Software Process Assessment

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)
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](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 and 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 attributes are evaluated on 4-point (N-P-L-F) rating scale:
  – Not achieved
  – Partially achieved
  – Largely achieved
  – Fully achieved

• 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.