Capability Maturity Models

The Capability Maturity Model for Software (CMM) is a framework that describes the key elements of an effective software process.

1. Software process improvement

2. Software process assessments

3. Software capability evaluations
Maturity levels: a well defined evolutionary plateau toward achieving a mature software process.

Process capability: describes the range of expected results that can be achieved by following a software process.

Key process areas: identify a cluster of related activities that, when performed collectively, achieve a set of goals considered important for establishing process capability at that maturity level.

Goals: summarize the key practices of a key process area and can be used to determine whether an organization or
project has effectively implemented the key process area.

**Common features:** are attributes that indicate whether the implementation and institutionalization of a key process area is effective, repeatable and lasting. Commitment to perform, Ability to perform, Activities performed, Measurement and analysis and Verifying implementation.

**Key practice:** describes the infrastructure and activities that contribute most to the effective implementation and institutionalization of the key process area.
Capability Maturity Levels

**Maturity Level 1:** initial level - Ad hoc process

**Maturity Level 2:** Repeatable level - Basic project management

**Maturity Level 3:** Defined level - Process definition

**Maturity Level 4:** Managed level - Process measurement

**Maturity Level 5:** Optimizing level - Process control
The Key Process Area

• Software configuration management

• Software quality assurance

• Software subcontract management

• Software project tracking and oversight

• Software project planning

• Requirements management
The Key Process Area

- Peer reviews

- Intergroup coordination

- Software product engineering

- Integrated software management

- Training program

- Organization process definition

- Organization process focus

Defined level (3)
The Key Process Area

- Software quality measurement
- Quantitative process management
The Key Process Area

- Process changed management
- Technology change management
- Defect prevention

Optimized level (5)
ISO 9000


ISO 9000-3: Guidelines for the application of ISO 9001 to the development, Supply and Maintenance of Software.

BS5750

• Inspection, measurement and test equipment

• Quality system

• Control of nonconforming product

• Design control

• Handling, storage, packaging and delivery
- Purchasing

- Purchaser supplied product

- Product identification and traceability

- Process control

- Inspection and testing
BS5750

- Management responsibility
- Inspection and test status
- Contract review
- Corrective action
- Document control
BS5750

- Quality records
- Internal quality audits
- Training
- Servicing
- Statistical techniques
Techniques of Cost Estimation

1. Expert judgment by Analogy.

2. Bottom-Up Approach;

3. Algorithmic Cost Estimation Models;
Components of a Software Project Management Plan

- The work to be done;
- The resources with which to do it;
- The money to pay for it.