

The Value of Agile Earned Value Management

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Someone recently posed a question to me on the benefits of using earned value management on agile projects. “What does it do for you that the burn down chart doesn’t do?” was basically how it was phrased in the e-mail.

It’s a good question. I meant to answer him, really I did. I got all fired up about it, too. Then the phone rang, my e-mail chimed and my calendar beeped reminding me that I was supposed to be somewhere else. There’s only so much multi-tasking that I can do, so I let it go.

If I had answered his e-mail (and I wish I had), I would have written about AgileEVM bringing statistically proven cost predictions in the form of estimates at completion and the ability to measure and track cost efficiency trends across multiple iterations in Scrum projects. I would have also brought up the benefit of being able to run “what if” scenarios to balance tradeoffs across changes to scope, schedule and budget and the value that brings to product owners in making good decisions.

Another benefit that AgileEVM brings is at the portfolio and program levels. I would have also written about using the Planned Value and Earned Value metrics to express cumulative information across multiple teams at those levels. Instead of replying, I’d like to discuss all of these benefits in this article, and share with a larger audience.

Before I get into that discussion, though, some definition of terms would be useful here. AgileEVM is an adapted implementation of Earned Value Management (EVM) that uses the Scrum framework artifacts as inputs, uses traditional EVM calculations and is expressed in traditional EVM metrics, such as the Cost Performance Index (CPI) and Estimate at Complete (EAC). Other definitions include:

- **Agile methods:** The collection of lightweight software development methods that have been developed based on the Agile Manifesto. Examples are Extreme Programming (XP), Scrum and Feature Driven Development.
- **Burn charts:** Graphical way of conveying progress by plotting completed units against time. The slope of the line predicts work completed against an expected date. (*)
- **Burn down charts:** Graphical representation of progress, often across an iteration. Burn down charts can be used to show the amount of work remaining (in hours) on the Y axis, and time (number of days remaining in the iteration) on the X axis. The slope of the line predicts the scope completed by an expected date. (*)
- **Burn up charts:** Graphical representation of progress, often across a release. Burn up charts can be used to chart the number of story points completed in each iteration (Y axis) against the number of releases (X axis.) The slope of the line predicts the scope completed by an expected date. (*)
- **Product owner:** The person responsible for the success of the product in the market and therefore entitled to prioritize the needed features of the product.
- **Delivery Team:** The group of people responsible for the delivery of the artifacts that together make up the product. They are responsible for delivering the right quality and can therefore determine and estimate the tasks involved in the delivery of the product features.
- **Product backlog:** A prioritized list of features that make up the product as desired by the product owner.
- **Iteration or Sprint:** A one- to four-week period in which the delivery team produces working (accepted) product features.
- **Story:** A description of a product component that the product owner and customer recognize and value. Stories express functional requirements.
- **Story points:** A unit-less measure of a story that is influenced by how hard it is and how much of it there is. Story points measure the relative size of one story compared to another.

(*) See [Alistair Cockburn](#) for a discussion of these.

Okay, on to our discussion on the benefits that AgileEVM brings to Scrum projects...

I like big visible burn charts, both at the iteration level and the release (across multiple iterations) level. Burn charts give great intuitive information on scope and schedule based on forecast of team productivity. They are quick and easy to understand, generally. You look at the slope of the plotted line on an iteration burn chart and can tell if this iteration is likely to deliver all of the planned scope by the end of the iteration.

In the case of a release burn chart, you can predict when the planned release scope can be expected to be delivered. That’s really useful information! I encourage teams that I’m working with to keep their burn charts updated and posted prominently on the wall. Nothing helps focus a team on meeting their goals like that chart posted on the wall, for all to see. Personally, I like to see big visible charts on the wall with the iteration tasks in a burn down chart, and burn up chart with the progress of the release tracked in story points.

However, burn charts typically only tell the part of the story related to schedule, and to some extent scope. What a burn up chart doesn't intuitively tell you is how much the expected cost of the release at complete is likely to be, or how effectively you are spending your dollars. It's difficult to see trends in cost efficiencies with burn charts. This is important information in supporting decisions that a product owner must make to support his or her expected return on investment for the product. A burn up chart can't really predict the impact of changes to planned scope or schedule on cost either. Selected metrics from EVM, however, can provide this information.

Using story points to measure our velocity, we can quickly and easily get the statistically proven accuracy of the estimate at complete (EAC) metric, and get an index--the Cost Performance Index (CPI)--that measures how efficiently we are spending our dollars as compared to how we planned to spend those dollars. By tracking and displaying the trend of the CPI across iterations, delivery teams and businesses can see some of the impacts of changes on their cost efficiencies as they inspect and adapt their processes and remove impediments. This is a great way to see if these changes are improving performance over time, and by how much.

Change is expected on agile projects. Sometimes, a lot of change! In the heat of fast-paced development, I have seen product owners and teams lose sight of the impact of changes to scope on the cost and schedule of a release. When changes to scope are envisioned, we can run "what if" scenarios with the EVM analysis to balance the tradeoffs of these changes. This information helps the product owner make better decisions to support the product's expected return on investment.

For example, if the product owner is considering adding three stories, each worth 10 story points to a release, what impact will that have on the current release plan? If this scope is added, what else needs to change--and by how much--to realistically meet the planned cost and schedule? In another scenario, if a product owner decides that the planned release budget needs to be slashed by X percent, how many story points need to be removed from the release plan to meet that new target?

In addition, AgileEVM provides a quick and easy way to measure cumulative results across multiple teams at the portfolio level. Story points, by their subjective nature, are unique to individual teams. One team's story point value cannot be compared to another team's story point value. How do you compare a value that is unit-less? By using the Earned Value and Planned Value metrics from multiple teams, you can project the cumulative totals across multiple teams in a portfolio. This in turn generates the prediction of EAC at the portfolio level. Because the AgileEVM metrics are expressed in exactly the same way as traditional EVM metrics, hybrid programs that involve both Scrum and traditional plan-driven methodologies can reap the same benefit of predicting estimates of cost at complete at the program level.

This is what I would have discussed, Alistair, in that e-mail if I hadn't gotten completely sidetracked with the beeping, chiming and other ringing things in my life. I hope it helps...

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