

## Can This Project Be Saved, and What Would It Take?

By Richard F. Cowan, PE, PMP

How can you believe the Project Manager who predicts a successful project recovery in the face of problem performance to date?

### *The situation*

Imagine you're in the conference room ready for the first project review of a project you are sponsoring, and led by one of your young, promising project managers. Rumors and a heads-up email have alerted you that all is not well with the project so far. So you aren't surprised when your star leads off with an apology, but confidently continues, "I know things haven't started out as I hoped, but I'll make it up. We will finish this project on time and within budget."

Will he? Can you rely on it? Perhaps you're reminded of yourself some years ago making the same predictions based primarily on confidence in yourself and your team, and on little else.

But now, more experienced and wiser, you ask your star two questions: "How far is the team into the project, and how bad is the problem to date?" In Earned Value parlance, well described in Chapter 10, section 10.3.2 of the PMBOK, what is the earned value and what are the cumulative performance indices for cost and schedule?

The project manager can answer these two questions. After all, you trained him. But then you ask, "What magnitude improvement in the project performance is needed to bring the project in as originally budgeted and scheduled?"

He fumbles with answering this more important and useful question. So you schedule a training session for the project team later.

### *The Earned Value tool*

"Let's review some basics," you start.

"We all remember the Cost Performance Index, CPI, and Schedule Performance Index, SPI.

$$\text{CPI} = \frac{\text{EV}}{\text{AC}} \quad \text{and} \quad \text{SPI} = \frac{\text{EV}}{\text{PV}}$$

where EV is earned value or budgeted cost of work performed, and  
AC is the actual cost of work performed, and  
PV is the planned value, or budgeted cost of work scheduled.

A CPI or SPI number greater than 1 is good because it means we are getting more work done than planned.

If we know the project's cumulative Cost Performance Index, we can predict the To Complete Performance Index, (TCPI). This is what the **cost performance must be for the balance of the project if we are to meet the original budget** (or some other target). This useful index is well described in Earned Value Project Management by Quentin W. Fleming and Joel M. Koppelman, published by PMI.

$$TCPI = \frac{\text{Work remaining}}{\text{Resource remaining}} = \frac{\text{Budget at Completion} - EV}{\text{Budget at Completion} - AC}$$

If you take a pencil and paper and play with a few examples, you can convince yourself that there is an analogous To Complete Schedule Index, calculated as:

$$TCSI = \frac{\text{Budget at Completion} - EV}{\text{Budget at Completion} - PV}$$

These are powerful numbers. But a sponsor or project manager of a project in trouble must be interested in the difference between how things have gone to date, and how they must go in the future. This is the difference between CPI and TCPI or between SPI and TCSI. A measure of how great a swing to the TCPI or TCSI must be might be a ratio called the Improvement, =  $\frac{TCPI}{CPI}$  or  $\frac{TCSI}{SPI}$ .

I like the ratio to describe the Improvement better than the arithmetic or percentage improvement between CPI and TCPI, because the ease or difficulty of achieving a .30 swing is hard to imagine and because I get confused that a 200% improvement means 3 times the original. But a ratio of 1.6 clearly means I have to do 1.6 units for every 1 unit I used to do."

### ***A deeper look at a project in trouble***

After checking that the team is clear on these arithmetic relationships, you press on.

"Now let's consider some concepts:

- The further we're into a project with poor performance to date, the harder it will be to make the needed Improvement." The team discusses the idea of lots of budget used up and little budget remaining to work with, and quickly agree.
- "The worse the performance to date, the harder it will be to make the Improvement." Again, the team imagines too much budget used up and too little work completed, and agrees.
- "But, performance can be improved, perhaps by brainstorming for different approaches than originally planned, budgeted, or scheduled; perhaps by more training, by subcontracting work out, by taking work back in house. We are not helpless in managing our projects." The team really likes this news, and the members straighten their shoulders and lean forward.

“There are three variables to consider, the earned progress to date, the performance to date, and the Improvement. So there are three ways I might ask you the same question:

1. At this level of progress and performance, what Improvement ratio must you achieve to bring the project in on time and budget?
2. At this level of progress and a known level of Improvement your team and you have figured out how to achieve, how bad a performance index can you still overcome and bring the project in?
3. At the level of performance to date, and for a known level of Improvement you can achieve, at what state of progress must you have achieved the Improvement in order to bring the project in?

Since the three variables are arithmetically related, they generate the curves on Figure 1 which can be used to answer any of the three questions. For example, a project with 30% progress can be brought in if the performance index to date is 0.77 and an Improvement of 1.5 is achievable? Or if performance index to date is 0.63 and Improvement of 2.1 is achievable.

These curves allow us to check the Improvement needed or available and apply it to different situations.”

### ***Can we save the project, and how?***

“But now another important question. What improvement is attainable? How would that improvement be attained?” As you leave the group to check the condition of their own project, and calculate some information, you plan your next involvement in this project.

By working with your bright project manager, you might commission him to convene his team and lead them himself in a recovery planning session if, say, a 15% Improvement is indicated and progress in the project is early. That way the project team owns the problem and the solution.

But, if the stakes are high, and a much higher Improvement is needed, say 35%, you might provisionally accept his forecast of success only if all of the project stakeholders agree to re-plan and cooperate in a week long retreat to use all of their brainpower and capability to better the project.

Finally, if your judgment is that the Improvement needed has become so high it is unachievable, it's better the sponsor, project manager, and team face the truth early. Bad news never gets better with age.

If you are fortunate enough to have in your company or industry some benchmarks of project performance, you can better gauge what levels of Improvement are reasonable. This will guide you in coaching the project manager in forecasting and managing.

As the experienced project sponsor, it is up to you to help your project manager balance the forecast of project success with a required level of effort and cooperation in working

on the project recovery, and to know from your industry benchmarks whether certain levels of project performance are reasonable.

Now your teams can base predictions of project success on meaningful information and planning.

“Dick” Cowan is a PMP, Registered Civil Engineer, and President of Clark & Sullivan Construction Management, Inc., which specializes in project and construction management of public buildings, schools, and higher education facilities.