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Welcome to the
**Eastwood Harris Pty Ltd**
**MICROSOFT® PROJECT AND**
***PMBOK® GUIDE* FOURTH EDITION**
training course
presented by

**Paul E Harris**

PMI REP No 3001 – Course Number MSP



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## Administration

- Evacuation
- Timings, meals and facilities
- Mobile phones and emails
- Introductions
  - Your name
  - Your position or job
  - Experience in scheduling software
  - What you expect from the course
- Course attendance sheet.



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## Course Agenda

**Day 1 Modules**

1 Introduction
2 Creating a Project Plan
3 Creating Projects and Setting Up the Software
4 Navigating Around the Screen
5 Defining Calendars
6 Adding Tasks
7 Organizing Tasks Using Outlining
8 Formatting the Display
9 Adding Task Dependencies
10 Network Diagram View
11 Constraints

**Day 2 Modules**

12 Filters
13 Tables, Grouping Tasks, Outline Codes and WBS
14 Views and Details
15 Printing and Reports
16 Tracking Progress
17 Options
18 Creating Resources
19 Assigning Resources and Costs To Tasks
20 Resource Histograms, Tables, S-Curves & Leveling
21 Statusing Projects With Resources
22 Tools and Techniques For Scheduling



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## Module 1 – Introduction

Topics:

- Purpose of the course
- Required Background Knowledge
- Purpose of Planning
- Definition of Planning and Control
- *PMBOK® Guide* Process Groups and Knowledge Areas
- Project Planning
- Levels of Planning
- Monitoring and Controlling a Project
- Project Planning Metrics
- Planning Cycle
- *PMBOK® Guide* Processes and Microsoft Project



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## Purpose of the course

- Provide a method for planning, scheduling and controlling projects using Microsoft Project in an environment utilizing the *PMBOK® Guide* Fourth Edition processes,
- Up to an intermediate level.



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

- Understand the steps required to create a project plan.
- Set up the software.
- Define calendars.
- Add tasks.
- Organize tasks and format the display.
- Add logic and constraints.
- Use Tables, Views and Filters which create the printouts and reports.
- Print the above reports.
- Record and track progress.
- Customize the project options.
- Create and assign resources.
- Understand the impact of task types and effort-driven tasks.
- Status projects that contain resources.
- Understand the different techniques for scheduling.

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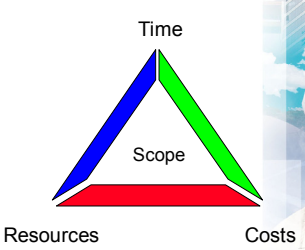
## Project Planning Metrics

- The components that are usually measured and controlled using planning and scheduling software:
  - Scope
  - Time
  - Effort (resources)
  - Cost and
  - Project Constraints.

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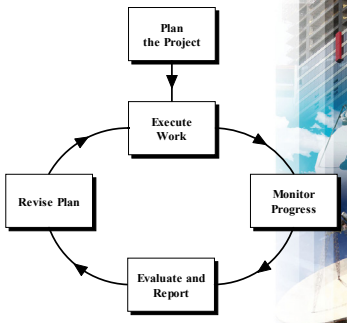
## Planning Cycle

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

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## *PMBOK® Guide* Processes and Microsoft Project

- It is possible to use Microsoft Project in almost all the *PMBOK® Guide* Processes,
- Even if it is just to schedule when the work is planned to be executed and by whom.
- The table on page 1-10 explains some practical ways to use Microsoft Project in many of the processes beyond scheduling and assigning resources.

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## Module 2 – Creating a Project Plan

Topics:

- Understanding Planning and Scheduling Software
- Understanding Your Project
- Level 1 – Planning without Resources
- Level 2 – Tracking Progress without Resources
- Level 3 – Planning with Resources
- Level 4 – Tracking Progress of a Resourced Schedule.

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## Four modes or levels

- There are four levels in which planning and scheduling software may be used.

| | Planning | Controlling |
|---|---|---|
| **Without Resources** | **LEVEL 1** Planning without Resources | **LEVEL 2** Tracking progress without Resources |
| **With Resources** | **LEVEL 3** Planning with Resources | **LEVEL 4** Tracking progress with Resources |

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## Understanding Planning and Scheduling Software

Planning software allows

- Record the WBS- the deliverables,
- Break the deliverables into activities,
- Assign durations, constraints, predecessors and successors to activities,
- Calculate the start and finish dates,
- Assign resources and/or costs to activities,
- Optimize the project plan,
- Set Baselines to compare progress,
- Approve work,
- Record the actual progress,
- Compare progress against the original plan,
- Amend the plan for scope changes etc., and
- Produce management reports.

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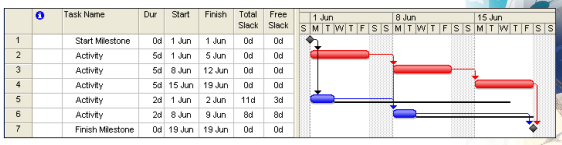
## Total Float

- The **Total Float** is the amount of time an activity may be delayed without delaying the end of a project.
  - An activity may delay another activity.
  - Displayed in a column and the thin black bar below and may be in the negative.



| | Task Name | Dur | Start | Finish | Total Slack | Free Slack |
|---|---|---|---|---|---|---|
| 1 | Start Milestone | 0d | 1 Jun | 1 Jun | 0d | 0d |
| 2 | Activity | 5d | 1 Jun | 5 Jun | 0d | 0d |
| 3 | Activity | 5d | 8 Jun | 12 Jun | 0d | 0d |
| 4 | Activity | 5d | 15 Jun | 19 Jun | 0d | 0d |
| 5 | Activity | 2d | 1 Jun | 2 Jun | 11d | 3d |
| 6 | Activity | 2d | 8 Jun | 9 Jun | 8d | 8d |
| 7 | Finish Milestone | 0d | 19 Jun | 19 Jun | 0d | 0d |



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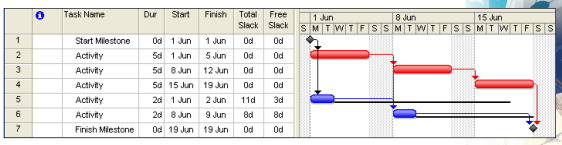
## Free Float

- The **Free Float** is the amount of time an activity may be delayed without delaying another activity.
  - Displayed in a column or bar.
  - Is never in the negative.



| | Task Name | Dur | Start | Finish | Total Slack | Free Slack |
|---|---|---|---|---|---|---|
| 1 | Start Milestone | 0d | 1 Jun | 1 Jun | 0d | 0d |
| 2 | Activity | 5d | 1 Jun | 5 Jun | 0d | 0d |
| 3 | Activity | 5d | 8 Jun | 12 Jun | 0d | 0d |
| 4 | Activity | 5d | 15 Jun | 19 Jun | 0d | 0d |
| 5 | Activity | 2d | 1 Jun | 2 Jun | 11d | 3d |
| 6 | Activity | 2d | 8 Jun | 9 Jun | 8d | 8d |
| 7 | Finish Milestone | 0d | 19 Jun | 19 Jun | 0d | 0d |



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## 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,
  - 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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## Constraints Types

There are two types of constraints:

- **Project Constraints** which includes the **Project Start Date** or **Project Finish Date** only in Microsoft Project and
- **Task Constraints**; the two most common are **Start On or After** (Early Start) and **Finish On or Before** (Late Finish).



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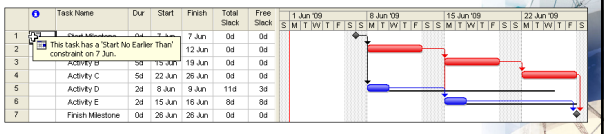
## Task Early Start Constraint

- A task will no longer start on the Data Date When a **Start No Earlier Than** constraint is assigned
- This is more commonly known as an **Early Start** constraint.




| | Task Name | Dur | Start | Finish | Total Slack | Free Slack |
|---|---|---|---|---|---|---|
| 1 | | | | 7 Jun | 0d | 0d |
| 2 | | | | 12 Jun | 0d | 0d |
| 3 | Activity B | 5d | 15 Jun | 19 Jun | 0d | 0d |
| 4 | Activity C | 5d | 22 Jun | 26 Jun | 0d | 0d |
| 5 | Activity D | 2d | 8 Jun | 9 Jun | 11d | 3d |
| 6 | Activity E | 2d | 15 Jun | 16 Jun | 8d | 8d |
| 7 | Finish Milestone | 0d | 26 Jun | 26 Jun | 0d | 0d |



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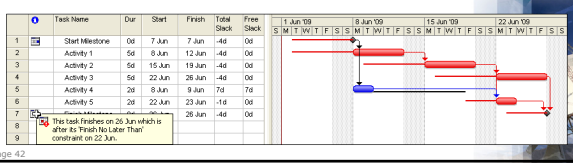
## Task Late Finish Constraint

- This picture shows a **Finish Date No Later Than** constraint assigned 4 days earlier than the calculated finish date
- Thus Negative Float is created, representing the amount of time that needs to be caught up,
- This is constraint is also known as a **Late Finish** constraint.




| | Task Name | Dur | Start | Finish | Total Slack | Free Slack |
|---|---|---|---|---|---|---|
| 1 | Start Milestone | 0d | 7 Jun | 7 Jun | -4d | 0d |
| 2 | Activity 1 | 5d | 8 Jun | 12 Jun | -4d | 0d |
| 3 | Activity 2 | 5d | 15 Jun | 19 Jun | -4d | 0d |
| 4 | Activity 3 | 5d | 22 Jun | 26 Jun | -4d | 0d |
| 5 | Activity 4 | 2d | 8 Jun | 9 Jun | 7d | 7d |
| 6 | Activity 5 | 2d | 22 Jun | 23 Jun | -1d | 0d |
| 7 | | | | 26 Jun | -4d | 0d |

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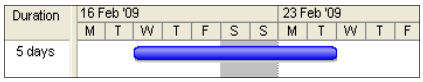
## Calendar Calculation

- The finish date (and time) of a task is calculated from the start date (and time) plus the duration over the calendar assigned to the task.
- Therefore, a five-day duration task that starts at the start of the workday on a Wednesday, and is associated with a five-day workweek calendar (with Saturday and Sunday as non-work days) will finish at the end of the workday on the following Tuesday.



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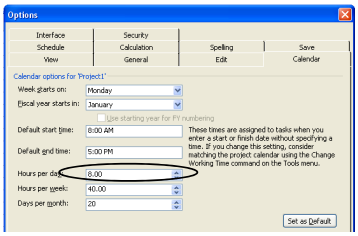
## Calculation of Duration in Days

- Microsoft Project effectively calculates in hours and the value of the duration in days is calculated using the parameter entered in the **Hours per day:** field in the **Tools**, **Options**, **Calendar** tab:



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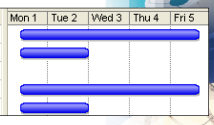
## Calculation of Duration in Days

- The picture below shows:
  - Task 1 has the correct duration in days
  - Task 2 shows a duration that is clearly misleading.
  - Task 4 and 5 display the duration in hours and are not misleading when the calendar column is also displayed.

| | Task Calendar | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | 8 Hours per Day | 5 days | Mon 8:00 AM | Fri 5:00 PM |
| 2 | 24 Hours per Day | 5 days | Mon 8:00 AM | Wed 12:00 AM |
| 3 | | | | |
| 4 | 8 Hours per Day | 40 hrs | Mon 8:00 AM | Fri 5:00 PM |
| 5 | 24 Hours per Day | 40 hrs | Mon 8:00 AM | Wed 12:00 AM |



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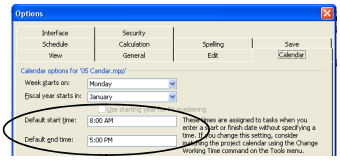
## Understanding Default Start and Default End Time

- The **Default start time:** and **Default end time:** are the times that the software uses when a date is entered and a time is not entered. These times should be aligned to the **Project** calendar and they are used in Microsoft Project when:
  - Constraints are assigned to tasks, and
  - Actual Start or Actual Finish Dates are assigned.
- These times are set in the **Options**, **Calendar** form:



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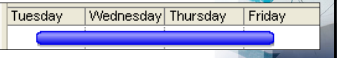
## Understanding Default Start and Default End Time

- If these times are not aligned then tasks may be displayed one day longer than the duration as per the picture below, where the calendar start time is 8:00am and the Default start time is 9:00am.

| Duration | Start | Finish |
|---|---|---|
| 3 days | Tue 9:00 AM | Fri 9:00 AM |



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## Defining Calendars

- The instructor will demonstrate the software functions.

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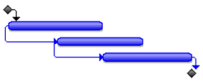
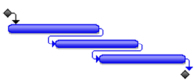
## What is Closed Network

- To create a **Closed Network** each task will require a Start predecessor and a Finish successor.

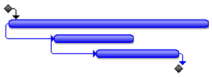
Open Network



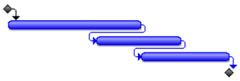
Closed Network



No delay to Finish Milestone



Delay to Finish Milestone





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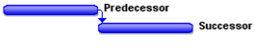
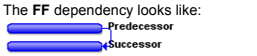
## Relationship Types

The **FS** (or conventional) dependency looks like this:




While the **SS** dependency is like this:


The **FF** dependency looks like:




The **SF** dependency would be:

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## Leads and Lags

- A successor task will start or finish later when a positive Lag is assigned. Therefore, a task requiring a 3-day delay between the finish of one task and start of another will require a positive lag of 3 days.
- Conversely, a lag may be negative (also called a Lead) when a new task can be started before the predecessor task is finished.
- Leads and Lags may be applied to any relationship type including Summary Task relationships.

An example of a **FS** with positive lag


An example of a **FS** with negative lag:




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## Adding Task Dependencies

- **The instructor will demonstrate the software functions.**



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## Module 10 – Network Diagram View

Topics:

- Understanding the Network Diagram View
- Adding and Deleting Tasks in the Network Diagramming View
- Adding, Editing and Deleting Dependencies
- Formatting the Task Boxes
- Formatting Individual Boxes
- Formatting the Display and Relationship Lines
- Early Date, Late Date and Float/Slack Calculations
- Workshop 8 – Schedule Calculations



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## Task Network View

- **The instructor will demonstrate the software functions.**

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## Views

- **The instructor will demonstrate the software functions.**



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## Module 15 – Printing and Reports

Topics:

- Printing
- Print Preview
- Page Set-up
- Print Form and Manual Page Breaks
- Reports
- Workshop 12 - Printing



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## Printing and Reports

- **The instructor will demonstrate the software functions.**



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## Module 16 – Tracking Progress

Topics:

- Setting the Baseline
- Practical Methods of Recording Progress
- Understanding Tracking Progress Concepts
- Updating the Schedule
- Simple Procedure for Statusing a Schedule
- Procedure for Detailed Statusing
- Comparing Progress with Baseline
- Corrective Action
- In-progress Schedule Check List
- Workshop 13 – Tracking Progress



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## Tracking Progress Steps

The main steps for monitoring progress are:

- Saving a Baseline schedule,
- Recording or marking-up progress as of a specific date, often titled the Data Date, Status Date, Update Date, Current Date and As-Of-Date,
- Updating or Statusing the schedule with Actual Start and Actual Finish dates where applicable, and adjusting the task's Remaining Durations and Percent Completes,
- Scheduling, moving the Status Date to the new date and recalculating all the tasks,
- Comparing and Reporting actual progress against planned progress and revising the plan and schedule, if required.



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## Tracking Progress

- **The instructor will demonstrate the software functions.**

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## Statusing a Resourced Schedule

- It is often considered best practice to update a project between 10 and 20 times in its lifecycle. Some companies update schedules to correspond with accounting periods, which are normally every month. This frequency is often too long for projects that are less than a year in duration, as too much change may happen in one month. Therefore, more frequent updating may identify problems earlier,
- Statusing a project with resources employs a number of preferences and options, which are very interactive and will require a significant amount of practice by a user to understand and master them,
- It must be decided if the software will calculate the Actual costs and units from the percentage complete or if this data is to be collected and entered into the software.



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## Preparing to Status a Resourced Schedule

After this course and before working on a live project, inexperienced users should gain confidence with the software by:

- Creating a new project and setting the **Options** to reflect the method you wish to enter information and how you want Microsoft Project to calculate the project data,
- Creating two or three tasks and then assigning two or three resources to each task,
- Update the Tasks and Resources as if you were updating a schedule and observe the results,
- Alter the preferences and defaults if you are not receiving the result you require. Re-update and note the preferences and defaults for future reference.



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## Statusing a Resourced Schedule

Statusing a project with resources takes place in two distinct steps:

1. The dates, durations and relationships are statused using the methods outlined in the **Tracking Progress** chapter, and
2. The Resource, Expenses Units (hours and quantities) and Costs, both the Actual to Date and To Complete, are then updated. These values may be automatically updated by Microsoft Project from the % Complete or imported from accounting and timesheet systems or updated by the Microsoft Project Timesheet system.



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## Statusing a Resourced Schedule

- **The instructor will demonstrate the software functions.**



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## Module 22 – Tools and Techniques for Scheduling

Topics:

- Understanding Menu Options
- Cut, Copy and Paste Row
- Cut, Copy and Paste Cell
- Copy Picture
- Fill
- Clear
- Find and Replace
- Go To
- Insert Recurring Task
- Splitting a Task
- Copy or Cut-and-Paste to and from Spreadsheets
- Paste Link – Cell Values in Columns
- Unique Task, Resource and Assignment ID
- Organizer



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## Tools and Techniques for Scheduling

- **The instructor will demonstrate the software functions.**