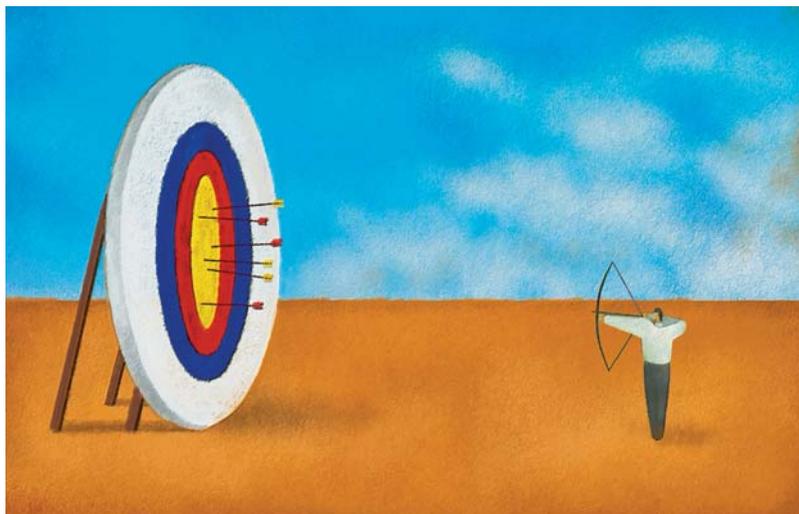


Using Earned-Value Analysis to Better Manage Projects

Heather Hayes

EVA allows project managers to refer to tangible numbers, not just a gut feeling, to determine whether the project is advancing on time and within budget.



From the outset, all managers expect their projects to come in on schedule and within budget. Unfortunately, according to the Standish Group, only one in five (or 20%) of all major projects actually meets one or both of those goals. In the pharmaceutical industry, this kind of failure can have enormous consequences such as development resources wasted by not eliminating a drug candidate soon enough and foregone profits as a result of a delayed launch.

At least 12 factors can derail projects, says John Gioia, president of Robbins-Gioia (Alexandria, VA), a leading project management firm. These include the underestimation of program complexity, requirement creep, a lack of leadership commitment and sponsorship, and the absence of measurable controls. Thanks to the use of a project management tool known as earned-value analysis (EVA), many of these problematic factors can be caught and corrected before failure becomes inevitable.

EVA is the analysis of a project's actual performance compared with a detailed

plan and is performed at various points in the project schedule. Its greatest benefit is risk mitigation. Because EVA takes into account the project scope, schedule, and budget, a project manager can refer to tangible numbers — rather than just a gut feeling — to determine whether the project is advancing on time and within budget.

Like many project management methodologies, including management by objective, EVA is performance centered. However, it supplies an indicator of true cost performance that usually isn't found in other project management techniques.

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EVA is only as perfect as the project itself, but it will give a manager options when variances are too great to overcome.

With EVA, project managers have an early warning signal that provides the information they need to identify risks and do something about them while there's still time.

"In the past, people monitored their costs by looking at what they budgeted and what was actually spent, then calculating a variance and determining whether or not they were over or under cost," explains Paula Spinner, senior cost and economic analyst for Robbins-Gioia. "Well, that's fine, but it winds up giving you a skewed picture because it doesn't relate to the project schedule, and the schedule is absolutely critical. With EVA, you get the entire picture."

Getting back to simple

The Department of Defense began using EVA about 40 years ago, but through the years it created a methodology so complex that other industries viewed the project management tool as too difficult and costly to use. In the past five years, however, a major push to make the methodology simpler and more accessible has inspired industries from aerospace to fashion to begin investigating EVA and incorporating it into major projects.

EVA's methodology now involves the following steps:

- Scope the project using a work breakdown schedule.
- Plan and schedule the project.
- Estimate and budget available resources.
- Form a baseline.
- Monitor performance against the baseline.
- Forecast progress and the final costs and schedule.

"Scoping" the project involves separating the project into measurable tasks, each of which has an estimated value, and then assigning a staff to monitor the performance of each task. On the basis of this first step, a schedule is determined and a budget is estimated.

After the initial setup, managers using EVA can perform frequent and regular

analyses to measure any cost or schedule variances and to assess any potential risks that could throw off the project. Of course, EVA is only as perfect as the project itself, but it does provide enough flexibility to give a manager options when variances are too great to overcome. For example, if a project is time sensitive and falls behind schedule but is still within its budget, the project manager has the choice to spend more money to align the project to the schedule.

Taking hold

The pharmaceutical industry is using EVA already, although only sparingly. Merck (Whitehouse Station, NJ) is perhaps the highest-profile proponent, having imple-

mented the methodology as part of its drug development process for years. A few other companies are incorporating EVA during the marketing phase of new products.

However, the industry has yet to fully recognize EVA's potential for curing some of its more prevalent ills, according to Steve Lines, development program manager for AstraZeneca Pharmaceuticals (Wilmington, DE). He believes the tool should be used in both research and development and marketing — from the beginning of a drug program, through its life cycle, and even when it is rolled up into a single portfolio planning document. In this way, EVA can be applied to all products at once and risk mitigation can be conducted comprehensively on the basis of the performance of every drug in development.

"One of the reasons why pharmaceuticals are so expensive is that only 1 in 1000 drugs makes it to market," he explains. "That's a pretty lousy success rate. Having the EVA tool available will allow you to kill products that are not worth developing a

How EVA works

Because EVA can be difficult to grasp, consider its usefulness in this generic example provided by Paula Spinner, senior cost and economic analyst at Robbins-Gioia, a leading project management firm.

After a project was "scoped" using a work breakdown schedule, it was found to have 10 units that needed to be developed and tested, and each unit required about the same amount of resources. After the broad schedule was determined, the team responsible for each unit developed more-detailed schedules, all of which were then put together to form a master project schedule.

The project manager then concluded that the entire project would take 12 months to complete. Each unit would require \$100,000, for a total project cost of \$1 million.

After three months, the project's initial performance review produced the following results:

- Three units were scheduled for completion, but only two had been completed.
- The team had forecasted expenditures of \$300,000, and \$300,000 had been spent.

Typically, project managers would conclude that the project is slightly behind schedule but on target with its budget. They might decide to work a little harder to get back on schedule.

A different conclusion, however, would be reached if the team used EVA, which would measure the following seven points of data:

Q: How much work was scheduled for completion at the point of measurement?

A: 3 units

Q: What is the budgeted value of the work scheduled?

A: \$300,000

Q: How much of the scheduled work is actually completed?

A: 2 units

Q: What is the budgeted value of the work actually performed?

A: \$200,000

Q: How much has actually been spent?

A: \$300,000

Q: What is the schedule variance?

A: \$100,000

Q: What is the cost variance?

A: Spent \$300,000 to accomplish \$200,000 worth of work.

Thus, at the end of the first quarter, the project has met only 67% of the planned work schedule and is overrunning its costs by 50%. This will result in a significant overrun. The risk mitigation effort can now take effect, enabling management to consider such solutions as adding more people to accomplish the work, hiring less-skilled workers, or taking other steps that will bring the numbers back in line with the planned schedule and budget.

Contract Services

lot earlier in the cycle. Clearly that would be a great help to the industry.”

Yet implementing EVA is not necessarily an easy course. “The devil is in the details,” admits Lines, who adds that even with his advocacy, EVA is incorporated only on a limited basis at AstraZeneca. The tool is not yet applied at the project level, but Lines does use EVA as a kind of scorecard that absorbs critical information — dollars, timing, and resources — about the development of drugs bundled for use in therapeutic areas such as cardiovascular medicine and oncology. The information then is put into an equation, which creates a risk score that can be balanced against a variety of other projects.

Richard Musselman, president and CEO of AvAMed Consulting Group, Inc. (Lincolnshire, IL), and an experienced manager of clinical research programs at G.D. Searle and several other CROs, says EVA offers value for any type of project a pharmaceutical company might want to apply it to, including clinical studies. To make the process easier, his firm has developed a project tracking and planning application called P2T2 that incorporates EVA and helps companies better plan and manage their clinical studies during Phases II–IV. The program uses an algorithm to study project timelines, resources, associated costs, and deliverables; it even processes as many as 350 associated tasks and 11 different CRO billing rates.

“Plenty of planning tools are out there, but this is the first one that is specific to the pharmaceutical industry and the intricacies of these types of clinical trials,” notes Musselman. “So it really becomes a powerful planning and project management tool for people who don’t necessarily understand all of the technical components of project management. This tool demystifies all of that.” His firm also can customize the tool to specific sponsor requirements.

Whether a manager uses a software application that includes the methodology or simply goes through the steps with or without the help of a project management specialist, EVA can provide a new and successful way to manage projects more efficiently and more effectively. “What you want to do is make better decisions using better tools and data, and that’s where EVA really leverages you,” says Lines. **PT**