Structure
Projects should be broken up into manageable areas by using a **Work Breakdown Structure** or WBS. The WBS is usually based on the various components of the project.

Organization Breakdown Structure
Organization Breakdown Structure is a term used to describe reporting hierarchy of people with areas of responsibility, just like an organization chart within a company.

Other Breakdown Structures
Other common breakdown structures found are:

- Contract Breakdown Structure, allocating activities to contracts,

- System Breakdown Structure, breaking a System into Sub-Systems and Sub-Sub- Systems as used in System Engineering and

- A code structure to break a project down into physical areas.

P3 **Activity Code Dictionaries** are created for each project breakdown structure and **Activity Code Values** assigned to reflect the items within the breakdown structure. **Activity Code Values** are assigned to each activity so activities may be grouped and sorted.

5.1 Defining Activity Codes

Select **Data**, **Activity Codes** to define the Activity Codes.

P3 has two types of activity codes, **Activity codes** and **Activity ID Codes**.
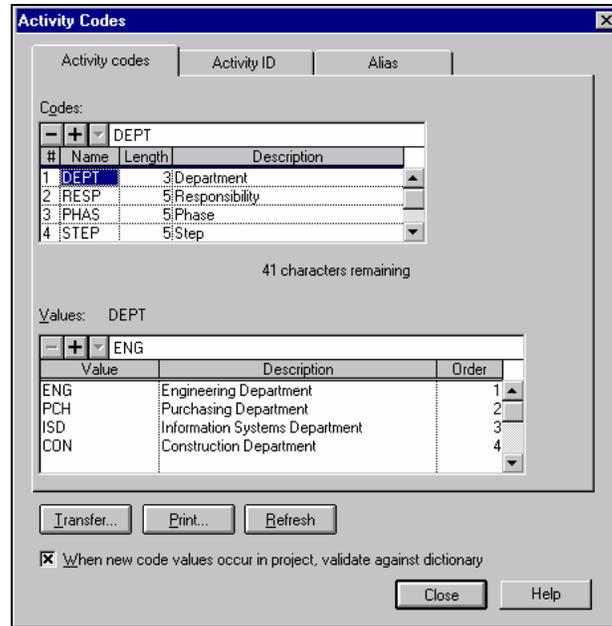
- **Activity codes** are codes are assigned to activities in the **Activity Form** or by using other methods.

- **Activity ID** codes are assigned through the logical coding of the Activity ID. These are discussed in the **ORGANISING ACTIVITIES** chapter.

- **Alias** is a facility for combining codes, this topic will be covered in the **ACTIVITY ID'S**, **ALIAS AND WBS CODES** chapter and may only be used in reports.

- **Transfer** allows you to transfer codes from another project.

An **Activity code** has a **Name** and a **Description**. The dictionary holds a series of **Values** and each **Value** has a **Description**.

In the example above:

- the dictionary for the Departments of the Project is named **DEPT**

- ENG is the value for the Engineering Department and

- PCH is the value for the Purchasing Department.

5.2   Creating and Deleting Code Dictionaries
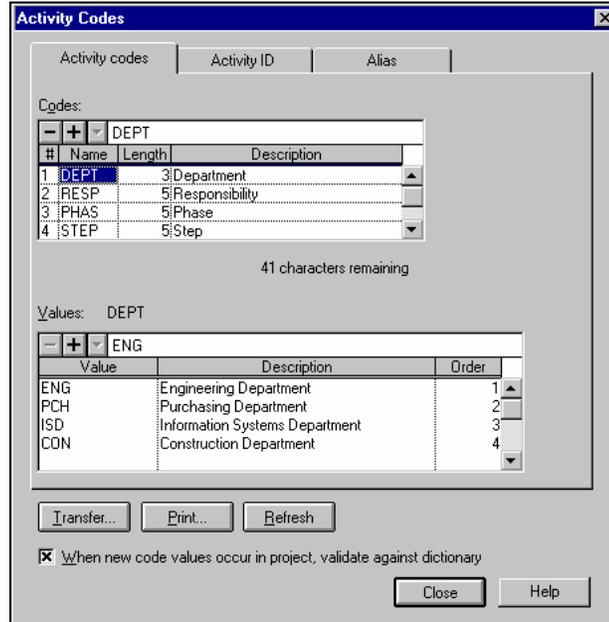
To create a new code:

- Select the place where you want to insert a new code and click ▣ button under the title **Codes** or click into the first blank line under **Codes**.

- Give the dictionary a 1 to 4-character **Name**.

- Nominate a code **Length** to a maximum of 10 characters. The length is the maximum number of characters each code may have.

- Type in the **Description** for the code.

- To delete a dictionary, highlight the appropriate dictionary and click the ▣ button. Deleting a dictionary will delete all the dictionary codes assigned to all activities.

- The total of all the code lengths added together has a maximum length of 64 characters.

- A maximum of 20 **Codes** are permitted.

> *i*   It is recommended to keep the code length as short as possible to reduce the number of keystrokes when assigning the code to an activity.

5.3   Creating and Deleting Activity Codes

To create a Code:

- Select a blank line or click on an existing code and click the ⊞ icon to insert a code.

- Allocate the **Code Value**. The maximum length of a **Code Value** is the code **Length** nominated in the dictionary and must be uppercase characters and numbers only.

- Type in the **Description** of the code.

- Allocate the order, from 1 to 254 to order the Codes on the screen. The lowest value is displayed at the top of the screen. If the order is not used (or has the same value) then the codes will be reordered alphabetically

- Select the ⊟ button to delete a code.

5.4   Default Activity Codes

Default activity codes may be created using **Tools**, **Options Default Activity Codes**. These code dictionaries are created when a new project is created. This table may be edited to suit your requirements.
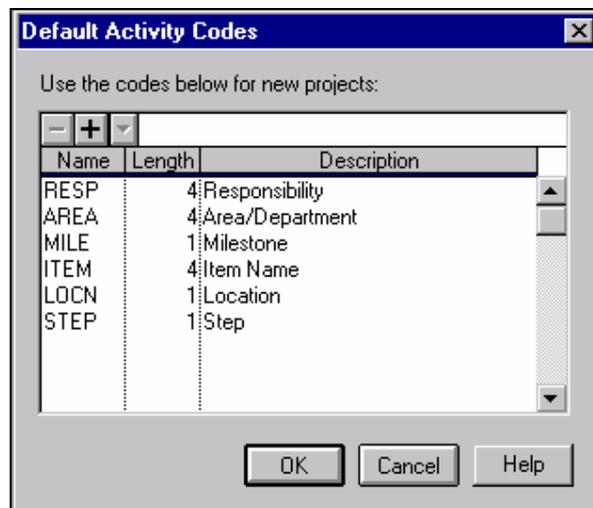
10 ADDING THE LOGIC

The next phase of a schedule is to add the logic to the activities. There are two types of logic that you must understand:

- The first is the logic **links or relationships** between activities and

- The second is the imposed **constraints** on the activities.

10.1 Understanding Relationships

There are four types of relationships available in P3; they are Finish-to-Start (**FS**) (also known as conventional), Start-to-Start (**SS**), Start-to-Finish (**SF)** and Finish-to-Finish (**FF**).

Two other terms you must understand are:

- **Predecessor**, an activity that controls the start or finish of another activity, and

- **Successor**, an activity whose start or finish depends on the start or finish of another activity.

If you were to draw a **FS** relationship (or conventional) it would look like this:
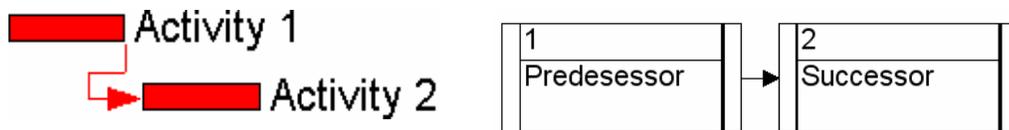
While the **SS** relationship looks like this:
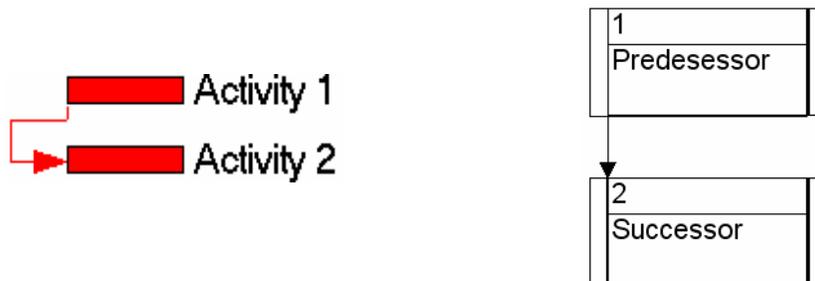
The **SF** relationship looks like:
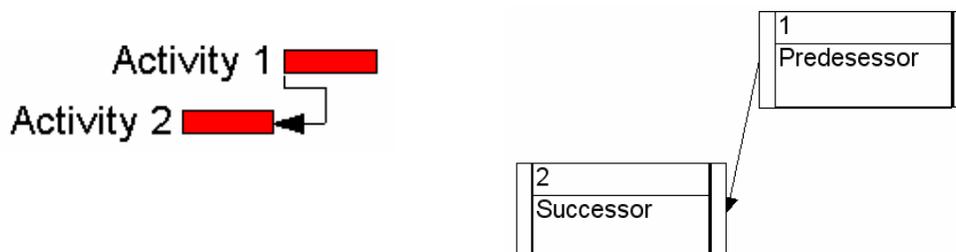
The **FF** relationship would be:
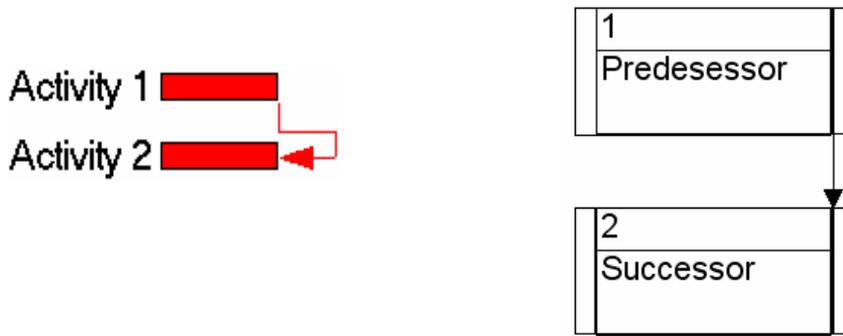
An example of a **FS** with positive lag:
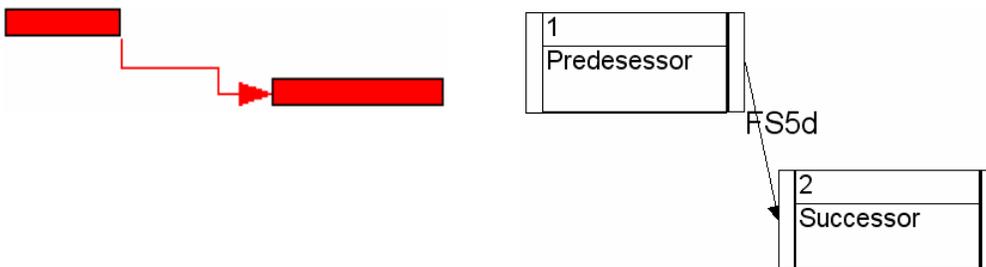
and an example with negative lag:
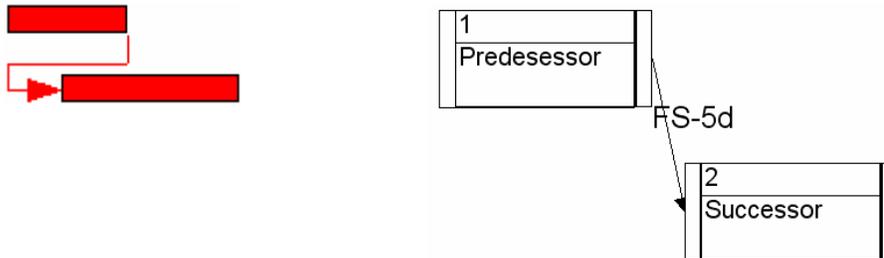
Lag is calculated on the predecessor's calendar.

i   You must be careful when using a lag to allow for delays such as curing concrete when the predecessor is not a seven-day calendar. The concrete will cure while the predecessor calendar has non-work days.

10.2 Adding Relationships to the Activities

There are a number of methods for adding logic to activities. This chapter will look at the following techniques:

- Graphical adding, editing and deleting relationships,

- Series Link and Unlink,

- Successor and Predecessor forms and

- PERT View.

10.2.1 Graphical Adding, Editing and Deleting Relationships

Adding Relationships

There are two modes of screen presentation. The first is where links are displayed on the screen. The second is without links. When links are shown, logic may be added on the screen using the mouse. To change between modes click on the ⊞ button in the tool bar, push **F3** or select **View**, **Relationships**.

You may add relationships on the screen by right clicking on the end of the predecessor activity bar, the mouse arrow is replaced by a ⌖, hold down the mouse button and dragging to the start of the successor activity.

To create other relationships such as **Start to Start**, drag from the beginning of the predecessor to the beginning of the successor bar.

Editing Relationships in the Bar Chart View

Click on a relationship line and this will open the **Edit Relationship** form. This allows you to select and edit a relationship.

The **Confirm Relationships** form will be displayed when there is more than one relationship line and you are able to select the relationship you wish to edit.

You may also select an activity and select **Edit**, **Relationships** to open the **Select Relationship** form.
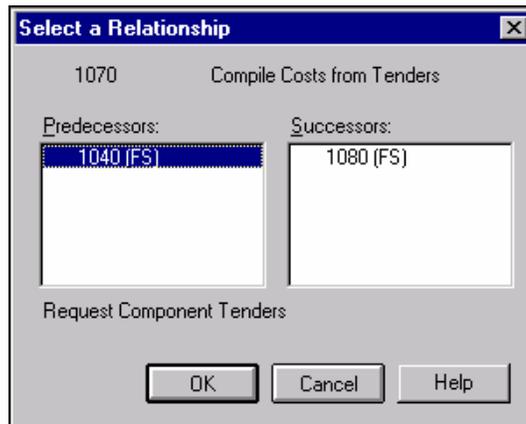
10.2.2 Link and Unlink

The Series Link is a method of linking a series of activities with **Finish to Start** relationships.

- highlight the activities to be linked and

- click **Edit**, **Link Activities** or the [icon] button on the tool bar,

- now all the activities are linked.

The activities need not be consecutive activities to be **Linked**. Activities may be selected at random with the **Ctrl** key held down and then **Linked**. When activities lower down in the schedule are selected first, they will not be linked in the order they were selected. Activities will be linked from top to bottom.

To remove Finish to Start relationships, select the activities to be unlinked and use:
- the [icon] button on the tool bar or
- select **Edit**, **Unlink**.

10.2.3 Autolink

The **Autolink** facility automatically assigns a Finish to Start relationship to an activity you highlight before adding an activity.

Select **Insert, Autolink** to turn this facility on or off.

10.3 Successor and Predecessor Forms

The third way to link activities is to use the **Successor** and/or the **Predecessor** forms. There are several methods of opening these forms.
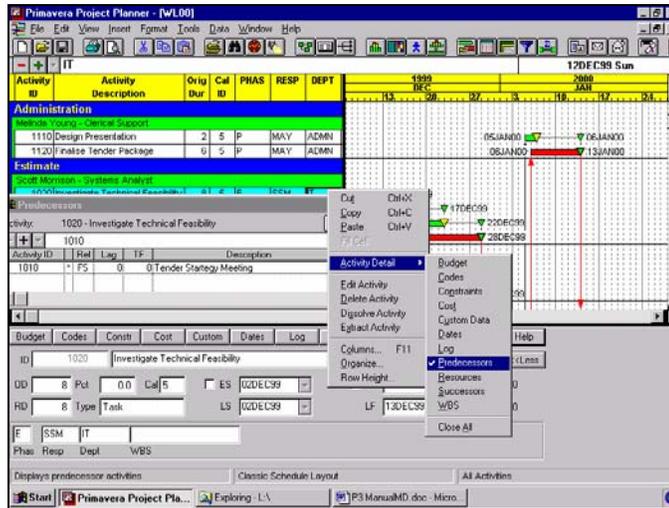
- Highlight the activity and click the right mouse button, which causes a pop-up menu to appear. Then select **Activity Detail**, a sub-menu pops up from which you may select the required form. The Predecessor Form is shown below.

- Select **View**, **Activity Detail** which shows the same menu opened by the right mouse button.

- Click on the **Pred** and/or **Succ** in the **Activity Form**.

- Click on the Predecessor or Successor Tool Bar Icons .

- Use the Pert View (which will be covered next).

When the form is open, you may insert the relationships required, including the link type and the lag.
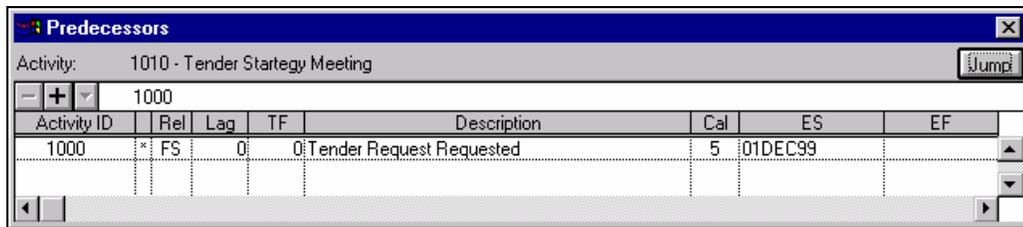
Scroll right to display a substantial amount of information on the activity.

Jump is used to move to the highlighted predecessor or successor.

10.4 Deleting Relationships

Relationships may be deleted by

- Opening the **Predecessor or Successor** form.

- Clicking on a Relationship Line on the Bar Chart to display the **Edit Relationship** form.

- Using **Series Unlink** as described above

- Highlight an activity and select **Edit, Relationships** to open the **Edit a Relationship** form.

- Highlight one activity and select **Edit, Extract Activity,** this will join all predecessor activities to the successor activities of the highlighted activity and remove all predecessors and successors from the highlighted activity.

Highlight one activity and select **Edit, Dissolve Activity,** this will join all predecessor activities to the successor activities of the highlighted activity and delete the highlighted activity.

10.5 PERT View

Select **View PERT** or press F6 or click on the ⬚ icon. The screen will change from **Bar Chart** view to **PERT** view.
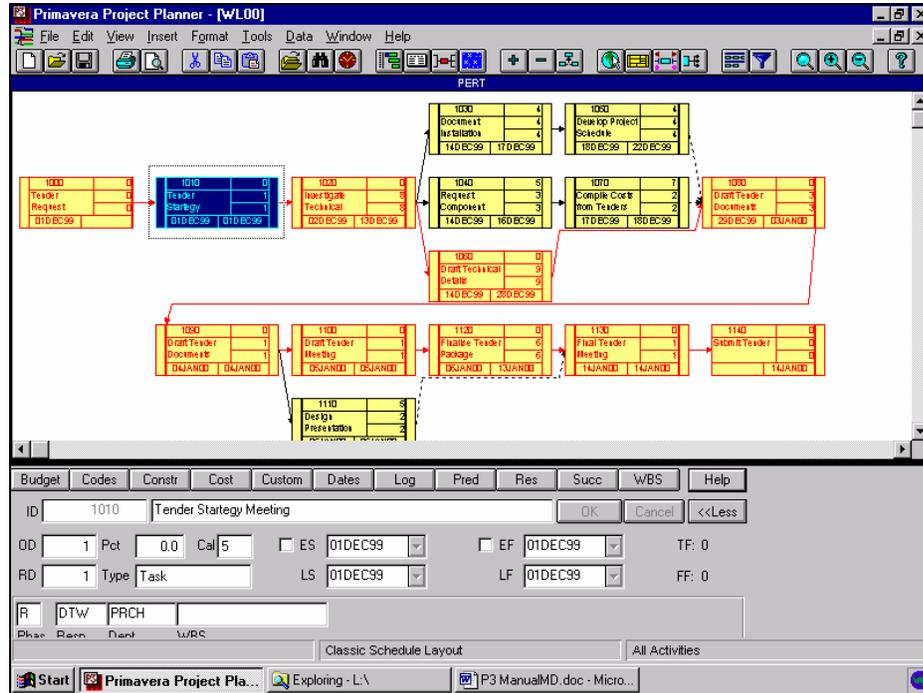
Position the mouse on the left (for start) or right (for finish) end of the predecessor activity, waiting for the cursor to change to a ⬚ then drag (i.e. hold the left mouse button down) the cursor to the left or right of the successor activity bar.
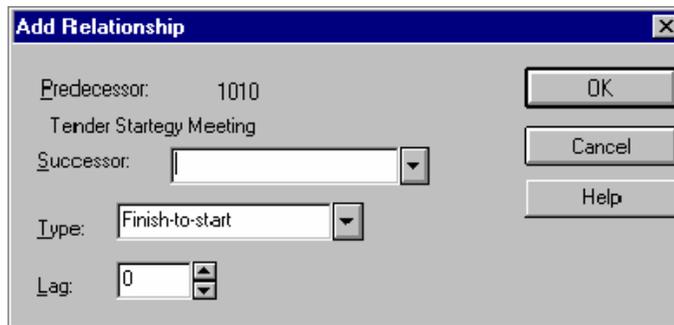
When the activity is not visible, release the mouse in a blank area and choose the successor using the **Successor Activity** form.

To change the relationship or alter the lag on an existing relationship, move the mouse over the relationship line and left click to open the **Edit Relationship** form.

10.5.1 Formatting your PERT View

Select **Format**, **Relationship** as the first step in tailoring the PERT view.

This allows you to choose:

- To display/not display the driving and non-driving relationships
- Change the color and line style
- Change to method of drawing the relationship lines and
- Display the lag and relationship type in the font of your choice.

Select **Format**, **Activity Box Configuration** to open the **Activity Box Configuration** form as the next step in tailoring the PERT view.
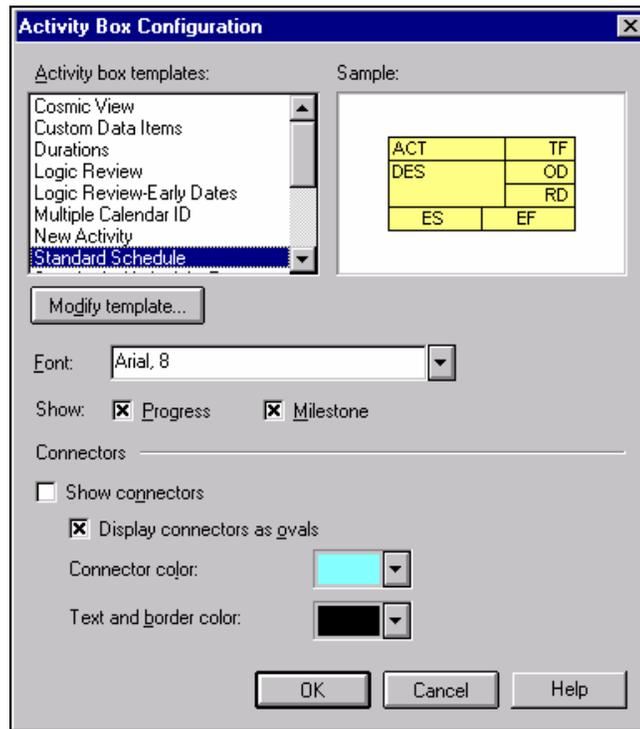
This allows you to:

- Select/modify the contents of each activity box

- Select the font to be used for the text in the box

- Display/not display connectors not in your current view

- Configure the connectors fill and text/border color or

- Optionally indicate progress and milestones.

Modifying/creating a new template by using the **Modify** template button to open the **Modify Template** form:

Entering a new template name activates the **Add template** button and allows you to store your modifications under a new name.

Select the cell you wish to modify and then either:

- Alter the cell contents, alignment or style
- Insert a row above the row of that cell
- Delete the row of that cell
- Append a row to the last row of the box
- Split the selected cell in two or
- Delete the cell but leave the row and other cells in that row.

Select **Format**, **Activity Box Ends and Colors** to open the **Activity Box Ends** form as the next step in tailoring the PERT view.
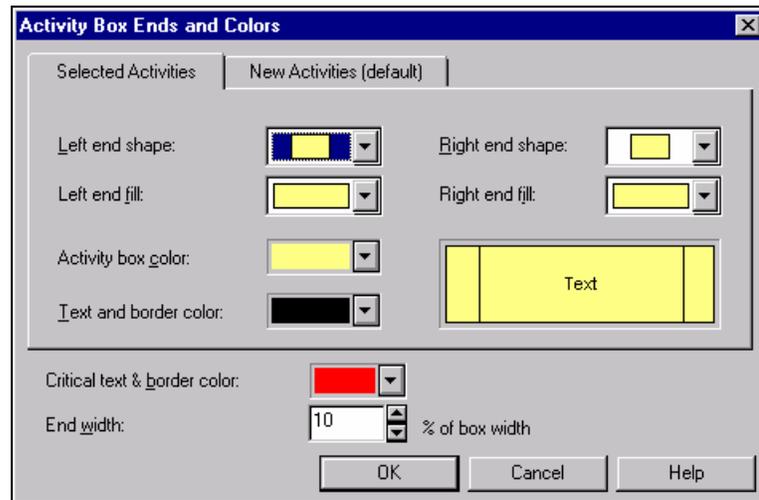
You may tailor the shape, pattern, color and width of the ends of the boxes. Use a filter or the **Shift/Ctrl** keys to select multiple activities you wish to format.

10.5.2 Timescale PERT

A timescaled Pert is available which presents the activities with a timescale.

From the Pert view select **Format, Organize** to open the **Organize** form and select the **Arrangement** tab.
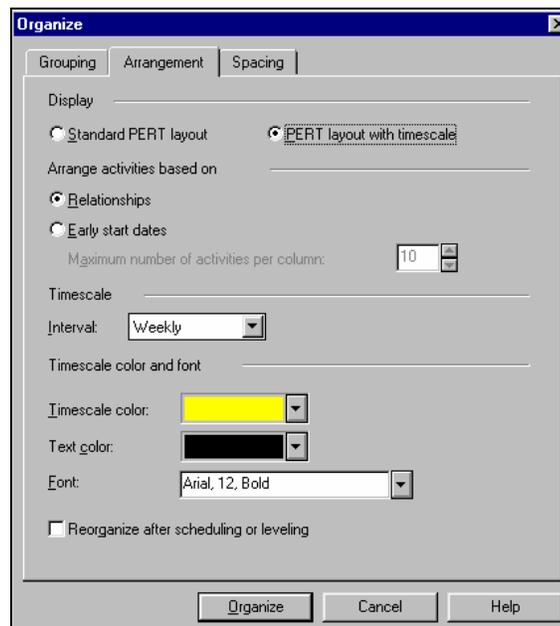
- You may select the **Standard PERT layout** or the **PERT layout with timescale (**see the next page for an example).

Standard PERT layout
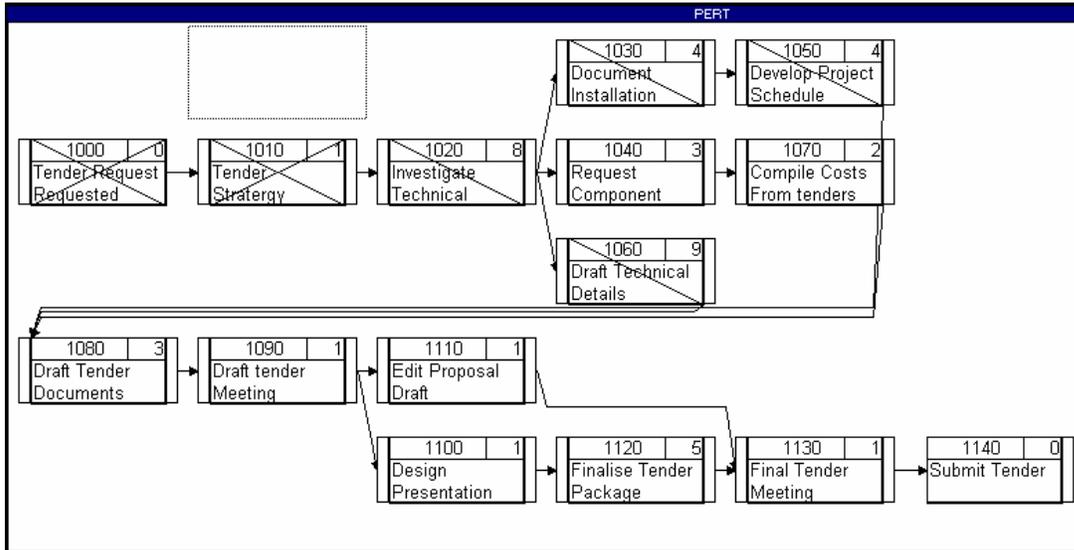
PERT layout with timescale
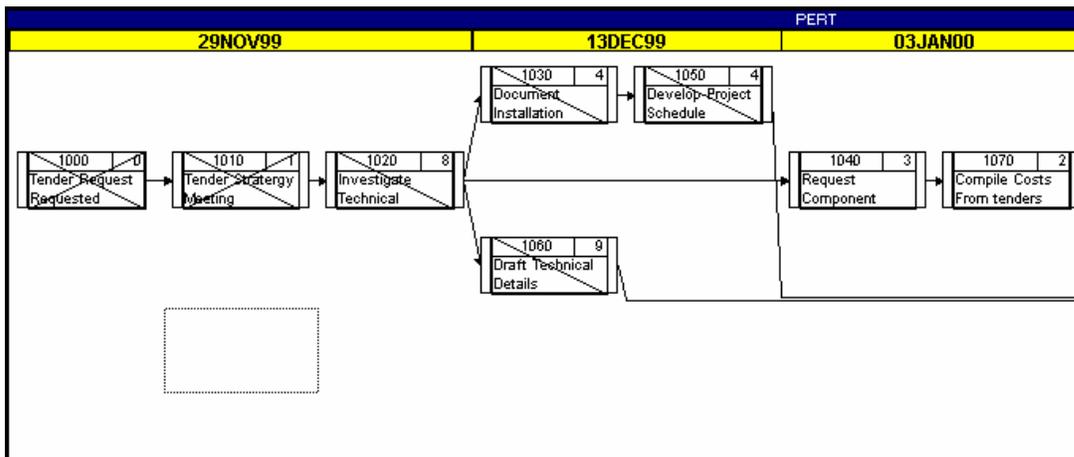
10.6 Scheduling the Project

Now that you have activities and logic in place, it is time to calculate the activity dates. More specifically, you will **Schedule** the project to calculate the Early Dates, Late Dates and the Float. This will allow you to determine the **Critical Path** of the project.

There are three methods to calculate the schedule:

- Select **Tools**, **Schedule**, check the **Data date** is correct, click on the [Schedule Now] button and then P3 will present you the **Output Options** form with options for viewing or saving a text **Scheduling Report**.

- If you know that the **Data date** is correct, then you may simply press **F9** to schedule the project and you will not be presented with a scheduling report.

- Click on the Tool Bar icon [icon].

It is also possible to have the **Automatic Scheduling** option switched on so the software reschedules every time you make a change to the data. This is found under **Tools**, **Schedule**, **Options**.

Understanding Tools, Schedule
Select **Tools**, **Schedule** and check that the **Data date** is correct.
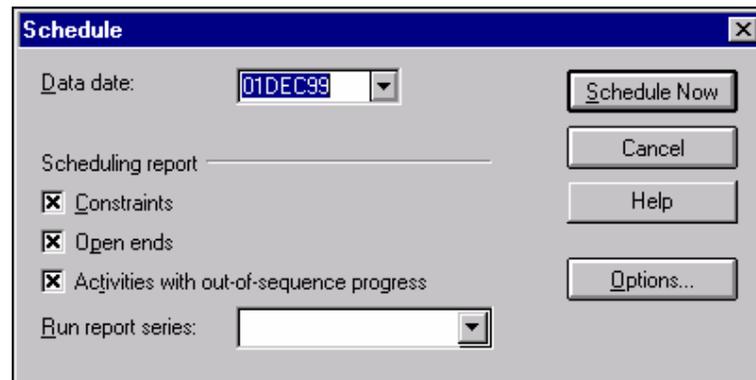
- The **Options** form has advanced options for scheduling and will be discussed in the **SCHEDULING OPTIONS AND OUT OF SEQUENCE PROGRESS** chapter.

- The options under **Scheduling report** allow you to reduce the size of the text scheduling report.

- Press the **Enter** key or click the **Schedule Now** button to schedule.

P3 will then present you with options for handling the **Scheduling Report**.
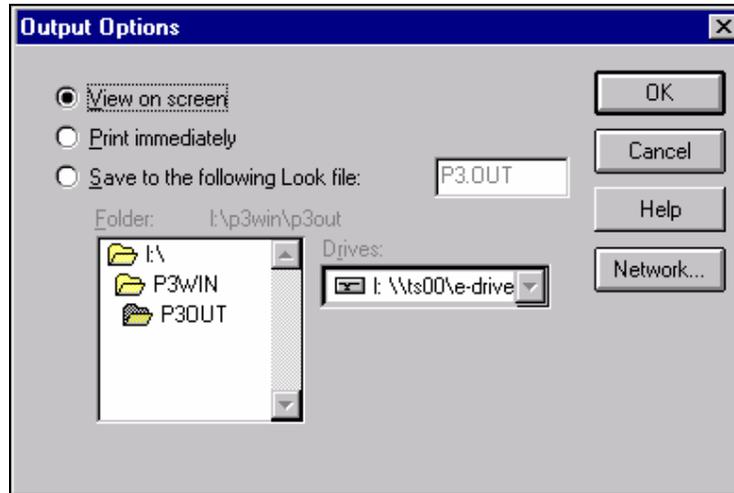
You may either:

- **View on screen** and the report will be displayed on the screen utilizing a program called **P3 Look**, the Primavera text editor. You may review the report in P3 Look and close the program down by selecting **File**, **Close** or clicking on the top right hand corner of the screen or

- **Print immediately** and the report will be sent to the printer or

- **Save to the following Look file** and save the report as a text file.

> ⓘ If you are involved in managing a complex project schedule then you must study and understand the **Scheduling Report**. It contains valuable and important information and will highlight potential problems in your project.

WORKSHOP 10

Adding the relationships

Preamble

You have determined the logical sequence of activities so you may now create the relationships.

Assignment

1. Input the logic below using the different methods covered in this chapter
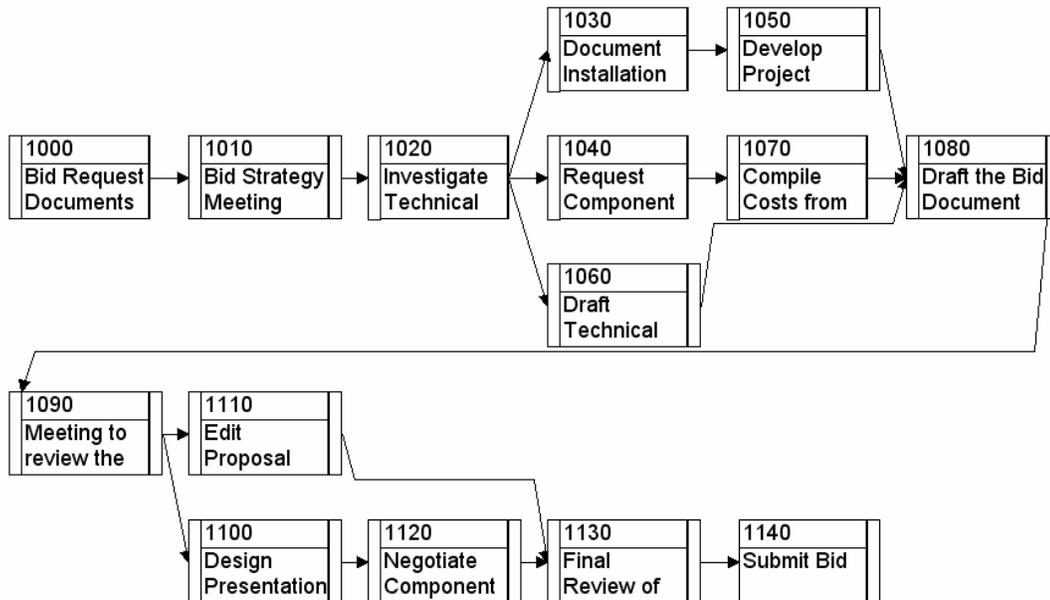
2. Format the PERT diagram to reflect the layout above. In the PERT View select all tasks by dragging, then select **Format**, **Activity Box Configuration**, and select **Logic Review** under **Activity box templates** to format the Activity Boxes like the picture above.

3. Schedule your project by pressing F9 and note the end date.

4. Check your answer with the picture over the page after reformatting your layout by adding the columns, removing the bands, sorting by Activity ID and removing dates from the bars.

ANSWER TO WORKSHOP 10

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	Free Float	Predecessors
1000	Bid Request Documents Received	0	01DEC08		0	0	
1010	Bid Strategy Meeting	1	01DEC08	01DEC08	0	0	1000*
1020	Investigate Technical Feasibility	8	02DEC08	11DEC08	0	0	1010*
1030	Document Installation Requirements	4	12DEC08	16DEC08	4	0	1020*
1040	Request Component Bids	3	12DEC08	16DEC08	4	0	1020*
1050	Develop Project Schedule	4	17DEC08	20DEC08	4	4	1030*
1060	Draft Technical Details Schedule	9	12DEC08	24DEC08	0	0	1020*
1070	Compile Costs from Component Bids	2	17DEC08	18DEC08	4	4	1040*
1080	Draft the Bid Document	3	29DEC08	31DEC08	0	0	1050, 1060*, 1070
1090	Meeting to review the Draft Bid Document	1	02JAN09	02JAN09	0	0	1080*
1100	Design Presentation	1	05JAN09	05JAN09	0	0	1090*
1110	Edit Proposal Bid Document	1	05JAN09	05JAN09	6	6	1090*
1120	Negotiate Component Work Packages	6	06JAN09	13JAN09	0	0	1100*
1130	Final Review of Bid Document	1	14JAN09	14JAN09	0	0	1110, 1120*
1140	Submit Bid	0		14JAN09	0	0	1130*
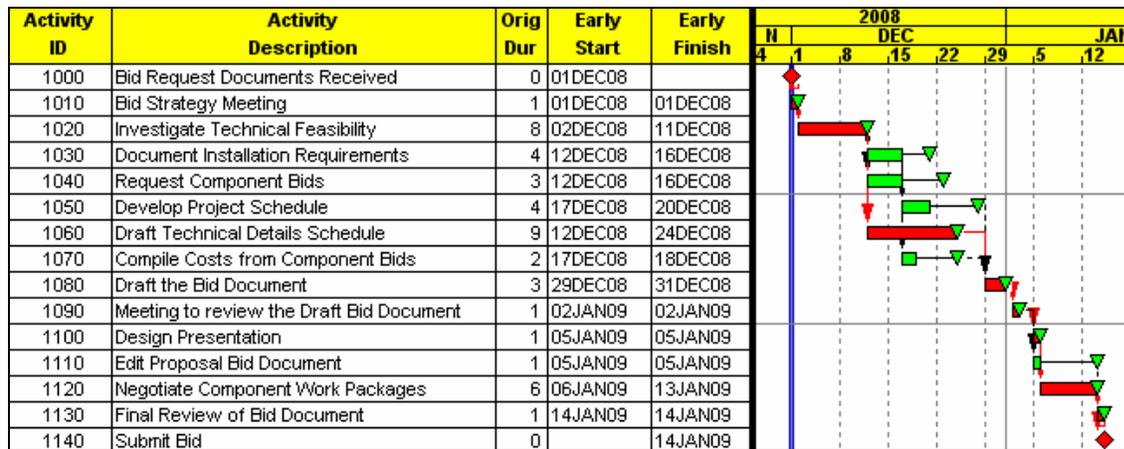
19 STATUSING PROJECTS WITH RESOURCES

This chapter covers the following subjects:

- Understanding Target Schedule and Budgets
- Understanding the Data Date
- Information Required to Update a Resourced Schedule
- Updating Dates and Percentage Complete
- Recording Progress on the Bar Chart
- Using Expected Finish Constraint
- Progress Spotlight and Progress Update
- Updating Resources
- Storing Period Actual Costs and Quantities and
- Resource Histograms and S-Curves.

19.1 Understanding Target Schedule and Budgets

Budgets

The Budget hours or quantities and costs of resources are automatically recorded in the Budget field of each resource as the resource is assigned to an activity.

Targets

A Target Schedule is a complete schedule against which your progress and performance is measured. Setting the Target schedule is covered in the **TRACKING PROGRESS** chapter.

Target dates may be viewed by the following methods:

- Display the Target start and finish date columns
- Display the **Target Bar** in the bars chart area or
- Display the **Dates** form from **View, Activity Detail, Dates**.

	Start	Day	Finish	Day
Current Early	02DEC99A	2	04JAN00A	26
Current Late	02DEC99A	2	04JAN00A	26
Target 1 Early	02DEC99	2	13DEC99	9
Target 1 Late	17DEC99	13	28DEC99	20
Target 2 Early				
Target 2 Late				

Suspend: Resume:

Actual duration: 25   Free Float:

There are two distinct processes when statusing a schedule:

- Statusing the dates then

- Statusing the resources, costs and quantities.

There are relationships between resources and the percent complete that may be created or broken and are governed by **Autocost Rules**. These rules must be understood to successfully status a resourced schedule. They are not easy to comprehend but these rules are a feature that makes P3 a good scheduling tool.

19.2 Understanding the Data Date

The **Data Date** is also known as **Review Date**, **Status Date**, **As Of Date** and **Update Date**.

- The **Data Date** is the date that divides past and future in the schedule.

- **Actual Costs** and **Quantities/Hours** should have occurred before the data date.

- **Costs** and **Quantities/Hours To Complete** occur after the data date.

- **Remaining durations** are calculated from the Data Date.

- The **Data Date** is not normally in the future, but often in the recent past, due to the time it may take to collect the information to status the schedule.
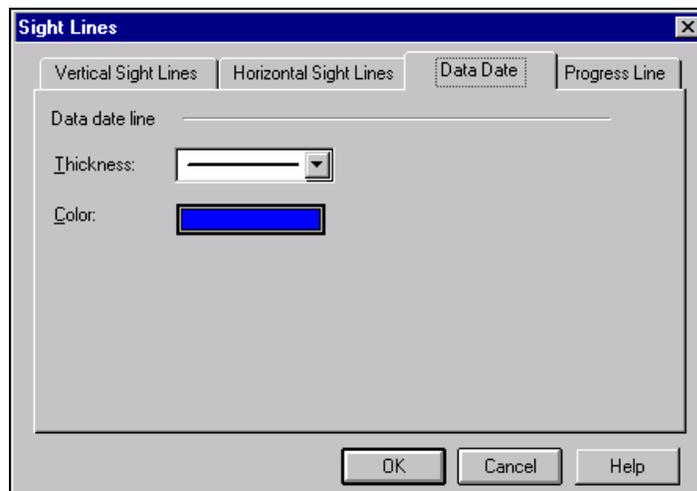
To modify the Data Date color select **Format**, **Sight Lines** to open the **Sight Lines** form and select the **Data Date** tab.

19.3 Information Required to Update a Resourced Schedule

A project schedule is usually updated at the end of a period, such as each day, week or month. One of the purposes of updating a schedule is to establish differences between the Baseline/Original Plan and the Current schedule.

The following information is required to status a schedule :

Activities commenced in the update period require:

- Actual start date of the activity.

- Remaining Duration from the status date or Expected finish date.

- Costs and Hours or Quantities to date and/or Costs and Hours or Quantities this period or Total to date.

- Costs and Hours or Quantities to complete.

Activities completed or started and completed, **in the update period require**:

- Actual Start date of the activity.

- Actual Finish date of the activity.

- Costs, Hours and/or Quantities to date.

Activities not commenced require:

- Changes in logic or date constraints.

- Changes in Costs or Hours or Quantities.

- Changes in duration.

Once this information is collected the schedule may be updated.

19.4 Updating Dates and Percentage Complete

Activity dates, remaining duration and percentage complete may be statused using one of three principal methods:

- Using the Activity Form, (as outlined in the **TRACKING PROGRESS** chapter)

- Using Columns

- Recording Progress on the bar chart

- Using Progress Spotlight & Update Progress.

19.4.1 Recording Progress Using Activity Form

The Activity Form may be used for statusing activities in conjunction with the **Dates** form for Suspending and Resuming activities.
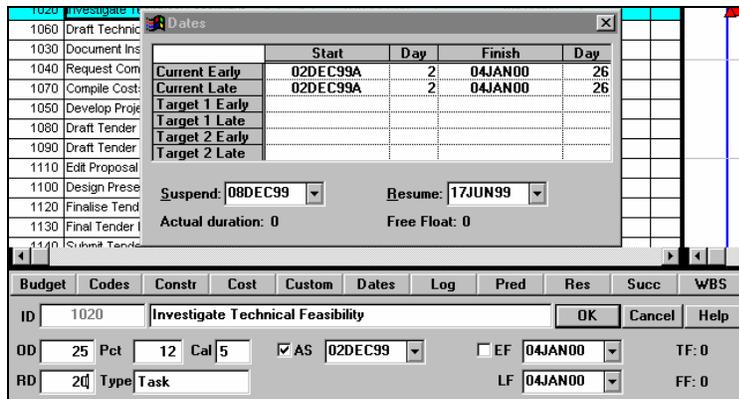
19.4.2 Recording Progress Using Activity Columns

A layout may be created with the columns required to status a project. You should display all the columns you wish to status.

Actual Start and **Actual Finish** columns are available in P3, see below.

19.5 Recording Progress on the Bar Chart

To record progress on the bar chart:

- Set the **Actual Start** by moving the mouse pointer to the start of the activity and a double-headed arrow will be displayed, press the **Shift** key to display the icon shown below.

- Click with the left mouse button and drag the bar to the required Actual Start Date. You will be presented with this form:
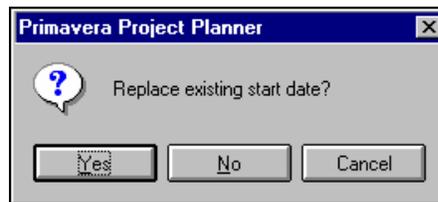
- Click on **Yes** and you will be presented with the **Progress** form:
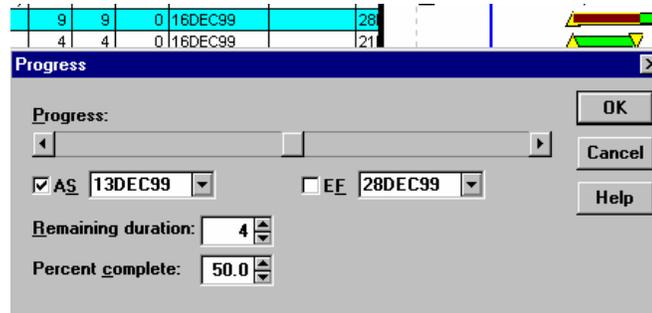
- You may mark up the **Percent Complete** using the slide or typing in the **Percent Complete** and update the **Remaining Duration**. As the percentage is increased the bar will be highlighted, see above.

Follow the same procedure to record the **Actual Finish**.

19.5.1 Using Expected Finish Constraint

You may set the **Finish Date** with an **Expected Finish Date Constraint**, and then P3 will calculate the Remaining Duration for you. Therefore, you will not have to status the activity.

The Remaining Duration will have an asterisk by it indicating that P3 has calculated the duration and, therefore, there is a **Expected Finish** date constraint.

Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish
Activity with Expected Finish Constraint	6*	6*	0	08FEB00	15FEB00

When an **Expected Finish** constraint moves into the past and is not marked as complete with an actual finish, then this error will be noted as in the scheduling report below:

```
Constraint listing -- Scheduling Report Page: 2
Activity Date Constraint
---------- ------- ---------------------------
2 15FEB00 Expected Finish Constraint

Bad expected finish on activity 2, this constraint will be ignored.
```

i   When an expected finish moves into the past the **Remaining Duration** is set to zero and **Quantities to Complete** are also set to zero. i.e. It deletes your ETC.

19.6 Progress Spotlight and Progress Update

These functions are used together for statusing a schedule.

- **Progress Spotlight** enables you to drag the **Data Date** with the mouse to the next period and

- **Progress Update** updates the **Percentage Complete**, **Remaining Duration**, **Resource Quantity** and **Resource Cost** to reflect what would have happened if the project had proceeded according to schedule.

You have the option of statusing all the activities or some of them. If you wish to status just some activities then select these activities before opening the **Update Progress** form.

There are two methods of setting the new data date:

- Use **Progress Spotlight** to drag the **Data Date** line with the mouse to the next end of period or

- Set the new **Data Date** in the **Progress Update** form.

19.6.1 Progress Spotlight

To use **Progress Spotlight** by dragging the Data Date**:**

- Set the Timescale to be compatible with your Update Periods.

- Place the mouse arrow over the **Data Date** line and it will change to the icon ⟨╫⟩.

- Right click the mouse and drag the date to the end of your next period.

- The screen will look like the picture below. (Note the activities to be updated are highlighted).
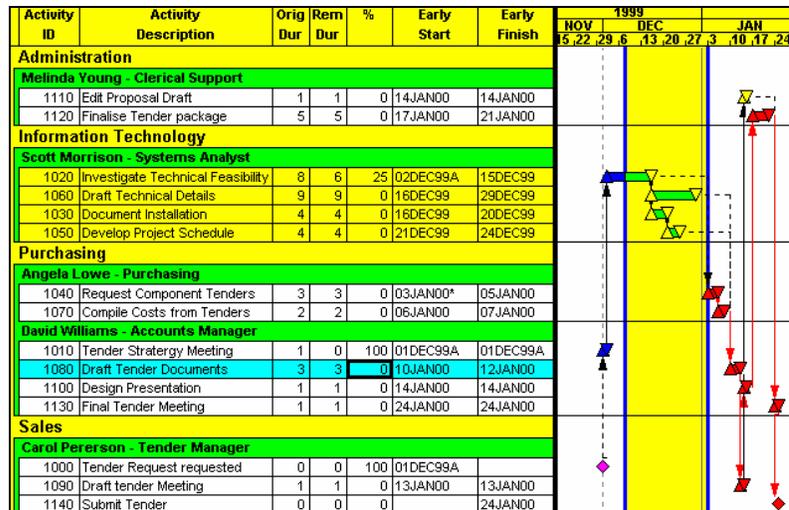
To use **Progress Spotlight** by selecting **View**, **Progress Spotlight**:

- Set the Timescale to be the same as your Update Periods. If you are statusing weekly then set the time period to weeks in the **Timescale** form.

- Select **View**, **Progress**, **Spotlight** or click on the [icon] icon and the next period of time (one week if your scale is set to one week) will be highlighted.

You are now ready to update progress.

19.6.2 Update Progress

Select **Tools**, **Update Progress** to open the **Update Progress** form.
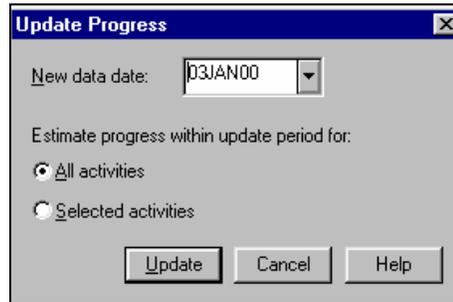
- If you have not changed the **Data Date** with the **Spotlight** function then it may be set in this form.

- Select **All activities** to update all activities or **Selected Activities** when you have made a selection prior to opening the **Update Progress** form.

- Click on **Update** to update the schedule.

- **Early start** and **Early finish** are set to **Actual start** dates and **Actual finish** dates where appropriate.

- **Percentage Complete** and **Remaining Duration** are linked during Update Progress even if you have unlinked them in the **Autocost Rules**.

- **Resource Quantity** and **Resource Cost** are updated by the new calculated **Percent Complete**. This calculates costs and quantities to date and to complete based on the **Autocost Rule "Use the update percent complete against budget to estimate"**. Though this may not necessarily be what you wanted to happen.

- Updating a Spotlighted activity before running **Update Progress** will prevent unwanted changes to activities and manually statused activity will not be changed by **Update Progress**.

- It is suggested that you may wish to create a **Custom Data Item** and copy in the last period Percentage Complete into this custom data item so you have a record of last period's percent complete to compare with the one calculated by P3.

- It is recommended that you back up your schedule before Updating Progress.

P3 **Progress Spotlight** is similar to the SureTrak **Update Progress** facility for updating a project, but there are differences:

- P3 will not reverse progress in the same way as the SureTrak **Update Progress**,

- P3 does not give you the option of not updating the resources and

- P3 will not move the Progress Spotlight more than one time period.

19.7 Updating Resources

P3 has **Autocost Rules** that allow the scheduler to decide how costs and quantities are calculated. These should be reviewed before statusing the schedule for the first time as their values often need to be different from those used when creating the initial schedule.

It is important that these options are understood. They are well defined in P3 Help and the descriptions are self-explanatory.

19.7.1 **Tools**, **Options**, **Autocost Rules**

Select **Tools**, **Options**, **Autocost Rules** to access the Autocost form.

- **Identifier** and **Dates** are text boxes you may complete, but have no other purpose.

- **Transfer** allows you to transfer rules from another project.

- **Default** reassigns the default **Autocost Rules** to your project. When a project is created it adopts the default **Autocost Rules**. You may set your default Autocost rules by closing all projects and selecting **Tools**, **Options**, **Default Autocost Rules** to open the **Global Automating Cost/Resource Calculation Rules**.

19.8 Understanding Autocost Rules

Autocost rules are the single most important aspect of P3 to be understood when statusing projects with costs and resources. Individually each rule is simple, but as a group they become quite complex and it is recommended that you experiment with a small schedule to confirm that your options are giving you the result you expect before you attempt a large project.

19.8.1 Link remaining duration and schedule percent complete – Rule 1

When this box is checked the percent complete is calculated as a proportion of **Remaining Duration/Original Duration** and visa versa. When either the **Percent Complete** or **Remaining Duration** is entered, then the other is calculated.

It is recommended that this is unchecked so you are able to enter the **Percent Complete** and **Remaining Duration** separately.

It this box is checked and you set the Remaining Duration to be greater than the Original Duration the Percent Complete will be set to Zero.

19.8.2 Freeze resource units per time period – Rule 2

Checking this option results in an increase in **Quantities and Hours to complete** as the **Remaining Duration** is increased, and a decrease when the **Remaining Duration** is decreased. If this option is not checked then the **Quantity to Complete** remains constant and the **Units per hour** increase when the **Remaining Duration** decreases, and **Units per hour** decrease when the **Remaining Duration** increases.

It is recommended that this box is left unchecked so that if you increase or decrease a **Remaining Duration** the **Cost** and **Quantity to Complete** remains unchanged.

19.8.3 Add actual to ETC or Subtract actual from EAC – Rule 3

Add actual to ETC or Subtract actual from EAC
ETC is the Estimate To Complete. EAC is Estimate At Completion. This option changes the relationship between the **Actual to date** and the **To complete** resource fields.

If you do not wish the Final Forecast to increase as you enter the actual to date, then check the option **Subtract actual from EAC** and as you increase the actual to date the **To complete** will reduce to maintain a constant ETC.

It is recommended that you check the **Subtract actual from EAC**, therefore, when you enter actual costs/quantities the **Cost/quantity at Completion** will not change.

Allow negative ETC
This is useful if you wish to have a negative ETC in your project.

This may be used when you expect income or a credit to a task or when incorrect journals generate a negative expenditure which you have to reconcile against.

19.8.4 When quantities change, use current unit prices to recompute costs – Rule 4

When you assign a resource to an activity the resource cost is calculated by:

Cost = Quantity x Resource Unit Rate.

This option allows you to unlink this relationship between Quantities and Costs.

Therefore, if you uncheck any of these boxes, you unlink the appropriate relationship in the **Budget** or **Actual to date** or **Estimate to complete** fields**.**

You may wish to enter the actual labor costs and hours from the payroll system; therefore you would uncheck the **Actual to date** box.

You may wish P3 to calculate the **Cost to Complete** from an estimate of hours you enter and the Resource form labor rate; in this case, you would check the **Estimate to Complete** box.

19.8.5 Use the update percent complete against budget to estimate – Rule 5

You will need to uncheck these fields when you wish to enter the Actual Quantity or Actual Cost. Otherwise P3 will calculate these fields by multiplying the % Complete by the Budget.

When an activity has Driving resources you are able to enter a Percent Complete for each resource and P3 will calculate Costs and Quantities for each resource based on the Resource Percent Complete not the Activity Percent Complete.

19.8.6 Link actual to date and actual this period – Rule 6

With this option checked, when you enter an **Actual this period**, the **Actual to date** will be calculated by increasing the original value by the value of the **Actual this period**. Or you may enter the **Actual to date** and P3 will calculate the **Actual this period**. When unchecked you may enter any figure in each field.

When the actual to date and actual this period are unlinked, the Store Period Performance feature is disabled.

This **Link actual to date and actual this period** Autocost rule was omitted from the first release of P3 Version 3.0. It may be added to your copy P3 V3.0 by loading the latest Service Pack, but it would be better to upgrade to Version 3.1.

19.8.7 Link budget and EAC for non-progressed activities –Rule 7

This option is usually left checked while you are creating a schedule. Any changes to the **Budget** are copied to the **At completion** fields and visa versa. Therefore, any change does not have to be made twice.

Once a project is under way this box is usually unchecked and the Budget field will not change when the EAC is altered to reflect project changes. Comparisons may then be made between the EAC and Budget.

19.8.8 Calculate variance as – Rule 8

Project over runs are shown in the negative by selecting **Budget – EAC** or in the positive by selecting **EAC – Budget.**

Perform these calculations during each schedule computation.
With this box checked the Autocost rules are applied each time the project is scheduled.

When you have resources with Units assigned to Hammock activities or WBS activities or activities with Finish Date constraints or Non linear resource assignment, then this option needs to be considered. When unchecked the Autocost rules will not be applied to these activities when the activity durations are changed during recalculation. This means that Costs, Units and % Complete of these activities are recalculated when the activity durations are changed during schedule recalculation.

If you intend to assign resources with units to Hammock or WBS activities it is suggested you create a small schedule with a WBS or Hammock activity driven by other activities and status the schedule with this option both checked and unchecked and decide which option suits your environment.

19.8.9 Apply these rules when moving from one Cell/Resource to another – Rule 9

When **Cell** is selected the effect is calculated in cost and quantities immediately after you move to another cell in the resource.

When **Resource** is selected then the effect is not calculated until you click into another resource.

> Beware, if at any time the Remaining Duration is set to zero the Hours/Quantity to complete is also set to zero.

19.9 Updating Resources Using Resource and Costs Forms

Select the Resources and or Costs forms to update the Resource Information.
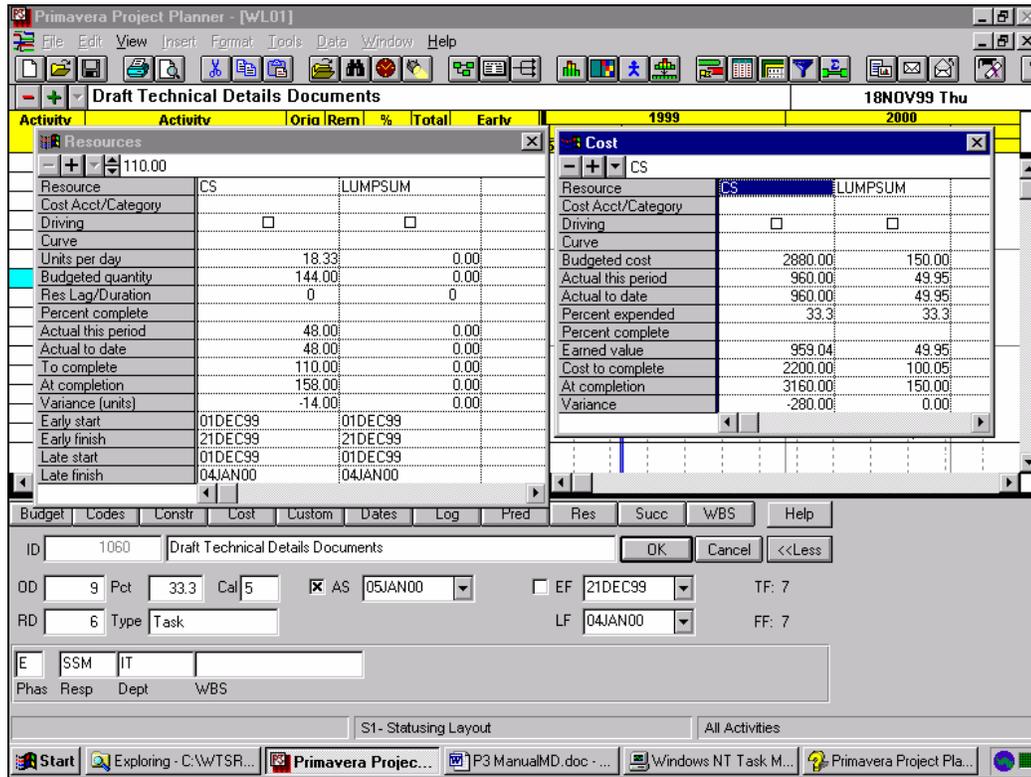
- The above example has the cost and quantities for **Actual to date** and **To complete** entered separately.

- **Percent expended** is calculated as **Actual to Date / Budget** and expressed as a percentage.

- **Earned value** is the **Budget** x **Resource Percent complete To complete**.

- **At completion** is **Actual to date + Cost to complete**.

- **Variance** is the difference between **Budget** and **At completion**.

19.10 Updating Resources Using Columns

To enter any resource data in a column you must **Group by Resource** and then costs and quantities may be updated using the columns.

The layout must be organized by Resource to allow resource column data to be edited.

i — The option to organize by Activity ID and then by Resource is available in SureTrak but not in P3. This makes finding activities difficult in large P3 schedules when organized by resource.

19.11 Storing Period Actual Costs and Quantities

This function allows you to store the actual costs and quantities for each resource and earned values in appropriate period. Therefore, actual costs and quantities which span over more than one past period will be accurately reflected in the **Resource Table** and **Resource Profile**. This facility combined with **Progress Spotlight** makes it simpler to update schedules.

The **Close Out** option in the P3 2.0 **Resource** form has been removed and is combined into the **Store Period Performance** function.

The **Store Period Performance** copies the actual quantities and costs from the **Actual this period** box in the **Costs** form and **Resources** form into the last period. The last period is defined as the period between the last two update dates and may be any period and not restricted to fixed periods.

Version 3.1 now allows the editing of past actuals. To edit past actuals select **Edit**, **Period Performance** to open the **Edit Period Performance** form:

> *i*   It is recommended that you back up the schedule before Storing Period Performance.

Select **Tools**, **Store Period Performance** to open the **Store Period Performance** form.
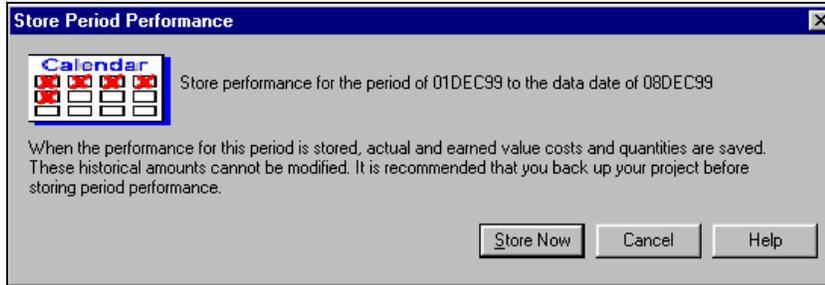
- Click on **Store Now** to store the actual and earned value costs and quantities in the last period.

- These historical values may not be directly edited.

- If you update progress incorrectly, you may correct these for the last period actual costs and quantities only by making the adjustment in the Resource Form and Cost form and then **Store Period Performance** again. This will not work for periods before the last period.

- The stored costs are spread using the calendars. Therefore, changing a calendar may alter the spread of costs and quantities on a curve.

- P3 creates a file ******HST**.**OUT**, with ******** being your project name which contains a history of closeout dates.

- P3 will not store data associated with an activity that has an **Actual Start** of **Actual Finish** greater than the **Data Date** and, therefore, in the future.

- If it is unable to close out any data then a text file named **CLOSEOUT**.**OUT** is created listing the problems. This will normally be stored in the **P3**.**OUT** directory.

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