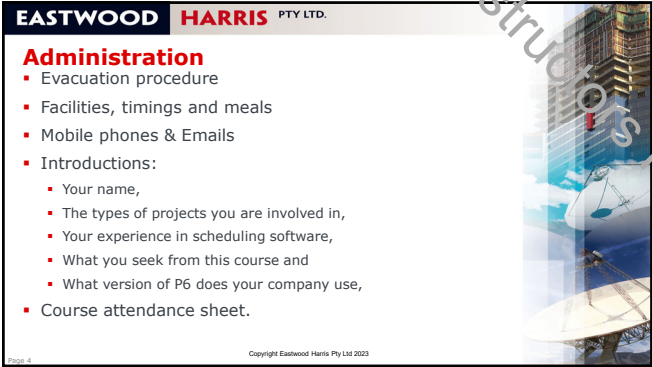


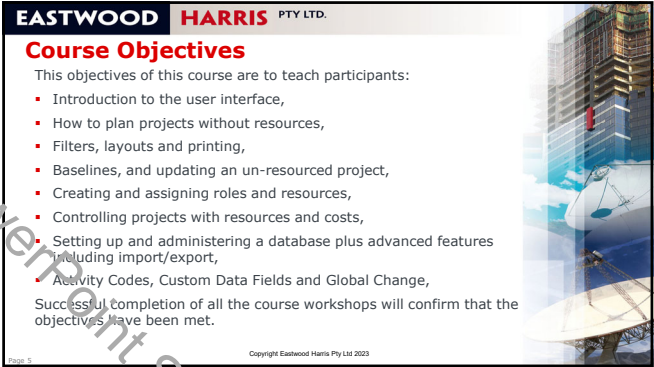
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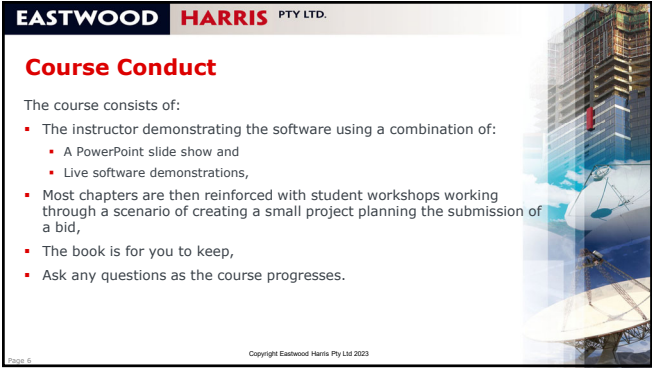
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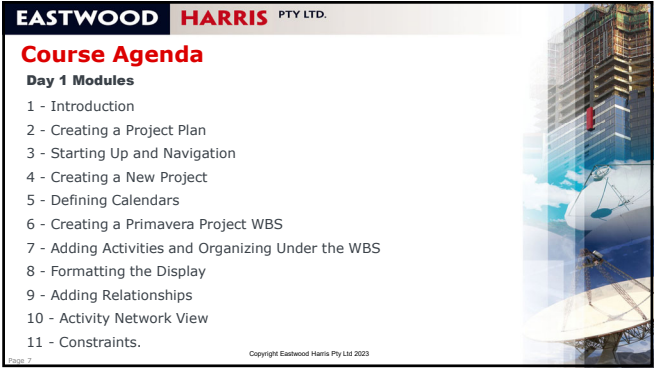
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Course Agenda

Day 2 Modules

- 12 - Group, Sort and Layouts
- 13 - Filters
- 14 - Printing, Reports and Visualizer
- 15 - Schedule Options and Setting a Baseline
- 16 - Updating an Unresourced Schedule
- 17 - User and Administration Preferences
- 18 - Creating Roles and Resources
- 19 - Assigning Roles, Resources and Expenses.



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Course Agenda

Day 3 Modules

- 20 - Resource Optimization
- 21 - Updating a Resourced Schedule
- 22 - Other Methods of Organizing Project Data
- 23 - Global Change
- 24 - Managing the Enterprise Environment
- 25 - Multiple Project Scheduling
- 26 - Utilities
- 27 - Earned Value.



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1 - INTRODUCTION

- 1.1 - Purpose of the Course
- 1.2 - Required Background Knowledge
- 1.3 - Purpose of Planning
- 1.4 - Project Planning Metrics
- 1.5 - Planning Cycle
- 1.6 - Levels of Planning
- 1.7 - Monitoring and Controlling a Project.



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1.1 - Purpose of the course

- Provide a method for planning, scheduling and controlling projects using Primavera,
- Within an established Enterprise Project database or a blank database,
- Up to an intermediate level.



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1.2 - Required Background Knowledge

- The ability to use a personal computer and understand the fundamentals of the operating system,
- Experience using application software such as Microsoft Office and
- An understanding of how projects are planned, scheduled and controlled, including understanding the project management processes applicable to your projects.



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1.3 - Purpose of Planning

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



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Planning aims to:

- Identify the total scope and stakeholders,
- Plan to deliver the scope and understand the risks,
- Evaluate different project delivery methods,
- Identify the deliverables under a logical breakdown of the project, often called Work Breakdown Structure (WBS) or Products Breakdown Structure (PBS),
- Identifying activities required to produce the deliverables,
- Identify and optimize the use of resources,
- Evaluate if target dates may be met,
- Identify risks and plan to minimize them,
- Provide a baseline plan,
- Assist in stakeholders' communication, and
- Assist management to think ahead and make informed decisions.



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Planning helps to avoid or assist in evaluating:

- Increased project costs or reduction in scope and/or quality,
- Additional change over and/or operation costs,
- Extensions of time claims,
- Loss of your client's revenue,
- Contractual disputes and associated resolution costs,
- Resolving contractual disputes with subcontractors and suppliers,
- The loss of reputation of those involved in a project, and
- Loss of a facility or asset in the event of a total project failure.



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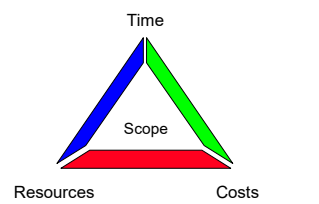
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1.4 - Project Planning Metrics

- A change in any one of these components normally results in a change in one or more of the others.





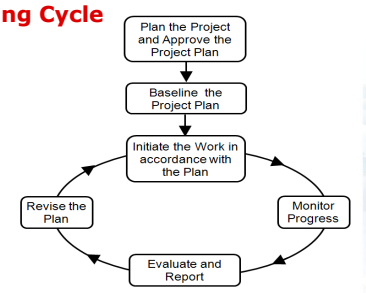
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1.5 - Planning Cycle





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1.6 - Levels of Planning

There are many books on the market that give guidance:

- PMBOK® Guide
- PRINCE2
- AACE International publications,
 - Total Cost Management and
 - The Recommended Practices, relevant ones are listed on the next slide.



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AACE International Scheduling Recommended Practices

ID	TITLE
14R-90	Responsibility and Required Skills for a Project Planning and Scheduling Professional
20R-98	Project Code of Accounts
21R-98	Project Code of Accounts - As Applied in Engineering, Procurement, and Construction for the Process Industries
23R-02	Identification of Activities
24R-03	Developing Activity Logic
27R-03	Schedule Classification System
32R-04	Determining Activity Durations
37R-06	Schedule Levels of Detail—As Applied in Engineering, Procurement, and Construction
38R-06	Documenting the Schedule Basis
39R-06	Project Planning - As Applied in Engineering and Construction for Capital Projects
45R-08	Scheduling Claims Protection Methods
46R-06	Schedule Constructability Review
49R-06	Identifying the Critical Path
52R-06	Prospective Time Impact Analysis - As Applied in Construction
61R-10	Schedule Design - As Applied in Engineering, Procurement, and Construction
70R-12	Principles of Schedule Contingency Management - As Applied in Engineering, Procurement and Construction
76R-13	Original Baseline Schedule Review - As Applied in Engineering, Procurement, and Construction
82R-13	Earned Value Management (EVM) Overview and Recommended Practices Consistent with EIA-748-C
84R-13	Planning and Accounting for Adverse Weather
89R-16	Management Summary Schedule
91R-16	Schedule Development
92R-17	Analyzing Near-Critical Paths



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2.4.9 Total Float

The Total Float is the amount of time an activity may be delayed without delaying the end of a project,

An activity with Total Float may delay another activity,

May be displayed in a column and in the Gantt Chart, as per the thin black bar below and

May be negative.

Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float
A1000	Start	0d	01-Sep-14		0d
A1010	Activity A	5d	01-Sep-14	05-Sep-14	0d
A1020	Activity B	5d	08-Sep-14	12-Sep-14	0d
A1030	Activity C	5d	15-Sep-14	19-Sep-14	0d
A1040	Activity D	2d	01-Sep-14	02-Sep-14	11d
A1050	Activity E	2d	08-Sep-14	09-Sep-14	8d
A1060	Finish	0d		19-Sep-14	0d

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2.4.10 Free Float

The Free Float is the amount of time an activity may be delayed without delaying another activity,

Displayed only in a column and not as a bar, and

Is never in the negative.

Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float	Free Float
A1000	Start	0d	01-Sep-14		0d	0d
A1010	Activity A	5d	01-Sep-14	05-Sep-14	0d	0d
A1020	Activity B	5d	08-Sep-14	12-Sep-14	0d	0d
A1030	Activity C	5d	15-Sep-14	19-Sep-14	0d	0d
A1040	Activity D	2d	01-Sep-14	02-Sep-14	11d	3d
A1050	Activity E	2d	08-Sep-14	09-Sep-14	8d	8d
A1060	Finish	0d		19-Sep-14	0d	0d

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2.4.11 Relationship Colors

Solid Red are Critical and normally do not have Total Float,

Solid Black are Driving Non-Critical and their successors have Total Float,

Dotted Black are Non-Driving Non-Critical and their predecessors have Free Float.

Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float	Free Float
A1000	Start	0d	01-Sep-14		0d	0d
A1010	Activity A	5d	01-Sep-14	05-Sep-14	0d	0d
A1020	Activity B	5d	08-Sep-14	12-Sep-14	0d	0d
A1030	Activity C	5d	15-Sep-14	19-Sep-14	0d	0d
A1040	Activity D	2d	01-Sep-14	02-Sep-14	11d	3d
A1050	Activity E	2d	08-Sep-14	09-Sep-14	8d	8d
A1060	Finish	0d		19-Sep-14	0d	0d

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2.4.12 Constraints

To correctly model the impact of events outside the logical sequence, you MAY use constraints,

A constraint would be imposed to specific dates such as:

The availability of a facility to allow work to commence, or

The predetermined time a project must be complete by,

Constraints should be cross-referenced to the supporting documentation such as contract documentation Milestone Dates.

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Constraint Types

There are two types of constraints:

Project Constraints which includes the Project Start Date and an optional Project Finish Date, and

Activity Constraints; the two most common are Start On or After (Early Start) and Finish On or Before (Late Finish).

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2.4.13 Project Constraints

When a Project Finish Date constraint is assigned then Total Float is calculated to this date,

The picture shows a project with a Project Finish Date on Friday 26 September developing 5 days Total Float.

Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float
A1000	Start	0d	01-Sep-14		5d
A1010	Activity A	5d	01-Sep-14	05-Sep-14	5d
A1020	Activity B	5d	08-Sep-14	12-Sep-14	5d
A1030	Activity C	5d	15-Sep-14	19-Sep-14	5d
A1040	Activity D	2d	01-Sep-14	02-Sep-14	16d
A1050	Activity E	2d	08-Sep-14	09-Sep-14	13d
A1060	Finish	0d		19-Sep-14	5d

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3.15 - Refresh Data - F5 Key

- The **File, Refresh Data** command writes your changed data to the database,
- Reads changes that other users may have made to your schedule, and
- Corrects display issues such as:
 - Places the Data Date vertical line in the correct place when the system has not refreshed correctly when you open a new project, and
 - Organizes the WBS correctly in the Activities View after editing the WBS in the WBS workspace.



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3.16 - Commit Changes - F10 Key

- The **File, Commit Changes** command writes any changes you have made to the database,
- These changes may then be read by other users by the Refresh Data command.



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3.17 - Send Project

- The **File, Send Project** function creates an **XER** file and attaches it to an email,
- This requires P6 and the email software to be loaded on the same machine and will not work in cloud or virtual environments,
- The **XER** file is an older format that does not support the exporting of baseline projects and activity Layouts,
- Therefore it is usually better when you wish to export a project with a baseline and/or activity Layouts to use the **File, Export** option and selecting **XML**,
- The downside of using **XML** files is that they may change the cost of the projects on import when the Resource rate in the Resource window is not the same as the activity resource rate.



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3.18 - Closing Down

The closing down options are:

- Select **File, Close All** or **Ctrl+W** to close all **Projects**, but not the software,
- Select **File, Exit** or click the  icon in the top right side of the Primavera window to shut down all projects and close Primavera.



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3 - STARTING UP AND NAVIGATION - SUMMARY

- 3.1 - Logging In
- 3.2 - The Projects Window
- 3.3 - Opening One or More Projects
- 3.4 - Displaying the Activities Window
- 3.5 - Opening a Portfolio
- 3.6 - Introduction to Layouts
- 3.7 - User Interface Update
- 3.8 - User Preferences
- 3.9 - Starting Day of the Week
- 3.10 - Admin Preferences - Set Industry Type

continued...



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3 - STARTING UP AND NAVIGATION - SUMMARY

- 3.11 - Application of Options within Forms
- 3.12 - Do Not Ask Me About This Again
- 3.13 - Right-clicking with the Mouse
- 3.14 - Accessing Help
- 3.15 - Refresh Data - F5 Key
- 3.16 - Commit Changes - F10 Key
- 3.17 - Send Project
- 3.18 - Closing Down.



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3.19 - Workshop 1 - Navigating Around the Windows

- To become familiar with Primavera you will need open your database and navigate around the windows,
- Note:** Your windows may look different from the ones used in this course which uses a demonstration database provided by Oracle Primavera.

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4 - CREATING A NEW PROJECT

- 4.1 - Creating a Blank Project
- 4.2 - Copy an Existing Project
- 4.3 - Importing a Project
- 4.4 - Setting Up a New Project
- 4.5 - Project Dates
- 4.6 - Saving Additional Project and EPS Information - Notebook Topics
- 4.7 - Workshop 2 - Creating Your Project.

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4.1 - Creating a Blank Project

- Select **File, New** to run the **Create a New Project** wizard,
- Information required to create a new project:
 - EPS Node
 - A unique Project ID
 - Project Name
 - Planned Start date
 - (Optional Must Finish By date)
 - Responsible Manager (OBS)
 - Resource Rate Type,
- Note:** It is recommended that you close all other projects before you create a new one as this process does not close any existing projects.

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4.2 - Copy an Existing Project

- Select project or projects to be copied,
- Select **Edit, Copy** or **Ctrl C**,
- Select EPS Node to be copied to,
- Edit, Paste** or **Ctrl V**,
- Select options as required:

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4.3 - Importing a Project

- Different Versions of Primavera run on different databases including Oracle and Microsoft databases,
- Primavera will not open a standalone project file,
- You may be required to import a project or project data that has been created in another program,
- Primavera is equipped with a set of tools for importing projects and data in Excel format from other sources,
- Select **File, Import...** to open a wizard that will guide you through the process of importing projects into your database,
- Select **File, Export...** to open a wizard that will guide you through the process of exporting projects from your database,
- NOTE:** Importing projects will often import a large amount of unwanted data.

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4.3.1 - Primavera File Types

- XER** - Used to exchange one or more projects between Primavera databases, not supported by the Web module and does not include any baseline projects. Baseline projects need to be restored and exported separately,
- PLF** - Used to exchange Layouts between Primavera databases,
- ANP** - Used to save the position of activities in an Activity Network,
- ERP** - Used to exchange Reports between Primavera databases,
- XML** - A format introduced with Primavera Version 6.0 which may be used to import and export projects. It is supported by the Web module and will also import and export **Baselines** and **Project Activity Layouts** and therefore should be used instead of XER files to transfer project from one database to another.
NOTE: This is the same software language but a different format to a Microsoft Project XML file so be careful with the naming of your files, so you do not confuse MSP and a P6 XML file may recalculate the cost of an imported project.
- PCF** - Used to exchange Global Changes between Primavera databases,
- VLF** - Visualizer Layout File allows the import and export of Visualizer Layouts between databases.

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6.2 - Creating and Deleting a WBS Node

To create or delete a WBS Node:

- Open the WBS Window and select a WBS Code or Name and:
 - Right-click to display the menu, or
 - Select the **Edit** menu command, or
 - Use the icons from the **Edit Toolbar**
- Use the icons on the **Move Toolbar** to put the WBS Nodes at the right level or to reorder them,
- When deleting a WBS Node you will receive a message:
 - Delete Element** means delete the WBS Node and activities
 - Merge Element(s)** means move the activities to the parent node and delete the WNS Node.

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6.3 - WBS Node Separator

- The Default WBS Node Separator is assigned in **Admin, Admin Preferences..., General** tab:

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6.4 - Work Breakdown Structure Lower Pane Details

- General Tab
 - WBS Code
 - WBS Name
 - Responsible Manager
 - Anticipated Dates
 - Status
- Notebook
 - WBS Milestones
 - Earned Value
 - WPs & Docs
 - Budget Summary, Budget Log, and Spending Plan
 - Planning Resources (only available with the EPPS/Web)
 - User Defined Fields, added in P6 Version19.

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6.5 - WBS Categories

- WBS Nodes may be assigned categories, which enables WBS Nodes within an EPS to be grouped and sorted in a different way,
- Created using **Admin, Admin Categories..., WBS Categories** tab,
- WBS Categories are assigned to and removed from WBS Nodes by inserting the WBS Categories column into the WBS Window.

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6.6 - Displaying the WBS in the Activity Window

- Move back to the **Activity window** to see the WBS,
- Press the **F5** key if it is not displayed properly,
- If the WBS in **NOT** displayed then:
 - Select **View, Group and Sort by**, to open the **Group and Sort** form,
 - Then click on the line below **Group By**, and
 - Under the **Group By** box select **WBS** as in the picture, and
 - Also ensure **Hide if empty** is not checked.

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6.7 - Why a Primavera WBS is Important

- User Access may be assigned at this level,
- Progress at the WBS level may be measured with the use of WBS Milestones which in turn may be with the Earned Value calculations,
- Earned Value calculations and Project Performance may be measured at WBS Level,
- WBS Activities** are very useful to create summary activities,
- Anticipated Dates** may be assigned at the WBS level to provide a bar when no activities have been added to a WBS Node,
- The **Tracking Window** operates down to WBS Node level,
- There are a number of standard Reports that function at WBS Node level.

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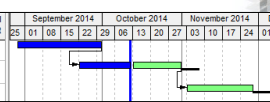
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Float on Complete Activity....

- This is what it should look like now:

Activity ID	Activity Name	Start	Finish	Total Float
A1010	Activity A	29-Aug-14 08 A	30-Sep-14 17 A	
A1020	Activity B	22-Sep-14 08 A	31-Oct-14 17	5d
A1030	Activity C	03-Nov-14 08	28-Nov-14 17	5d



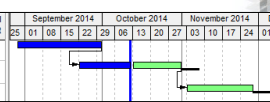
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Free Float Bar

- This is not an inbuilt function of the software and may not be easily displayed.



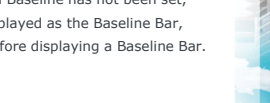
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Baseline Bar Display

- A Baseline Bar is displayed when a Baseline has not been set,
- The **Planned Dates** are being displayed as the Baseline Bar,
- Ensure you have a Baseline set before displaying a Baseline Bar.



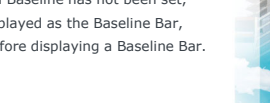
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Relationships displayed on Baseline Bars

- By default the relationships are displayed on the Baseline bar which is not a normal method of displaying them,
- To remove relationships from the Baseline bar, Move the Baseline bars to the bottom of the **Bars** form:



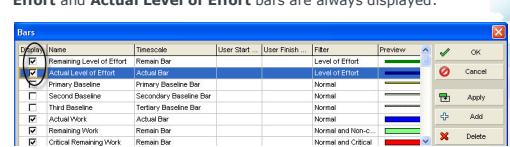
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Remaining Level of Effort and Actual Level of Effort bars

- The activity bar may disappear when a LOE Activity is created,
- You should check in the **Bars** form that both the **Remaining Level of Effort** and **Actual Level of Effort** bars are always displayed:



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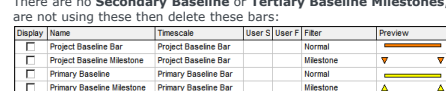
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Baseline Bar Formatting

After you have moved all the baseline bars to the bottom:

- There is no **Project Baseline Milestone**, this will need to be added,
- The **Project Baseline** and **Primary Baseline** bars are both narrow yellow bars, the same as the Negative Float,
- It is suggested you make them a different color and put them as thicker bars on the top and bottom of row 2,
- The change the **Baseline Milestone** colors to match,
- Change to shape so one may be seen behind the other, and
- Change the descriptions so they make sense,
- There are no **Secondary Baseline** or **Tertiary Baseline Milestones**, if you are not using these then delete these bars:




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10.2 - Adding, Deleting and Dissolving Activities in the Activity Network View

- Adding an Activity:
 - Insert** key, or
 - Add** button in the **Edit** toolbar, or
 - Select **Edit**, **Add**,
- Deleting an Activity is similar as adding,
- Dissolving an Activity:
 - Right click on the activity and choose **Dissolve** which will delete an activity and join the predecessors and successors with FS relationships.



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10.3 - Adding, Editing and Deleting Relationships

- This is achieved in the same way as in the Gantt Chart either:
 - Graphically Adding a Relationship, or
 - Using the Activity Details form.



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10.4 - Formatting the Activity Network Boxes

- Activity Network Boxes** may be formatted from the **Activity Network Options** form,
- The formatting affects both the **Activity Network Window** formatting and **Trace Logic** formatting when displayed in the lower pane,
- The formatting affects only the layout that is being displayed:
 - Select **View**, **Activity Network**, **Activity Network Options...**, or
 - Right-click in the **PERT** area of the **Activity Network Window** and select **Activity Network Options...**



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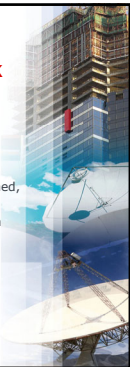
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10.5 - Reorganizing the Activity Network

- Activities in the **Activity Network** view may be repositioned by dragging,
- There are two functions available when right-clicking in the **Activity Network** view:
 - Reorganize** will reposition activities that have not been manually positioned, and
 - Reorganize All** will reposition all activities including those that have been manually positioned.



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10.6 - Saving and Opening Activity Network Positions

- When activities are manually dragged into new positions in the Activity Network window and then you leave the Activity Network window and return, P6 will reposition activities, thus losing their positions that you have manually created,
- It is possible to save and reload these positions at a later date by selecting:
 - View**, **Activity Network**, **Save Network Positions...** will create an *.anp file, and
 - View**, **Activity Network**, **Open Network Positions...** will enable an *.anp file to be located and loaded which will reposition the activities as they were saved.



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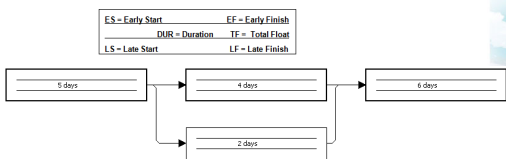
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10.7 - Early Date, Late Date and Float Calculations

- To help understand the calculation of early dates, late dates, float and critical path, we will now manually work through an example,
- The boxes below represent activities.



ES - Early StartEF - Early Finish

DUR - DurationTF - Total Float

LS - Late StartLF - Late Finish

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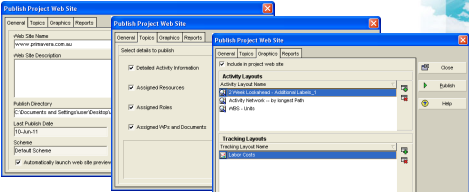
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14.3 - Publish to a Web Site

- Primavera has a function named **Publish Project Web Site** that enables project data to be published to a web site which is effectively the only "Free Reader" that Oracle Primavera provides with P6,
- The **Tools, Publish**, menu has options for creating a web site for a currently opened project or projects:

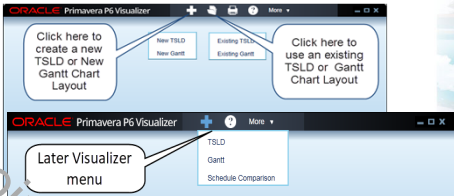


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14.4 - Visualizer

- Visualizer** is new to P6 Version 8.3 and is an update of the P6 Version 8.2 Timescale Logic Diagram module,
- It is add on piece of software that allows a higher level of Gantt Chart customization than available from the Activities Window,
- May be run from P6 or the Windows Start menu,
- Allows the creation of Timescale Logic Diagrams (TSLD), Gantt charts and Version 16 moved Claim Digger to Visualizer and named it Schedule Analyzer,
- Is used for reporting only and may not manipulate data, and
- All Layouts and Filters have to be recreated, or imported as it does not use the existing P6 Professional Layouts and Filters.

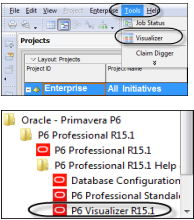


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Starting Visualizer...

- To start Visualizer either select:
 - From P6 PPM select **Tools, Visualizer**, and **Visualizer** will start without the need to log in again, or
 - Open from the Windows Start Menu without opening P6, but you will need to use your P6 login name and password:

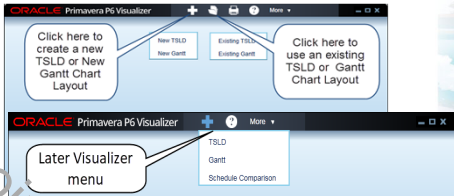


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Starting Visualizer

- There are initially 4 or 5 buttons at the top of the screen and the additional printing button was available on earlier version of Visualizer:

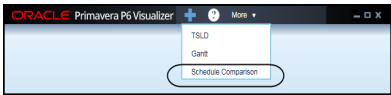


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14.5 - Claim Digger - Schedule Comparison

- Schedule Comparison** enables a user to compare two schedules and evaluate what changes have been made to a later version and often used in claims analysis,
- Version 16.1 moved **Schedule Comparison** to **Visualizer**. From P6 select **Tools, Visualizer** to open **Visualizer**. There is now an additional menu item named **Schedule Comparison**,
- Also, the menu has changed from earlier versions,
- As with **TSLD** or the **Gantt**, in **Schedule Comparison** you will need to create a View and then add the projects or project and a baseline for comparison.

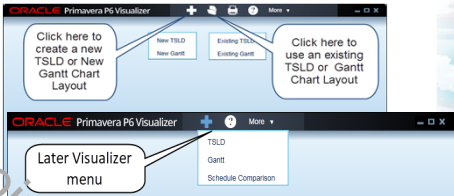


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14 - PRINTING, REPORTS AND VISUALIZER - SUMMARY

- 14.1 - Printing
- 14.2 - Reports
- 14.3 - Web Publishing
- 14.4 - Visualizer
- 14.5 - Claim Digger - Schedule Comparison



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Project Window - Resources Tab

- Resources can be assigned to the same activity more than once,
- The picture shows a crane assigned to the first and last day of the activity:

Activity ID: 1000

Activity: [x] 1000

Original Duration: 10

Activity with same resource at start and end

Resource ID Name: Crane Cranes

Original Date: 10

Original Duration: 10

Activity ID: 1000

Activity: [x] 1000

Original Duration: 10

Activity with same resource at start and end

Resource ID Name: Crane Cranes

Original Date: 10

Original Duration: 10

Activity ID: 1000

Activity: [x] 1000

Original Duration: 10

Activity with same resource at start and end

Resource ID Name: Crane Cranes

Original Date: 10

Original Duration: 10

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Project Window - Calculations Tab

- Activities - Default Price/Unit for activities without resource Price/Units is used to calculate activity costs when:
 - An Activity has quantities set in the Activities window, Status tab but no resources,
 - Note: Be careful if you change this rate as it is linked,
- The other functions in this tab affect the updating of resourced activities and are covered in the Updating a Resourced Schedule chapter.

Calculations

Activities

Default Price / Unit for activities without resource or rate Price / Units

Activity percent complete based on activity steps

Link Budget and At Completion for not started activities

Reset Original Duration and Units to Remaining

Reset Remaining Duration and Units to Original

Resource Assignments

When updating Actual Units or Cost

Add Actual to Remaining

Subtract Actual from At Completion

Recalculate Actual Units and Cost when duration % complete changes

Update units when costs change on resource assignments

Link actual to date and actual this period units and costs

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19.3 - User Preferences Applicable to Assigning Resources

- Open the User Preferences form Calculations tab Resource Assignments section by selecting Edit, User Preferences....
- The Calculations tab has two Resource Assignments options:
 - Preserve the Units, Duration, and Units/Time for existing assignments. With this option as Resources are added or deleted the total number of hours assigned to an activity increases or decreases. Each Resource's hours are calculated independently,
 - Recalculate the Units, Duration, and Units/Time for existing assignments based on the activity Duration Type. The total number of hours assigned to an activity will stay constant as second and subsequent resources are added or removed from an activity,
- Note: The Recalculate the Units..... function does not work when the Activity Type is Fixed Duration and Units/Time.

Resource Assignments

When adding or removing multiple resource assignments on activities

Preserve the Units, Duration, and Units/Time for existing assignments

Recalculate the Units, Duration, and Units/Time for existing assignments based on the activity Duration Type

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User Preferences Applicable to Assigning Resources

- Select Edit, User Preferences... to open the User Preferences form, Calculations tab, Assignment Staffing section,
- The Assignment Staffing option are self explanatory and should be considered carefully when resources and roles have different rates. If the are not understood and set incorrectly the resource may end up with the incorrect unit rate when assigned to a Role or existing Resource,
 - Note: When two users have different settings this may result in a schedule having two different rates for the same resource.

Assignment Staffing

When assigning a resource to an existing activity assignment:

Always use the new resource's Units per Time and Overtime factor

Always use current assignment's Units per Time and Overtime factor

Ask me to select each time I assign

When a resource and role share an activity assignment:

Always use resource's Price per Unit

Always use role's Price per Unit

Ask me to select each time I assign

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19.4 - Activity Window Resource Preferences and Defaults

- The Status form has a section titled Labor Units at the right side as seen in the following picture. The drop-down menu enables you to select which data is to be displayed in this section of the form,
- It is possible to enter a Labor Unit value in the Status tab and not assign a resource. When a resource is assigned the resource will adopt this value in the Status tab,
- Note: When there is no resource assigned, the Labour Cost is calculated from the Project Window, Calculations tab, Activities Default Price / Unit for activities without resource or role Price / Units.

Labor Units

Labor Units

Nonlabor Units

Labor Cost

Nonlabor Cost

Material Cost

At Complete

20h

20h

0h

20h

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Activity Type and Resources

The following Activity Types are available:

- Task Dependent - ignores resource calendars,
- Resource Dependent - like P3 and SureTrak Independent Activities and resources do not have to be available at the same time to work,
- NOTE: A Resource Dependent activity still acknowledges the Activity Calendar for the start of an activity:

Activity Type

Calendar

Resources

Aug 03

Resource Dependent

5 x 8 No Hols

24 h/d 7d/7e

Resource Dependent

5 x 8 No Hols

24 h/d 7d/7e

Resource Dependent

7 x 24 No Hols

24 h/d 7d/7e

This activity is scheduled to start on the project start date ONLY when both the resource and activity are assigned 24x7 calendars

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Project Window Calculations Tab
Resource Assignments Section

Link Actual and Actual This Period Units and Cost

- 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**.
- Alternatively, you may enter the **Actual to date** and Primavera will calculate the **Actual this period**.
- When unchecked, the two fields are unlinked and you may enter any figure in each field. This option is grayed out if the project is not open and is used to fix errors in data entry when **Period Actuals** are being recorded:

Calculations

Activities

Default Price / Unit for activities without resource Price / Units\$0.00/h

☐ Activity percent complete based on activity steps

☒ Link Budget and At Completion for not started activities

☐ Reset Original Duration and Units to Remaining

☐ Reset Remaining Duration and Units to Original

Resource Assignments

When updating Actual Units or Cost

- ☐ Add Actual to Remaining
- ☐ Subtract Actual from At Completion

☒ Recalculate Actual Units and Cost when duration % complete changes

☐ Update units when costs change on resource assignments

☒ Link Actual and Actual This Period Units and Cost

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Project Window Calculations Tab
Resource Assignments Section

When updating Actual Units or Costs. There are two options:

- Add Actual to Remaining.** When Actual Costs are entered, the At Completion increases by the amount of the Actual Costs.
- Subtract Actual from At Completion.** When Actual Costs are entered, the At Complete does not change and the To Complete is reduced by the value of the Actual.
- Recommend **Subtract Actual from At Completion** and updating Resources does not change At Completion values:

Calculations

Activities

Default Price / Unit for activities without resource Price / Units\$0.00/h

☐ Activity percent complete based on activity steps

☒ Link Budget and At Completion for not started activities

☐ Reset Original Duration and Units to Remaining

☐ Reset Remaining Duration and Units to Original

Resource Assignments

When updating Actual Units or Cost

- ☒ Add Actual to Remaining
- ☐ Subtract Actual from At Completion

☒ Recalculate Actual Units and Cost when duration % complete changes

☐ Update units when costs change on resource assignments

☒ Link Actual and Actual This Period Units and Cost

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Project Window Calculations Tab
Resource Assignments Section

Recalculate Actual Units and Cost when duration % complete changes.

- This option links the **Duration % Complete** to the To Complete Units and Costs.
- Thus, an increase in **% Complete** will increase the **Actual** and decrease the **To Complete** values.
- This allows the software to automatically calculate the **Actual** and **To Complete Cost and Units**:

Calculations

Activities

Default Price / Unit for activities without resource Price / Units\$0.00/h

☐ Activity percent complete based on activity steps

☒ Link Budget and At Completion for not started activities

☐ Reset Original Duration and Units to Remaining

☐ Reset Remaining Duration and Units to Original

Resource Assignments

When updating Actual Units or Cost

- ☐ Add Actual to Remaining
- ☐ Subtract Actual from At Completion

☒ Recalculate Actual Units and Cost when duration % complete changes

☐ Update units when costs change on resource assignments

☒ Link Actual and Actual This Period Units and Cost

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Project Window Calculations Tab
Resource Assignments Section

Update units when costs change on resource assignments.

- With this option checked a change in Costs will recalculate the Units.
- With this option unchecked, a change in costs may be made independently of units after units have been changed.
- This is unchecked when it is wished to enter Actual Units from a Timesheet system and Actual Costs from an Accounting system and thus the P6 database Resource Unit rate does not apply to the actual Costs:

Calculations

Activities

Default Price / Unit for activities without resource Price / Units\$0.00/h

☐ Activity percent complete based on activity steps

☒ Link Budget and At Completion for not started activities

☐ Reset Original Duration and Units to Remaining

☐ Reset Remaining Duration and Units to Original

Resource Assignments

When updating Actual Units or Cost

- ☐ Add Actual to Remaining
- ☐ Subtract Actual from At Completion

☒ Recalculate Actual Units and Cost when duration % complete changes

☐ Update units when costs change on resource assignments

☒ Link Actual and Actual This Period Units and Cost

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21.5 - Activity Window - Percent Complete Types

The default is adopted from the setting in the **Defaults** tab in the **Projects Workspace**,

- Physical**
- Duration**
- Units**

Physical % Complete must be used when **Steps** are being used to record progress,

Units % Complete becomes active once resources are assigned.

Activity ID	Activity Name	Percent Complete Type	Activity % Complete	Physical % Complete	Duration % Complete	Units % Complete
AA1000	% Complete Physical	Physical	50%	50%	0%	0%
AA1010	% Complete Duration	Duration	50%	0%	50%	0%
AA1020	% Complete Type Units	Units	50%	0%	0%	50%

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21.6 - Using Steps to Calculate Activity Percent Complete

An activity percent complete may be defined by using steps. A Step is a measurable or identifiable task required to complete an activity,

- A Step template may be created by selecting **Enterprise, Activity Step Template....** to open the **Activity Step Templates** form,
- Check the **Activity percent complete based on steps** check box in the **Projects Workspace, Calculations** tab,
- Select the **Physical** in the **% Complete Type** for each activity that is to be measured by steps in the **General** tab of **Activity Workspace**,
- Select the **Steps** tab in the **Activity Workspace** to use Steps:

Step Name	% Complete	Step Weight	Step Weight Percent	Completed
Specify Document Composition	100%	10.0	10.0	<input checked="" type="checkbox"/>
Document First Draft	100%	40.0	40.0	<input checked="" type="checkbox"/>
Final Draft and Internal Approval	0%	25.0	25.0	<input type="checkbox"/>
Client Approval	0%	25.0	25.0	<input type="checkbox"/>

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21.7 - Updating the Schedule - Preferences, Defaults and Options for Updating a Project

The following project options should be considered and checked or unchecked before updating a schedule, considering the following changes to defaults:

- User Preference, Calculation Tab**
 - Set to **Preserve the Units, Duration, and Units/Time** for existing assignments thus, adding and removing resources will not change existing resource assignments
- Project, Default tab:**
 - % Complete Type** - **Physical %** is recommended, especially if you wish to use **Steps**,
 - Duration Type** - **Fixed Duration & Units** to keep the estimate at complete unchanged when the duration is changed or **Fixed Duration & Units/Time** to keep the crew size constant,
- Project, Calculations tab:**
 - Check **Activity percent complete based on activity steps** if you wish to use **Steps**, you may then edit the **Remaining Duration** and **Activity % Complete** independently.
 - Check **Recalculate Actual Units and Costs when duration % complete changes** and P6 will calculate the remaining costs and units from the Remaining Duration,
- Schedule Options** as per an unresourced schedule:
 - Select **Longest Path** for multiple calendar schedules and
 - Make open-ended activities critical** to create a multiple critical path schedule.

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21.8 - Updating Resources

- There are many permutations available for calculating resource data,
- Due to the number of options available in Primavera, it is not feasible to document all the combinations available for resource calculation,
- Resource units and costs may be updated by either:
 - Entering Progress Automatically from Time Sheets, a process titled **Applying Actuals**, or
 - Entering the data using the **Resource** tab in the **Activities Window**, or
 - Entering the data using the right section of the **Status** tab in the **Activities Window**.

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Resource Window Defaults

Primavera may calculate Actual Costs and the Costs to Complete by turning on (the P6 default) the relationship between the Resource Units and Resource Price/Unit:

- The default is set in the **Resources** window, **Details** form, **Calculate costs from units** option, and
- May be changed after the resource has been assigned for each activity in the **Resources** tab,

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21.9 - Updating Expenses

Expenses do not automatically update from any % Complete and have to be manually updated,

- Expenses are very useful for recording costs when you do not wish to use resources,
- Expenses may be assigned to Milestones, resources may not,
- The Expense **Auto Compute Actuals** option works only with the **Apply Actuals** function, which is used when brining in data from the Primavera Timesheets module,
- Expenses may have a cost assigned before their activity is marked as started a resources may not, useful for recording mobilization costs,
- Expenses may have a cost to complete after the activity is complete; resources may not, useful for recording Retention,
- It is possible to have negative costs, useful for recording contractor charge back,
- It is often difficult to get Expense data back out of P6.

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21 - UPDATING A RESOURCED SCHEDULE - SUMMARY

- 21.1 - Understanding Budget Values and Baseline Projects
- 21.2 - Understanding the Current Data Date
- 21.3 - Information Required to Update a Resourced Schedule
- 21.4 - Project Window Defaults for Updating a Resourced Schedule
- 21.5 - Activity Window - Percent Complete Types
- 21.6 - Using Steps to Calculate Activity Percent Complete
- 21.7 - Updating the Schedule
- 21.8 - Updating Resources
- 21.9 - Updating Expenses
- 21.10 - Workshop 18 - Updating a Resourced Schedule.

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21.10 - Workshop 18 - Updating a Resourced Schedule

- The project has progressed one week,
- We now need to update the activities and resources and calculate the forecast cost and revised finish date of the project.

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24.5 - Users, Security Profiles & Organizational Breakdown Structure

- This section is intended to introduce this topic,
- Please refer to the Primavera Administration Manual for full details,
- This topic was discussed in Module 17.

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Security & Access - Whole Picture

```
graph TD
    User[A person is created as a User and is assigned a Password that the user may change and is assigned:]
    Role[A Role may be assigned to one or more Resources]
    Global[A Global Security Profile]
    Project[A Project Security Profile for each assigned OBS Node]
    Resource[Access to one resource node in Version 18 and earlier and up to 5 Resource Nodes in Version 19 and later]
    License[A software license]
    ID[An optional Resource ID]
    Manager[A Resource ID may be assigned as a Timesheet approval Manager]

    User --> Global
    User --> Project
    User --> Resource
    User --> License
    User --> ID
    User --> Manager
    Role --> Resource
    Global --> GlobalDesc[This allows access to Global data such as EPS, OBS etc.]
    Project --> ProjectDesc1[This allows access to one or more Projects]
    Project --> ProjectDesc2[This allows access to one or more Project WBS Nodes]
    Resource --> ResourceDesc[Allows the assigning of Resources under this Node]
    License --> LicenseDesc[Allows the software to be started]
    ID --> IDDesc[This allows Timesheeting]
    Manager --> ManagerDesc[This allows Timesheet approval]
```

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24.6 - Project Codes

- Project Codes are assigned to projects and enable projects to be Grouped and Sorted under an alternative structure to the EPS,
- To create a Project Code:
 - In the **Professional Client** you select **Enterprise, Project Codes...** to open the **Project Codes** form, or
 - In the **Web Client** you select **Administer, Enterprise Data, Project, Project Codes** from the Web for Optional Client users.

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24.7 - Filtering, Grouping & Sorting Projects in the Projects Window

- Projects are Grouped and Sorted and filtered in the **Projects Window** in the same way as activities are in the **Activities Window**,
- Layouts, Filters, columns and bar formatting work in the same way in both windows.

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24.8 - Project Durations in the Project Window

- The project durations in both the **Projects Window** and **Activities Window** are normally calculated the Project Default calendar,
- EPS Node durations are normally calculated on the Database Calendar:

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24.9 - Why Are Some Data Fields Gray and Cannot Be Edited?

- If you are unable to edit data then consider the following points:
 - You may not have access. Discuss your access rights with your administrator,
 - Some data, e.g., the project **Status**, needs the project open before the data may be edited,
 - The field may be calculated, such as **Actual Duration**, and cannot be edited.

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27.4 - Actual Costs

- These are the costs actually incurred in performing the work,
- Actual Costs are often calculated from the amount paid plus accruals,
- Actual Costs and Actual Units may be recorded in Primavera and displayed in two methods:
 - The total to date, or
 - Calculated from the **Financial Periods** values when Period values are stored.



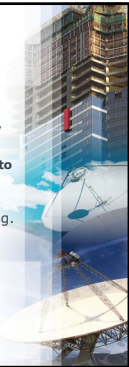
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27.5 - Estimate to Complete

- P6 has two separately calculated estimate to complete fields:
 - Estimate to Complete from Resource and Expense Units and Costs, usually titled **Remaining Costs** or **Remaining Units** and
 - Estimate to Complete from P6 Earned Value Calculations, titled **Estimate to Complete** (costs) or **Estimate to Complete Labor Units**,
- NOTE:** It is very important that users understand the differences between these two fields and know which they are using and displaying.



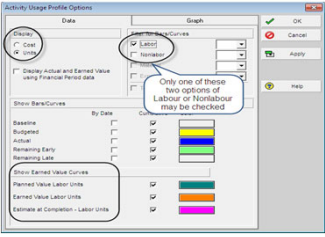
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27.6 - Activity Usage S-Curve Options

- The instructor will step through the options:





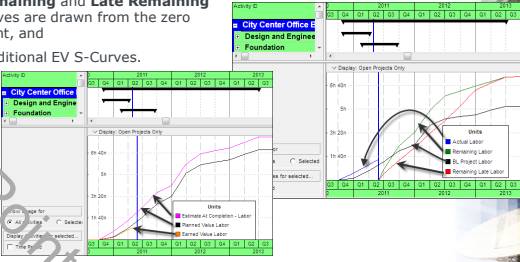
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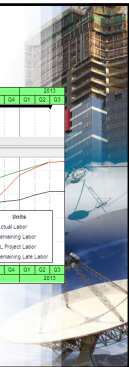
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27.7 - Sample Graphical S-Curves

- Remaining** and **Late Remaining** curves are drawn from the zero point, and
- Traditional EV S-Curves.






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27 - EARNED VALUE MANAGEMENT WITH P6 - SUMMARY

- 27.1 - Performance Measurement Baseline
- 27.2 - Planned Value
- 27.3 - Earned Value
- 27.4 - Actual Costs
- 27.5 - Estimate to Complete
- 27.6 - Activity Usage S-Curves
- 27.7 - Sample Graphical S-Curves.




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Review Expectations

- Any questions,
- Complete Feedback Sheet,
- Course Certificates,
- Have we met your expectations?



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Database Cleanup at end of course, if required:

Please could you delete all:

User Filters

User Layouts

The resources created but NOT your Resource node

Your projects.

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Thank you for attending

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Sample Instructors PowerPoint Slide Show