

# Executing Effective Projects

Maintenance and engineering projects can have a great impact both upon your organization and your career. You need to ensure that they have a high likelihood of success. Here's help in determining your probable result.

BY LEN MIDDLETON

Many readers may not be aware of the business impact of project management and project-related issues, so we'll deal with them here.

Maintenance and engineering often need to make improvements to current assets or processes. If the changes and risks are relatively small, then it might be done within the current expense budget, depending upon the organization's CAPEX (capital expenditures) and OPEX (operations expenditures) practices. Larger changes and changes that involve significant risks should be managed as projects in an effort to apply the appropriate level of management required.

Figure 1 shows a typical project cumulative cash flow and includes the operational phase. It has the typical project expenditure 'S' curve, where the project starts slowly during the early organizing/mobilization phase, increases as greater resources are added, then decreases as resources and efforts are gradually reduced during commissioning/demobilization before the operational phase.

During the operational phase, there may be a planned ramp-up period, or operations of the project deliverables may need to be tweaked, before the project can reliably deliver full operational output. After the project has been operational for some time, the cumulative cash flow resulting from the operations equals the investment of the project, creating the project break-even point. The time from the start of operations to the break-even point is the payback period. The slope of the cumulative cash flow line during the operations period will determine the rate of return. A steeper slope during the operations phase indicates a higher rate of return and is obviously preferred over a flatter slope.

#### Problems with project execution

Using the previous baseline project curve, it is compared to an identical project, except there are problems in the execution (Figure 2). As can be seen, the

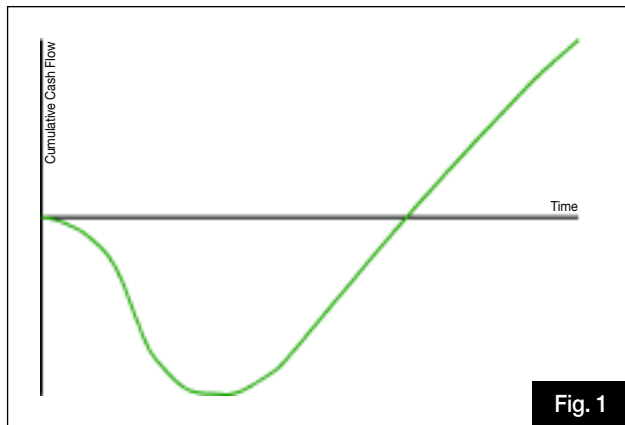


Fig. 1

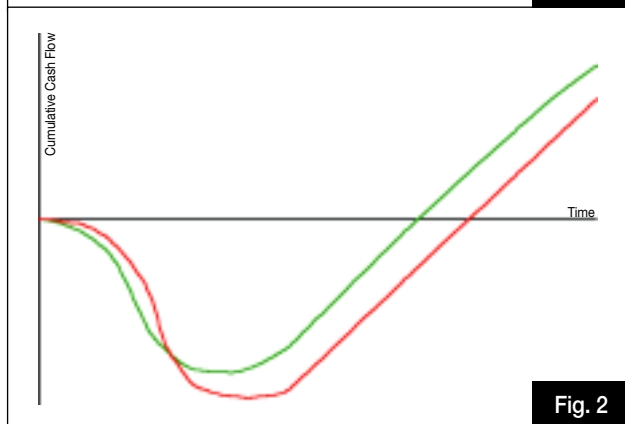


Fig. 2

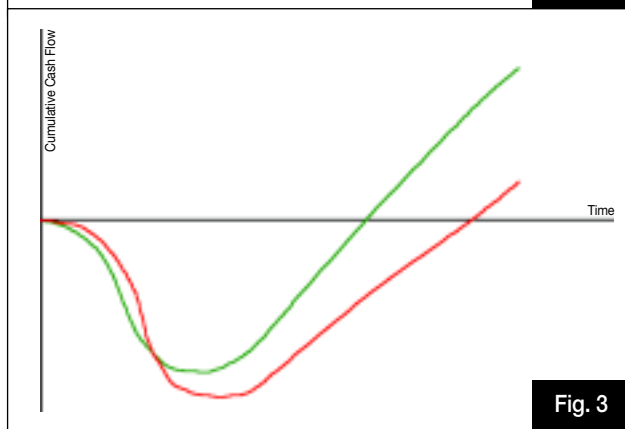


Fig. 3

'red' project is late and costs more than the baseline 'green' project. As the rate of return is about the same, the project break-even point is delayed as a result of the project completion delay and higher project costs.

Problems in project budget and schedule compliance can result from poor planning or poor execution. The scope of the project may not be well-defined and changes may need to be made during execution (scope creep). The tasks to execute the project including dependencies, and estimates of resources required, level of effort, duration, etc. may also not be well-defined or accurate. The effort on project planning prior to the execution of the project is referred to as Front End Loading (FEL). Effective investment in

time and effort in FEL can greatly reduce project risks and improve project results.

In executing the project, there may be problems with the quantity and quality of resources (in-house and contract). This can result in delays (resources not efficient or effective) or rework (resources did not 'get it right'). Effective project management can reduce the consequences of these problems.

In many organizations, project groups often focus only upon the budget and schedule, and in many cases only the project budget (TIC - Total Installed Cost). Budget compliance is something that everyone understands, and can be calculated relatively easily. Schedule compliance is typically viewed as less critical, except when it has an impact on customer schedules. Many organizations do not audit project deliverables at all, to see if the results are as promised.

#### Problems with project deliverables

As well as problems with execution, there can be problems with the deliverables. The project part of Figure 3 is identical to Figure 2 with one exception. The difference is in the operations phase, as the rate of return is lower than the baseline.

As can be seen from the different diagrams, the problems in execution (schedule delay and budget overrun) have a short-term related impact. Once the project is operational, the return is only delayed, not the rate of return.

However the problem related to the deliverables and lower rate of return continue on indefinitely, until the situation is changed. Once ideas materialize in the form of concrete and steel (or other materials used), they are difficult and expensive to change, if they can be changed at all. This is the more serious issue with projects and it is ironic that organizations spend more effort in addressing budget compliance and little or no effort on assessing the quality of the deliverables.

Problems can be caused by resource-

related issues (poor quality work). Often it can also be caused by under-investing in the project. The under-investing might be a genuine oversight at the time the project was scoped. Or it might be a result of trying to get the project cost down to achieve the desired project ROI (return on investment) to achieve organizational approval. The underlying assumption of course is that the items omitted from the scope will not have an impact on the ROI, and that assumption is not always correct!

A less expensive (and less capable) asset might be purchased. Training and spare parts might be omitted from the project scope. During project execution, rework may be required, but not performed, to conform to the project budget and schedule. All of these items can have an impact on the project deliverables and project rate of return.

#### Impact on maintenance and engineering

Projects can have a great impact both upon your organization and your career. You need to ensure that your projects have a high likelihood of success (remember to under-promise and over-deliver). Find out how your organization measures project success and focus your efforts to maximize success in those measures. There may be some projects you might have to implement as a pilot first or execute on a phased approach. Otherwise you might be better not to propose a project, if there is little likelihood of success.

From my project experience (including conducting a benchmarking study on project management), I also strongly recommend that you address operability, maintainability and constructability issues in your project efforts, as the first two have a long-term organizational impact and the latter a project execution impact, which could also affect deliverables.

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Very useful #413  
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