Software Process Improvement – Is There a Payback?

The prime and probably only justifiable business driver for starting a process improvement effort is "HOW WILL THIS POSITIVELY IMPACT MY BUSINESS?" In other words, will this effort save/earn my organizations more than it costs? The answer to this simple question comes in many shades of gray.

- Your prime customer says you must start a process improvement effort and achieve a certain measure of success to be considered for future work,

- Your management wants to become more efficient so you can more easily beat out the competition for lucrative contracts,

- There is dissatisfaction in your external customer base due to the number of errors produced and delivered or because the delivered product fails to meet the customer's expectations,

- There is dissatisfaction within your own organization due to smokestack organization and lack of communication within the organization.

A Capability Maturity Model Integrated (CMMI) based software process improvement effort produces real bottom line results in all of the areas mentioned above. The available data show:

- Decreases in delivered defects,

- Increases in the number of defects caught earlier in the life cycle,

- Productivity gains in the number of delivered source lines of code,

- Improved internal communication,

- Decreases in estimated delivery schedules without increasing schedule risk, and

- Business Value Ratios (Return On Investment (ROI)) of anywhere between 4 & 8.8 to 1. Conservatively speaking that translates to $5.00 returned for each $1.00 invested, or approximately a 5:1 ROI!

To get that kind of return you'd probably have to invest a huge amount of the organization's assets. Not So.

On average, in a one hundred person IT Organization, you'd need to do the following:

- Initially allocate funding in the amount of about a mid level developer's starting salary, and

- Free up just three to six people or their equivalent to maintain the effort on an ongoing basis.

Managed just like any other project in your organization, your Process Improvement Project will produce positive business results for your organization and will continue to do so for all of the other projects in your organization as well.

Although misplaced, the first question I usually hear from project managers concerning a software process improvement effort or more particularly a software process appraisal is how much later will it make us, or how much over budget will it put us.

Won't That Make Us Later / More Over Budget?

Assumptions:

1. An average first time appraisal, inclusive of all training, briefings, interviews, etc. takes about 7 calendar weeks of labor from start to finish.

2. The appraisal team will be made up of 6 members of the organization being appraised. Each of these people will be dedicated to the effort for 200 hours over the 7 weeks.

3. Approximately 50 people from the organization will be interviewed. These people will need to allocate about 4 hours to the appraisal distributed during weeks 6 and 7.

4. The "average" organization has 100 people that develop or manage software.

5. An "average" software development project or release delivery is 6 - 9 months long, or around 7 ½ months on average.

Computations:

1. 7 1/2 months of effort for 100 people is 130,000 hours of effort for the organization.

2. The effort required for the appraisal is 6 people x 200 hours + 50 people x 4 hours = 1,400 hours.

3. 1400 hours / 130,000 hours = 1.08% (That's right, just a shade over 1 %)

Conclusion:

During the 6 - 9 months of a typical organization's project schedule, the organization will be impacted to the tune of around 1% of its project-based effort. The cost of an appraisal is in the noise level with respect to the estimation accuracy of both cost and schedule. Therefore it can be concluded that an appraisal will not cause a project to be any later than, or cost any more than if no appraisal were performed. Most project managers I know would not bet their paychecks that their cost or schedule estimates were accurate to within 1%.

How To Calculate The Total Cost Of An Appraisal:

- Lead assessor fees vary; however, $75,000 can be used as a working figure.

- Six weeks of expenses (Airfare, Room, Board, Vehicle, Supplies, Shipping)

- Fully burdened costs for 1400 hours of effort from the organization. This number might increase depending on how many people over the minimum attend the Introduction to Software Process Improvement and CMMI class.

This works out to not more than $100,000 for the Appraiser plus your organization's costs

How About The Costs Of The Continuing Software Process Improvement Effort:

General rule of thumb data puts the costs of a continuing software process improvement effort at somewhere between 6 and 10 percent of the software budget. In terms of people, you would need a Software Engineering Process Group (SEPG) or equivalent that is 6 to 10 people per 100 developers and managers. The SEPG is composed of process people, software quality assurance people, configuration management specialists, measurement folks, etc. These are the types of people develop, improve and assure that the proper processes and procedures are being followed during the project's lifecycle phases.

How Do I Get Started?

With a potential ROI of 5:1, the best question might be, how can I get started right away?

The easiest way to get started is to conduct an informal appraisal of a selection of your organization's projects to see if they are in compliance with your own organization's standards for the management and development of projects. Secondly, compare the organization's standards with an industry benchmark such as the CMMI. Finally, compare the differences and put together a plan for closing any gaps.