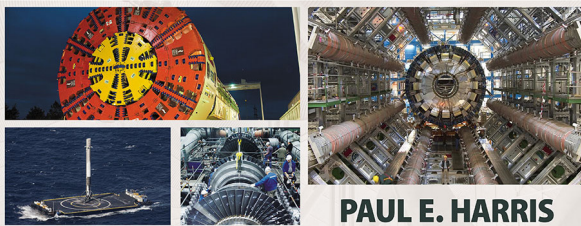



PLANNING & CONTROL USING
ORACLE® PRIMAVERA® P6
VERSIONS 8, 15 and 16 PPM PROFESSIONAL



PAUL E. HARRIS

EASTWOOD HARRIS PTY LTD.

Welcome to the
Eastwood Harris Pty Ltd
Primavera P6
Versions 8, 15 and 16
PPM Professional
3 day training course



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Administration

- Evacuation
- Facilities, timings and meals
- Mobile phones & Emails
- Introductions:
 - Your name,
 - The types of projects you are involved in,
 - Your experience in scheduling software and
 - What you seek from this course
 - What version of P6 does your company use
- Course attendance sheet,
- Course conduct.



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Course Objectives

This course objectives are teach participants:

- Introduction to the user interface and how to plan projects without resources,
- Filters, layouts and printing,
- Baselines, and updating an un-resourced project,
- Creating and assigning roles and resources,
- Controlling projects with resources and costs,
- Setting up and administering a database plus advanced features including import/export,
- Activity Codes, Custom Data Fields and Global Change.

Successful completion of all the course workshops will confirm that the objectives have been met.




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Course Conduct

The course consists of:

- The instructor demonstrating the software using a combination of:
 - A PowerPoint slide show and
 - Live software demonstrations,
- Most chapters are then reinforced with student workshops working through a scenario of creating a small project planning the submission of a bid,
- The book is for you to keep,
- Ask any questions as the course progresses.




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Course Agenda

Day 1 Modules

- 1 - Introduction
- 2 - Creating a Project Plan
- 3 - Starting Up and Navigation
- 4 - Creating a New Project
- 5 - Defining Calendars
- 6 - Creating a Primavera Project WBS
- 7 - Adding Activities and Organizing Under the WBS
- 8 - Formatting the Display
- 9 - Adding Relationships
- 10 - Activity Network View
- 11 - Constraints.



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Course Agenda

Day 2 Modules

- 12 - Group, Sort and Layouts
- 13 - Filters
- 14 - Printing and Reports
- 15 - Scheduling 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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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 - Top and Bottom Panes of Windows
- 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

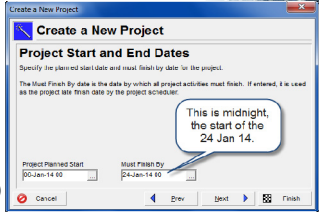
- 4.1 - Creating a Blank Project
- 4.2 - Copy an Existing Project
- 4.3 - Importing a Project
- 4.4 - Setting Up a New Project
- 4.5 - Project Dates
- 4.6 - Saving Additional Project and EPS Information - Notebook Topics
- 4.7 - Workshop 2 - Creating Your Project.

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4.1 - Creating a Blank Project

- Select **File, New** to run the Create New Project Wizard,
- Information Required:
 - EPS Node
 - A unique Project ID
 - Project Name
 - Planned Start date
 - (Optional) Must Finish By date
 - Responsible Manager (OBS)
 - Resource Rate Type.



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7.7 - Elapsed Durations

- An Elapsed duration is a duration that runs 24x7,
- A P6 activity may NOT be assigned an **Elapsed** duration as in Microsoft project,
- A P6 activity should be scheduled on a 24hrs/day and 7 days per week calendar to assign an elapsed duration.

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7.8 - Finding the Bars in the Gantt Chart

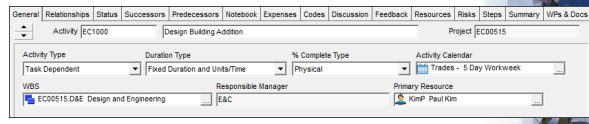
- At times you will find there are no bars displayed in the Gantt Chart because the Timescale has scrolled too far into the past or future,
- Double-click in the Gantt Chart in line with an activity and the Timescale will scroll to display the activity bar.

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7.9 - Activity Information – Bottom Layout Tabs

- General
- Status
- Summary
- Resources
- Expenses
- Notebook
- Steps
- Feedback
- WP's & Docs
- Codes
- Relationships
- Predecessors
- Successors
- Discussion, new to 8.3.

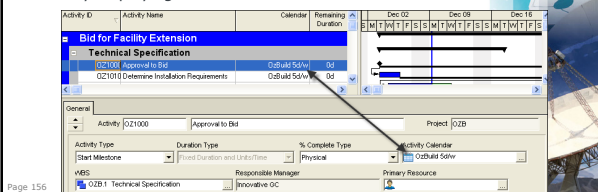


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7.10 - Assigning Calendars to Activities

- Activities often require a different calendar from the default **Project Calendar** assigned in the **Project Information** form,
- An **Activity Calendar** may be assigned:
 - In the **General** tab of the **Bottom Layout**, or
 - By displaying the **Calendar** column:



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7.11 - Assigning Activities to a WBS Node

- A new activity will inherit the WBS Node that is highlighted when an activity is created,
- A new activity will inherit the WBS Node of a selected existing activity when the project is organized by the WBS and a new activity is created,
- To change the Activity WBS Node:
 - Select the activity and click the WBS box in the **General** tab in the lower window, this will open the **Select WBS** form where you may assign the WBS Node,
 - Drag & drop activities from one WBS Node to another WBS Node,
 - Insert WBS into activity columns.

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7.12 - Reordering or Sorting Activities

- The sort order of activities within a band is set by an order from one or more columns,
- You may not drag activities up or down the schedule in the same way as other products.
- To sort Activities:
 - Highlighting a column title and clicking with the mouse, or
 - Select **View, Group and Sort By**:
 - Click the **Sort** icon,
 - This will be covered in detail in Module 8,
 - NOTE:** Ensure the layout is saved immediately as the sort is destroyed as soon as another column header is clicked on.


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10 - ACTIVITY NETWORK VIEW - SUMMARY

- 10.1 - Viewing a Project Using the Activity Network View
- 10.2 - Adding, Deleting and Dissolving Activities in the Activity Network View
- 10.3 - Adding, Editing and Deleting Relationships
- 10.4 - Formatting the Activity Boxes
- 10.5 - Reorganizing the Activity Network
- 10.6 - Saving and Opening Activity Network Positions
- 10.7 - Early Date, Late Date and Float Calculations.

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10.8 - Workshop 8 - Scheduling Calculations and Activity Network View

- We want to practice using the Activity Network View and,
- Then you may work through calculating early and late dates with a simple manual exercise which is found in your copy of the book this course is based on.

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11 - CONSTRAINTS

- 11.1 - Assigning Constraints
- 11.2 - Project Must Finish By Date
- 11.3 - Activity Notebook
- 11.4 - Workshop 9 - Constraints.

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Activity Constraint Types

Constraints are used to impose logic on activities that **MAY** not be realistically scheduled with logic links.

This module will deal with the following constraints in detail:

- **Start On or After** more commonly called an **Early Start constraint** and affects the activities Early Start date,
- **Finish On or Before** more commonly called an **Late Finish constraint** and affects the activities Late Finish date,

These are the minimum number of constraints that are required to effectively schedule a project, There are many other types that may be used:

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Activity Constraint Types continued

Other Constraint Types:

- **Start On** initially sets the Early and Late Start to the constraint date and therefore has no Total Float, but may develop Negative Float,
- **Start On or Before** more commonly called an **Late Start constraint** and affects the activities Late Start date,
- **Finish On** initially sets the Early and Late Finish to the constraint date and therefore has no Total Float, but may develop Negative Float,
- **Finish On or After** more commonly called an **Early Finish constraint** and affects the activities Early Finish date calculation,

continued.....

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Activity Constraint Types Continued

Other Constraint Types continued:

- **Mandatory Start** sets the Early and Late Start dates and prevents float from travelling through the constraint,
- **Mandatory Finish** sets the Early and Late Finish dates and prevents float from travelling through the constraint,
- **Expected Finish** calculates the Remaining Duration of an activity and requires the check box in the Scheduling Options form to be checked before it operates,
- **As Late as Possible** consumes Free Float and sets the Early and Late date to be as late as possible but without delaying successor activities and does not develop Total Float.

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Calendar for scheduling Relationship Lag

There are four options for the calculation of the lag:

- The example below shows the effect of changing the calendar on a 40 hour lag:
- Predecessor Activity Calendar** is the default, or

Calendar	Sun	Mon	Tue	Wed	Thr	Fri	Sat	Sun	Mon	Tue
24 Hours/Day 7 Days/Week 5 Day/Week										

- Successor Activity Calendar**, or

Calendar	Sun	Mon	Tue	Wed	Thr	Fri	Sat	Sun	Mon	Tue
24 Hours/Day 7 Days/Week 5 Day/Week										

- The other options are **24 Hour**, or
- Project Default Calendar**.

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Scheduling Options, General Tab - Advice on options to select

The P6 default **Scheduling Options** are in general good but you should consider changing the following options when the circumstances dictate:

- Make open ended activities critical** should be selected when you needed multiple critical paths displayed, and
- Define critical activities as Longest Path** when you have multiple calendars.

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15.3 - Setting the Baseline

- Setting the Baseline makes a complete copy of a project, including relationships, notebook entries and codes.
- You are then able to compare the current project's progress against the baseline.
- There are two types of Baselines:
 - Management/Contract Baselines**
 - Last Period Status Baselines**
- The number of baselines that may be saved and copied is set in the **Admin Preferences** form,
- Up to four baselines, one **Project Baseline** and three **User Baselines**, may be displayed and compared to the current project.

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Setting the Baseline

- Baselines are created, deleted, restored and updated in the **Project, Maintain Baselines** form,
- The baselines are assigned from the **Project, Assign Baselines...** form:

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15 - SCHEDULING OPTIONS AND SETTING A BASELINE - SUMMARY

- 15.1 - Understanding Date Fields
- 15.2 - Scheduling Options - General Tab
- 15.3 - Setting the Baseline.

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15.4 - Workshop 13 - WBS, LOEs and Setting the Baseline

- We will first look at how WBS and LOE activities work and
- Then create and assign a Baseline.

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20.5 - Methods of Resolving Resource Peaks and Conflicts

- Revising the Project Plan,
- Duration Change,
- Resource Substitution,
- Increase Working Time,
- Split an activity around peaks in demand; the splitting function is not available in P6 and you will need to create 2 or more activities to simulate a split,
- Leveling the schedule,
- Resource Curves, or
- Manually Editing the Resource Spreadsheet may assist in some instances.

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20.6 - Resource Leveling

- Turning off Automatic Calculation and Dragging Activities,
- Constraining Activities,
- Sequencing Logic, or
- Leveling Primavera function:
 - The Resource Leveling function enables the optimization of resource use by delaying activities until resources become available, thus reducing the peaks in resource requirements.
 - The leveling function should be used by novices with extreme caution.

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Resource Leveling Function

- The instructor will lead you through the Resource Leveling function.

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20.9 - Guidelines for Leveling

- Only level resources that are overloaded,
- Try leveling one resource at a time,
- After all resources are leveling individually, you should start leveling with two resources and then three,
- Do not expect a perfect result; be satisfied with an average resource usage that meets your requirements over periods, such as months.

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20.10 - What to look for if Resources are Not Leveling

- Have you selected a resource to level in the Select Resources form?
- Have you set the Limits in the Resource Window?
- A resource will not be leveled when you assign a resource to an activity with a Units per time period greater than value set in the resource dictionary,
- Decreasing Durations of Fixed Units and Fixed Duration and Units will increase the Units/Timeperiod,
- Have you assigned a **Mandatory Constraint** to an unlevelled activity?
- Have you checked **Level resources only within activity Total Float** option?

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20.11 - Resource Curves

- Resource Curves enable a non-linear assignment of resources to schedules,
- Resource curves are assigned in the **Curve** column in the **Resources** tab of the **Activities Window**:

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24.4 - Organizational Breakdown Structure – OBS

- The OBS is an Enterprise hierarchical structure that is intended to represent the company's OBS,
- The OBS function is the security gateway and does not have to mirror your company's OBS,
- Any structure that enables you to assign user access to projects is usually satisfactory and some companies just duplicate their EPS as the OBS and use a project code for the OBS,
- A user may be assigned to one or more OBS Nodes, each with different access rights,
- The OBS Nodes are assigned to EPS Node, Projects and WBS Nodes,
- A user assigned an EPS is normally responsible for all projects associated with all elements of the EPS.

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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 LR
      A[A person is created as a User and is assigned a Password that the user may change and is assigned:] --> B[A Global Security Profile]
      A --> C[A Project Security Profile for each assigned OBS Node]
      A --> D[Access to a Resource Node]
      A --> E[A software license]
      A --> F[A optional Resource ID]
      B --> B1[This allows access to Global data such as EPS, OBS etc]
      C --> C1[This allows access to one or more Projects]
      C --> C2[This allows access to one or more Project WBS Nodes]
      D --> D1[Allows the assigning of Resources under this Node]
      E --> E1[Allows the software to be started]
      F --> F1[This allows Timesheeting]
      G[A Role may be assigned to one or more Resources] --> H[A Resource ID may be assigned as a Timesheet approval Manager]
      H --> H1[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:

Project ID	Project Name	At Completion Duration	Total Activities	Strategic Priority
Enterprise	All Initiatives	1178d		
EC	Engineering & Construction	1112d 7h		
EC00501	Halterng Corporate Park	601d 5h		
EC00515	City	681d 1h		
EC00630	Ne	585d 4h		
EC00610	Ha	1039d 3h	131	100
EC00620	Ju	812d 5h	132	100
EC00630	Sar	922d 7h	132	100
Energy	Energy Services	439d 15h	689	500
NRG00800	Sunset Gorge - Routine Maintenance Work	57d 15h	132	500

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27.3 - Earned Value

- P6 has a field titled **Performance % Complete** which is used to calculate the **Earned Value** for each activity,
- In P6 there are some options for calculation of the **Performance % Complete** for all activities in each **WBS Node** which is, in turn, is used to calculate the **Earned Value**:
 - The defaults are set in the **Admin, Admin Preferences...**, **Earned Value** tab,
 - The options are managed at WBS Node for all activities assigned to a specific WBS Node, and each WBS Node may have different values,
 - Open the **WBS Window, Earned Value** tab to see the options which are mainly self-explanatory.

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Earned Value

- Example of the Calculation of the Earned Value:

Activity ID	Activity % Comp	Performance % Complete	BL Project Total Cost	Earned Value Cost	BL Project Labor Units	Earned Value Labor Units	Aug 29	Sep 04
Earned Value Percent Complete								
Activity % Complete								
A1000	50%	50%	\$9,600	\$4,800	80h	40h		
WBS Milestone Percent Complete 75%								
A1010	50%	75%	\$9,600	\$7,200	80h	60h		
0/100								
A1020	50%	0%	\$9,600	\$0	80h	0h		
50/50								
A1030	50%	50%	\$9,600	\$4,800	80h	40h		
Custom percent complete at 10%								
A1040	50%	10%	\$9,600	\$960	80h	8h		

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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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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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