

INGENIVA
PROJECT CONTROLS CONSULTANTS

Earned Value Management

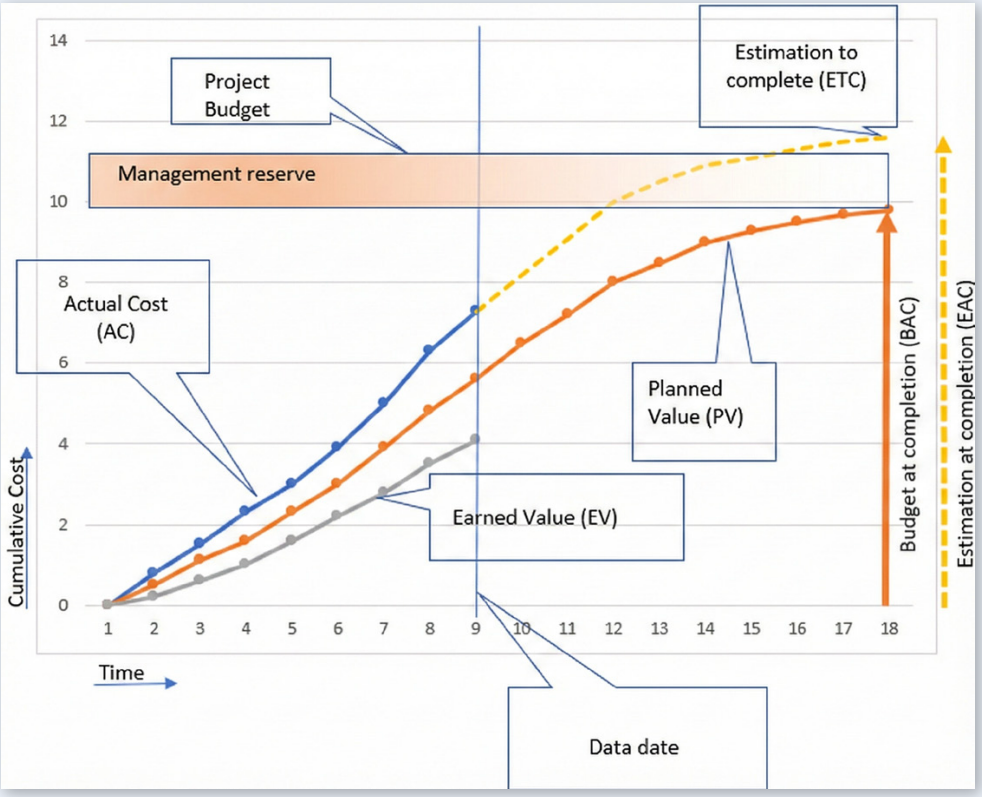
Why is it so important to use in projects?

Earned Value Management (EVM) is an integrated project management technique that binds scope, schedule, and cost aspects of a project. It is important to use in projects for several reasons:

1. **Performance measurement:** EVM provides a standardized, objective measure of performance by comparing the Earned Value (EV) against the Planned Value (PV).
2. **Early warning system:** EVM functions as a trend analysis tool, identifying trend deterioration early, often before variance thresholds are breached.
3. **Cost and schedule control:** EVM helps project managers to track and control project costs and schedule more effectively. It provides a clear understanding on the project's cost performance and schedule performance, making it easier to manage resources and make informed decisions.
4. **Enhanced decision-making:** By providing valuable insights into the project's status, EVM allows project managers to make better-informed decisions about project scope, budget, and schedule adjustments. This can lead to more efficient use of resources and improved project outcomes.
5. **Improved communication:** EVM establishes a standardized, single source of truth for performance, eliminating optimism bias in status reporting.
6. **Accountability:** EVM helps to establish a culture of accountability within the project team, as it objectively measures performance against the project baseline. This encourages team members to take responsibility for their tasks and contribute to the overall success of the project.
7. **Better forecasting:** EVM allows project managers to forecast the project's final cost and completion date more accurately. By analysing trends and performance data, project managers can anticipate potential issues and take proactive steps to mitigate them.

In summary, Earned Value Management is crucial in projects as it provides a comprehensive framework for monitoring and controlling project performance. It allows project managers to identify and address issues early, make informed decisions, and ultimately deliver successful projects.

The Schedule Performance Index (SPI) and Cost Performance Index (CPI) are key metrics in Earned Value Management (EVM) that help project managers assess project performance concerning the schedule and costs. Here's a more detailed explanation of each:



1. **Schedule Performance Index (SPI):** SPI is a measure of schedule efficiency, showing how effectively the project is progressing compared to the planned schedule. It is calculated by dividing the Earned Value (EV) by the Planned Value (PV):

SPI = EV / PV

If the SPI is:
- Greater than 1: The project is ahead of schedule.
- Equal to 1: The project is on schedule.
- Less than 1: The project is behind schedule.

SPI allows project managers to understand how well the project is performing in terms of its schedule and provides insights into whether the project is likely to be completed on time.

2. **Cost Performance Index (CPI):** CPI is a measure of cost efficiency, illustrating how effectively the project is using its resources compared to the planned budget. It is calculated by dividing the Earned Value (EV) by the Actual Cost (AC):

CPI = EV / AC

If the CPI is:
- Greater than 1: The project is under budget (cost-efficient).
- Equal to 1: The project is on budget.
- Less than 1: The project is over budget (cost-inefficient).

CPI helps project managers understand the cost performance of the project and provides insights into whether the project is likely to be completed within the allocated budget.

Both SPI and CPI are essential components of EVM as they offer valuable information about the project's performance. By monitoring these indices, project managers can identify potential issues, take corrective actions, and make informed decisions to ensure the project's success. Additionally, SPI and CPI can be combined to create an integrated project performance metric called the Critical Ratio (CR), which helps provide a more comprehensive understanding of the project's overall performance:

CR = SPI x CPI

This combined metric allows project managers to evaluate both schedule and cost performance simultaneously, which is particularly useful for complex projects with multiple constraints and dependencies.

INGENIVA
PROJECT CONTROLS CONSULTANTS

PV = Planned Value: the authorized budget assigned to scheduled work.

EV = Earned Value: The measure of work performed is expressed in terms of the budget authorized for the work.

AC = Actual Cost: The realized cost incurred for the work performed on an activity during a specific period.

BAC = Budget at Completion: The sum of all budgets established for the work to be performed.

CV = Cost Variance: The amount of budget deficit or surplus at a given point in time, expressed as a difference between the earned value and the actual cost.

SV = Schedule Variance: The amount by which the project is ahead or behind the planned delivery date at a given point in time, expressed as the difference between the earned and the planned. SV (Schedule Variance) = EV-PV.

VAC = Variance at Completion: A projection of the amount of budget deficit or surplus, expressed as the difference between the budget at completion and the estimate at completion. VAC = BAC-EAC

EAC = Estimate at Completion: The expected total cost of completing all work is expressed as the sum of the actual cost to date and the estimate to complete.

ETC = Estimate to Complete: The expected cost to finish all the remaining project work.

TCPI (in BAC or EAC) = To complete the performance index: A measure of the cost performance that must be achieved with the remaining resources in order to meet a specified management goal, expressed as the ratio of the cost to finish the outstanding work to the budget available If it becomes obvious that the BAC is no longer viable, the project manager should consider the forecasted EAC. Once approved, the EAC may replace the BAC in the TCPI calculation.

Implementing Earned Value Management (EVM) on EPC projects

Ingeniva consultants can provide expert assistance in implementing Earned Value Management (EVM) on EPC projects. EPC projects involve designing, procuring materials, and constructing facilities, making them complex and often subject to cost and schedule overruns. Implementing EVM in such projects can help improve their management and overall success.

Here's how Ingeniva consultants can help with the implementation of EVM on EPC projects:

INGENIVA
PROJECT CONTROLS CONSULTANTS



1. **Training:** Ingeniva consultants can provide training to your project team, enabling them to understand the concepts, techniques, and benefits of EVM. This ensures that all team members are equipped with the knowledge required to effectively use EVM in project management.



2. **EVM system design and setup:** Ingeniva consultants can help design and set up an EVM system tailored to your project's specific needs. This includes identifying the appropriate work breakdown structure (WBS), establishing a cost and schedule baseline, and defining the necessary performance measurement metrics.



3. **Integration:** Ingeniva consultants can integrate EVM with your existing project management, financial, and reporting systems, ensuring a seamless flow of data and enabling efficient monitoring and control of project performance.



4. **EVM process implementation:** Ingeniva consultants can guide your team in implementing the EVM process, including establishing performance measurement baselines, tracking progress, calculating performance indices, and forecasting project outcomes.



5. **Continuous improvement and support:** Ingeniva consultants can provide continous support to your project team, addressing any challenges or issues that may arise during the EVM implementation process. They can also help identify areas for improvement and ensure that your EVM system remains effective and efficient throughout the project lifecycle.



6. **Reporting and communication:** Ingeniva consultants can assist in developing clear and concise EVM reports for project stakeholders, ensuring that everyone is well-informed about the project's performance and progress.

By leveraging Ingeniva consultants' expertise and support, your organization can successfully implement EVM on EPC projects and enjoy the many benefits that this powerful project management technique offers, such as improved cost and schedule control, better decision-making, and increased project success rates.

If you are planning an upcoming project, we are here to provide the necessary expertise. Contact our team at +32 3 651 23 45 or info@ingeniva.eu to discuss the specifics of your project.