SEI CMMI - CAPABILITY LEVELS

A capability level is a well-defined evolutionary plateau describing the organization's capability relative to a process area. A capability level consists of related specific and generic practices for a process area that can improve the organization's processes associated with that process area. Each level is a layer in the foundation for continuous process improvement.

Thus, capability levels are cumulative, i.e., a higher capability level includes the attributes of the lower levels.

In CMMI models with a continuous representation, there are six capability levels designated by the numbers 0 through 5.

- 0 - Incomplete
- 1 - Performed
- 2 - Managed
- 3 - Defined
- 4 - Quantitatively Managed
- 5 - Optimizing

A short description of each capability level is as follows:

Capability Level 0: Incomplete

An "incomplete process" is a process that is either not performed or partially performed. One or more of the specific goals of the process area are not satisfied and no generic goals exist for this level since there is no reason to institutionalize a partially performed process.

This is tantamount to Maturity Level 1 in the staged representation.

Capability Level 1: Performed

A Capability Level 1 process is a process that is expected to perform all of the Capability Level 1 specific and generic practices. Performance may not be stable and may not meet specific objectives such as quality, cost, and schedule, but useful work can be done. This is only a start, or baby-step, in process improvement. It means that you are doing something but you cannot prove that it is really working for you.

Capability Level 2: Managed

A managed process is planned, performed, monitored, and controlled for individual projects, groups, or stand-alone processes to achieve a given purpose. Managing the process achieves both the model objectives for the process as well as other objectives, such as cost, schedule, and quality. As the title of this level indicates, you are actively managing the way things are done in your organization. You have some metrics that are consistently collected and applied to your management approach.

Note : metrics are collected and used at all levels of the CMMI, in both the staged and continuous representations. It is a bitter fallacy to think that an organization can wait until Capability Level 4 to use the metrics.

Capability Level 3: Defined

A capability level 3 process is characterized as a "defined process." A defined process is a managed $capability level 2$ process that is tailored from the organization's set of standard processes according to the organization's tailoring guidelines, and contributes work products, measures, and other process-improvement information to the organizational process assets.

Capability Level 4: Quantitatively Managed

A capability level 4 process is characterized as a "quantitatively managed process." A quantitatively managed process is a defined *capability level 3* process that is controlled using statistical and other quantitative techniques. Quantitative objectives for quality and process performance are established and used as criteria in managing the process. Quality and process performance is understood in statistical terms and is managed throughout the life of the process.

Capability Level 5: Optimizing

An optimizing process is a quantitatively managed process that is improved, based on an understanding of the common causes of process variation inherent to the process. It focuses on continually improving process performance through both incremental and innovative improvements. Both the defined processes and the organization's set of standard processes are the targets of improvement activities.

Capability Level 4 focuses on establishing baselines, models, and measurements for process performance. Capability Level 5 focuses on studying performance results across the organization or entire enterprise, finding common causes of problems in how the work is done *the process[es]used*, and fixing the problems in the process. The fix would include updating the process documentation and training involved where the errors were injected.

Organization of Process Areas in Continuous Representation

Category	Process Area
Project Management	- Project Planning - Project Monitoring and Control - Supplier Agreement Management - Integrated Project Management *IPPD* - Integrated Supplier Management *SS* - Integrated Teaming *IPPD* - Risk Management Quantitative Project Management
Support	- Configuration Management - Process and Product Quality Assurance - Measurement and Analysis Causal Analysis and Resolution - Decision Analysis and Resolution - Organizational Environment for Integration *IPPD*
Engineering	- Requirements Management - Requirements Development - Technical Solution - Product Integration - Verification - Validation
Process Management	- Organizational Process Focus - Organizational Process Definition

- Organizational Training
- Organizational Process Performance
- Organizational Innovation and Deployment