

1. CMM was developed and is promoted by the [Software Engineering Institute \(SEI\)](#), a research and development center.
2. It is not a software process model. **Capability Maturity Model** is used as a benchmark to **measure the maturity** of an organization's software process.
3. The model describes a **five-level** evolutionary path of increasingly organized and systematically more mature processes.

Level One : Initial

Work is Performed Informally

A software development organization at this level is characterized by **ad hoc activities** (organization is **not planned in advance**).

1 Initial

On level 1 the software process is a "black box". The software development is **chaotic**. There are no standards for planning and controlling of projects. Success in these organizations depends on the competence, motivation and heroics of the people in the organization and not on the use of proven processes.



Level Two : Repeatable

Work is Planned and Tracked

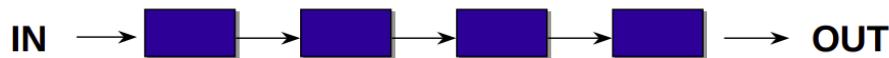
This level of Software Development Organization has a basic and consistent project management processes to **track cost, schedule, and functionality**. The process is in place to **repeat** the earlier successes on projects with similar applications.

A project on level 2 is repeatable and uses milestones

② repeatable project

Projects in **level 2** organizations have **installed basic project management controls**, like planning, monitoring and control of time, costs, functionality and quality.

The software process consists of a series of „black boxes“ with defined milestones (checkpoints).



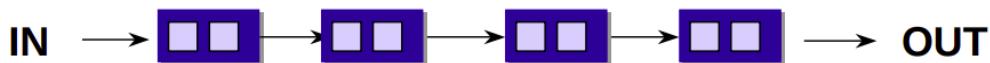
Level Three: Defined

Work is Well-Defined

At this level the software process for both management and engineering activities are **Defined** and **documented**.

3 Defined software process

On level 3 a standard software process is documented and implemented across the organization. The internal structure of the „boxes“ are now visible. Managers and team members understand their roles and responsibilities within the processes.



Level Four: Managed

Work is Quantitatively Controlled.

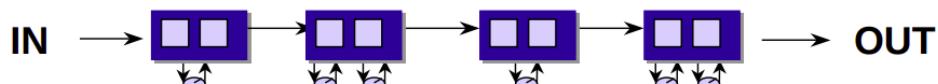
Software Quality Management: Management can effectively control the software development effort using precise measurements. At this level, organization set a quantitative quality goal for both software process and software maintenance.

Quantitative Process Management: At this maturity level, the performance of processes is controlled using statistical and other quantitative techniques, and is quantitatively predictable.

4 managed software process

On level 4 the organization sets quantitative quality goals for both software products and processes.

The software process is predictable because the process is measured and operates within measurable limits. With this management has an objective basis for decisions.



Level Five: Optimizing

Work is based upon Continuous Improvement

The Key characteristic of this level is focusing on **continuously improving process** performance. Key features are:

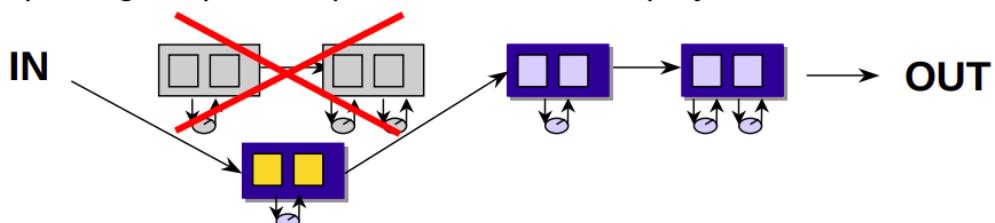
- Process Change Management
- Technology Change Management
- Defect Prevention

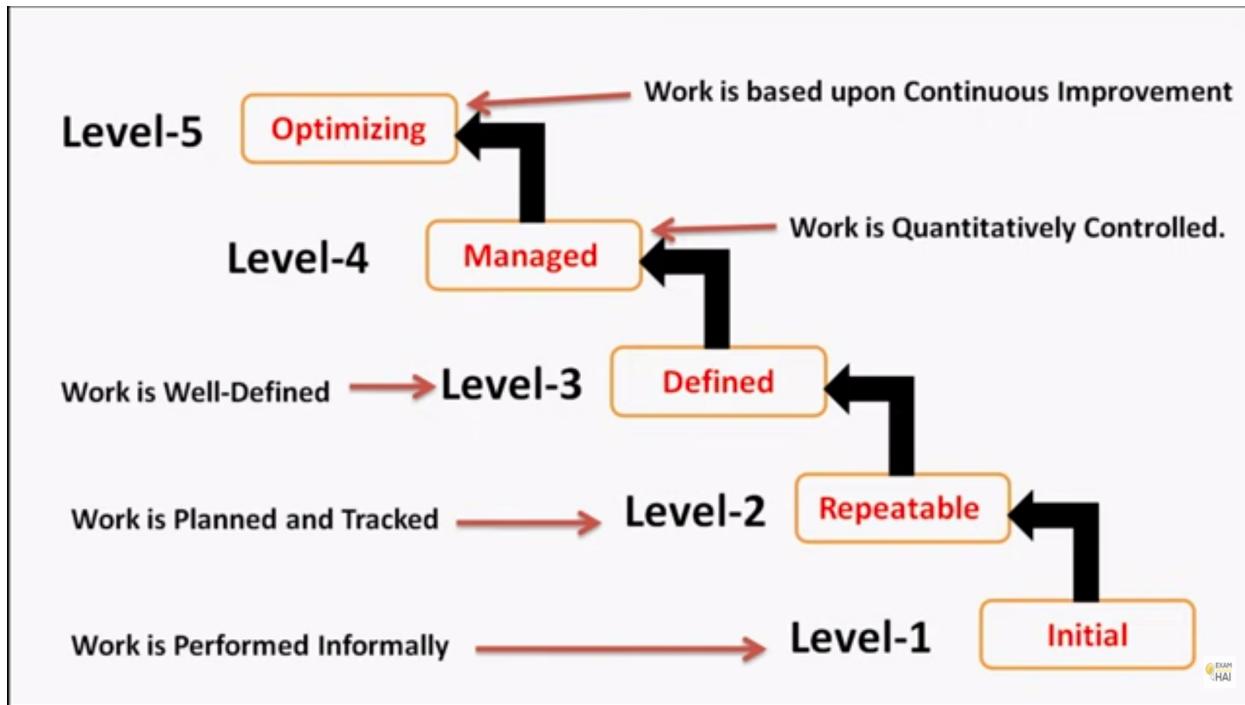
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An organization on level 5 continuously improves its software process.

⑤ Software process is optimized

On **level 5** an organization has the means to identify weaknesses and strengthen the process proactively. They are continuously striving to improve the range of their process capability, thereby improving the process performance of their projects.





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