Level 2 Achievement

Nature abhors a vacuum, thus it comes as no surprise when an individual supplies his or her own guesses and assumptions to fill in factual gaps. Such apparently happened to the author of the Letter to the Editor in the September 1999 *CrossTalk*. As a principal participant in the Thrift Savings Plan Division's (TSPD) Software Process Improvement (SPI) effort at the USDA's National Finance Center, I would like to address the inferences drawn by that [letter writer].

First, a brief background. The TSPD develops and maintains the Thrift Savings Plan software for the Federal Retirement Thrift Investment Board under a fee-for-all-service agreement. SPI was initiated and funded by the customer in the interest of the program's million-plus participants. The customer, not the software engineers, established the immediate goal of Capability Maturity Model® Level 2, with substantial progress toward Level 3 by October 1998. The customer is also backing continued process improvement. On reflection, though, the author of the [letter] might surmise the difficulty of preventing Level 2 from becoming the primary focus of engineers whose jobs were riding on the Software Capability Evaluation (SCE) results.

The division's initial assessment was via the Capability Maturity Model-Based Appraisal for Internal Process Improvement (CBA-IPI) method in August 1995. Subsequent assessments were via the SCE. The SCEs were extremely rigorous (more so than a typical CBA-IPI), and were led by the principal author of the SCE method, Paul Byrnes. The [letter] neither stated nor implied that the first assessment occurred 10 months prior to the successful assessment. In fact, it states that, "…efforts began in earnest in November 1997 with the organization and rollout of several key processes." Prior to that date, there was a lot of motion, very little progress. The Software Engineering Process Group (SEPG) spent two years in attempts to build real management commitment, involvement, and direction. When they obtained it, with assistance from the Software Technology Support Center, the real improvements began. The real improvement journey to Level 2 took place in 10 months.

I have been involved in SPI for some five years now—successfully. I have had many opportunities to discuss elements of success and failure with many organizations conducting SPI activities. I have found job insecurity to be perhaps one of the primary motivators of engineers to adopt and practice process improvements. They and their managers tend to recognize SPI as nice in a perfect world, but are usually too deep in firefighting to spare time for fire prevention. I have found that most of the successful organizations I have talked to had to hit some type of significant low point before SPI really took hold. In a perfect world, we would all embrace SPI for the right reasons, but I have not seen that as the most common motivator for initial SPI. On the other hand, we saw and appreciated real improvements in quality derived from implementing basic project management. Are they invalidated by initially misplaced motivation?

A primary lesson learned through findings of an interim SCE, in which we failed to satisfy the verification common feature of all the Level 2 Key Process Areas, was that it would behoove an improvement organization to develop Software Quality Assurance (SQA) first. The SQA process can be developed in the absence of other software processes. As other new processes come on line, they simply become inputs to SQA. The Capability Maturity Model makes a clear distinction between quality control (inspection of the product as it rolls off the line), and quality assurance (review and inspection for fidelity to the process, procedures, and standards). Product quality remained the responsibility of the project team; SQA ensured that quality activities were planned into the projects and conducted as planned. In the latest SCE in September, the assessors had high praise for the SQA effort, finding it proactive, observed through the life cycle, and respected by practitioners to the degree that SQA personnel were sought out for consulting throughout the project.

A second lesson learned via interim SCEs: it would be difficult to "game" an assessment. To know enough to present a consistent picture of the software processes and practices, and to be able to back assertions of institutionalization with artifacts, managers and practitioners have to be practicing the improvements. Each member of the software organization has to know his or her roles on the project as well as being familiar with the roles of others. To go to the lengths it would take to achieve that result, and not implement and institutionalize the practices, would be monumentally absurd.

—Linda Giffen,
SEPG Leader,
USDA National Finance Center

Chuck Stenzrude,
SQA Leader,
USDA National Finance Center

On the cover: Cover artist Anthony Peters has worked as a professional artist since he graduated from the University of Utah in 1995. His work has appeared in movies, books, web sites, multimedia CDs, and television commercials. His most recent ventures include 3-D graphics and computer animation. He is a full-time artist for L-3 Communications. Anthony lives in Layton, Utah.