Session: 12

Project Performance

- Identify various stoplight indicators

- Explain how to calculate schedule variance

- Describe how to review critical path

- Describe how to create critical task report

- Explain how to evaluate performance using earned value measures

Introduction

◆ Using flexible choices and built-in earned value metrics in MS Project 2010, project managers can easily monitor the performance of a project against their project plan.

◆ Evaluating project performance using views, reports, and filters help project managers to see high level and task-by-task progress, as well as potential problems.

◆ It also helps in finding and comparing overallocated resources and tasks that exceed their work budgets.

Inserting Stoplight Indicator Icons 1-5

- By setting baselines and interim baselines, project manager can verify the project progress through project statistics.

- Project managers can also design formula based visual indicators to show the status of the project and its performance.

- For example, a project manager can set an option to trigger an indicator in the Gantt Chart view when there is a variance in the project plan with colors red, yellow, and green for schedule, cost, or work statistics.

- Project schedule can be evaluated using visual indicators at several levels such as at the project finish date, task management at regular intervals, and overall schedule performance.

- For example, to set visual indicators for schedule variance of tasks in the project plan, consider the following table that illustrate schedule variance assumptions in a project:
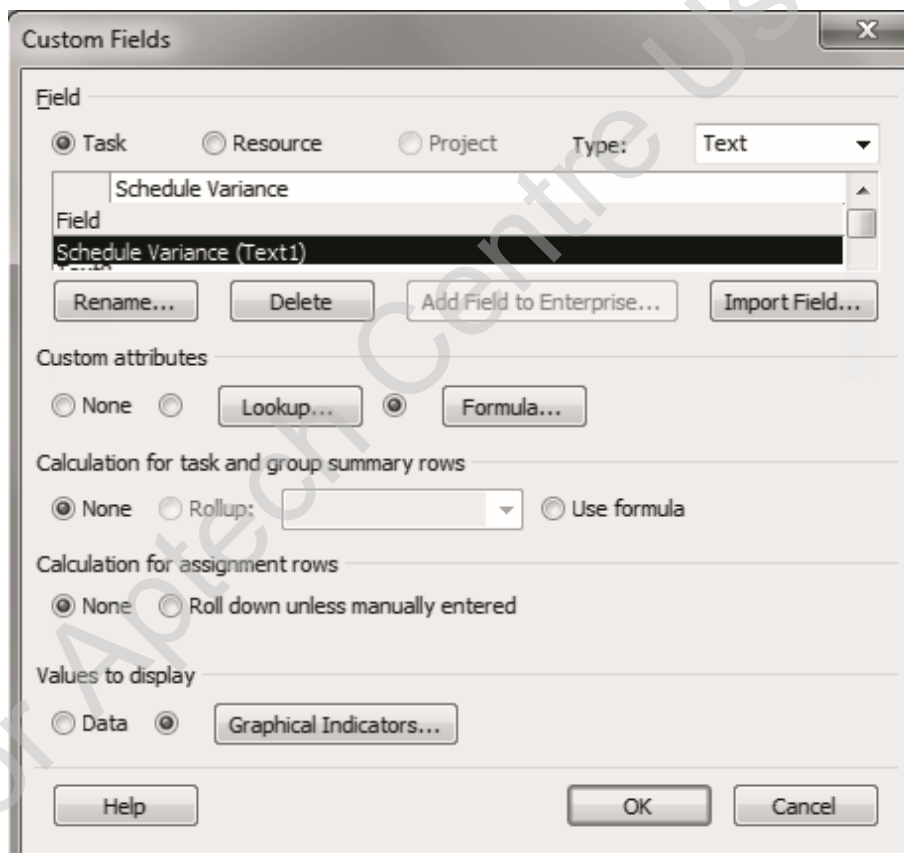
Schedule Variance	Condition
0-10%	Green
10%-20%	Yellow
More than 20% .	Red

◆ Steps to enable stoplight indicators in MS Project are as follows:

Open the project and on the **Format** tab, click **Custom Fields** on the Columns group of the **Ribbon**. This displays **Custom Fields** dialog box as shown in the following figure:
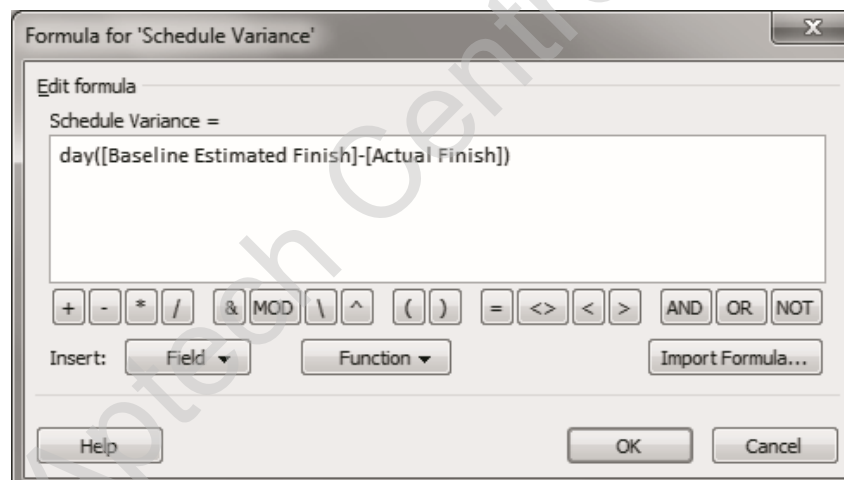
Select the **Text 1** row and click **Rename** button to enter a name such as '**Schedule Variance**' for the custom field.

Select **Formula** option under **Custom attributes** to display **Formula for Schedule Variance** dialog box.

Insert the fields in the formula by selecting the columns from the Field drop-down list and applying mathematical calculations as shown in the following figure:

Formula for 'Schedule Variance'

Edit formula

Schedule Variance =

day([Baseline Estimated Finish]-[Actual Finish])

| + | - | * | / | & | MOD | \ | ^ | (|) | = | <> | < | > | AND | OR | NOT |

Insert: Field ▼   Function ▼   Import Formula...

Help   OK   Cancel

Click **OK** to return to the Custom Fields dialog box.

Click **Graphical Indicators** to open the **Graphical Indicators** dialog box.

Select **Indicator criteria** either for **Nonsummary rows** or **Summary rows** or select **Project summary** radio button to display graphic indicators for the entire project.

Click **Test for Schedule Variance** cell and click the drop-down list to select a condition and enter its value in the **Value(s)** field.

Click **Image** cell to select an image from the drop-down list for the condition and value(s) selected as shown in the following figure:
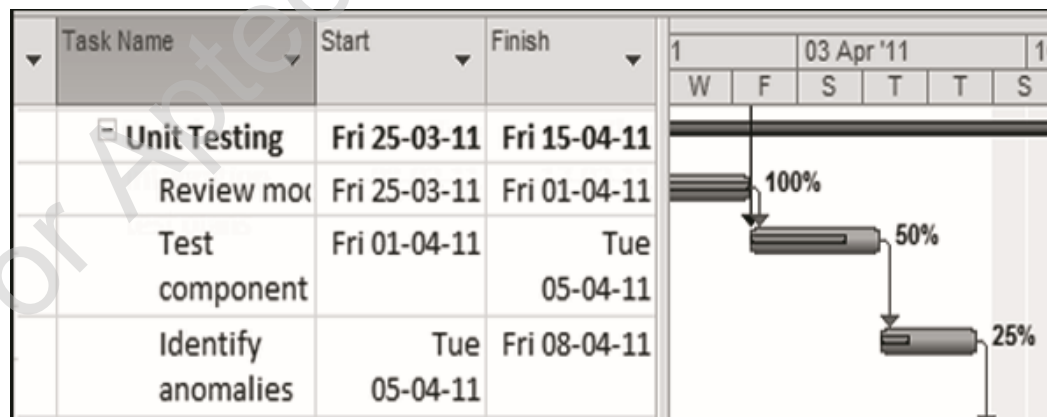
Click **OK** to save the information. This displays indicators on the **Gantt Chart** sheet as shown in the following figure:

Task Name	Start	Finish	Late Start	Late Finish	Schedule Variance
⊟ **Scope**	**Mon 04-01-10**	**Wed 29-12-10**	**Fri 25-12-09**	**Wed 22-12-10**	
Determine project scope - Fixed	Mon 04-01-10	Fri 24-12-10	Fri 25-12-09	Fri 17-12-10	⚪
Secure project	Mon 27-12-10	Mon 27-12-10	Fri 17-12-10	Fri 17-12-10	⚪
Define prelimi	Tue 28-12-10	Tue 28-12-10	Mon 20-12-10	Mon 20-12-10	⚪
Secure core re	Wed 29-12-10	Wed 29-12-10	Tue 21-12-10	Tue 21-12-10	⚪
Scope comple	Wed 29-12-10	Wed 29-12-10	Wed 22-12-10	Wed 22-12-10	⚪

◆ While evaluating project performance, critical path tasks are the key tasks to examine.

◆ Most project managers check tasks each week to see the progress of tasks because any delays on the critical path turns immediately into a late finish date.

◆ For example, if a two week non critical task runs into difficult problems that make it a five weeks task, the delay could place the task on the critical path.

◆ The tasks on the critical path impact the duration of the project.

◆ MS Project 2010 provides easy ways to view the critical path, baseline, and other schedule information as shown in the following figure:

Task Name	Start	Finish		03 Apr '11	10
			W	F	S	T	T	S
⊟ Unit Testing	Fri 25-03-11	Fri 15-04-11			
Review moc	Fri 25-03-11	Fri 01-04-11	100%	
Test component	Fri 01-04-11	Tue 05-04-11	50%	
Identify anomalies	Tue 05-04-11	Fri 08-04-11	25%	

◆ Steps to display critical path tasks are as follows:

1 • Open the project in any task oriented view such as the **Gantt Chart**.

2 • On the **Format** tab, select the **Critical Tasks** check box on the **Bar Styles** tab of the **Ribbon** to show critical tasks in red on the **Gantt Chart** view.

3 • Select the **Late Tasks** check box to display late tasks with black taskbars.

4 • Select the **Slack** check box to display slack of each task on the **Gantt Chart** view.

5 • Select the **Baseline** down arrow and choose a baseline.

6 • Select the **Slippage** down arrow and choose a baseline to draw narrow black lines from the baseline start dates to the current scheduled start date.

Creating Critical Tasks List

- The Critical Tasks text based report works well as a hard copy checklist of critical tasks.

- The columns in critical task checklist include Duration, Start, Finish, Predecessors, and Resources.

- Steps to create a critical tasks report are as follows:

1 • Open project in **Gantt Chart** view and under **Project** tab, select **Reports** and double-click Overview button.

2 • Click **Critical Tasks** on the **Overview Reports** dialog box and click **Select**. This generates the Critical Task Report and readies it for printing.

3 • Click **Print** under the **Print** options of the **File** tab. The report is printed as shown in the following figure:

Critical Tasks as of Fri 16-12-11
Software Development

Indicators	Task Mode	Task Name	Duration
	Auto Schedu	Scope	258 days
	Auto Schedu	Determine project scope - Fixed Duration	8505 hrs

ID	Successor Name	Type	Lag
3	Secure project sponsorship	FS	0 days

| | Auto Schedu | Secure project sponsorship | 1 day |

ID	Successor Name	Type	Lag
4	Define preliminary resources	FS	0 days

| | Auto Schedu | Define preliminary resources | 1 day |

ID	Successor Name	Type	Lag
5	Secure core resources	FS	0 days

| | Auto Schedu | Secure core resources | 1 day |

ID	Successor Name	Type	Lag
6	Scope complete	FS	0 days

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Checking Delayed Tasks 1-2

- MS Project 2010 provides several filters and reports that highlight delayed tasks.

- Once the project plan is filled with actual values, it is time to find out any delay in the remaining tasks to start.

- The most common instance with delayed starts is not entering actual values in the project plan.

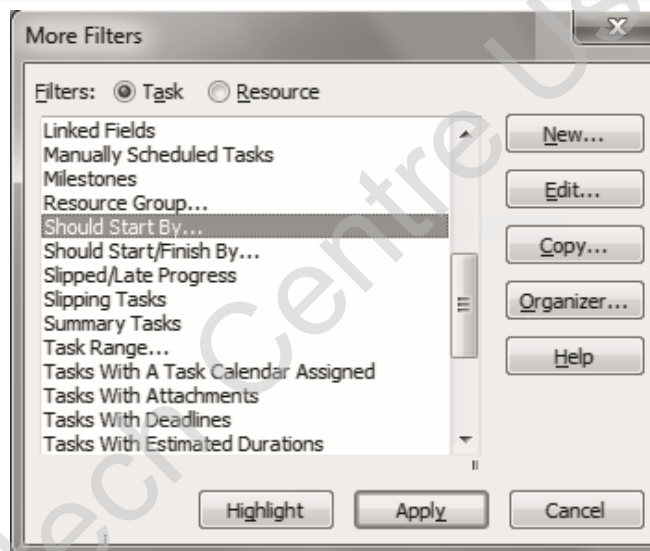- The Should Start By filter lists tasks that should have started by the most recent status date.

◆ Steps to create filter to check delayed tasks are as follows:

Open the project and on the **View** tab, click **More Filters** under **Filter** drop-down on the **Data** tab of the **Ribbon** to display **More Filters** dialog box as shown in the following figure:

Select **Should Start By** in the list and click **Apply** to display the **Should Start By** dialog box.

Select **Start by** date from the date calendar and click **OK**. This shows changes in the view with only the tasks that should have started but have not started as of Start by date.

- Earned value analysis requires a baseline in the project to compare to the current values.

- If no project baseline is set, all the earned value fields display zero.

- To measure schedule and cost status, MS Project uses several calculations.

- Steps to create earned value overtime visual report are as follows:

Open the project and on the **Project** tab, click **Visual Reports** on the **Reports** group. This displays **Visual Reports** - **Create Report** dialog box as shown in the following figure:
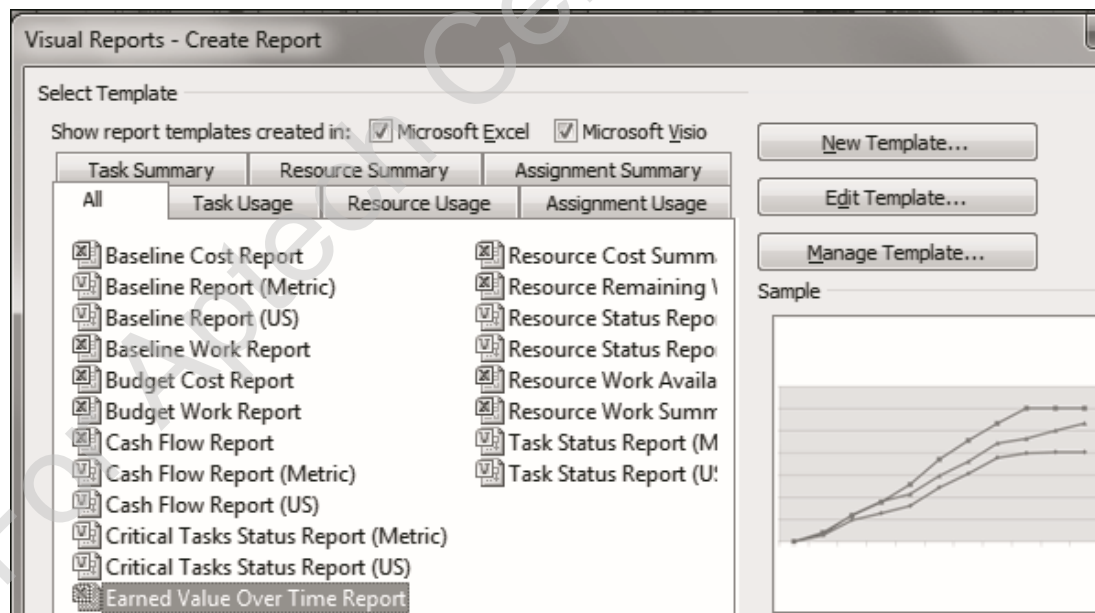
Select **Earned Value Over Time Report** under **All** templates tab and click **View** to generate the graph in MS Excel showing lines of three measures Actual cost greater than earned value means over budget, earned value greater than planned value means ahead of schedule and planned value as shown in the following figure:
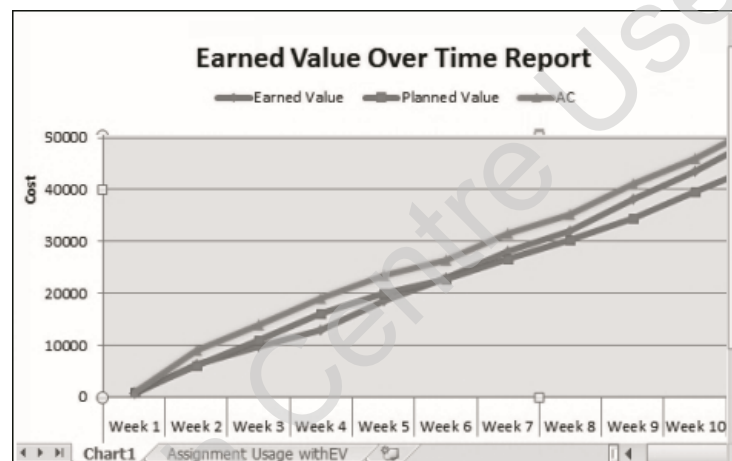
◆ Project performance with respect to schedule and cost can be evaluated by simple calculations as follows:

Schedule performance is measured considering planned value and earned value.

Cost performance is the difference between earned value and actual cost.

◆ Additional earned value measures are calculated as follows:

> Schedule Performance Index (SPI) is a measure to find the health of a project in terms of the project schedule.

> Cost Performance Index (CPI) is a measure to find the health of a project in terms of the project budget.

> Budget At Completion (BAC) is the sum of the budget for each phase of the project.

> Estimate At Completion (EAC) is an estimate of how much a task will cost when it is completed, based on the performance so far.

> Variance At Completion (VAC) is the estimated variance when the task is done.

◆ EAC is calculated by the following formula:

EAC = ACWP + ((BAC - BCWP) / CPI)

where, EAC has two components:

- ❖ The first component is the actual cost (ACWP) of the task as on date.
- ❖ The second component (BAC – BCWP) / CPI, is a forecast based on the cost performance.

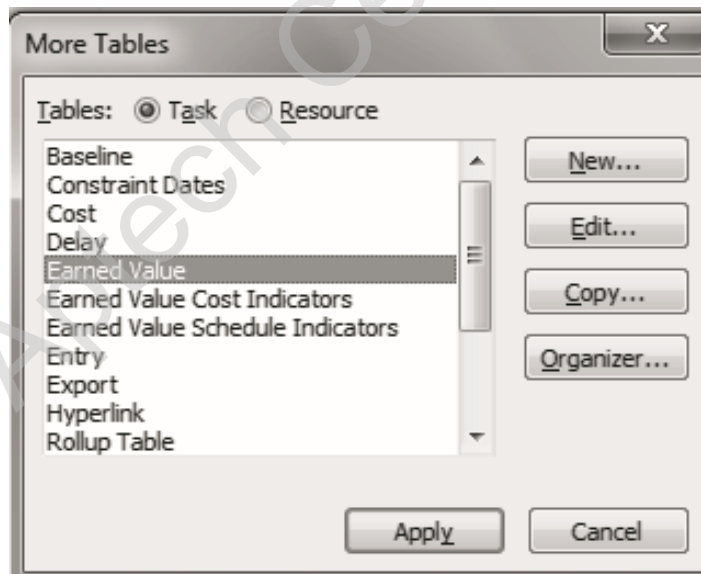◆ Steps to create Earned Value table are as follows:

1
• Open the project in any task oriented view such as **Task Usage** view.

2
• On the **View** tab select **Tables** and click **More tables** to open **More Tables** dialog box.

3
• Select **Earned Value** in the list as shown in the following figure:

4

• Click **Apply** to display **Earned Value** table in the **Task Usage** sheet as shown in the following figure:

Task Name	PV	EV	AC (ACWP)	SV	CV	EAC	BAC	VAC
⊟ **Deployment**	$0.00	$0.00	$0.00	$0.00	$0.00	$5,900.00	$0.00	($5,900.00)
⊟ Determine final deployment	$0.00	$0.00	$0.00	$0.00	$0.00	$200.00	$500.00	$300.00

◆ The Earned Value table includes all the basic earned value fields such as planned value (BCWS), earned value (BCWP), actual cost (ACWP), SV, CV, EAC, BAC, and VAC.

Summary

- MS Project 2010 provides several ways to monitor the performance of a project against the project plan.

- Project schedule can be evaluated using visual indicators at several levels such as at the project finish date, task management at regular intervals and overall schedule performance.

- Earned value analysis requires a project baseline to compare to the current status and if no project baseline is set, all the earned value field display zero.

- The critical tasks text based report works well as a hard copy checklist of critical tasks.

- MS Project 2010 provides several ways to analyze project performance through the critical path, baseline, and other schedule information.

- Delayed tasks are filtered by the Should Start By filter in MS Project 2010.

- Earned Value graphs help in measuring performance by comparing planned value, earned value, and actual costs.