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Earned value management

Manage the future, not just the past, and prevent projects from trending in a negative direction.

BY NICHOLAS T. BETTIS

Civil engineering firms serving the private sector haven't historically used earned value management (EVM) as part of their project management process. However, given the competitive advantage that can be gained from adopting EVM, there are many compelling reasons to become fully educated about the reporting framework and its uses. As the only ANSI-approved project management standard, EVM allows firms to plan their work, work to that plan, and measure accomplishments against the plan.

EVM has been standard for engineering and construction projects in the government contracting arena since the 1960s, and it gained popularity among project-based businesses in the 1990s. Essentially, EVM allows project leaders to manage the future outcome of a project budget. It brings visibility to potential problem projects before they are complete, allowing corrective action to take place proactively, rather than asking a client for an additional fee after the budget has already been overrun. This is achieved by calculating a value-earned amount based on project status and comparing it to the portion of the budget expected to be spent within that particular time period. While an EVM process can be applied to all project sizes and types, it is especially relevant to large projects with components managed by multiple people.

Implementation

Implementing EVM involves setting clear parameters at the outset of the project to measure results objectively as it progresses. The process can be broken into several components that together produce a snapshot of the project as it stands at any given moment. For a civil engineering firm, which may have several vastly different activities going on at any given time, this kind of one-look report can be an invaluable tool for keeping clients happy and protecting the firm from errors of oversight.

The first step of EVM implementation is to define the scope of the project. To measure success, a project manager needs to know the end goal. The Statement of Work provides that by identifying the scope of the requirements; it is used as the basis of everything that follows, including the budget and further breakdown into tasks via the Work Breakdown Structure (WBS). The WBS carves up a large and complex project into smaller, more easily managed steps. When completed, the WBS is also used as a reporting tool.

Once the outline of the project is created, it is possible to delegate tasks

and responsibilities to the appropriate people. A clear chain of command and reporting is established, meaning that others can see exactly what is required of them and what has been completed.

The next step is to determine the method used for determining a project's status and the frequency with which this will be tracked. Probably the most common status measurement used by civil engineering firms today is "percent complete." As an example, a project manager might provide to the EVM manager an indication of the physical percent complete for his or her assigned tasks or for the project as a whole.

Before going further, a clear distinction needs to be made between physical percent complete and the percent of the budget that has been expended thus far. Typically these two are not equal, as the project is either ahead or behind. It can be challenging for the project manager to determine what the physical percent complete is, and he or she may need to meet with the project team or check on the status of specific deliverables. This takes time, which may seem like a loss — especially if the project is behind. However, actively identifying problems is a key component of successful project management, as opposed to monitoring the budget without regard to the process.

Metrics other than a physical percent complete can be designed as motivators. For example, a project manager can award 50 percent of the earned value on a project element when it is started and the other 50 percent once the task is finished. If a project manager is forecasting resource usage on future projects and updating it on a regular basis, he or she can use the percentage of work remaining on the project to derive a physical percent complete.

EVM can also be realigned as the project evolves. Scheduling, budgeting, and forecasting can all be updated when changes are made, allowing for real-time changes of scope or funding. This is especially important in the civil engineering sector, where budgets have hard limits and firms must avoid overrunning those limits regardless of how the project develops. Therefore, it is in a firm's interest to make sure that it is aware of every aspect of a project at all times; any slips can result in expensive budget overruns and potential losses of revenue.

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Possibilities

Civil engineering firms unfamiliar with the ins and outs of EVM might worry that the process of reporting will be too labor-intensive to add to their workload. How much detail is necessary to estimate percent complete accurately? The answer is that EVM can be tailored to the needs of each firm. It can be either extremely specific or relatively general. In either case, civil engineering firms get an accurate overview of their progress. Obviously, the more detailed their implementation, the easier it is to see and avoid potential problems; but firms should see dramatic improvements in cost control with any amount of reporting.

However, the benefits aren't just about cost control. Implementing an EVM process can bring consistency and focus to project managers' methods and performance, ultimately enhancing the project management culture within a firm.

For civil engineering managers intrigued by the benefits and possibilities of EVM, there is another incentive. EVM reporting is standard today for many contractors working with the federal government, and as of July 5, 2006, Federal Acquisition Regulations were changed to require EVM on all projects, including those run by the Department of Transportation. Though each agency will define the dollar threshold for deciding when to use EVM, civil engineers likely will be affected by these new regulations. However, even if it isn't required, implementing an EVM process can be a competitive advantage. Clients do not want after-the-fact budget surprises, and as such, firms will be viewed positively if they demonstrate an internal project management process such as EVM, which reflects a desire to address potential problems actively.

It is clear that the competitive advantage derived from the implementation of EVM processes is large. For a civil engineering firm, EVM can reduce cost overruns, keep projects on track, and constitute an extremely efficient way of overseeing a large number of diverse and complex projects. Engineers can give themselves an edge over the competition by showing that they have strong management behaviors and are reporting above and beyond all existing requirements and industry standards. ■

Nicholas T. Bettis, director of product marketing for Deltek Vision, has an MBA degree and more than eight years experience working with enterprise software providers. He can be contacted at nickbettis@deltek.com.