Up Close with Lt. Col. (Ret.) Joe Jarzombek and Bruce Allgood

Lt. Col. Joe Jarzombek retired in April as the Director of CRSIP. He managed CRSIP efforts in the STSC to provide technology information services, such as *CROSSTALK: the Journal of Defense Software Engineering*. In addition to the CMMI Product Development Team, he has served on various software steering committees and working groups to provide coordinated software technology initiatives, policies, and practices.

H. Bruce Allgood is the Deputy of the Computer Resources Support Improvement Program (CRSIP) at Hill AFB in Ogden, Utah. He brings 29 years of experience in the electronics and software marketplace to his assignment. He has been involved with the development of Practical Software Measurement (PSM) since its inception in 1994. Allgood has been involved with software process improvement efforts utilizing the Capability Maturity Model (CMM®) for the past eight years. As a member of the Air Force Software Technology Support Center (STSC), he supports software process improvement efforts throughout the Air Force and DoD. He has worked with Capability Maturity Model Integration (CMMI), assigned to work with the Training Integrated Product Team (IPT) within the CMMI Product Development Team. He represents the Air Force and DoD perspective to the CMMI training effort.

The importance of measurement and its use in the field of software process improvement have been steadily increasing in recent years. To shed more light on the growing use of this discipline, Scott Lucero, Program Manager of the Army Software Metrics Office, interviewed H. Bruce Allgood and Lt. Col. Joe Jarzombek on the Capability Maturity Model®-Integrated-Systems/Software Engineering (CMMI-S/SE)'s new process area for measurement.

Measurement has been elevated to the status of a separate process area in the CMMI that Allgood and Lt. Col. Jarzombek helped author. Lucero, who has been published in CROSSTALK, interviewed the men on the CMMI's new process area for measurement.

The following interview is reprinted courtesy of *Insight, The Army's Software Metrics Newsletter.* It first appeared in the Spring 1999 issue (Vol. 3, No. 4)

The Interview

Question: The first public release draft of the CMMI stated that there are more than 30 process improvement models that use the general approach of the CMM. These models include the Software CMM, the Systems Engineering CMM, and the People CMM. What is the relationship between the CMMI and the other CMM-based models?
Answer: The CMMI effort uses three documents as source models:
- CMM for Software, Version 2, draft C.
- Electronic Industries Alliance Interim Standard (EIA/IS) 731, System Engineering Capability Model (SECM).
- Integrated Product Development Capability Maturity Model, draft Version 0.98 (IPD-CMM).

Several additional CMM-related documents are listed as references for the effort, including the Software Acquisition CMM (SA-CMM) and the Federal Aviation Administration Integrated CMM (iCMM).

Question: Measurement is already an integral part of several Key Process Areas (KPAs) of the CMM. Why create a separate process area for measurement in the CMMI? Is it due, in part, to the Level 4 quantitatively managed stage of the CMM?

Answer: One of the requirements found in the CMMI A-Specification is to have the product suite consistent and compatible with the International Standards Organization/International Electrotechnical Commission (ISO/IEC) 15504, which includes a measurement process area. It was felt that, even though measurement is referenced in several of the CMM KPAs, there was insufficient focus on measurement at the lower maturity levels. Organizations that have achieved the highest CMM ratings have reported to us that a clear focus on measurement at lower levels would have saved them significant efforts later. Yes, the need for a measurement process area in CMMI is due in part to the requirements for Level 4. Historical measurement data is necessary to be able to quantitatively manage processes. It was also felt that without measurement as a process area, management would not pay adequate attention to measurement as a critical success factor for process improvement.

Question: Can you tell us a little about the Measurement Process Area (PA)? How is it different from the measurement aspects of the different KPAs of the Software CMM?
Answer: Although several existing process areas have measurement and analysis as common features, without the Measurement and Analysis PA there is no one place in the CMM where practitioners can go to find a description of good measurement practice. The Measurement and Analysis PA provides a focus area and foundation for the various applications of measurement in project management and process improvement activities. The PA provides greater consistency and understanding with respect to the practice of measurement. Therefore, the CMMI should allow organizations to implement measurement more easily than if the equivalent practices were spread across multiple process areas. We are afraid that management buy-in to the need for good measurement processes will be missing if measurement is not raised to a process area.

Question: Could you briefly describe the two representations of the CMMI, continuous and staged, and the need for these two different representations?

Answer: The CMMI A-Specification explicitly requires both a staged representation and a continuous representation.[1] In a staged representation, such as the SW-CMM, each maturity level contains a specific set of process areas that must be achieved before moving to a higher maturity level. The continuous representation, such as the SECM, has only a recommended sequence of process areas that should be achieved. To accommodate this variation of source models, the CMMI product suite offers staged and continuous representations of each CMMI model. Some parts of an organization may prefer the staged representation, while others may prefer the continuous representation. The content of each model representation is virtually identical. Regardless of which representation is used, assessments using either should produce very similar results, and the guidance stemming from an assessment should be the same.

Question: The CMMI is based on the FAA's Integrated Capability Maturity Model (iCMM) work,[2] which integrates the Software and Systems Engineering CMMs. Was measurement a part of the FAA-iCMM?
Answer: Yes, measurement is a process area in FAA-iCMM. Authors of the CMMI Measurement and Analysis PA used the information created by FAA-iCMM as a reference.

Question: Was not the Software Technology Support Center (STSC) involved in the trial applications of the FAA-iCMM in the Department of Defense? What has been the experience in the pilot applications of the iCMM?
Answer: Yes, the STSC is involved in piloting enterprise-wide process improvement efforts at Warner Robins Air Logistic Center using the FAA-iCMM as a model. Using the same reference model has proven useful in getting the software, systems, and acquisition communities to work closely in achieving common goals.[3]

Question: Einstein said that our theories determine what we measure. The SEI has had various takes on software measurement over the years: the SEI core measures, the Goal-Question-Indicator-Metric, and the CMM measurement map. Does the new Measurement PA, in essence, create a new theory about what aspects of software development to measure?
Answer: There is nothing in the CMMI Measurement and Analysis PA that is considered new theory. The PA is based on industry-best practices for measurement and does not dictate specific measures, or presuppose how measurement must be accomplished for a particular project.

Question: There is an effort to create an international standard for software measurement, ISO 15939, which is partially based on the Practical Software Measurement (PSM) guidance. What is the relationship between the CMMI Measurement PA and ISO 15939? Are these two efforts in sync?
Answer: Authors of the CMMI Measurement PA actually used the ISO 15939 document as a resource to create the Measurement and Analysis PA. As a result, the philosophy found in the process area closely follows that found in PSM. Efforts are definitely in sync and are expected to remain so.

Question: Lastly, why are you all known as the *Measurement Mafia*?
Answer: Initial voting on what process areas to include in the CMMI resulted in a split vote on measurement. A few of the Product Development Team (PDT) members, the most vociferous, were given the task to create the new process area for further study and consideration. After this group of PDT members created measurement and analysis as a new process area, it lobbied other members with the reasons why it ought to be accepted as a PA. They soon became known as the *Measurement Mafia.* I assume this was a light-hearted reflection on our persuasive tactics. ✍

Notes

1. See page 6 for more on this in an article by Sandy Shrum.
2. See page 8 for more on this in an article by Joan Weszka, Phil Babel, and Jack Ferguson.
3. A report on the progress of this effort was presented at STC '99.

A New Look

Readers will notice a new face to CROSSTALK beginning with this issue, with the introduction of color covers. It is the latest in the staff's efforts in the past year to bring you a quality product, with such improvements as:
- The F-22 poster insert and quiz in the May issue.
- A more user-friendly and better positioned Table of Contents.
- A cleaner, sharper layout to make the contents more attractive and more readable.
- The addition of our Web site address on the bottom of the pages throughout the journal, to make it easier for readers to contact us or access us online.
- Including high-profile interviews with such subjects as Gen. Lester Lyles, former Vice Chief of Staff for the Air Force and now Commander of the Air Force Materiel Command at Wright-Patterson Air Force Base; Dr. Delores Etter, Under Secretary of Defense (S&T); and an upcoming interview with Paul Maritz of Microsoft.
- Listing of theme-related Web sites.

CROSSTALK staff, clockwise from left. *Managing Editor Kathy Gurchiek, Assoc. Editor Heather Winward, Publisher Rudy Alder, Assoc. Editor Matt Welker, Assoc. Publisher Lynn Silver.*

In making these improvements, it was important that we retain those elements that readers have long enjoyed and found useful in CROSSTALK, such as well-written articles on software metrics, process improvement, lessons learned/field reports, and software project management, as well as BACKTALK. We will continue to implement changes—major or minute—that will see CROSSTALK continue as the Department of Defense's premier software engineering journal. As we make these changes, our mission at shall remain the same: *To encourage the engineering development of software in order to improve the reliability, maintainability, and responsiveness to the United States' warfighting capability and to instruct, inform, and educate readers on up-to-date policy decisions and new software engineering technologies.* Drop us a line; let us know how CROSSTALK can meet your needs.