



## Overview of CMMI Structure

based on [Koppensteiner,2005], [CMMI, 2001]

CMMI® has started to play a key role in software development organizations worldwide. In order to compete with increasing software quality demands, many organizations claim or aim to move from their current CMM® level to the next higher one. CMMI is more comprehensive and rigid than CMM, as it covers 24 process areas versus CMM's 18 process areas. In addition, CMMI has 460 practices versus CMM's 316. The number of processes can be very overwhelming and it opens up the question how to best implement them. In order to stage the process improvement effort, CMMI offers five maturity levels that can only be reached one after the other. This short article explains the basic structure of CMMI.

### *CMMI Structure*

The Capability Maturity Model Integration (CMMI) provides a framework for the integration of process improvement for multiple process areas. The process areas are systems engineering; software engineering; supplier sourcing and development; and integrated product and process development. Different versions exist depending on how many of these areas are applicable to the organization. CMMI then offers two different improvement models for each version; the continuous model and the staged model:

**Staged:** Organizations that like to improve their processes across various process areas to reflect a certain maturity are likely to choose the staged model. In the staged model, the overall maturity of the organization is measured by maturity levels from one to five:

1. Initial
2. Managed

3. Defined
4. Quantitatively Managed
5. Optimizing

The structure of the staged model is shown in Figure 1. Each maturity level builds on the previous level by pre-defining a set of process areas that must be met in order to reach that level. Each process area includes a set of specific and generic goals. Specific goals are unique to the relevant process area (e.g. “Develop a Project Plan” is a specific goal within the Project Planning (PP) process area). Each specific goal applies activities, so-called “specific practices” that help to achieve these specific goals. Generic goals are common between the set of process areas (e.g., “Institutionalize a managed process” is a generic goal). Each Generic goal consists of a set of “generic practices” that help achieve the generic goal.

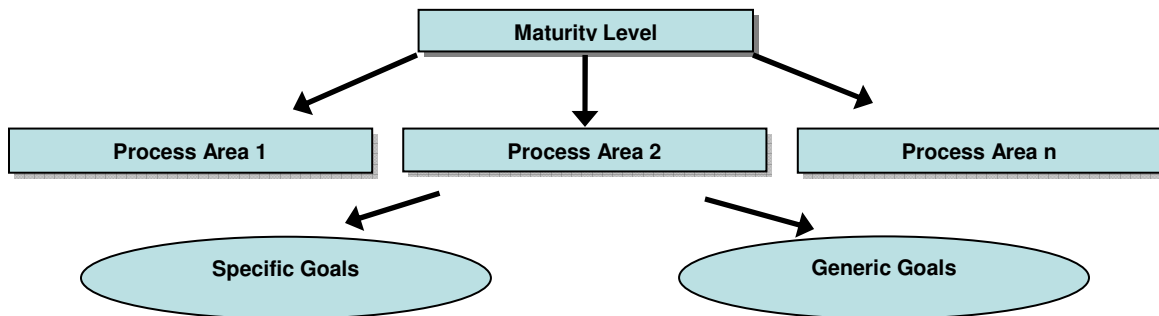


Figure 1: Staged model (based on [CMMI, 2001])

**Continuous:** Organizations that like to improve its processes one area at a time might likely chose the continuous model. The continuous model applies specific process improvement achievements for each process area. These are measured by capability levels from zero to five. Each capability level corresponds to a generic goal and specific goals. A set of generic practices help to achieve a general goal. Implementing a number of specific practices lead to meeting a specific goal.

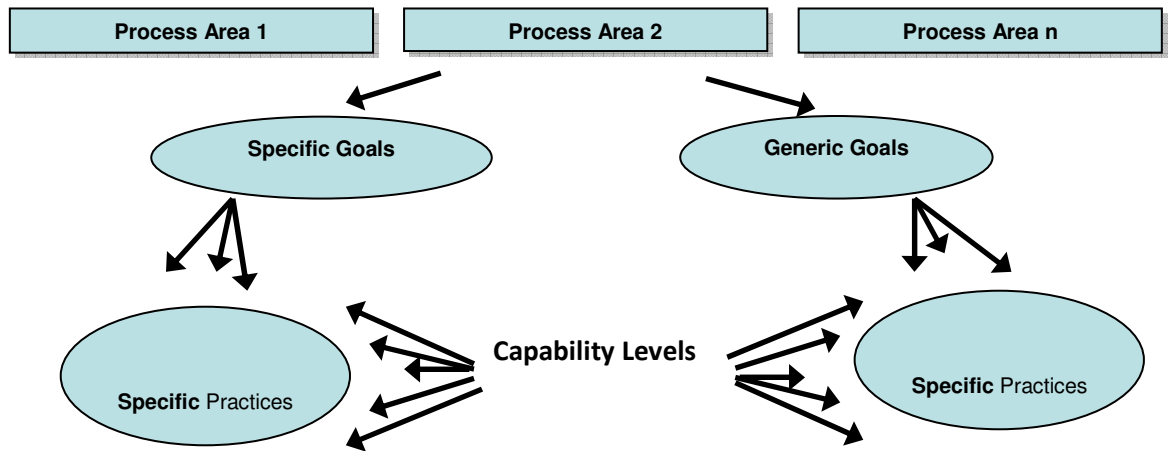


Figure 2: Continuous model (based on [CMMI,2001])

### ***First Steps of Implementation***

First of all an organization needs to choose between the staged and the continuous model. Table 1 shows a number of reasons why to choose each model representation.

<b>Reasons for Staged Model</b>	<b>Reasons for Continuous Model</b>
Want to achieve quality improvement across the organization in order to cooperate with more mature partner companies.	Want to focus on weak process areas only
Start up or small companies that like to build up quality gradually as they grow.	Want to improve core process area of the company (focus investment on process improvement to provides the most benefit to the organization)
Want to have process improvement represented by one number, the maturity level.	Want to adapt a certain process area to a formal industry or quality standard.

**Table 1: Some reasons why to choose one model representation over the other.**

After the organization chose a representation model it needs to map existing processes to CMMI areas. This enables them identify where the gaps are and therefore helps them to identify the scope of their process improvement projects.

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## References

[Koppensteiner, 2005], "How to use CMMI to bring your project management process to the next level", PMI Global Congress – EMEA May 23rd – 25th 2005, Edinburgh, Scotland.

[CMMI 2001], Capability Maturity Model® Integration (CMMISM), Version 1.1, CMMISM for Systems Engineering, Software Engineering, and Integrated Product and Process Development (CMMI-SE/SW/IPPD, V1.1), Carnegie Mellon SEI, December 2001.