



SPM ASSIGNMENT-2

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Q1. How earned value analysis after completion of project is done?

Ans: - Earned Value Analysis (EVA) is an industry standard method of measuring a project's progress at any given point in time, forecasting its completion date and final cost, and analysing variances in the schedule and budget as the project proceeds. EVA is a snapshot in time, which can be used as a management tool as an early warning system to detect deficient or endangered progress. In either case, it provides a basis for course correction. It answers two key questions:

- At the end of the project, is it likely that the cost will be less than, equal to or greater than the original estimate?
- Will the project likely be completed on time?

Calculating Earned Value:

Earned Value Management measures progress against a baseline. It involves calculating three key values for each activity in the WBS:

1. **The Planned Value (PV)**, (formerly known as the *budgeted cost of work scheduled* or *BCWS*)—that portion of the approved cost estimate planned to be spent on the given activity during a given period.
2. **The Actual Cost (AC)**, (formerly known as the *actual cost of work performed* or *ACWP*)—the total of the costs incurred in accomplishing work on the activity in a given period. This Actual Cost must correspond to whatever was budgeted for the Planned Value and the Earned Value (e.g. all labour, material, equipment, and indirect costs).
3. **The Earned Value (EV)**, (formerly known as the *budget cost of work performed* or *BCWP*)—the value of the work actually completed.

These three values are combined to determine *at that point in time* whether or not work is being accomplished as planned. The most commonly used measures are the cost variance:

$$\text{Cost Variance (CV)} = \text{EV} - \text{AC}$$

and the schedule variance:

$$\text{Schedule Variance (SV)} = \text{EV} - \text{PV}$$

These two values can be converted to efficiency indicators to reflect the cost and schedule performance of the project. The most commonly used cost-efficiency indicator is the cost performance index (CPI). It is calculated thus:

$$\text{CPI} = \text{EV} / \text{AC}$$

The sum of all individual EV budgets divided by the sum of all individual AC's is known as the cumulative CPI, and is generally used to forecast the cost to complete a project.

The schedule performance index (SPI), calculated thus:

$$\text{SPI} = \text{EV} / \text{PV}$$

is often used with the CPI to forecast overall project completion estimates.

A negative schedule variance (SV) calculated at a given point in time means the project is behind schedule, while a negative cost variance (CV) means the project is over budget.

To do a basic manual calculation using the earned value method, you would perform the following actions. This must be done individually for every task.

1. Estimate the expected percent complete of each task. For example, if the start and end dates of the task are June 1 and June 10, respectively, and it's June 3 today, the expected percent complete is 30%.
2. Convert this to a monetary value by multiplying by the task budget. This is called the Planned Value (PV), also known as the Budgeted Cost of Work Scheduled (BCWS).
3. Estimate the *actual* percent complete of each task based on the number of hours of work completed, or some other relevant metric.
4. Convert this to a monetary value by multiplying by the task budget. This is called the Earned Value (EV), also known as the Budgeted Cost of Work Performed (BCWP).
5. Calculate the ***Schedule Variance***. $SV = EV - PV$ (aka $BCWP - BCWS$).
6. Determine the actual cost of the task to date (AC) and then calculate the ***Cost Variance***. $CV = EV - AC$ (or $BCWP - ACWP$).
7. Graph the results if you want to see the trend.

Q2. What options do we have when defining the structure of a software team? Explain in detail.

Ans: **Deciding the one kind of team structures:**

1. **Problem-Solving Teams:** Such teams of 5-10 members are usually the part of one department. Their main goal is to meet one a week to discuss the problems arising and find solutions. They share experience and suggest own ways and methods of improving the workflow, reduce expenses and increase the revenue. In other words, they are advisors whose task is to recommend solutions and present them to the higher management and executives. They advise but don't implement.
2. **Self-managed team:** Unlike problem-solving teams, self-managed teams don't recommend solutions, they implement. But not only they just do the work given, they also take the responsibility for the outcomes. They are autonomous structures that can make operational decisions as well as perform the planned work. Being a part of such a team, each member gets enough experience and leadership skills to manage other teams later.
3. **Functional Development Teams:** Each functional team performs a specific role in a company. For example, HR team is working on employee management. The work of a functional team is usually coordinated by a project manager. Since the manager is informed about the strength of each team member, he or she knows exactly how to organize them to get the best results.
4. **Virtual Teams:** As you might guess from its name, virtual team is the one, where members are physically located in different places and contact online only. Thanks to the Internet, it's

possible to easily collaborate online using chats, video-calls, emails and other tools. Even if developers live in different countries, they can discuss any issues in real-time via Skype, Slack or any other software. Virtual teams are also easy to manage using task-management tools and time-trackers. Moreover, it's becoming trendy to work remotely and be a so-called digital-nomad due to the flexibility.

- 5. Matrix Structure:** Matrix teams are working under the control of two leaders: project manager and upper manager. This team structure has both advantages and disadvantages. The good part is that the team has a strict plan and cannot stray from it. This structure is good when you have a large team of effective members who can deal with complex tasks. Nevertheless, miscommunication between the leader might lead to confusion and deadlines breaks. In other words, the success of matrix teams greatly depends on the team leaders and their management skills.

Q3. A formal technical review is effective only if everyone has prepared in advance. How do you recognize a review participant who has not prepared? What do you do if you're the review leader?

Ans: - Formal Technical review is a software quality assurance activity performed by software engineer.

- **Objectives of FTR:**

1. FTR is useful to uncover error in logic, function and implementation for any representation of the software.
2. The purpose of FTR is to ensure that software meets specified requirements.
3. It is also ensuring that software is represented according to predefined standards.
4. It helps to review the uniformity in software development process.
5. It makes the project more manageable.

All the above objectives will only be successfully possible if everyone has prepared in advance.

To recognise a participant who has not prepared is quite easy by checking the following points:

- Does not have any idea of what is currently going on with the project.
- No knowledge of what has actually been done in project.
- Not giving accurate suggestions or ideas when asked for.
- Through Body language.
- No coordination with team mates.
- Feels quite distracted.

Q4. Quality and reliability are related concepts but are fundamentally different in a number of ways. Discuss the differences.

Ans: -

	QUALITY	RELIABILITY
1.	Quality is today.	Reliability is the future.
2.	It is not possible to improve the performance of a system by using low quality components.	It is certainly possible to improve the performance of a system by using components with low reliability.
3.	Quality can be controlled and measured to the accuracy.	Reliability is just a probability. We can ensure reliability by controlling the quality.
4.	It is everything until put into operation(i.e. t=0 hrs).	Reliability is everything that happens after t=0 hrs.