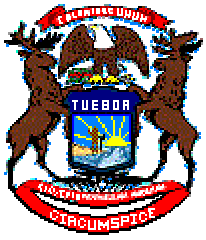


SYSTEMS DEVELOPMENT LIFECYCLE

APPENDIX H

CAPABILITY MATURITY MODEL (CMM)

Section H: Capability Maturity Model

Overview

The Capability Maturity Model (CMM) comes from the Software Engineering Institute (SEI) of Carnegie Mellon University. The SEI has conducted significant research into several areas of business process improvement and reengineering over the past several years.

The CMM, described briefly below, is a professionally recognized model for process development within software-based organizations. The ultimate intent of applying this model for software development in order for State of Michigan agencies to strive to a level five maturity in Project Management. If successful, this practice will eventually spread to other lifecycle areas and throughout Michigan State Government.

CMM Defined

The Capability Maturity Model for Software describes the principles and practices underlying software process maturity and is intended to help software organizations improve the maturity of their software processes in terms of an evolutionary path from ad hoc, chaotic processes to mature, disciplined software processes. The CMM is organized into five maturity levels:

1) Initial. The software processes are characterized as ad hoc, and occasionally even chaotic. Few processes are defined, and success depends on individual effort and heroics.

2) Repeatable. Basic management processes are established to track cost, schedule, and functionality. The necessary process discipline is in place to repeat earlier successes on projects with similar applications.

3) Defined. The software process for both management and engineering activities is documented, standardized, and integrated into a standard software process for the organization. All projects use an approved, tailored version of the organization's standard software process for developing and maintaining software.

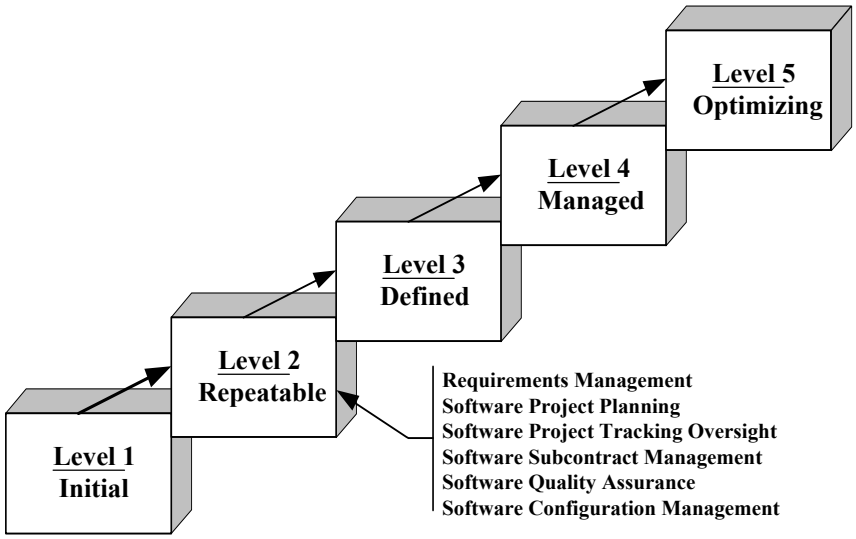
4) Managed. Detailed measures of the software process and product quality are collected. Both the software process and products are quantitatively understood and controlled.

5) Optimizing. Continuous process improvement is enabled by quantitative feedback from the process and from piloting innovative ideas and technologies.

Predictability, effectiveness, and control of an organization's software processes are believed to improve as the organization moves up these five levels. While not rigorous, the empirical evidence to date supports this belief.

Overview

CAPABILITY MATURITY MODEL PROCESS LEVELS



CMM Process Decomposition

Except for Level 1, each maturity level is decomposed into several Key Process Areas (KPA) that indicate the areas an organization should focus on to improve its software process.

The Key Process Areas at Level 2 focus on the software project's concerns related to establishing basic project management controls. They are Requirements Management, Software Project Planning, Software Project Tracking and Oversight, Software Subcontract Management, Software Quality Assurance, and Software Configuration Management.

The Key Process Areas at Level 3 address both project and organizational issues, as the organization establishes an infrastructure that institutionalizes effective software engineering and management processes across all projects. They are Organization Process Focus, Organization Process Definition, Training Program, Integrated Software Management, Software Product Engineering, Intergroup Coordination, and Peer Reviews.

Overview

The Key Process Areas at Level 4 focus on establishing a quantitative understanding of both the software process and the software work products being built. They are Quantitative Process Management and Software Quality Management.

The Key Process Areas at Level 5 cover the issues that both the organization and the projects must address to implement continual, measurable software process improvement. They are Defect Prevention, Technology Change Management, and Process Change Management.

Each Key Process Area is described in terms of the key practices that contribute to satisfying its goals. The key practices describe the infrastructure and activities that contribute most to the effective implementation and institutionalization of the key process area.

Finding Additional Information on CMM and the SEI

To find out more about the Capability Maturity Model and implementing its methods into your workplace, you can visit their website at http://www.sei.cmu.edu/