Code reviews / software inspections

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Peer Reviews in Software
A Practical Guide
Karl E. Wiegers
What is a Software Peer Review?

- Having other people read the code

Why do that?

- Because, in many studies, it is the single most effective way to find and fix bugs
- Human beings are pretty smart
- Open source theory “many eyes make for shallow bugs”
What Kind of Review?

- Ad hoc “look at this”
- Peer deskcheck / “pass around”
- Pair programming

- Walkthrough
- Team Review
- Formal Inspection
Differences?

- Vary in amount of planning required, amount of formality, number of people and number of roles

- More heavyweight tend to be more effective, and more efficient (“more bugs for your buck”) but sometimes aren’t possible
Formal Inspections

- Include all of the following:
  - Planning
  - Preparation
  - An actual meeting
  - Correction of found defects
  - Verification of correction

- Role of moderator/reader is not given to the person/people who created the code in a formal inspection
What attributes are well-handled by inspections but not testing?

- “Fuzzy” non-functional properties
  - Maintainability, evolvability, reusability
- Other properties tough to test
  - Scalability, efficiency
  - Security, integrity
  - Robustness, reliability, exception handling
- Requirements, architecture, design documents
  - Cannot “execute” these as a test
Review Roles

- **Moderator**
  - Organizes review
  - Keeps discussion on track
  - Ensures follow-up happens
  - Key characteristics
    - Good facilitator
    - Knowledgeable
    - Impartial and respected
    - Can hold participants accountable and correct inappropriate behavior

- Separate role from **Recorder**
  - Who captures a log of the inspection process
Review Roles

- **Reader** (different from author)
  - Presents material
    - Provides points of comparison for author and other team members
      - Differences in interpretation provoke discussion
      - Reveals ambiguities - If author were to present, others might not mention that their interpretation is different
  - Alternative
    - Get comments section by section
    - Faster, but does not capture differing perspectives as effectively
Review Roles

- **Author**
  - Describes rationale for work
  - Not moderator or reader
    - Conflict between objectivity required of moderator/reader and advocacy for the author’s own work
    - Others raise issues more comfortably
- **Not recorder**
  - Temptation to not write down issues the author disagrees with
- **Significant benefits to attending**
  - Gain insight from others’ perspectives
  - Can answer questions
  - Can contribute to discussion based on knowledge of artifact
  - Potential downside: meeting may be confrontational