Verification In CMMI Using Peer Reviews

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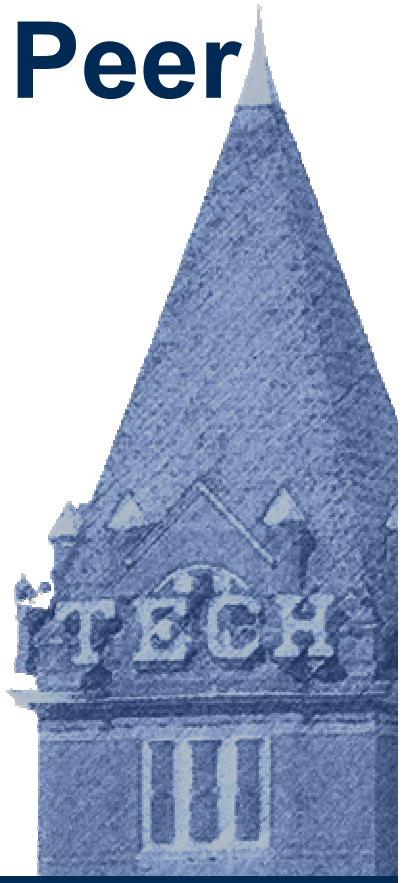


Who is GTRI?

- Unit of the Georgia Institute of Technology
- 1200+ employees
- Wide variety of products
- Customers include federal, state, and industry
- Projects range greatly in size and duration
- More Info: http://www.gtri.gatech.edu/

Current Status

- Assessed CMM level 3
- Performed gap analysis between CMM and CMMI
- Updating processes
- Implementing the new processes
- Not assessed under CMMI

Outline

- CMMI and peer reviews
- Purpose of peer review
- Formalize the peer review process
- Plan peer reviews
- General example of the execution of a peer review
- Secondary benefits of peer reviews

CMMI Verification Process Area Specific Practices

- SG 1 – Prepare for Verification
  - SP 1.1-1 – Select Work Products for Verification
  - SP 1.2-2 – Establish the Verification Environment
  - SP 1.3-3 – Establish Verification Procedures and Criteria
- SG 2 – Perform Peer Reviews
  - SP 2.1-1 Prepare for Peer Reviews
  - SP 2.2-1 Conduct Peer Reviews
  - SP 2.3-2 Analyze Peer Review Data
- SG 3 – Verify Selected Work Products
  - SP 3.1-1 Perform Verification
  - SP 3.2-2 Analyze Verification Results and Identify Corrective Action

What is a Peer Review?

"The review of work products performed by peers during development of the work products to identify defects for removal."

- CMMI Guidelines for Process Integration and Product Improvement (Addison Wesley, 2003, page 622)

What is Verification?

"Confirmation that work products properly reflect the requirements specified for them."

- CMMI Guidelines for Process Integration and Product Improvement (Addison Wesley, 2003, page 631)

Purpose

- Verify the work product meets requirements
- Identify defects or problems early in the life-cycle
- Gain confidence in work products
- Reduce risk

An Informal Peer Review

"Does this seem right to you?"

An Inappropriate Peer Reviewer

"Farmer Bob, does this seem right to you?"

Why Do We Need Formalized Peer Review Processes?

CMMI requires it!

A formalized process helps ensure:

- Peer reviews are taking place
- The right products are being peer reviewed at appropriate times
- Adequate resources are planned and allocated for peer reviews
  - The right reviewers are being selected
  - The reviewers are prepared adequately
- Defects are being recorded
- Defects are tracked to closure

Establishing a Peer Review Process

- Establish procedures for peer reviews
- Establish “ground rules” for peer reviews
- Provide guidance in what & when to peer review

Document the Peer Review Process

- Types of reviews
- What to review in each phase
- Planning
- Conducting
- Closing

Peer Review Types

Desk Check

- Single producer and single reviewer
- Cheapest, least effective review

Round Robin

- Single producer and at least two reviewers
- Reviewers examine work product sequentially
- A single defect log is used
- Moderator verifies defects are corrected

Structured Walkthrough

- At least two reviewers, a Moderator, and a Recorder
- All participants meet after reviewers have prepared
- More expensive and effective than a Round-Robin

Formal Inspection

- Roles and format similar to Structured Walkthrough
- Outside experts participate
- Advanced preparation is extensive and required
- Most expensive and effective review type

What to Review

Requirements

Design

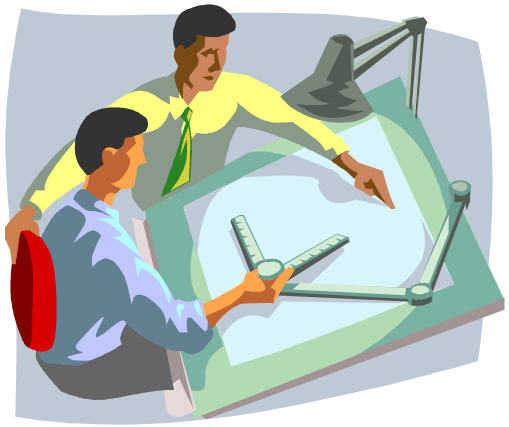
Implementation

- **Critical components**
- **Complex components**
- **New employee's work**
- **New technology or platform**

Test Plans

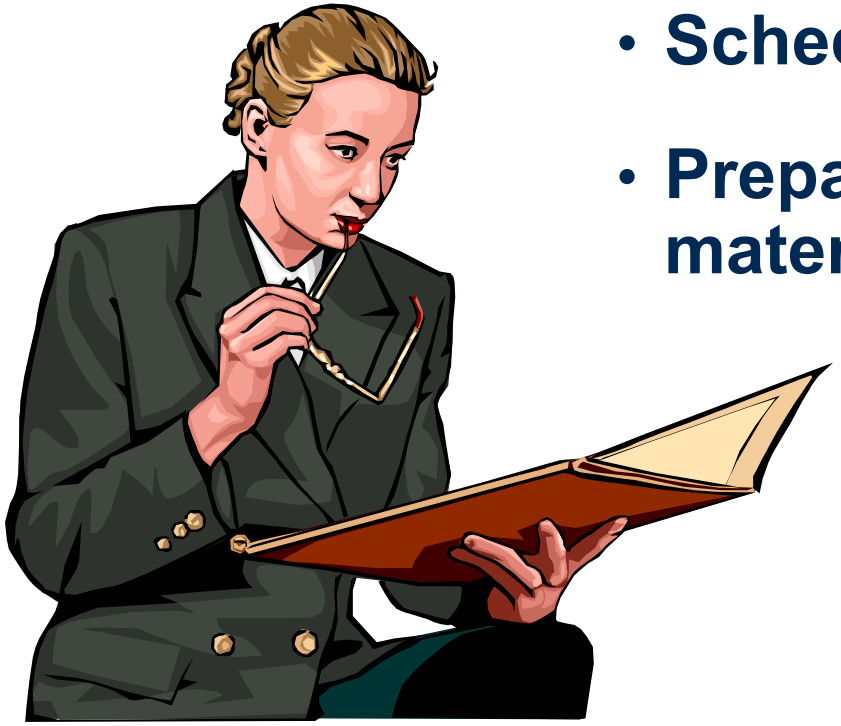
Plan Peer Reviews

- Determine what will be peer reviewed
- Determine when it will be peer reviewed
- Provide adequate budget for peer reviews
- Plan for critical reviewers
- Plan for appropriate facilities



Applying the Process

Prepare for Peer Reviews



- Choose reviewers
- Schedule meeting
- Prepare review and reference materials

Choosing Reviewers

- Knowledgeable and trained
- Some project-independent reviewers are desirable
- Non-management, unless special circumstances require a manager's participation
- Committed to adequately prepare

Scheduling the Meeting

- Allow the reviewers adequate time to prepare and turn in defect logs
- Define clear objectives regarding the amount of time (min/max) for the review preparation
- Limit meeting time to two hours
- Ideally choose a location with a networked computer, overhead projector, and access to configuration management system

Review and Reference Materials

- Review materials must be under version control
- Provide controlled defect logs to reviewers
- Identify location and version of all review materials
- Provide reference materials

Preceding the Peer Review

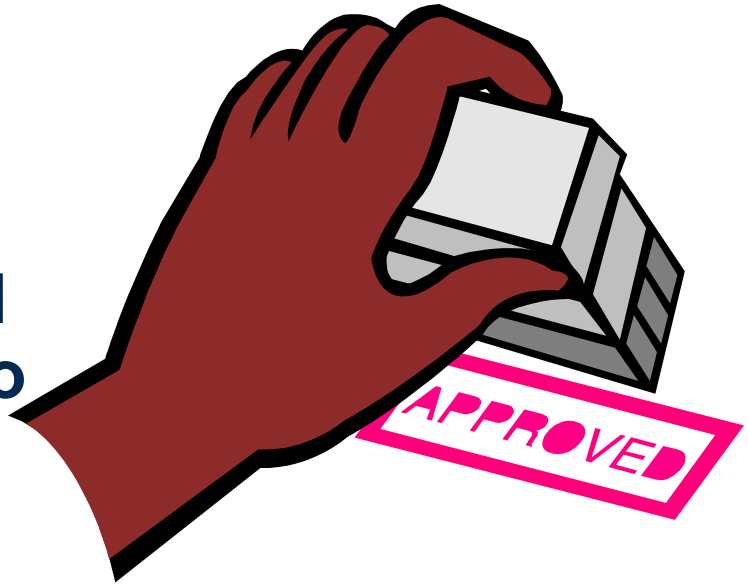
- Verify producer has distributed product
- Verify that reviewers are prepared
- Tabulate all the defects into a summary log

Conducting the Meeting

- Walk through the work product in its entirety; don't just look at the tabulated defects
- Ideally – use a projector so that everyone can see how defects are recorded
- Gain consensus during the review of the type, severity and disposition of each defect
- Identify, but don't try to fix the defects
- Determine if re-review is necessary

Closing the Peer Review

- Put peer reviews on the list of project deliverables so that closing them won't fall through the cracks
- Close out defects within 30 days or write a change request
- Re-review if necessary
- Require project director and quality engineer signature to close the review



Secondary Benefits

- Create mini-milestones for work products
- Jump-start team communication
- Product quality increases when the author knows it will be reviewed
- Create an esprit de corps within the project team - everyone has to be reviewed and act as a reviewer

More Secondary Benefits

- Leverage team member skills
- Teach junior engineers “It’s OK to criticize senior people’s work”
- Exposes junior engineers to direct tutelage from experts
- Expose reviewers from outside the project team to new ideas, and vice-versa

Questions?