

CMMI for Small Businesses: □ Initial Results of the Pilot Study

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A frequent misconception about adopting Capability Maturity Model® Integration (CMMI®) is that it works only for large organizations—its cost and complexity appear to make it impractical for smaller organizations to implement.

Jim Hendrix, a business systems engineer at Analytical Services Inc. (ASI), doesn't believe that's the case. His organization recently implemented three process areas (PAs) of CMMI as part of a pilot study with the Software Engineering Institute (SEI). He said CMMI might even be more beneficial to smaller businesses because it allows them to grow more consistently and to make changes when they are less costly, that is, "before growth demands them."

ASI and Cirrus Technology Inc. are two Huntsville, AL, companies that participated in a recent study to develop a business case and technical guidance for small- to medium-sized enterprises—defined by the study as companies with 25 to 250 employees—that wish to adopt CMMI. Initial results from the pilot look promising: both organizations described significant benefits from using CMMI, especially in the areas of project management and change management, and both are in the process of documenting and disseminating their findings so that others can learn from their experiences.

The pilot, launched in July 2003, is part of a joint project between the SEI and the U.S. Army Aviation and Missile Research and Development Center (AMRDEC) Software Engineering Directorate in Huntsville. SuZ Garcia, a member of the piloting team from the SEI, said that the pilots help support a business case for deploying CMMI in smaller companies. "We now are much more confident that CMMI is technically feasible for these kinds of companies; the process areas helped them to solve current business problems, and the generic practices helped them to institutionalize the new practices," she said. "The challenges lie in making CMMI adoption for these smaller companies and projects affordable."

Pilot Process

Although the focus of the pilots was technical feasibility, the team chose an approach that, for the most part, simulated the level of resources that a small company might be able to expend for outside consulting for CMMI. Each organization received two days of training and business analysis, two days for an initial on-site appraisal, and one day each month for on-site consultation during implementation.

At ASI, a management and technical services provider with ISO 9001:2000 certification, the team voted on which areas needed the most work, settling on Requirements Management (REQM), Project Planning (PP), and Measurement and Analysis (MA). The next step was a gap analysis to

determine where ASI's current practices mapped to these areas of CMMI and to develop an action plan for bridging the gaps.

The team then developed project-specific process descriptions based on this analysis. One project the team worked on involved a small project to upgrade a software system. Once the gap analysis was complete, the ASI team formulated an action plan, updated its existing process descriptions to conform to CMMI expectations, executed the pilot projects, collected metrics, gathered lessons learned (including benefits) and process improvements, and updated its processes to reflect process improvements. In the final phase of the pilot, the team set up a process for monthly status checks and coaching sessions with the SEI and AMRDEC consultants.

Pilot Results: ASI

Hendrix said that even though the team members worked hard to learn and implement the PAs, they were astounded by their appraisal results: capability level 2 in REQM, PP, and MA and capability level 3 in Organizational Training and Organizational Process Focus—two additional areas ASI decided to appraise to understand the capability of these existing processes, which were built on ASI's ISO 9001 implementation.

“We now have confidence that CMMI will help our services-based company, and we have renewed initiative for improvements,” Hendrix said. “The pilot members and others at ASI have seen the value of CMMI and the potential it offers.”

Pilot Results: Cirrus

Cirrus is a technical services and manufacturing enterprise based in Huntsville with several satellite offices around the country. The Cirrus piloting team followed the same general process as ASI, selecting PP, REQM, and Project Monitoring and Control (PMC) as its three focus areas for improvement. The team applied CMMI guidance to a two-person project to research and catalog information from the Web as well as to one of its manufacturing projects. At the end of the pilot, Cirrus was appraised at capability level 1 in each PA, which was its initial target, since it had only recently purchased the manufacturing sector of the company and knew that the organization wasn't ready to attack the institutionalization aspects of the generic practices until it had settled some of the basic operations of the new business unit.

“As the pilot proceeded, our emphasis changed from an original desire to ‘get certified’ to a focus of improving in smaller ‘chunks’ in areas identified by business analysis,” said Bill Clemons, Cirrus project lead. “We realize now that we can use CMMI in the areas that naturally add value to our organization and quality to our end products by improving activities where we need them the most.”

Next Steps

Garcia and her team are currently compiling guidance—in the form of documents, methods, and tools—that the pilot organizations used to make CMMI adoption easier. This guidance will be published in a series of reports throughout the next year and shared at several software conferences, including Software Engineering Process Group (SEPG) Australia Conference 2004 in September and the CMMI Technology Conference and User Group in November. The SEI and AMRDEC are also discussing potential follow-up work in the Huntsville region.

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