

SEI CMM Model

- **Capability Maturity Model**
  - Software Engineering Institute (CMU)
- **Key Practice Areas (KPA's)**
  - Specific activities
  - Required to achieve each level
  - More on these later . . .

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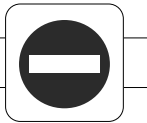
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A Warning



- **You're going to hate this**
  - The CMM is boring!
  - It's about management and control
- **Until . . .**
  - The recruiter asks if you know it
  - And how you can help them improve

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CMM Level 1

- **No stable environment**

→ In crisis, reverts to coding and testing  
 → Planned procedures abandoned

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CMM Level 1

- No stable environment
- Success depends on individuals

- Exceptional manager
- Seasoned and effective team
- Withstand pressure to take shortcuts
- Stability lost when individuals leave

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CMM Level 1

- No stable environment
- Success depends on individuals
- Unpredictable

- Schedules
- Budgets
- Functionality
- Product quality
- Ad hoc process

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CMM Level 2 - Repeatable

- Establish procedures

- Planning and management
- Based on similar past experience
- Disciplined process capability

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CMM Level 2 - Repeatable

- Establish procedures
- Institutionalize processes

- Practiced
- Documented
- Enforced
- Trained
- Measured
- Able to improve

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CMM Level 2 - Repeatable

- Establish procedures
- Institutionalize processes
- Management controls

- Realistic commitments
- Track costs, schedules, functionality
- Repeat earlier successes

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CMM Level 2 - Repeatable

- Establish procedures
- Institutionalize processes
- Management controls
- Project standards

- Defined
- Enforced

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CMM Level 3 - Defined

- **Standard, documented**

- Defined process
- Both engineering and management
- Across entire organization

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CMM Level 3 - Defined

- **Standard, documented**
- **SEPG & training**

- Software engineering process group
- Organization-wide training
  - Staff
  - Managers

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CMM Level 3 - Defined

- **Standard, documented**
- **SEPG & training**
- **Project process**

- Readiness
- Inputs
- Work standards
- Verification mechanisms
- Outputs
- Completion criteria

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CMM Level 3 - Defined

- Standard, documented
- SEPG & training
- Project process
- **Consistent capability**

- ➔ Control
  - Cost
  - Schedule
  - Functionality
- ➔ Track software quality

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CMM Level 4 - Managed

- **Quantitative quality goals**

- ➔ Software products
- ➔ Processes

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CMM Level 4 - Managed

- **Quantitative quality goals**
- **Measure**
  - Productivity
  - Quality

- ➔ Instrumented processes
- ➔ Defined and consistent measures

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CMM Level 4 - Managed

- Quantitative quality goals
- Measure
  - Productivity
  - Quality
- Narrow variation

→ Acceptable quantitative limits  
 → Action taken when limits are exceeded

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CMM Level 5 - Optimizing

- Continuous improvement

→ Identify process weaknesses  
 → Strengthen processes proactively

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CMM Level 5 - Optimizing

- Continuous improvement
- Cost/benefit analysis

→ New technology  
 → Proposed process changes

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### CMM Level 5 - Optimizing

- Continuous improvement
- Cost/benefit analysis
- Defect prevention

→ Defect analysis  
 → Process evaluation  
 → Knowledge dissemination

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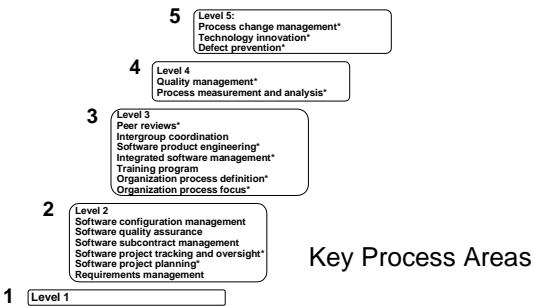
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### CMM Levels and KPA's




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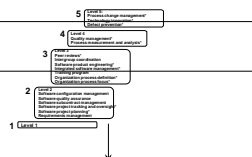
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### CMM Level 2



Level 2 - Repeatable  
 Software configuration management  
 Software quality assurance  
 Software subcontract management  
 Software project tracking and oversight  
 Software project planning  
 Requirements management

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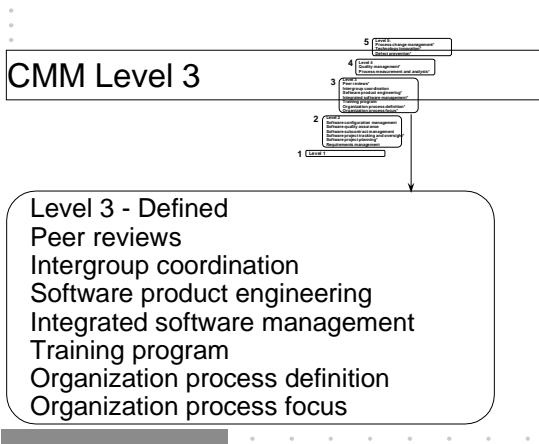
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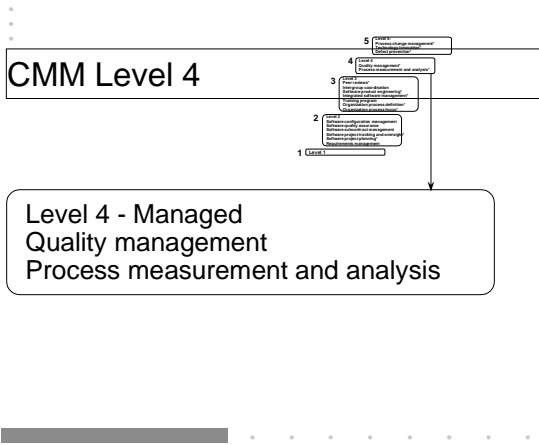
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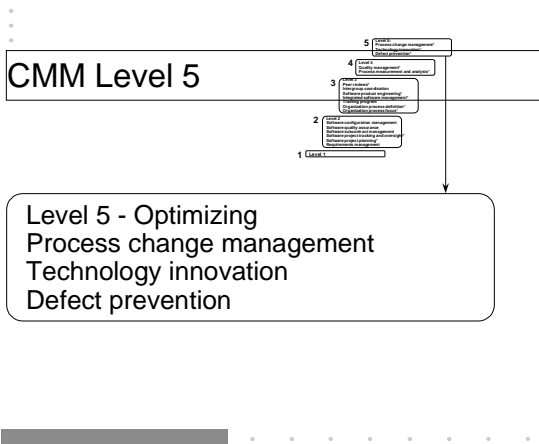
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