Brief History of CMMI

The CMMI® Product Suite was developed by the CMMI Product Team, a team of process improvement experts from the government, industry, and the SEI, to improve on the existing Software Capability Maturity Model (SW-CMM) released in 1991. The CMMI Steering Group, leaders of the CMMI Product Team, realized that the best practices outlined for software development could be merged into a single framework that organizations could use for enterprise-wide process improvement initiatives. In 2000, the team published the original CMMI model, training, and appraisal method, which incorporated software and systems engineering. The model was also designed to support the future integration of other disciplines.

CMMI Product Suite

The CMMI Product Suite currently consists of two constellations: Development and Acquisition. Both of these constellations include a model, the accompanying Standard CMMI Appraisal Method for Process Improvement℠ (SCAMPI℠) appraisal method, and training materials.

The CMMI Product Suite helps integrate traditionally separate organizational functions, sets process improvement objectives and priorities, provides guidance for quality processes, and provides a point of reference for appraising current processes.

CMMI models are being used by small and large organizations alike in a variety of industries, including electronics, health services, finance, insurance, and transportation. Adopting organizations include Boeing, General Motors, JP Morgan, Bosch, and many others in North America, Europe, Asia, Australia, and South America.

Important Statistics:
- Over 70,000 professionals have completed the *Introduction to CMMI* course, offered by the SEI and the SEI Partner Network
- Over 300 SEI Partners and 400 appraisers are authorized by the SEI to deliver training and appraisals
- As of March 2007, nearly 2,000 organizations have reported appraisal results to the SEI

Development Constellation

In August 2006, CMMI Product Suite Version 1.2 was introduced with the release of the CMMI for Development, Version 1.2 (CMMI-DEV, V1.2) model. CMMI-DEV is a process improvement approach for product and service development organizations that provides the essential elements of effective processes. It combines disciplines such as software and systems engineering, and dovetails with other process-improvement methods that might be used elsewhere in an organization, such as the SEI's Team Software Process℠ (TSP℠), ISO 9000, Six Sigma, and Agile. It can be used to guide process improvement across a project, division, or organization to lower costs, improve quality, and deliver products and services on time. Organizations can determine how capable their processes are by conducting a SCAMPI appraisal to assess their level of maturity (ranging 1 to 5). Appraisals are conducted by lead appraisers who are authorized and trained by the SEI. SCAMPI (Class A) appraisals are designed to provide benchmark quality ratings relative to CMMI models.

Acquisition Constellation

The CMMI for Acquisition constellation was released on November 1, 2007 and is based on work done by General Motors and the SEI. General Motors began this work in 2005 when the SEI and the CMMI Steering Group were developing CMMI for Development, Version 1.2. General Motors IS&S Chief Information Officer Ralph Szygenda approached the SEI about developing a CMMI model that would address acquisition problems and processes. Already recognized as a leader in IT, GM's and Szgdenda's vision was to improve how the automaker acquired critical software needed to manage GM's infrastructure around the world. GM's problems were also being experienced in government acquisition offices.

In 2006, *Adapting CMMI for Acquisition Organizations: A Preliminary Report* was published. This document was piloted and reviewed by acquisition organizations and thereafter used as the basis for what is now CMMI for Acquisition, Version 1.2.

CMMI for Acquisition also has its roots in the Software Acquisition CMM (SA-CMM) model released by the SEI and U.S. government in 1994. The SA-CMM model has been used by a variety of Department of Defense (DoD) and other government agencies for a decade. In 2004, the DoD directed the development of the *CMMI-AM module*, a CMMI-compatible collection of best practices for acquisition that could be used within government program offices.

CMMI-ACQ provides an opportunity for acquisition organizations:
- To avoid or eliminate barriers and problems in the acquisition process through improved operational efficiencies
- To initiate and manage a process for acquiring products and services, including solicitations, supplier sourcing, supplier agreement development and award, supplier capability management
- To utilize a common language for both acquirers and suppliers so that quality solutions are delivered more quickly at a lower cost with the most appropriate technology

CMMI-ACQ also addresses how an acquisition organization forms effective teams across organizational boundaries. Often, teams must coordinate the functions, manage the risks, and handle information flow as part of a complex relationship with other organizations. CMMI-ACQ provides guidance for these types of challenges.

Organizations that are interested in adopting CMMI-ACQ will be able to send their employees to public courses offered by the SEI in late fall 2007. The SEI will also work to train and authorize organizations to deliver CMMI-ACQ training.

About the Carnegie Mellon Software Engineering Institute

The Carnegie Mellon® Software Engineering Institute (SEI) is a federally funded research and development center that provides the technical leadership to advance the practice of software engineering so that software-intensive systems can be acquired and sustained with predictable and improved cost, schedule, and quality. Since 1984, the SEI has served as a global resource in software engineering, networked systems survivability, and process improvement.

As the information revolution continues to advance, software has continued to grow in importance and impact, not only in defense systems but also in transportation, finance, medicine, entertainment, and all other aspects of everyday life.

Over the years, the SEI has made tremendous contributions in many areas, including software process improvement, network security and survivability, software architecture and product lines, real-time systems, risk management, software engineering education, integration of software-intensive systems, the development of systems from components whose quality and performance are trustworthy, and the improvement of software acquisition skills.

The SEI operates with major funding from the U.S. Department of Defense. The SEI also works closely with industry and academia through collaborations. As a part of Carnegie Mellon University, which is well known for its highly ranked programs in computer science and engineering, the SEI operates at the leading edge of technical innovation.

Areas of Work

The SEI program of work is conducted in three principal areas: software engineering management practices, software engineering technical practices, and software acquisition practices. Within these broad areas of work, the SEI defines specific initiatives aimed at solving problems that impede the ability of organizations to acquire, build, and evolve software-intensive systems predictably, on time, within expected cost, with expected functionality, and without vulnerabilities.

Management Practices

The ability to effectively manage the acquisition, development, and evolution of software-intensive systems is a critical requirement of SEI stakeholders. Success in this area increases the ability of software engineering organizations to predict and control quality, schedule, cost, cycle time, and productivity when acquiring, building, and enhancing software systems. The most widely known aspect of this work is the SEI's Capability Maturity Model® Integration (CMMI®). The CMMI approach consists of models, appraisal methods, and training courses that have been proven to improve process performance.

Engineering Practices

SEI work in this area aims to improve the ability of software engineers to analyze, predict, and control selected functional and non-functional properties of software systems. Work is primarily focused on defining, maturing, and accelerating the adoption of improved technical engineering knowledge, processes, and tools. The work is product oriented and focuses on the knowledge and practices that allow software engineers to predict and improve specific attributes of software systems. Included in this area of work is the internationally-recognized CERT Program. CERT is a center of enterprise and network security research, analysis, and training within the SEI.

Acquisition Practices

Acquiring software-intensive systems that work on their first promised date is a global imperative. The goal of the SEI program of work in acquisition support is to address the unique demands and challenges of acquisition by helping acquisition organizations improve their processes and minimize risks.