

# Software Reviews

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15-413 Introduction to Software Engineering

Adapted from SWENET Module QUA2



## Reviews and Inspections

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- A family of techniques
  - Walkthroughs
  - Inspections
  - Personal reviews
  - Formal technical reviews
- Review / inspect
  - To examine closely
  - With an eye toward correction or appraisal
- People (peers) are the examiners

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## Purpose

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- Catching errors
  - Sooner
  - More and different
  - Breaking frame of reference
- Improving communication
  - Crossing organization boundaries
- Providing education
- Making software visible

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## Results

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- Catching most errors before test
  - Review plus test is much cheaper than just test
  - Sample results:
    - 10x reduction in errors reaching test
    - 50 - 80 % total cost reduction
- Fewer defects after release
  - Substantial cost savings in maintenance

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## Results

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- Composite data from H-P (R. Grady)
- Testing efficiency (defects found / hour)
  - System use .21
  - Black box .282
  - White box .322
  - Reading/inspect. 1.057

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## Inspections

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- Features
  - Team reviews materials separately
  - Team and producers meet to discuss
  - May review selected product aspects only
- Implications
  - Focus on important issues
    - If you know what they are
  - More material per meeting
  - Less preparation time

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## Walkthroughs

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- Features
  - Less formal
  - Producer presents or provides information
- Implications
  - Larger groups can attend (education)
  - More material per meeting
  - Less preparation time
  - Harder to separate
    - Product and presenter
    - Explanation and justification

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## Personal Review

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- Features
  - Informal
  - Done by the producer
- Implications
  - Not as objective
  - Available to any developer
  - Different mindset
    - Need for review
    - Product completion

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## Formal Technical Review

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- Features
  - Formal
    - Scheduled event
    - Defined procedure
    - Reported result
  - Technical
    - Not schedule
    - Not budget
  - Independent review team
    - Producers not present

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## Formal Technical Review

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- Implications
  - More preparation time
  - Less material per meeting
  - Product must stand or fall on its own

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## Team Selection



- Manager assigns
  - Vested interest in a good outcome
  - Review as delegation of manager's responsibility
- Technical competence
  - Current technology
- Objectivity
  - Best buddies and "outsiders"
- User involvement

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## Team Size



- Smaller for
  - Focus
  - Scheduling
  - Reasonable output volume per person-hour
- Larger for
  - Expertise
  - Making review public
- Non-participating observers

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## What and When to Review

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- Any software artifact
  - requirements, designs, code, documentation, procedures, interfaces, ...
- Design for review
  - Controlling product complexity
  - Controlling review length
- Scheduling reviews

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## Review Process

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- Producers provide materials
- Leader schedules meeting
- Individuals prepare
- Team holds review meeting
- Manager gets report

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## Team Task Overview

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- Provide a good review
  - The team is responsible for the review, not the product (Don't shoot the messenger)
- Find issues
  - Raise them, don't solve them
- Render an assessment decision
  - Accept, Accept with minor revision, Revision needed, Reject
  - Unanimous approval required
    - Product rejection by individual veto

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## Team Leader - Tasks

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- Avoid premature reviews
- Coordinate arrangements
  - Materials distribution
  - Meeting schedule
  - Meeting location and facilities
- Ensure a good review
  - Or report the reason for failure
    - Materials missing
    - Reviewers missing or not prepared

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## Team Leader - Run the Meeting

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- Act as chairperson
  - Opening and introductions
  - Procedure guide
  - Closing
- Act as facilitator
  - Controlling level of participation
    - Enough but not too much
  - Conflict resolution
- Terminate the meeting if unproductive

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## Reviewers - Tasks

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- Prepare before
  - Thorough review of materials
- Participate
  - Be there
    - Coming late; leaving early
  - Act professionally
    - Personal agendas
    - Big egos and shyness
  - Positive and negative comments
    - Balance; courtesy; preserving what's good

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## Recorder

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- Selection
  - Any competent reviewer
  - Single or multiple recorders
  - Rotating responsibility within a meeting
  - Don't choose leader as recorder
    - Too much to do
    - Separation of power
- Task: Get it in writing
  - Basis for report

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## Recording Medium

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- Issues
  - Public Vs. private notes
  - Speed and accuracy
  - Usefulness after the meeting
- Media
  - Flip charts; posting prior pages
  - Blackboards, overheads, PC and projector
  - Video and audio recording

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## Managers - Tasks

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- Stay out of reviews in your own area
- Support reviews
  - Talk about it
  - Provide resources
    - Time, the right people, place, materials
  - Change the reward system
- Abide by the review results

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## Review Report

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- Purpose
  - Tell managers the outcome
  - Early warning system for major problems
  - Provide historical record
    - For process improvement
    - For tracking people involved with projects
- Contents
  - Summary
  - Product issues
  - Other related issues

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## Summary

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- Highly effective technique
- Low technology
- Not used nearly enough
- DO IT!
  - Personal review

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## Assignment 10

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- Formal Technical Review
  - Midpoint: By Thursday, midnight
    - Document part of your code for a review
    - Context, specification, likely changes, code, test suite
  - By Tuesday, midnight
    - Review someone *else's* project
    - Identify defects and other issues

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