



A Center for Requirements Excellence Can Move Your Organization to Higher Levels of Maturity

Technology is an enabler of most business improvements. In recognition of this simple fact, many organizations today are working to improve their software development processes. The Software Engineering Institute’s Capability Maturity Model (CMM) has become a useful guide to helping those organizations.

The key insight behind the CMM is that application development organizations must remove impediments to improvement *in a specific order* if they are to succeed. Therefore, the CMM provides an evolutionary path of five stages to help organizations increase the capability of their development processes. Within each stage, the CMM identifies the key process areas that must be focused on. By following the evolutionary path and by implementing the recommended key processes, development practices can be transformed from an ad hoc, undisciplined state into disciplined processes capable of predictable results.

Level 1 of the CMM represents the initial stage, in which application development results and processes are inconsistent.

The CMM reasons that to make any improvements, the first task is to establish a stable environment that facilitates repetition of successful practices. Thus, Level 2 focuses on project management and on establishing control of requirements.

Level 3 focuses on developing common processes based on best practices.

Levels 4 and 5, which we do not address in this paper, focus on quantitative management and on continuously evaluating the capability of processes in order to point to areas that require improvement.

Maturity Level	Key Processes
1. Initial	No required processes
2. Repeatable	<ul style="list-style-type: none"> • Requirements management • Software project planning • Software project tracking and oversight • Software subcontract management • Software quality assurance • Software configuration management
3. Defined	<ul style="list-style-type: none"> • Organization process focus • Organization process definition • Training program • Integrated software management • Software product engineering • Intergroup coordination • Peer reviews



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Many organizations are still at Level 1. At this level, between 30% and 50% of development effort is spent on fixing mistakes. A contributing factor is that project managers often commit to schedules that cannot be achieved without heroic effort. Rushing out code to meet unrealistic deadlines means cutting corners, sacrificing good practices, and creating mistakes.

By achieving Level 2, projects can set realistic expectations, with a by-product that developer-retention is higher in organizations that avoid “death march” projects.

At Level 3, organizations develop and use common application development processes, with consequent reductions in defects, cycle time and costs that have been reported as high as 40%.

So how can you get started moving up from Level 1 to Level 2, and then to Level 3? Since requirements management is a key competency for achieving Level 2, one way to begin is by establishing what we call a *Center for Requirements Excellence (CORE)*, that is, a group designed to focus specifically on improving the quality and management of requirements.

A Center for Requirements Excellence can be staffed by your in-house personnel, or it can be a virtual organization that combines your staff with expertise from outside. The advantage of this second choice is, of course, that you do not have to wait to build up experience in-house but can work with those who have already tried, tested, and identified the most beneficial techniques. In addition, you do not have to make a commitment to bringing on additional full-time staff.

What should a Center for Requirements Excellence consist of and how might it work?

- The CORE researches, documents, and continually updates a rigorous repeatable process for discovering, organizing and specifying business requirements and system requirements.
- The CORE selects a tool set where requirements information can be gathered in both models and text. In addition, the tools selected will allow dependencies among the requirements artifacts to be tracked. For example, it will be important to know what system function uses a particular piece of data, or to be able to trace all the system requirements that are related to a business requirement.
- The CORE ensures that the process is tightly integrated with the tool set and performs training for all those who will be participating in the requirements process – business subject matter experts, requirements analysts, and project managers.
- The CORE continually researches best practices and tool enhancements and ensures that the process takes advantage of the latest thinking.
- Once requirements are documented, the CORE provides web-based technology to enable sharing and review of the requirements. This technology, which we call LINK, is a place where reviewers can access the requirements, provide their comments, and give approvals.



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- The CORE establishes a process to manage change requests to the requirements throughout the development process.
- The CORE provides requirements analysts, facilitators, tool mentors, and data gatherers that can give timely and effective support to systems development teams.
- The CORE helps launch new projects by assessing project needs and providing appropriate training, tools, and processes.

The table below illustrates how establishing a CORE that uses defined processes, requirements capture tools, and requirements management and review tools can affect an organization's ability to reach CMM Levels 2 and 3. While a CORE will not meet each and every key process area within these levels, it is an enabler for many.

Key CMM Process Area	CMM Level	How Establishing a CORE Can Help
Requirements management. Establish, document, and maintain an agreement with the user community regarding the requirements for the project.	2	The LINK toolset provided by CORE is a repository of requirements that both analysts and the user community can access and comment on. Users review and approve requirements using LINK. The status of requirements is captured and tracked.
Software project planning. Develop and negotiate estimates for the work to be performed, establish the necessary commitments, and define the plan to perform the work.	2	Because the CORE provides standard processes, template project plans can be built with known activities and tasks. In addition, the LINK tool contains a scheduling capability that allows you to assign objects for review to particular users, develop a review schedule, and report on the review schedule progress.
Software project tracking and oversight. Provide visibility into the actual progress of a project so that management can take effective and appropriate action.	2	LINK tracks the status of requirements, their schedule for review, and the comments and approvals that have been made. Any user can report on the status of a requirement (or a set of requirements) or can see the progress within a group of requirements scheduled for review.
Software subcontract management Negotiate estimates, commitments, project plan and review cycles.	2	Following CORE processes means that well-documented requirements will be available to ensure that the work of contractors meets the business need.
Software configuration management. Establish and maintain the integrity of the project deliverables throughout the entire life cycle.	2	LINK provides history on all objects it stores. The history is kept on each object, on the content of each object, and on the relationships that the object participates in. You can request a report on object history at any time. The LINK repository itself can be versioned using such tools as PVCS or SourceSafe.
Organization process focus. Develop and maintain an understanding of your organization's software processes and coordinate the activities to assess, develop, maintain and improve these processes. This responsibility should be assigned to a permanent team within your organization.	3	The CORE documents processes, including information on when and how to use supporting tools. This process area, along with the next, is probably the key reason to establish a CORE. Without a group such as CORE whose rationale is to develop and maintain processes and process assets, an organization cannot achieve CMM Level 3.



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Organization process definition. Develop and maintain your organization’s standard software process, along with related process assets such as descriptions of software life cycles, process tailoring guidelines and criteria, your organization’s software process database, and a library of software process-related documentation.	3	See above.
Training program. Identify the training needed by your organization, projects, and individuals, and then develop or procure training to address the identified need.	3	The CORE team is positioned to provide training in processes and in tools to support the processes.

Organizations that establish a Center for Requirements Excellence are positioned to significantly enhance their maturity level within the CMM and can expect to reap many benefits. Using an outside organization such as Doreen Evans Associates to help you create a CORE means that you:

- Are better able to deliver quality requirements on time and within budget to your business partners
- Can quickly build high performance teams using CMM level 3 processes
- Have immediate access to best practices which includes process, technology and people
- Can use a process and tools without incurring cost and time of developing them and providing the on-going maintenance of them
- Have access to additional qualified resources “ready to go” to support your project work

Why work with Doreen Evans Associates to establish your CORE organization?

- In the twelve years that Doreen Evans Associates has been incorporated, we have had the opportunity to develop, test, and constantly improve our approach to requirements-gathering. We have come to believe that requirements-gathering is the ideal task to outsource. Why? Statistics gathered by the Standish Group show that requirements errors are the largest class of errors (41%) in large projects, and that fixing requirements errors consumes 70-85% of total project rework costs. If there were requirements experts in every organization, these statistics would not apply. We believe it just makes sense to use outside expertise to ensure the highest-quality requirements.
- Our requirements management processes are driven by models that represent the architecture of the business and the systems that support it. We believe it is virtually impossible to gather all requirements without using models, because they provide an ideal mechanism to drive out requirements and for subject matter experts to review them.
- Our processes are supported by repository-based modeling tools that hold the relationships among project artifacts.



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- We have developed the Requirements**LINK** product to provide a mechanism where users can review, comment on, and share requirements information via the web. Requirements**LINK** also provides requirements traceability and requirements management.
- We are committed to the success of your requirements efforts.

About Doreen Evans Associates

Doreen Evans Associates (DEA) is a professional services firm that focuses on business process improvement. We can help you change a process, build an enterprise architecture, or define requirements for your systems and technologies. Founded in 1992 as a woman-owned, privately-held small business, our mission is to ensure that business need drives solutions.