The Agile EVM
(A-EVM) Approach

CGI

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The Agile Earned Value Management (A-EVM) approach to project management provides effective scope variance analysis, comprehensive performance reporting and predictability that aid in keeping the program on time and on budget.

However, combining Agile with EVM can be challenging, as the traditional EVM approach is more suited to Waterfall methodologies, which involve a linear progression through predefined phases. In Agile, projects are broken down into smaller chunks, called "iterations," and progress is measured using different metrics.

A-EVM is an adapted implementation of the traditional EVM method. In A-EVM, we use the Agile framework artifacts as inputs, use traditional EVM calculations and express Value Delivery in traditional EVM metrics. CGI specializes in translating traditional Project Management Institute (PMI) Earned Value Management concepts to fit an Agile Delivery Framework and partnered to implement this approach with federal agencies, including the Centers for Medicare and Medicaid Services and the U.S. Army.

Agile EVM Standards

In the publication ["Agile and Earned Value Management: A Program Manager's Desk Guide,"](#) the Department of Defense has encouraged the following characteristics to mitigate risk and keep cost low in acquisitions:

1. **Flexibility:** Tailoring program strategies and oversight

2. **Responsiveness:** Rapidly integrating advanced technologies

3. **Innovation:** Adapting practices that reduce cost and cycle time

4. **Discipline:** Using program baseline parameters as control objectives

5. **Effective Management:** Decentralizing to the extent practicable
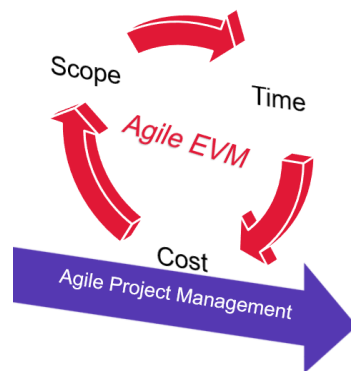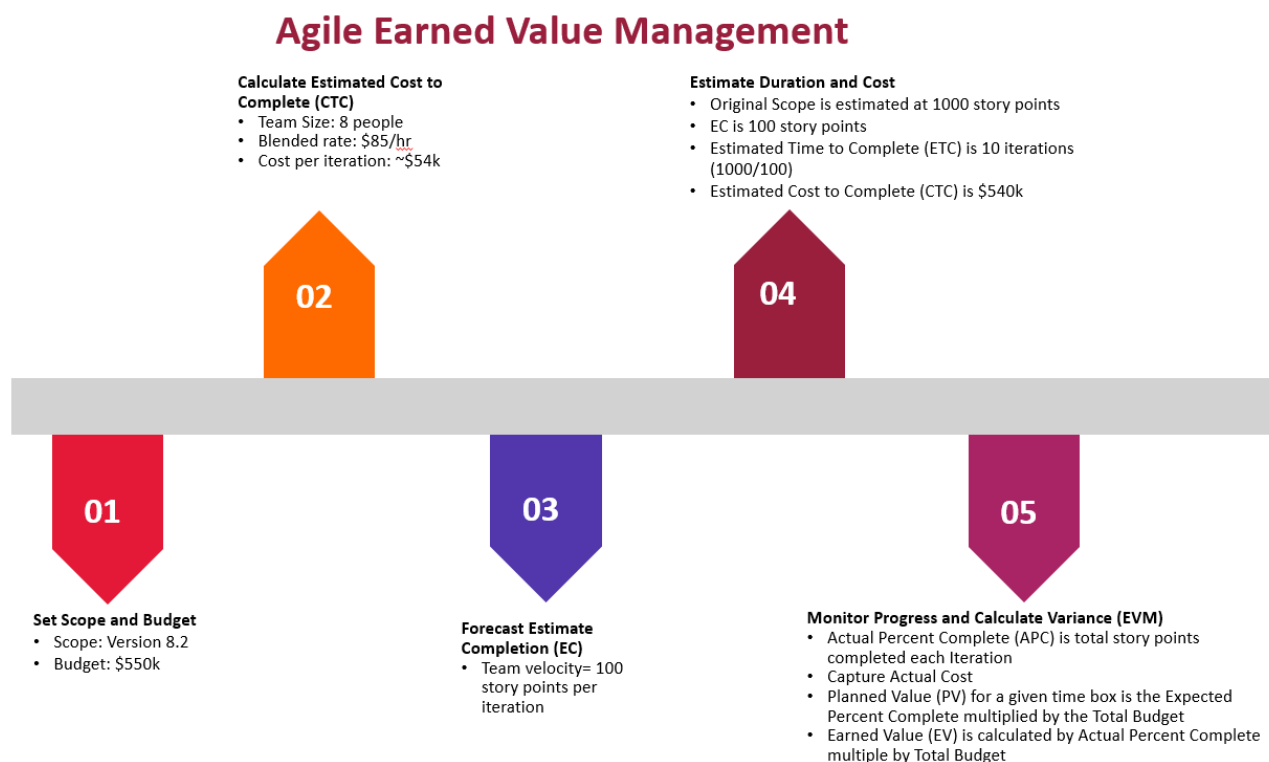

Common EVM terms and their Agile metrics as inputs

- **Planned Value (PV)** for a given time box is the **Expected Percent Complete** multiplied by the **Total Budget**

- **Earned Value (EV)** is calculated by multiplying **Actual Percent** Complete by the **Total Budget**

- **Actual Cost (AC)** is the total cost for the work so far at a specific date within the time-box, ideally calculated at the end of a sprint or an iteration.

- **Estimated Completion (EC)** is the iteration velocity of the Agile team divided by the total scope

- **Estimated Cost to Complete (CTC)** equates to the cost of one iteration (based on team capacity and labor category/Blended Rate) multiplied by the number of total iterations

- **Expected Percent Complete (EPC)** equates to the total estimated scope divided by the number of iterations or time-box

- **Actual Percent Complete (APC)** equates to the total number of story points completed within each epic divided by the total number of story points planned

Utilizing the Agile EVM (A-EVM) Approach

The Project Work Breakdown Structure (WBS) is used as the basic building block for the planning of all authorized work and is one of the key Inputs for traditional EVM. It ensures the Statement of Work or Statement of Objectives (SOW or SOO) is entirely covered by integrating the schedule, technical scope and cost information. Conversely, the EVM approach translates the Agile Delivery artifacts Program or Product Backlogs, and Program Increment or Iteration schedule and Team Capacity cost estimates to represent the WBS.

A-EVM leverages the Iteration or Program Increment time-boxes, in place of the traditional project management release used by the Project Management Institute's (PMI) Project Management Body of Knowledge (PMBOK), to provide boundaries around a set of epics or features, which is considered the scope for that time-box. Capacity is calculated for the total project team based on the team's composition, historical velocity (or industry standard velocity for new teams. We use this predictability data and apply the cost factor based on the team composition labor categories (LCATs) or the blended rate of the Agile project team. Using the combination of the time-box, the team composition and velocity, and the cost data, we can then estimate the duration and cost of the project. This approach is designed specifically to provide management with the necessary tools and data to analyze project cost, schedule and performance in real time throughout the project.

Agile Earned Value Management

Calculate Estimated Cost to Complete (CTC)
- Team Size: 8 people
- Blended rate: $85/hr
- Cost per iteration: ~$54k

Estimate Duration and Cost
- Original Scope is estimated at 1000 story points
- EC is 100 story points
- Estimated Time to Complete (ETC) is 10 iterations (1000/100)
- Estimated Cost to Complete (CTC) is $540k

02

04

01

03

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Set Scope and Budget
- Scope: Version 8.2
- Budget: $550k

Forecast Estimate Completion (EC)
- Team velocity= 100 story points per iteration

Monitor Progress and Calculate Variance (EVM)
- Actual Percent Complete (APC) is total story points completed each Iteration
- Capture Actual Cost
- Planned Value (PV) for a given time box is the Expected Percent Complete multiplied by the Total Budget
- Earned Value (EV) is calculated by Actual Percent Complete multiple by Total Budget

It is also in compliance with the Federal Acquisition Regulation (FAR) 52.234-4 on Earned Value Management System.

For each Iteration or Program Increment, CGI utilizes Agile metrics to calculate the A-EVM reports and determine the real-time performance of the project. As the project backlog continues to be refined, we expect estimates will expand and contract over time as priorities shift. However, as priorities change, the team capacity remains constant and they continue to deliver based on their historical velocity. This allows the Agile Teams to quickly pivot and adjust to meet the agency's needs and priorities.

Agile EVM in Practice

The following is an example of how we translate some traditional Basic PMI EVM Terms and apply them to an Agile Framework:

- Using three data points to establish the initial baseline:
  — The number of planned iterations in a release **(used to determine Estimated Time to Complete (ETC))**
  — The total number of planned story points in a release **(used to determine Estimated Cost to Complete (CTC))**
  — The planned budget for the release **(Total Budget/TB)**
- Use the Agile metrics below for **EV** calculation **(APC, EPC, EC):**
  — The total story points completed at each iteration **(Actual Percent Complete (APC))**
  — The number of Iterations completed **(used to calculate EC and EPC)**
  — The total **Actual Cost (AC)**

Earned Value (EV) is calculated by multiplying Actual Percent Complete by the Total Budget

Benefits of Agile EVM

While there may be some challenges, the benefits of using A-EVM — such as increased transparency, simplifying project management, and increased accountability — make it well worth the effort.

Continuous planning — Agile EVM helps project teams plan upfront. Proper planning positions your team up for success. Teams revisit and revise the plan at the borders of each major time box of Program Increment. Adding A-EVM to the process further increases your odds of coming out on top.

Increased transparency — With Agile EVM, at any given point, you clearly see where your project stands versus where you planned to be at that point and how much work your team has actually completed versus what you had projected to complete.

Simplify project management — Agile EVM simplifies tracking data and metrics for a project. As a result, stakeholders will be able to track, monitor and forecast the project's release and/ or completion dates, costs and budgets, thus reducing risk of schedule or cost overrun.

Increase accountability — Agile EVM help to increase the accountability at all levels because there is transparency at all levels. It provides a transparent backlog, a defined size of scope and level of effort. Moreover, A-EVM enables management and control of scope creep. The team capacity is set and progress is captured each iteration.

Agile EVM in the federal government

Agile EVM builds on traditional EVM, using Agile framework artifacts as inputs and traditional EVM calculations. Adapting a project to A-EVM requires more of a change in mindset than in practice. Federal agencies prefer Agile delivery because they value incremental delivery and the collaboration with customers and users during development. Success in Agile requires constant vigilance. The data-driven approach to A-EVM enables predictability, transparency and reduces the risks of cost overrun. CGI's Agile Center of Excellence can work with government agencies to realize these A-EVM benefits and save

taxpayer dollars.