



Software Process Assessment

A method of determining the effectiveness of the software process with a goal towards improving the process.

Software Process Assessment

- Approaches
 - Capability Maturity Model Integration (CMMI)
 - Standard CMMI Assessment Method for Process Improvement (SCAMPI)
 - CMM-Based Appraisal for Internal Process Improvement (CBA IPI)
 - SPICE (ISO/IEC 15504)
 - ISO IEC 90003:2004 Software Engineering Standard

CMMI

- provides organizations with the essential elements of effective processes, which will improve their performance.
- includes identifying your organization's process strengths and weaknesses and making process changes to turn weaknesses into strengths.

CMMI Models

- The CMMI for Acquisition (CMMI-ACQ) model.
- **The CMMI for Development, (CMMI-DEV) model is used for process improvement in organizations that develop products and services. CMMI-DEV provides guidance to improve the effectiveness, efficiency, and quality of their product and service development work.**
- The CMMI for Services (CMMI-SVC) mode.

CMMI 16 Core Process Areas

- Causal Analysis and Resolution (CAR)
- Configuration Management (CM)
- Decision Analysis and Resolution (DAR)
- Integrated Project Management (IPM)
- Measurement and Analysis (MA)
- Organizational Process Definition (OPD)
- Organizational Process Focus (OPF)
- Organizational Performance Management (OPM)

CMMI 16 Core Process Areas, Cont'd

- Organizational Process Performance (OPP)
- Organizational Training (OT)
- Project Monitoring and Control (PMC)
- Project Planning (PP)
- Process and Product Quality Assurance (PPQA)
- Quantitative Project Management (QPM)
- Requirements Management (REQM)
- Risk Management (RSKM)

Process Areas in CMMI for Development

- Product Integration (PI)
- Requirements Development (RD)
- Requirements Management (REQM)
- Supplier Agreement Management (SAM)
- Technical Solution (TS)
- Validation (VAL)
- Verification (VER)

CMMI Representations

- Continuous
 - Each *process area* is assigned a **capability level**, after being assessed against *specific goals and practices*
- Staged
 - For a company to achieve a particular **maturity level**, *the specific goals and practices* of certain process areas must be met

Capability Levels

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

Maturity Levels

- **Maturity Level 1 – Initial**
- **Maturity Level 2 – Managed**
- **Maturity Level 3 – Defined**
- **Maturity Level 4 – Quantitatively Managed**
- **Maturity Level 5 – Optimizing**

SCAMPI

- Standard CMMI Assessment Method for Process Improvement
- It is designed to provide benchmark quality ratings relative to the CMMI.
- Used for both internal process improvement and external capability determinations.
- Details:
<http://www.sei.cmu.edu/library/abstracts/reports/06hb002.cfm>

CBA IPI

- CMM-Based Appraisal for Internal Process Improvement
- A **diagnostic tool** that supports, enables, and encourages an organization's commitment to process improvement.
- It helps to identify a company's strengths and weaknesses of its current processes with regards to the CMM.

ISO/IEC 15504

- International Standard for the assessment of processes.
- Capability levels for each process
 0. Incomplete
 1. Performed
 2. Managed
 3. Established
 4. Predictable
 5. Optimizing

ISO/IEC 15504

- The capability of processes is measured using process attributes:
 - Process performance, Performance management, Work product management, Process definition, Process measurement, Process control, Process Innovation, Process Optimization
- Process attributes are evaluated on 4-point (N-P-L-F) rating scale:
 - Not achieved
 - Partially achieved
 - Largely achieved
 - Fully achieved

ISO/IEC 9003:2004 for Software Engineering

- Certification to an ISO standard does not guarantee any quality of end products and services; rather, it certifies that formalized business processes are being applied.

