



Have PMBOK, Will Take CMMI Maturity Level 2 by Tarak Modi, VP & CTO

A familiar situation...

So you've finally taken the plunge and set your eyes on achieving a CMMI Maturity Level 2 (ML 2) appraisal rating. Despite the extremely aggressive schedule of just a few short months, the initial apprehension is quickly overcome by overwhelming camaraderie and a sense that with a little bit of hard work (euphemism for lots of overtime), the target is within reach. After all, you've been around for years, have grown at enviable double digit rates, and most important of all, you are profitable. Confidence is quickly replaced with "over confidence" once you look at the CMMI for Development Constellation to find that achieving an ML 2 rating only requires you to have processes in these seven CMMI Process Areas:

1. Requirements Management (REQM)
2. Project Planning (PP)
3. Process and Product Quality Assurance (PPQA)
4. Configuration Management (CM)
5. Measurement and Analysis (MA)
6. Project Monitoring and Control (PMC)
7. Supplier Agreement Management (SAM)

You think to yourself, "of course we do requirements management, we plan our projects (all our projects have someone called a project manager, after all), we talk with our suppliers, and so on." As you continue your research, you realize that your claims must be supported with documented processes. So you start writing down processes around the seven CMMI process areas. However, this requires you to fragment your processes to the point that they don't really reflect the way projects currently are or even should be run. "At least this will make it easier for the CMMI appraiser to see how we are doing things," is your standard response to any challenge to this way of organizing the processes. A few months later, you end up with a complex web of processes broken up by process area with steps that mapped to every single goal and practice area for CMMI ML 2. Yes, running a project is much more complicated and cumbersome with CMMI processes in place, but at least you are all set to achieve the CMMI ML 2 rating and not a moment too soon because your SCAMPI B¹ assessment starts tomorrow!

¹ Assuming that you did not just go straight for a SCAMPI A appraisal. The Standard CMMI Appraisal Method for Process Improvement (SCAMPI) is the official Software Engineering Institute (SEI) method to provide benchmark-quality ratings relative to Capability Maturity Model Integration (CMMI) models. It comes in three flavors: SCAMPI A, B, and C with SCAMPI C being the most informal, followed by SCAMPI B, and finally by SCAMPI A, which is the only appraisal that can yield an official Maturity Level rating.

One week later...

The underwhelming results of the SCAMPI B have knocked the wind out of you as if someone had just punched you in the stomach. With utmost politeness, yet very directly and in no uncertain terms, the appraiser made it clear that you were not even close to adequately demonstrating the necessary level of institutionalization of processes to successfully pass a SCAMPI A. Reasons cited included the lack of an organization level policy that provides the proper direction and guidance for internal processes to operate at ML 2 and a lack of evidence that project members are actually following the documented processes.

What happened?

Unfortunately, the situation described above, and summarized in Figure 1 below, occurs more often than one might think.

As shown in Figure 1, there are many reasons why this pattern keeps repeating itself time and time again. Often times an organization will embark on a journey to achieve a CMMI ML rating without establishing a clear business case for continuous process improvement driven by strategic business objectives or realizing just how involved of a journey this really is. Consequently, such organizations simply haven't taken the time to understand their product development and project management practices, and instead, they look to CMMI as a means of defining their own processes rather than using it for what it is intended – a process maturity model. This is the beginning of the slide down a slippery slope at the end of which lies a complex web of processes that map well to the CMMI model but have little practical application outside of an academic world. With such a weak foundation, is it any surprise that the end results can be summarized as a lack of buy-in, rampant confusion and frustration, and the resulting malicious compliance? Just as we saw in our example above, this approach most often leads to failure and disillusionment.

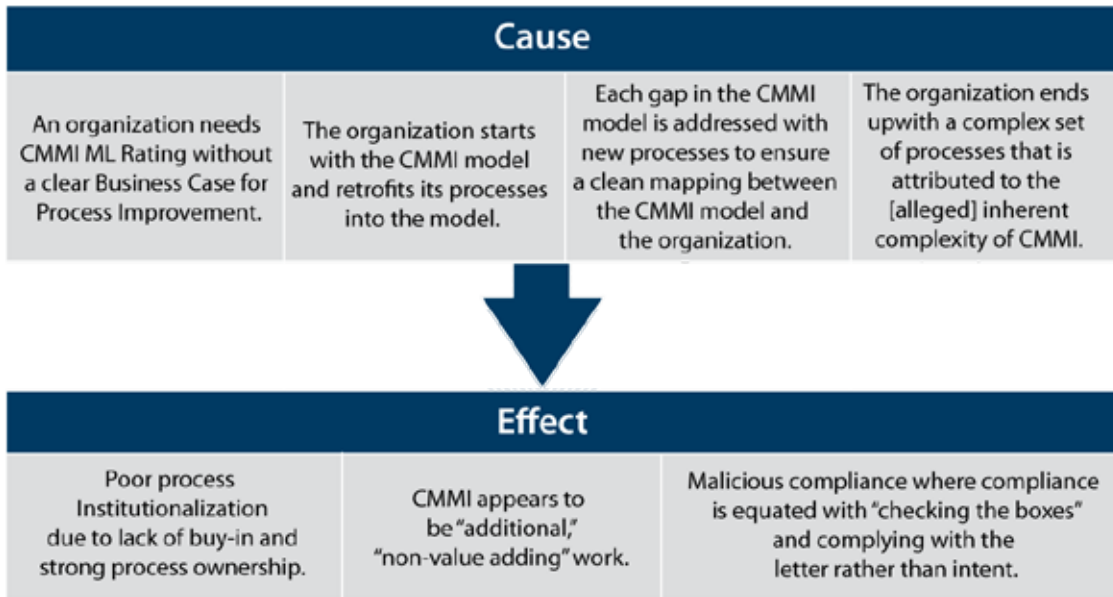


Figure 1 – The Classic CMMI Dilemma.

It's all about Basic Project Management

A fact that most organizations don't realize is just how easy attaining a CMMI ML 2 can be. You don't need a sophisticated tool set, nor do you need a complex set of rigorously defined, mandated processes across the organization. Rather, the gist of ML 2 boils down to three simple words – Basic Project Management. This means that all of the activities expected of a project in an organization seeking an ML 2 rating are activities that a well-run project would perform anyway. The news keeps getting better though since project management is a mature discipline with a vast and proven body of knowledge, which means there is a lot to leverage without the need to reinvent the wheel. One such body of knowledge, and perhaps the most well-known, is the Project Management Body of Knowledge (PMBOK).

So, what is the PMBOK?

The PMBOK is the official guide published by the Project Management Institute (PMI) that identifies a common vocabulary for project management as well as the “Generally Recognized, Good Practices” of effective project management. A “generally recognized, good practice,” as defined by the PMI, is a value adding practice (skills, tools, and techniques) that enhances the chances of success and applies to most of the projects, most of the time.

The PMBOK Guide is process-based, meaning it describes work as being accomplished by a set of 42 overlapping and interacting processes that are organized into five process groups and nine knowledge areas as shown in Table 1. In other words, each of the nine knowledge areas contains the processes that need to be accomplished within its discipline in order to achieve an effective project management program. Similarly, each of these processes also falls into one of the five basic process groups, creating a matrix structure such that every process can be related to one knowledge area and one process group.

PMBOK Process Groups	PMBOK Knowledge Areas
<ul style="list-style-type: none">i. Initiatingii. Planningiii. Executingiv. Monitoring and Controllingv. Closing	<ul style="list-style-type: none">i. Project Integration Managementii. Project Scope Managementiii. Project Time Managementiv. Project Cost Managementv. Project Quality Managementvi. Project Human Resource Managementvii. Project Communications Managementviii. Project Risk Managementix. Project Procurement Management

Table 1 – The 42 PMBOK processes are organized into five process groups and nine knowledge areas.

Is CMMI ML 2 really just Basic Project Management?

One way to answer this question is with a theoretical discussion about the requirements (goals and practices) from the seven CMMI ML 2 process areas and describe how each one these requirements trace back to good, old-fashioned project management of your projects. However, that would be a very subjective answer. Rather, a more objective approach, and perhaps, a better way to answer the question is to map the requirements for successfully achieving a CMMI ML 2 to an authoritative framework for basic project management i.e., the PMBOK.

Mapping CMMI ML 2 to the PMBOK

Figure 2 depicts the results of mapping the seven CMMI ML 2 process areas to the five PMBOK process groups. The mapping process itself is fairly straightforward and can be summarized as follows:

1. Start with the seven process areas required for CMMI ML 2.
2. List the specific goals and practices for each of the process areas.
3. Now list the generic goals and practices for CMMI ML 2.
4. Map each CMMI goal and practice to the relevant PMBOK processes.
5. Map the PMBOK processes in step 3 to the five PMBOK process groups and nine PMBOK knowledge areas.

Luckily, the Software Engineering Institute (SEI) has already taken care of the steps 1, 2, and 3 for us as part of the CMMI ML 2 model and PMI has already provided a mapping of the processes to both the five process groups and the nine knowledge areas for step 5. So, step 4 is where the bulk of the work is needed and will require a detailed understanding of both the CMMI ML 2 model as well as the PMBOK.

Analyzing the Mapping

As you study the mapping in Figure 2, you might notice that a good deal of the work that satisfies CMMI ML 2 goals and practices occur during the processes that make up the Executing and Monitoring/Control process groups. Digging deeper into the mapping reveals why. Since CMMI is a process maturity model most of the goals and practices focus on how to mature processes over time. On a project much of the discovery of “what works well and what doesn’t” happens during the Executing and Monitoring/Control related activities of the project. You might spot another interesting trend as you study the distribution of the Generic Goals across the PMBOK process areas. Coincidentally (or maybe not), this distribution is similar to how work is done on a project.

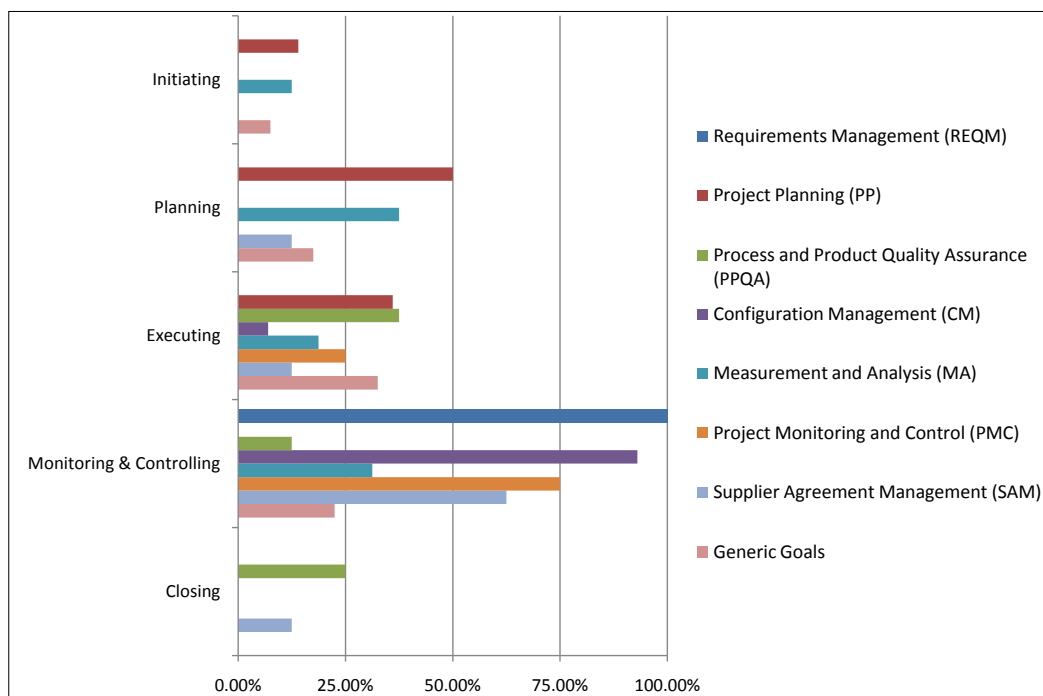


Figure 2 – Mapping the CMMI ML 2 Process Areas to the PMBOK Process Groups.

The mapping between CMMI ML2 and the PMBOK indicates a coverage (or intersection) of over 95%. The following three points account for the less than 5% gap.

1. The CMMI ML 2 Model requires that processes be institutionalized. The mapping covers eight of the ten generic goals required for demonstrating process institutionalization. The two that are not adequately addressed in the PMBOK are “Establishing an Organizational Policy” and “Objectively Evaluating Adherence.”
2. The CMMI ML 2 Process and Product Quality Assurance (PPQA) process area has a specific practice requirement for “Objectively Evaluating Processes,” which means evaluating how well the defined processes were followed in the creation of the artifact, product, or service. The PMBOK does not directly address this requirement.
3. The PMBOK defines a process for “Collecting Requirements,” which is part of the CMMI Requirements Definition (RD) process area that is not part of ML 2 (RD is part of ML 3 and above).

Starting over and avoiding the false starts

We've covered quite a bit of ground in this article thus far. Now, let's go back to where this all started. You were just about to embark on your CMMI ML 2 journey. This time, however, you are armed with valuable knowledge. You now know that CMMI ML 2, regardless of how complex it might appear, is really all about basic project management. Here are a few more pointers to keep in mind along your journey:

- Create and sustain a culture of continuous process improvement that is driven by business objectives.
- Start by creating a “to be,” robust, steady state process architecture that reflects how real work is and should be done, then find where/how the current state “reality” can be improved as a business process.
- Although process improvement itself is an ongoing process, each process improvement effort should be targeted and treated with the same rigor as any other project of similar size, scope, cost, and risk within the organization.
- Recognize that process improvement is a long-term investment that takes time and discipline just as any other long term investment.
- Process Improvement is done by a project (i.e., organically), not to the project (i.e., forced externally) and takes the form of value-adding activities as opposed to “check box” CMMI-specific activities.

Who would have guessed that the best approach is also the simplest approach? Just do what's right for your organization and CMMI will fall in naturally as part of doing business.

About the author

Tarak Modi, Vice President and Chief Technology Officer at CALIBRE Systems, Inc. (an employee-owned management and technology services company), is an industry thought leader in IT transformation and modernization technology such as enterprise architecture, SOA and Cloud Computing. A prolific author with excellent communication skills, Tarak has co-authored Professional Java Web Services (Wrox Press, 2001) and published over 80 articles showcasing his broad experience, keen business acumen, and deep technical knowledge. Find out more about Tarak at his professional website, TekNirvana.com.

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