



A CBA-IPI Reveals More Than Findings

David P. Quinn
National Security Agency

Since the beginning of the Capability Maturity Model (CMM)-Based Appraisal for Internal Process Improvement (CBA-IPI) method, Software Engineering Institute and CBA-IPI assessors have stated that appraisals are meant to improve an organization, not merely determine its current maturity level according to the CMM. Yet, some people still view the CBA-IPI as a way to get a maturity rating. Some shun the CBA-IPI in favor of the less expensive, less intensive Software Capability Evaluation, but they need to know that the CBA-IPI discovers more than findings, which makes it worth the extra investment.

What Appraisal Teams Do

The CBA-IPI appraisal team gathers data about the organization to compare with the practices in the CMM. The data comes from documents, interviews, and questionnaire responses from a number of projects. The data are characterized as strengths or weaknesses as they are mapped to the CMM practices.

Throughout the appraisal, the data status goes from “needing more information” to “corroborated.” Practices are judged as either common practices—*the rule*—or outliers of the organization—*the exception*—depending on the number of projects that use them. The appraisal team reports those practices deemed the rule during the Final Findings Brief. The exceptions go unreported but remain with the appraisal team members when the organization begins its improvement program.

The Importance of the Categories

When we view the strengths and weaknesses by the rule or the exception, the data take on additional meaning for the organization’s improvement program. Table 1 shows a short definition of the meaning of each category. By applying the data as described, the CBA-IPI

moves beyond a rating method to become an improvement tool.

Strength as the Rule

Every organization has some strengths in its practices. In more mature organizations, they are found in the Organization Standard Software Process (OSSP); less mature organizations use these practices as a matter of survival. Whether part of the OSSP or merely a means to survive, these practices represent the organization’s current best practices. Projects share them, and practitioners use them on a regular basis.

The CBA-IPI reports these best practices for each key process area (KPA) rated. They receive some fanfare during the appraisal but little attention afterward. After the appraisal, the appraisal team can identify where these best practices reside, so the organization can leverage them as part of the process improvement program.

Weakness as the Rule

The real reason to do an appraisal is to find the *targets for improvement*—those practices that are considered general weaknesses with regard to the CMM. Weaknesses may not be glaring problems

for the organization, but they are inhibitors to sound software engineering.

Whenever someone mentions appraisal findings, they tend to think in terms of the organization’s general weaknesses. Findings are listed by KPA and act as the requirements for the improvement program. Action planning is done based on these findings. Progress is shown by removing these weaknesses from general practice.

Strength as the Exception

It is not unusual for the appraisal team to stumble on a unique practice that provides additional software engineering capability to a project, especially when appraising a Level 1 organization. The practice may match a CMM practice that does not exist in the rest of the organization, or it may be an alternative practice to the CMM that someone in the organization innovated. Either way, the practice is not in general use by the organization, but it is considered a strength.

Usually, exceptions are important to the organization even though they are not mentioned in the Final Findings Brief. They represent a potential solution to targets of improvement or provide an additional alternative to the organization’s best practices. The appraisal team must identify exceptions during the action-planning phase of the improvement program to leverage the practice across the organization.

Weakness as the Exception

Because software engineering practices are performed by humans, it is unrealistic to expect everyone in the organiza-

Table 1. *Categories of data.*

	The Rule	The Exception
Strengths	Current Best Practices	Potential Solutions
Weaknesses	Targets for Improvement	Resistance or Irrelevance

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tion to do everything the same way. Some variations are healthy and are part of tailoring the OSSP to a project's specific needs. Other variations represent exceptions that may inhibit the organization's ability to mature. These exceptions are weaknesses that may or may not be addressed by the improvement program, depending on their impact. However, the appraisal team must keep track of these exceptions to allow the organization to take corrective actions.

An organization does not address an exception for legacy systems with a life of less than a year. Because these exceptions have a limited life, they are not worth fixing. They represent limited risk to the organization because they are not likely to be continued in other projects.

An organization needs to address an exception that represents resistance to sound software engineering. Fortunately for the organization, the appraisal identifies a set of best practices to provide to these resisters. The appraisal team should make sure the improvement program is aware of the resisters and recommend the best practices to use.

Summary

When an organization undergoes a CBA-IPI, the Final Findings Brief presents the general strengths and weaknesses of the organization by KPA. Although these findings are officially reported as part of the appraisal's end product, they are not the only strengths and weaknesses found during the appraisal. The appraisal team discovers exceptions that the organization should consider as part of the improvement program.

Exceptions that are strengths represent potential solutions for targets of improvement. It is crucial that the organization have access to these exceptions to make the improvement program more effective. The appraisal team provides that access.

Exceptions that are weaknesses represent possible resistance. The organization needs to address this resistance to minimize its impact. The best way to address this resistance is to use the strengths reported by the appraisal. The appraisal team can recommend which current best practices address the resistance.

Without the extensive investigation of a CBA-IPI, the exceptions in the process will not be captured or retained. The exceptions play an important role in the improvement program. This makes the CBA-IPI a valuable tool that goes beyond a mere rating method. It is an improvement tool worth any added expense. ♦

About the Author

David P. Quinn is chief of the Network Management Software Branch at the National Security Agency. He has more than 15 years experience in software development and maintenance. He spent four and one-half years working on software process improvement as a process consultant. He is certified by the Software Engineering Institute as a lead assessor for CBA-IPIs. He was also a member of the CMM Advisory Board.

National Security Agency
9800 Savage Road, Suite 6675
Fort Meade, MD 20755-6675
Voice: 301-688-2299
Fax: 301-688-2259
E-mail: dpqsr@romulus.ncsc.mil