

CMMI – Fitness Room for QA

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Current Status of QA Teams

- Start testing late
- Understaffed
- No sufficient time for testing
- Not informed about changes
- Busy with other tasks



Inefficient and ineffective Testing

HELP!

Poor Product Quality

Consequences

- Product quality can be improved by increasing testing effectiveness
- The CMMI provides a framework for institutionalization of effective testing processes that fit the organizational needs
- Usage of the CMMI increased products quality and testing group standing

Topics

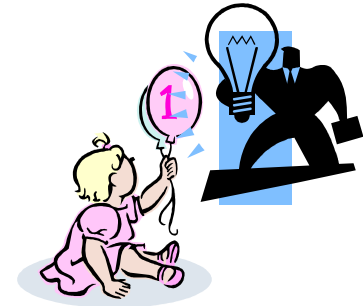
- Current QA Team Status
- CMMI in a Nutshell
- Testing in the CMMI
- Experience with the CMMI in Testing Groups

What is the CMMI



Capability – Ability, competence

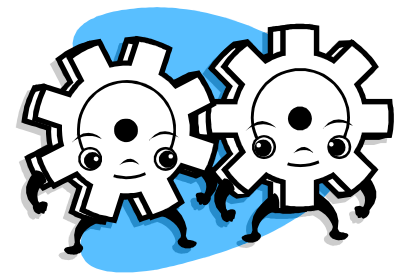
Maturity – Level of Professionalism



Model – A set of guidelines



Integration – A number of disciplines together

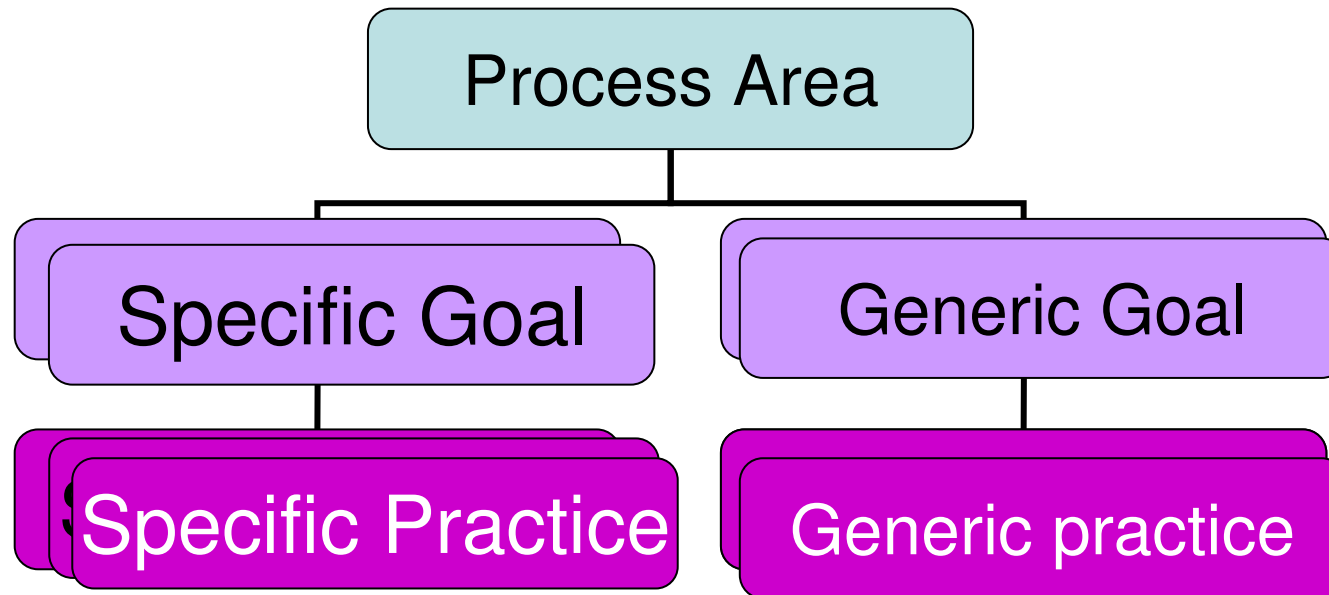


The CMMI - What is it?

- A **comprehensive** set of Models with **best practices, appraisal method and Training**
- Used for processes improvement and evaluations of organizational capabilities
- Developed by SEI in Carnegie-Mellon University
- Used by thousands of companies around the world currently for SW and System development
- Used by **large and small** companies in various domains
- **New versions for acquisition and services**



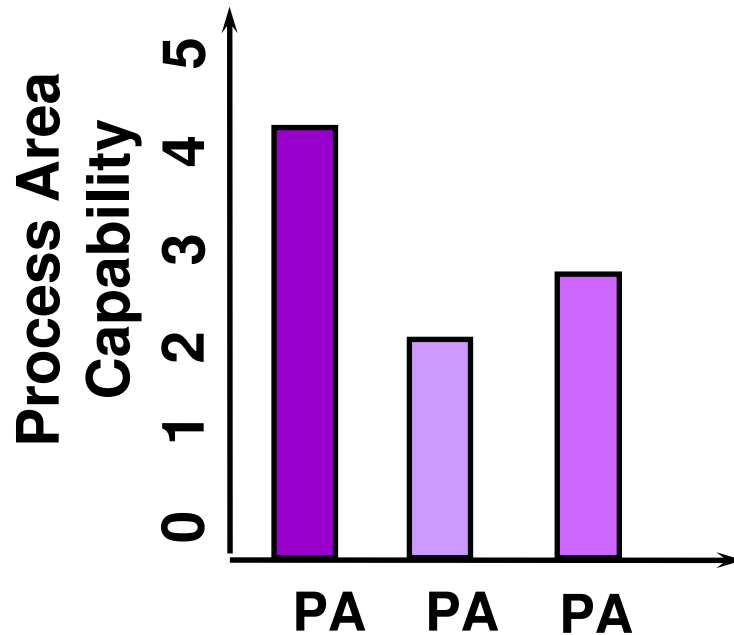
Model Structure



Specific Goals and Practices specify **What** is required to do for effective results
Generic practices specify **How** to do it more efficiently

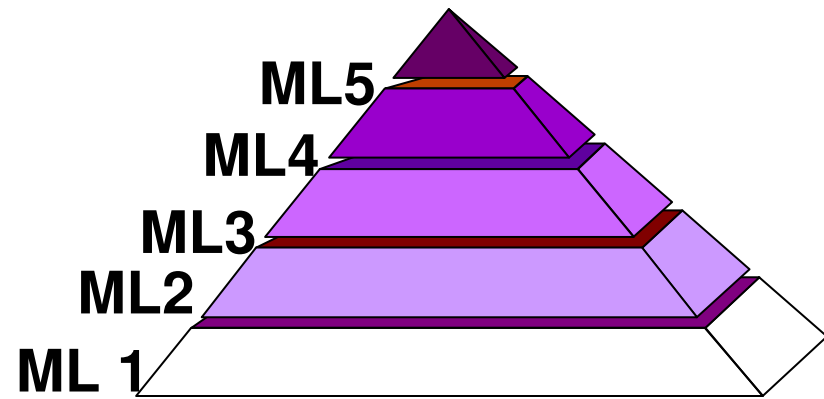
The Model Representation

- Continuous



...for a single process area or a set of process areas

- Staged



...for an established set of process areas across an organization

CMMI Appraisal Statistics

[Process Maturity Profile 09/08]

	Formal Appraisals	Maturity Level 4	Maturity Level 5
Around the world	3553	90	337
Israel	16	-	2
Egypt	31	2	2
USA	1136	21	118
China	581	22	39
India	362	22	158
Spain	85	1	3
France	125	1	2

Optimizing for Results

Performance Measures - CMMI

•The performance results in the following table are from 30 different organizations that achieved percentage change in one or more of the six categories of performance measures below.

[\[http://www.sei.cmu.edu/publications/documents/06.reports/06tr004.html\]](http://www.sei.cmu.edu/publications/documents/06.reports/06tr004.html)

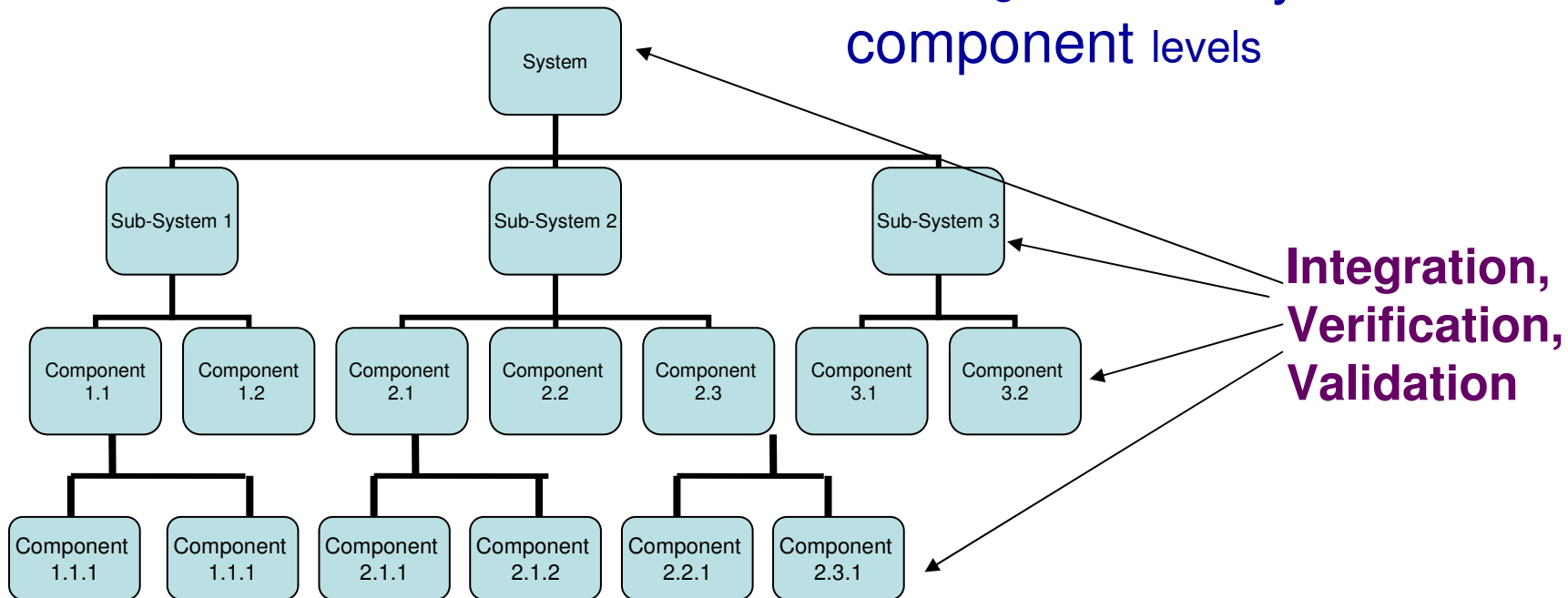
Performance Category	Median Improvement
Cost	34%
Schedule	50%
Productivity	61%
Quality	48%
Customer Satisfaction	14%
Return on Investment	4:1

Reasons for Using the CMMI

- Flexible
 - Methods, tools
- Modular
 - Structure
- Incremental improvement
 - Organization, Process
- Scalable

Testing in the CMMI

- Testing is done during integration and by verification and validation
- Testing is done on **system** and **component** levels



Verification vs. Validation

Verification

Ensures that **selected work products** meet their specified requirements

- Did you build the *product right*?
- That is, did you meet the requirements specification?

Validation

Demonstrates that a product or product component **fulfill its intended use** when placed in its intended environment

- Did you build the *right product*?
- That is, did you meet the operational need?

Verification

Purpose – To ensure that selected work products meet their specified requirements

SG 1 Prepare for Verifications

SP 1.1 Select Work Products for Verification

SP 1.2 Establish the Verification Environment

SP 1.3 Establish Verification Procedures and Criteria

SG 2 Perform Peer Review

SP 2.1 Prepare for Peer Review

SP 2.2 Conduct Peer Reviews

SP 2.3 Analyze Peer Review Data

SG 3 Verify Selected Work Products

SP 3.1 Perform Verification

SP 3.2 Analyze Verification Results

Validation

- **Purpose - To demonstrate that a product or product component fulfills its intended use when placed in its intended environment.**
- **SG 1 Prepare for Validation**
 - *Preparation for validation is conducted.*
- **SG 2 Validate Product or Product Components**
 - *The product or product components are validated to ensure that they are suitable for use in their intended operating environment.*

Generic Goal and Generic Practices Level 2

- GG2 Institutionalize a managed process
 - **GP2.1: Establish an Organizational Policy**
 - **GP2.2: Plan the Process**
 - **GP2.3: Provide Resources**
 - **GP2.4: Assign Responsibility**
 - **GP2.5: Train People**
 - **GP2.6: Manage Configurations**
 - **GP2.7: Identify and Involve Relevant Stakeholders**
 - **GP2.8: Monitor and Control the Process**
 - **GP2.9: Objectively Evaluate Adherence**
 - **GP2.10: Review Status with Higher Level Management**

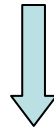
Generic Goals and Generic Practices Level 3

- GG3 Institutionalize a defined process
 - **GP3.1: Establish a Defined Process**
 - **GP3.2: Collect Improvement Information**

Experience with QA Teams Acting at Capability Level 3

- Defined Roles and responsibilities
- Planned and monitored their effort
- Took active part in the entire development life cycle
- Placed work products under configuration management
- Measured their quality and efficiency
- Sufficient human resources and tools
- Defined processes used and continuously improved

Increased Testing Efficiency & Effectiveness



Higher QA Team Satisfaction

Making it Happen

1. Evaluate current status
2. Develop Process assets
Define processes, Develop process assets/purchase tools
3. Deploy
Train employees and relevant stakeholders
4. Use
Plan, Use process assets, Monitor progress, Audit processes and review work product, place work product under configuration management
5. Re-Evaluate status

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