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## **From ROI to Eureka!**

### *The Oak/New Leaf Business Case for Developing Better Project Managers*

John M. Nevison, PMP

Project managers lead invisible lives in many companies. Project work is often considered part and parcel of routine middle management and senior executives don’t see the need to invest in the development of any special project skills. Project managers do, however, become visible in two areas of the business:

- New product development
- Information systems innovation

Here, the difference between a good project and a bad project makes a measurable business difference. These two areas illustrate the value of good project management in a way that reveals the value of projects performed in the less visible corners of the organization, corners such as internal business improvement efforts (six-sigma, black-belt process improvements), department reorganizations, and task-force assignments.

Developing project managers raises some immediate questions. What are the business benefits? To whom do the benefits accrue – the individual participants? Their immediate project? The whole department? The entire firm? How long do the benefits last – months, years, or decades? And how do we measure any of these benefits in a business-like way?

Because benefits occur at different times and in different ways, they are often difficult to measure. One way to organize a discussion about project management development is to begin with a newly trained manager and examine the successive effects of training over time. One time-tested method distinguishes four levels of effects:

- Reaction (during the event)
- Learning (during and after the event)
- Behavior (in the on-the-job activity)
- Results (in the firm’s performance) [1]

These levels track benefits from the “Eureka!” (or “Aha!”) in a training program to the “return on investment” (ROI) for the firm.

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A skeptical CEO might first ask about Results (in the firm's performance). If and when the CEO is convinced of the broad business benefits, we may examine the more detailed benefits of the next lower level. If there is no ROI, why bother with "Eureka"?

Over the years, New Leaf has found answers to the CEO's questions at each level. These answers add up to a strong business case for developing project managers. We will begin with the highest level, Results.

## LEVEL 4: Business Results

Level 4 captures the business impact of our investment. For better project managers the data is clear: the return on investment (ROI) is *multiples*, not percentages. Data collected across a variety of industries around the world over the past fifteen years indicate that the benefit/cost ratio is frequently over 5/1. A brief sample of the benefit/cost ratios includes: 7/1 Dion (1993), 5/1 Herbsleb et al. (1997), 5.5/1 Goyal et al. (2001), 5/1 Rico (2002), 9/1 Durrenberger (2003) [2].

### Process Maturity

Tools to measure a firm's business productivity often include an assessment of the firm's process maturity. Licensed assessors conduct five days of intensive interviews or administer a questionnaire to a broad cross section of the managers. The results are compared with known industry benchmarks. The firm is assigned a maturity level (from a low of 1 to a high of 5) similar to that shown in Figure 1. (Almost all of New Leaf's clients of the past ten years were originally at level 1 in process maturity. The maturity assessments of many other firms reveal a similar low initial level.) If a firm commits to improve, it can raise its maturity level at a rate of about one level every two years. [3]

**Figure 1.** *Five Maturity Levels Found in Many Industry Models*

- |  |
|--|
| <ol style="list-style-type: none"><li>1. Initial - "competent people and heroics"</li><li>2. Repeatable - "project management processes"</li><li>3. Defined - "technical processes and organization support"</li><li>4. Managed - "product and process quality"</li><li>5. Optimizing - "continuous process improvement"</li></ol> |
|--|

Maturity levels have been tied to bottom-line business effects and often show a five dollar *annual* return for every dollar invested. The ratios indicate that when a firm raises its project maturity faster than its competitors, it achieves a *significant competitive advantage* over time. Figure 2 displays some sample questions about process maturity.

**Figure 2.** *Sample Questions About Process Maturity*

Is there a <i>required training program</i> for all newly appointed project managers designed to familiarize them with project management?
Is a <i>formal procedure</i> used in the management review of each project prior to making contractual commitments?
Is a <i>formal procedure</i> used to produce project schedules?
Are <i>formal procedures</i> applied to estimating project cost?
Does senior management have a <i>mechanism</i> for the <i>regular review of the status</i> of projects?
Is a <i>mechanism</i> used for <i>regular technical interchanges</i> with the customer?
Is a <i>mechanism</i> used for <i>controlling technical changes</i> to the product itself?
Does the organization use a standardized and documented <i>technical life cycle</i> on each project?
Are <i>statistics on work errors</i> gathered?
Are the <i>action items resulting from work reviews</i> tracked to closure?
Is <i>labor productivity analyzed</i> for major project phases?
Is a <i>mechanism</i> used for periodically assessing the <i>technical life cycle</i> and implementing indicated improvements?
Is a <i>mechanism</i> used for <i>error cause analysis</i> ?
Are the <i>error causes reviewed</i> to determine the <i>technical life cycle</i> changes required to prevent them?

Our skeptical CEO now knows that evidence exists to show that process maturity in an organization can be measured, improved with effort, tied to business profits, and that it can have significant business consequences.

### **The Cost of Poor Projects**

Another way of understanding the business benefits of developing better project managers is to examine the cost of poorly run projects and assume that competent project managers would recover these costs. While working on a model to show how bad projects hurt business performance, New Leaf developed a model that shows how better projects help business performance. This model convincingly describes how better projects improve both revenues and profits.

The software industry has collected a consistent set of data about its poorly managed projects. Over the past ten years the Standish Group has found that software projects continue to perform terribly. While the detailed percentages vary from year to year and have actually shown some improvement over the decade, a good working approximation of the Standish Group results is that for every 10 projects begun:

- 4 do not finish
- Among those that complete, 4 cost twice as much as initially planned
- Among those that complete, 4 (not necessarily the same 4) have a significant loss of product features
- Among those that complete, 2 are significantly late [4]

New Leaf’s Simple Business Model of Project Performance (SBM) begins with a simplified business model for 10 identical projects to produce 10 products with a five-year life. (See Figure 3) [5]. All ten projects take one year to complete. The projects’ products have a five-year business life.

**Figure 3.** *The New Leaf Simple Business Model of Project Performance (SBM)*

<b>Business plan: ten successful projects &amp; products</b>						
	Year					
	0	1	2	3	4	5
<b>Sales</b>		\$3,250	\$5,000	\$4,500	\$4,000	\$3,250
<b>Costs</b>		\$2,250	\$4,250	\$4,000	\$3,500	\$3,000
<b>Project</b>	\$1,000					
<b>Profit (EVA)</b>	(\$1,000)	\$1,000	\$750	\$500	\$500	\$250
<b>Cum. Profit (EVA)</b>	(\$1,000)	\$0	\$750	\$1,250	\$1,750	\$2,000
<b>Margin</b>		30.8%	15.0%	11.1%	12.5%	7.7%
<b>Cum. sales</b>		\$20,000				
<b>Cum. Profit (EVA)</b>		\$2,000				
<b>Avg. margin</b>		10%				

The power of the New Leaf SBM is that it ties the present costs of the project in Year 0 to the future costs and benefits of the project’s result in Years 1-5. These future costs and benefits can occur in many patterns. For the sake of clarity, New Leaf’s SBM depicts a new-product-development project and the accompanying product’s business life. (Profits are labeled Economic Value Added [EVA] to emphasize that they represent the full economic benefit of the product.)

Figure 4 shows how bad project practices erode the sales and profits of the New Leaf SBM.

First, four projects do not finish. The business loses both the sales and the profits of the four canceled products. The business also loses profit to pay for the sunk costs of the four canceled projects.

Second, four of the projects cost twice as much to develop. The business loses more of its profits to pay for the extra costs of the four expensive projects.

Third, four projects deliver four products with significantly fewer features than the customer wanted. The business loses sales on these four products. Lower sales means lower profits. Another possible effect of missing features (not shown here) is that the product becomes more difficult to manufacture, incurs a higher unit cost, and erodes the profit margin.

Fourth, two late projects delay sales and profits.

**Figure 4.** *The Oak/New Leaf SBM's Loss of Sales and Profits*

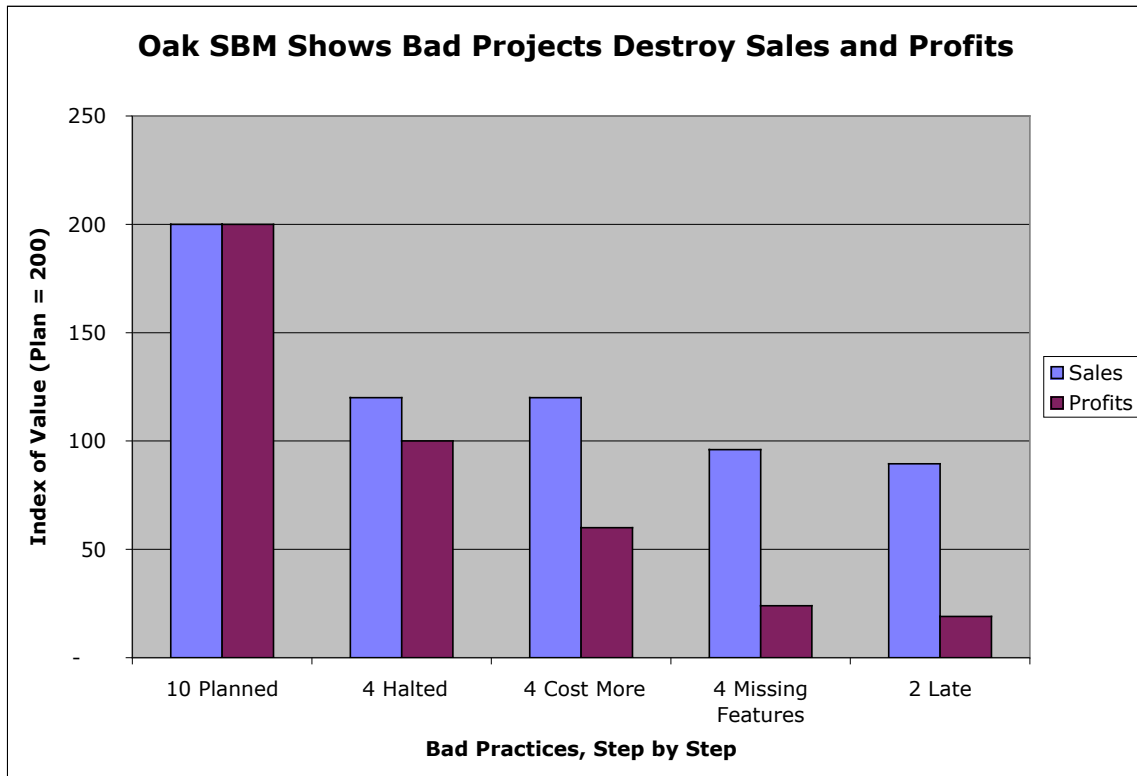


Figure 5 shows the results of the perfect plan and the actual practice of the New Leaf SBM. Figure 5 can be read two ways. First, as an example of how bad project practices adversely affect business performance. Second, as an example of how improved future project practices (i.e., maturity) can radically improve overall business performance (!)

**Figure 5.** *The Oak/New Leaf SBM's Results: Real Loss and Possible Gain*

	Five-Year Product Life Totals		Real Loss	Possible Gain
	Perfect projects	Actual projects	Actual/Perfect	Perfect/Actual
Sales	\$20,000	8,470	8/20 or 58%	20/8 or 136%
Profit (EVA)	\$2,000	162	2/20 or 92%	20/2 or 1135%

The first example about poor current practice is grim. The results? A 58% drop in sales, and a 92% drop in profits.

The second example is a pleasant surprise. If we begin at the end of the four steps, we position ourselves in the middle of our poor current project practices. The initial plan at the beginning of the model now becomes a picture of what our business might be like if we systematically improve our project management practices (our organizational maturity). The numbers are appealing. We have an opportunity to increase our sales by 136% and to increase our profits by 1135%! Possible profit improvement is more than a 10/1 ratio. This ratio, while not the same

thing as the earlier cited benefit/cost ratios discussed as the ROI of improved project processes, is sufficiently similar in scale to lend significant credence to those earlier, large, hard-to-believe, ratios.

Most businesses have other commercial activity not related to projects, so projects' poor business results often hide behind good performance in other areas. However, the New Leaf Simple Business Model of Project Performance reveals to the alert CEO *a significant, and often hidden, opportunity* to improve profits and revenues.

### Qualitative Level 4 Thinking

A third, and related, way to consider the ROI for developing better project managers is to remember the *detailed, qualitative* changes our CEO can expect to see with better project management. One recent example listed the following qualitative returns (see Figure 6):

**Figure 6.** *Detailed Qualitative Improvements from Better Project Managers*

- Increased revenues and profits because of:
1. Improved business image
    - a. Greater market reach
    - b. Better product quality
  2. Increased productivity
    - a. Better risk management
    - b. Shorter time-to-market
    - c. Efficient resource management
    - d. More skills developed and retained
    - e. More management support for skill development
    - f. Improved institutionalization of tools, processes, and methods
    - g. More efficient information management
    - h. Better team synergy
  3. Higher customer satisfaction
    - a. More competitive proposals
      - i. Better understanding of customer needs
      - ii. Sharper business focus
      - iii. Greater market intelligence
      - iv. Quicker adoption of new technology
    - b. Setting right customer expectations
    - c. More predictable delivery [6]

The combination of the above three approaches makes it likely that our CEO will believe in the bottom-line benefits of improving the firm's project management practices. And with a modest effort to establish a baseline of current performance, we can make a strong argument to set about improving it.

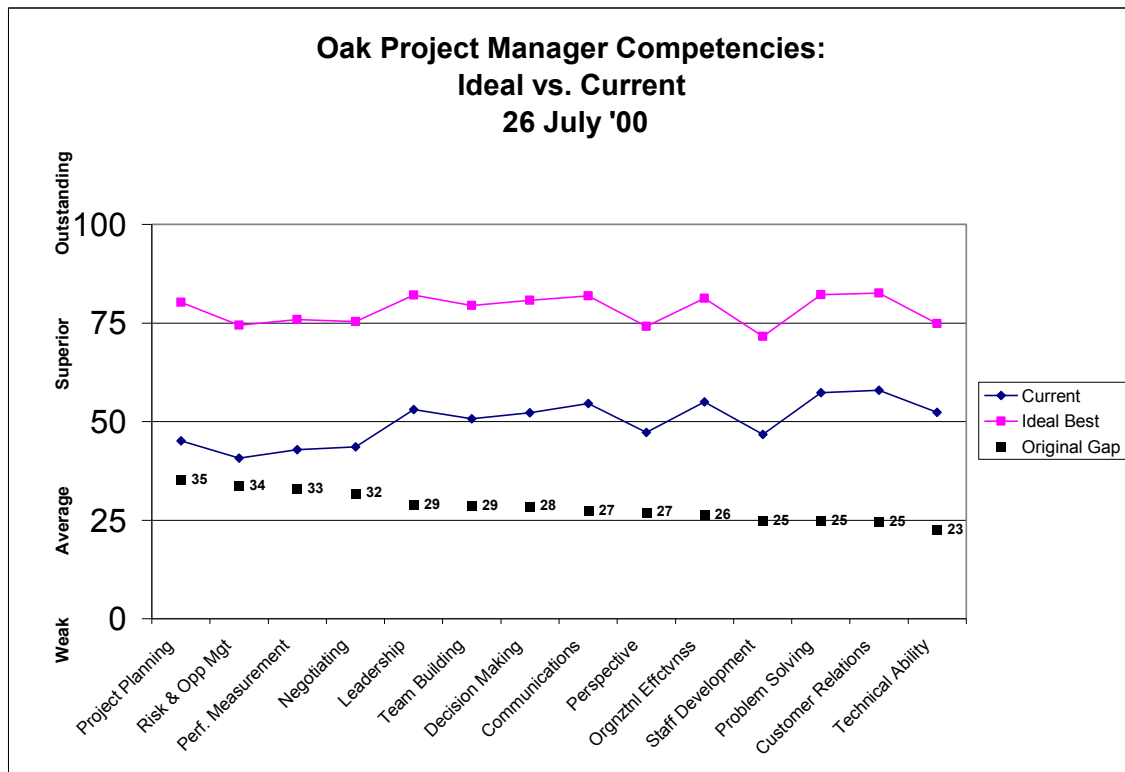
Once we decide to engage in a program to improve project managers and project performance, the next level of questions asks what the detailed improved performance will look like for the individual managers. (And, in parallel, what infrastructure will be necessary to support them.)

### LEVEL 3: Behavior

Our CEO is now focused on Level 3, the desired behavior on the job – what does an excellent project manager do? Let’s begin by measuring the current managers’ level of “competency” as project managers and what performance gaps exist between their individual current performance and consistent “excellent” performance.

Figure 7 shows the national benchmarks of the Oak/New Leaf Project Manager Competencies: Ideal versus Current, and the gap between them.

**Figure 7.** Project Manager Competencies, Ideal and Current



This “best practices” benchmark is based on ten years of New Leaf research with hundreds of project managers in firms from many industries. Each of the 14 competencies shown in the diagram has a list of 4-10 observable behaviors associated with it. Project managers have a rich array of 96 behaviors they must demonstrate.

Frequently, a specific firm will find that its “ideal” will vary from the national benchmark because of the way the firm defines the competencies of its project managers. After a specific

ideal has been defined, we can measure the gap between present practice and desired practice and we can focus on improving the critical competencies.

Sometimes a busy CEO assigns a senior management task force to redefine the role of project manager within the firm. New Leaf has assisted in these efforts by helping a firm to identify a custom set of competencies for the various kinds of project managers:

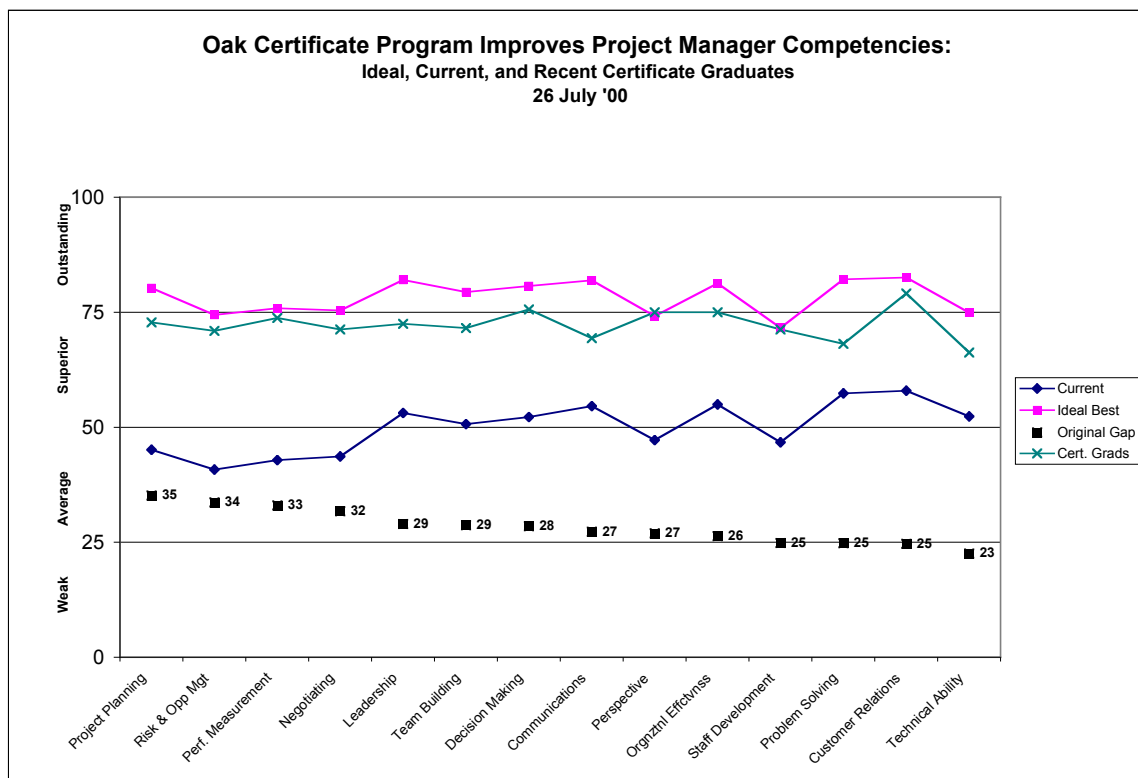
- Team leader
- Project manager
- Senior project manager
- Program manager
- Executive project manager

The personnel department can sequence these jobs to form a career path for project managers. The details of the job definitions can be incorporated into the firm’s tailored project manager competencies.

### The New Leaf Certificate in Project Management

Training can play a significant role in developing project managers’ competencies. New Leaf teaches a sequence of eight programs spread over 12 months that results in a Certificate in Project Management. One method of evaluating the Certificate sequence has shown promising results: a Competency Assessment of the graduates, shown in Figure 8.

*Figure 8. Oak/New Leaf Certificate Program Improves Project Manager Competencies*





On a 100-point scale, these graduates have improved an average of 30 points! Their final status was well above the national norm – in fact, their performance rated in the national “Ideal” range. Clearly, New Leaf’s Certificate sequence changed the behavior of project managers on the job.

Training alone is rarely sufficient to guarantee the transfer of new behavior to the project. For project best practices to *continue*, management must support the newly acquired skills in the work place.

### **Infrastructure Improvement**

While project managers can mature in their practice and increase their competency dramatically, the firm can hobble their productivity if it doesn’t provide appropriate organizational support. The innovative CEO will make sure that project manager development is accompanied by the necessary supporting infrastructure.

New Leaf research has shown that among the important organizational practices are:

1. Executive leaders voice support for good project management.
2. Projects are ranked by importance and their ranking is public knowledge.
3. Corporate policies and practices support project management.
4. Tools to support good project management exist.
5. A clearly understood project life cycle is in place.
6. An adequate number of people are available to work on projects.
7. Project people have adequate technical skills.
8. Project people have adequate management skills. [7]

With a supportive organizational infrastructure, developing managers can make significant productivity increases.

### **Five Sigma<sup>®</sup> Project Management Behavior**

Sometimes we want to know if a specific training program is having a short-term effect on the graduates’ on-the-job behavior. Level 3 also asks of an individual training program, “Are we transferring the program’s learning to our work?”

There are a number of possible ways to conduct a “program-specific” Level 3 review:

- Supervisor reviews
- Peer reviews
- Self-reviews
- Third party reviews

A reviewer’s role is to compare the manager’s behavior on the job, both before and after the training.

A self-review can be conducted with a questionnaire that captures the frequency of desired behaviors. New Leaf sometimes administers a “Level Three Behavior Assessment” between the fourth and twelfth the month after conducting our “Five Sigma<sup>®</sup> Project Management”

program. (The months of delay should equal the typical project duration. Such a period is long enough to allow a new project manager to apply new skills, but not so long that the manager has forgotten what was learned.)

Sometimes we can calculate the benefit/cost ratio of applying specific tools taught in a three-day program like Five Sigma<sup>®</sup> Project Management. The total effort saved is added up in Figure 9 below.

**Figure 9.** *The Total Effort Saved by Applying the Tools Taught in “Five Sigma<sup>®</sup> Project Management”*

Task Description	Effort Saved (Staff Days)				Task Variance
	Optimistic	Most Likely	Pessimistic	Expected Value	
One-Page Scope Statement	2.0	3.0	6.0	3.7	0.72
Work Breakdown Structure	2.0	5.0	10.0	5.7	2.72
Range Estimating	2.0	3.0	5.0	3.3	0.39
Project Scheduling	2.0	3.0	8.0	4.3	1.72
Risk Management	5.0	10.0	20.0	11.7	9.72
Communication Planning	1.0	2.0	3.0	2.0	0.17
Team Building	3.0	5.0	8.0	5.3	1.06
Progress Measurement	1.0	2.0	4.0	2.3	0.39
Status Meetings	4.0	6.0	10.0	6.7	1.56
<b>Totals</b>	<b>Project Mean 45.0</b>				
	<b>Project Standard Deviation 4.29</b>				

Based on this calculation, a firm could expect to save approximately 45 staff days of effort on an 8-month, 8-person project. This is 3.3% of the total planned effort for the project (1360 staff-days).

With a burn rate of \$300/staff-day, the cost savings will be \$13,600. To break even on the \$995 per person cost of the program, each attendee needs to save  $\$995 / \$300 = 3.25$  staff-days of effort (6.25 if you count the three days spent in training). Assume that a program of 12 participants consists of 4 project managers and 8 project contributors, all working on 8-person, 8-month projects. If only the 4 project managers were to benefit from the training, we can expect to realize 180 staff-days of savings. 180 staff-days (at a burn rate of \$300 per staff day) translate into \$54,000 of return – on an investment of about \$12,000.

If we assume that the other eight participants benefit half as much as the project managers, we will realize a grand total of 360 staff-days of savings. That translates into a \$108,000 for a \$12,000 investment, a 9/1 benefit/cost ratio. [8] Details of the argument for each tool are available in Durrenberger (2003). Of course, the benefits are much higher if, as is usually the case, the majority of the participants in a program are managing their own projects.

Notice that the above calculations do not include any of the business benefits beyond reduced project costs. Other obvious benefits would include: faster time to market, improved quality

in the product, higher sales, and lower manufacturing costs—all of which would increase profits.

Sometimes an observer can further verify the value of a program by indicating whether a specific tool or technique has been applied, and whether the project (and indirectly, the business) has benefited correspondingly.

One New Leaf study suggests where an observer should focus. After examining 213 projects, New Leaf found that of sixteen variables (eight organizational practices and eight planning tools), a project's successful execution could be explained using only six (two organizational practices and four planning tools)! [9] So an observer wants to check that a project manager works in an organization where:

1. "The policies and procedures support good project management"
2. "The project life cycle is well defined"

The observer also wants to be sure the manager's plan includes:

3. The critical path
4. A risk analysis
5. A communication plan
6. A work breakdown structure

Once our CEO knows what on-the-job behaviors are required, both in long-term project manager competency and in short-term tool use, what particular knowledge and skills will enable people to begin these new behaviors? What kind, and how much, knowledge are participants mastering in the programs?

## **LEVEL 2: Learning**

A Level 2 assessment discovers whether people actually learned anything while attending a program. Level 2 sometimes features the familiar "test" or "final exam." Because the bulk of management development requires the "integrated" use of new ideas in a work context with others, skillful facilitators favor *direct observation of the participants* to judge their integrated learning. These methods usually involve in-room exercises, discussion, and observed behavior in workshops. The instructor catches people using what they have learned and, in the case of group exercises, explaining it to others. Skilled facilitators determine whether their participants are "getting it" based on participants' performance and the questions they ask.

While creative facilitators prefer to appraise learning without testing, interactive quizzes and written exams can play a role when detailed intellectual knowledge is a must. When New Leaf prepares participants for the multiple-choice Project Management Professional (PMP®) Examination, the majority of the workshop time is spent taking sample examinations and discussing why the correct answer is "correct" and why the other answers are "less correct," if not completely wrong.

## LEVEL 1: Reaction

A Level 1 assessment is an immediate measure of the quality of the program experience. If our project managers think the program they are attending is unworthy of their attention, they won't learn much. We need to know how the participants are reacting to the program as it unfolds.

During New Leaf programs, the skilled facilitator will solicit explicit “plus-deltas” from the class, as well as conducting informal check-ins with the teams and individual participants. (A “plus” at the end of the day is something the group did well; a “delta” is a change to improve the group's performance.)

At the end of a program, a typical Level 1 Reaction is measured with a Participant Feedback Form. All of New Leaf's programs end with the form that is partially illustrated in Figure 10. This form asks questions like, “Overall, how would you rate this program?” (Usually between “excellent” and “very good”) and, “Would you recommend this program to others?” (Almost always “yes”) [10].

A well-designed Level 1 assessment will inform everyone about course details, instructor performance, training facilities, and the student's overall experience.

**Figure 10.** Excerpt from the New Leaf's Participant Feedback Form

*Your opinion is important to us — your candid comments will help us to improve our programs. Please take a moment to answer the questions below as well as those on the other side of this form.*

1. Overall, how would you rate this program?  Excellent  Very good  Good  Fair  Poor

2. How did you find the program's content?  Too Advanced  About Right  Too Elementary

3. How did you find the pace of the program?  Too Fast  About Right  Too Slow

4. Would you recommend the program to others?  Yes  Maybe  No

The New Leaf Participant Feedback Form has a twenty-year history of evolving use and analysis. Some of our clients have adapted the form for their own internal training programs. The instructor practices listed on the form are those that have survived an analysis of variance against the overall rating of the program. The form's velocity questions provide valuable details on the match between the program's pace and the participants' learning speed. Specific learning elements – notebook, overheads, activity debriefs, web sites, games, videos, and textbooks – are reviewed for detailed improvement. The form's open-ended questions continue to provide insights into the learning styles of the participants and creative ways to improve the program.

When the participants react with “Eureka!” the journey towards improved ROI has been successfully begun.

## Summary

For most firms, improving their projects by building better project managers will yield quantifiable business results and, over time, *significant competitive advantage*. New Leaf's experience of the past ten years confirms the published industry measures. This experience includes: our consulting engagements, independent business models of ROI, proprietary benchmark assessments of the individual project manager's competency, analyses of the cost/benefits of specific course practices, proprietary metrics of hundreds of managers' organizations, and careful reviews of thousands of participants' feedback on project management development programs.

Our conclusion: good project management is good business (and vice versa).

## Notes

1. In *Evaluating Training Programs* (recently revised), Donald Kirkpatrick discusses four levels of assessment that he has been recommending since the late sixties. See Kirkpatrick (1998). Durrenberger (March, 03) briefly notes a few Oak/New Leaf experiences with this model. His note was the inspiration for the present paper.
2. While numerous examples of improved project management in Software Engineering now exist, other fields have had less quantitative success at documenting these improvements. Dion and Herbsleb are good examples from the software world. The Dion benefit/risk ratio reported in his article is 5/1. Later, the ratio increased to 7/1 [private communication from the author]. Durrenberger and Ibbs provide the best evidence of improvements in other fields.
3. The figure of about 24 months to achieve an improvement of one level of maturity comes from Herbsleb and represents the average experience of over 25 companies.
4. The Standish Group has been issuing their reports and updates since the early 1990s. The 1995 reference is cited here. More recent reports have included some improvements but the basic numbers used in this model are typical.
5. The Oak/New Leaf Simple Business Model of Project Performance has been used to explain the relative sensitivities of project cost, project delay, and project product erosion. An early paper that describes the basic model is Nevison (March 2000). A second, more extensive, paper will appear soon.
6. Figure 6 is derived from a list on page 9 of Goyal (2001). The terms have been re-organized into an outline and edited for clarity. The authors of the study noted that "ROI computation, while starting off as a purely accounting exercise, should never end being one." They go on to stress the importance of the *qualitative* benefits they encountered while improving the business.
7. These practices are found in our Snapshot Assessment in Nevison (February, 2000), and in our Project Success<sup>®</sup> model used in our consulting practice.
8. These figures are built up from individual estimates of the time saved on each tool. The details can be found in Durrenberger (January, 2003).
9. The  $R^2$  of the stepwise linear regression indicated that over half of the variation (56% – a very high measure) in the execution of the project could be explained using only six variables. A regression of the combined eight organizational practices and the combined eight planning tools explained as much as the six-variable limited set.  $R^2$  for both regressions was 56%. See Nevison (February, 2000) for additional details.
10. New Leaf's training evaluation routinely checks the status of the participant feedback. On new programs, participant feedback helps to improve the details. With mature programs, participant feedback keeps the mix of educational activities well balanced.

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**New Leaf** is a premier provider of project-management training and consulting. Our comprehensive approach blends training with coaching for sustained practice improvement. We offer project-management training for all levels of experience, from novice to veteran, including preparation for the Project Management Professional (PMP®) Exam. We often customize programs to meet individual client needs. By benchmarking project managers with our proprietary PM Competency Assessment, we address our client's greatest training needs first. New Leaf is certified by PMI® as a Global Registered Education Provider (R.E.P.).

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