HIGHLIGHTS

- What is CMMI ?
- Process of CMMI
- Characteristics Of CMMI Maturity levels.
- CMMI process areas.
- Goals and Practices.
- Requirement of CMMI level 3.
- How can CMMI help?
- Getting started with CMMI.
- Requirement in management process.
- Advantages Of CMMI

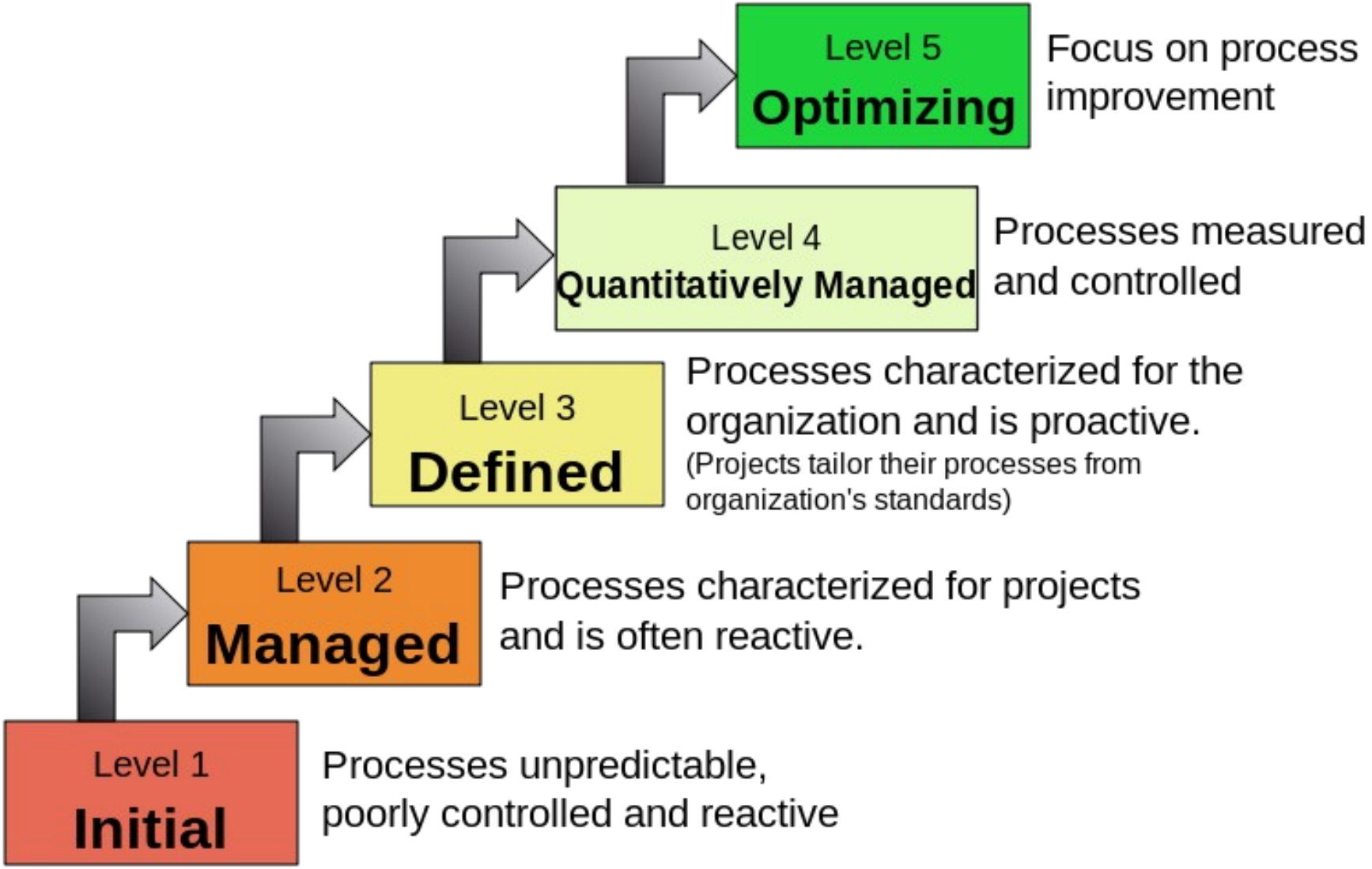
What is CMMI ?

- CMMI (Capability Maturity Model Integration) is a proven industry framework to improve product quality and development efficiency for both hardware and software.
- CMMI, staged, uses 5 levels to describe the maturity of the organization.
- CMMI is an evolutionary improvement path for software organizations from immature process to a mature, disciplined one.
- Provides guidance on how to gain control of processes for developing and maintaining software.
- CMMI describes the key elements of an effective software process.

Process of CMMI

- User Requirements.
- Functional Design
- Module Design
- Low And High Level Design
- Programming(Verification & Validation)
- Unit And Functional Test
- Integration Test
- System Test
- User Acceptance Test

Characteristics of the Maturity levels



Maturity Level 1: Initial

- Success Of organizations depends on the competence and heroics of the people in the organization and not on the use of proven processes.
- Organization usually does not provide a stable environment but Software project success depends on having quality people.
- Useful work done by the people but without objects like planning, quality , time schedule etc.
- So organizations are characterized by:

  -Tendency to over commit

  -Abandon processes in the time of the crisis

  -Not be able to repeat their past successes

Maturity Level 2: Managed

- At this level organization set a quantitative quality goal for both software process and software maintenance.
- This process are selected that significantly contribute to overall process performance.
- Organization has achieved all the specific and generic goals.
- Projects of the organization have ensured that:
  - -Requirements are managed
  - -Processes are planned
  - -Performed, measured, and controlled.

Maturity Level 3: Defined

- Processes are well characterized, and understood, are described in standards, procedures, tools and methods.
- Process are described more detail than level2
- To Establish and maintain a description of the process.
- To collect information derived from planning and performing the process.
- Process are managed proactively using an understanding of the interrelationship of the process activities
- Detailed measures of the process its work product s and its services.

Maturity Level 4: Quantitatively Managed

- Sub-processes are selected that significantly contribute to overall process performance.
- As criteria in managing process the quantitative objects for quality are established.
- Quantitative objectives are based on:
  - -Needs of a customer
  - -End users
  - -Organization
  - -Process implements.
- For these processes, detailed measures of process performance are collected and statistically analyzed

Maturity Level 5: Optimizing

- Focuses on continually improving process performance through:
  - -Incremental technological improvements
  - -Innovative technological improvements
- Both processes are the organization's set of measurable improvement activities

CMMI Process Areas

Process management (5)	Project management (6)	Engineering (6)	Support (5)
• Organizational Innovation and Deployment (OID) • Organizational Process Definition +IPPD (OPD) • Organizational Process Focus (OPF) • Organizational Process Performance (OPP) • Organizational Training (OT)	• Project Planning (PP) • Project Monitoring and Control (PMC) • Supplier Agreement Management (SAM) • Integrated Project Management +IPPD (IPM) • Risk Management (RSKM) • Quantitative Project Management (QPM)	• Requirements Management (REQM) • Requirements Development (RD) • Technical Solution (TS) • Product Integration (PI) • Verification (VER) • Validation (VAL)	• Configuration Management (CM) • Process and Product Quality Assurance (PPQA) • Measurement and Analysis (MA) • Decision Analysis and Resolution (DAR) • Causal Analysis and Resolution (CAR)

CMMI Process Areas

A. Process Management (5 processes)

- -Organizational Process Focus
- -Organizational Process Definition
- -Organizational Training
- -Organizational Process Performance
- -Organizational Innovation and Deployment

B. Project Management (8 processes)

- -Project planning
- -Project Monitoring and Control
- -Supplier Agreement Management
- -Integrated Project Management
- -Risk Management
- -Integrated Teaming
- -Integrated Supplier Management
- -Quantitative Project Management

CMMI Process Areas

C. Engineering: (6 processes)

- -Requirements Management
- -Requirements Development
- -Technical Solution
- -Product Integration
- -Verification
- -Validation

D. Support: (6 processes)

- -Configuration Management
- -Process and Product Quality Assurance
- -Measurement and Analysis
- -Organizational Environment for Integration
- -Decision Analysis and Resolution
- -Causal Analysis and Resolution

Goals and Practices

- For each of the 25 Process Areas there are Specific Goals.
- For each of the Specific Goals there are Specific Practices.
- Example for Organizational Process Focus:-

  Specific Goal 1: Strengths, weakness, and improvement opportunities for the organization's processes are identified periodically and as needed.

  - Specific Practice 1.1: Establish organizational process needs.
  - Specific Practice 1.2: Appraise the organization's processes.
  - Specific Practice 1.3: Identify improvements to the processes.

  Specific Goal 2: Improvements are planned and implemented, organizational process assets are deployed, and process-related experiences are incorporated into the organization's process assets.

Goals and Practices

- For All of the 25 Process Areas there are 5 Generic Goals which are :

  1.Achieve the Specific Goals of the Process Area

  2.Managed Process (institutionalize the process – consistently performed)

  3.Defined Process (institutionalize the tailoring of process to the organization)

  4.Quantitatively Managed Process (institutionalize the quantification of that process)

  5.Optimizing Process (institutionalize the continuous improvement of the process)

- Each Generic Goal has a number of Generic Practices

Requirement of Maturity Level 3

1. Development.
2. Technical solutions.
3. Product Integration.
4. Verification.
5. Validation.
6. Organizational Process Focus.
7. Organize Process Definition.
8. Organize Training.
9. Integrated Project Management.
10. Risk Management.
11. Integrated Teaming.
12. Integrated Supplier Management.
13. Decision Analysis and Resolution.
14. Organize Environment for Integration.

How can CMMI help?

- CMMI provides a way to focus and manage hardware and software development from product inception through deployment and maintenance.
- Behavioral changes are needed at both management and staff levels. Examples:
  - Increased personal accountability.
  - Tighter links between Product Management, Development.
- Initially a lot of investment required – but, if properly managed, we will be more efficient and productive while turning out products with consistently higher quality.

Getting Started

- Understand Your Business Goals
  - Sponsorship.
  - Commitment.
  - Strategic Planning.
  - Leading Change.
  - Understanding your organization's culture.
- Training
- Assessment (not audit)
- Strategic and Tactical Action Planning
- Implementation
  - Establishing effective processes.
  - Managing change.
  - Training programs.
  - Piloting improvements

Requirements in Management Process

- Commitment:
  - Is there a written policy?
- Ability:
  - Clear responsibility assigned?
  - Requirements documented?
  - Adequate resources assigned?
  - Members skilled ?
- Activity:
  - Requirements doc used ?
  - Requirements changes managed?
- Measurement:
  - Status of activities measured?
- Verification:
  - Requires management activities reviewed? review reports and presentations
    - Senior management
    - Project managers
    - Quality assurance

Advantages Of CMMI

- Provides a framework for benchmarking the process.
- CMM is not prescriptive; it does not tell an organization how to improve, but what to improve.
- Provides good “common sense” engineering and management practices.
- Helps forge a shared vision of what software process improvement means for the organization.
- Defines set of priorities for addressing software problems.
- Supports measurement of process by providing framework for performing reliable and consistent appraisals.

Conclusion

- If we are achieving CMMI level 3 then it is a new milestone for us, it is an important endorsement of our processes, engineering capabilities and system that delivers value tour customer .
- Achieve all these things through the successful planning, development, integration and maintenance of IT salutation.