

Quality Management

Clive Boughton

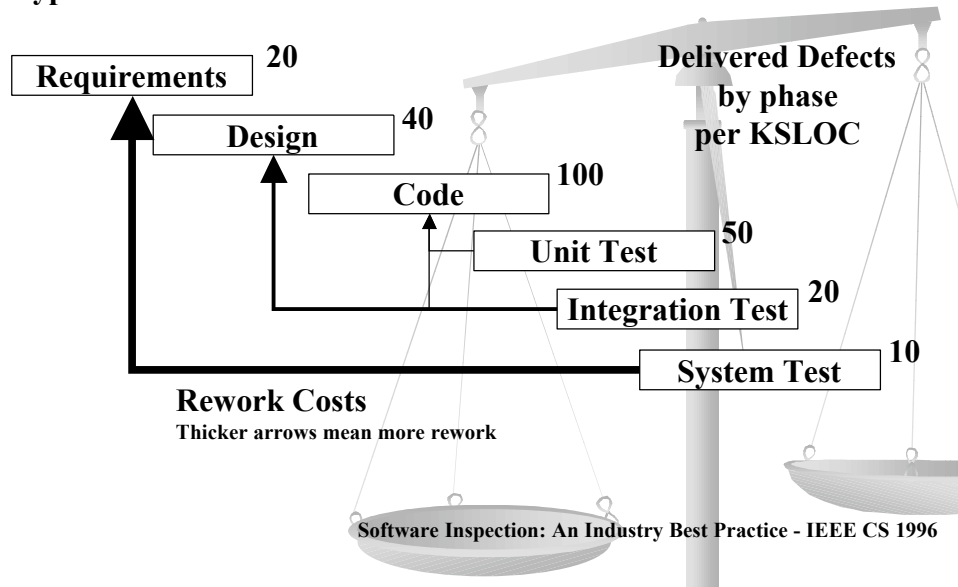
Inspections

Lecture 3



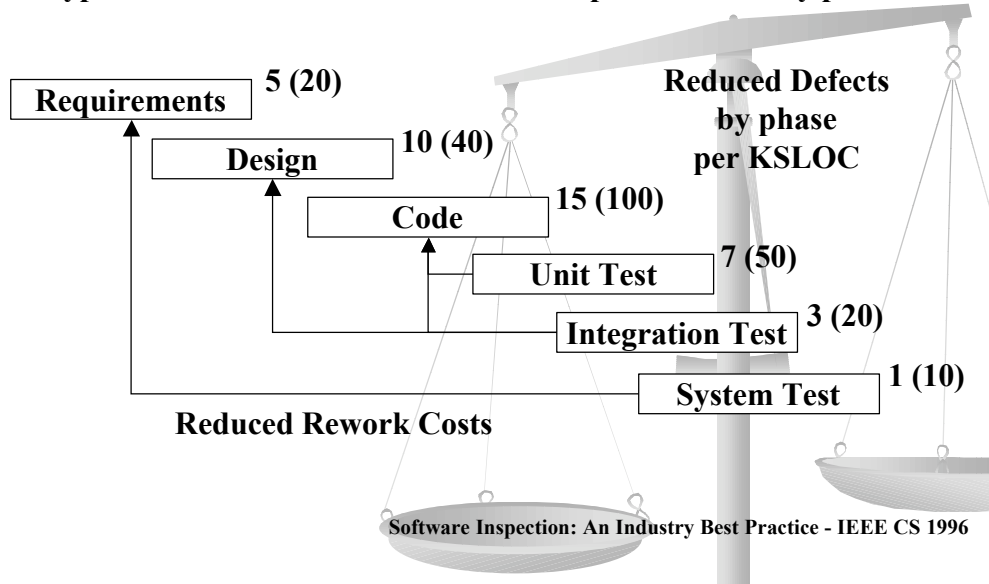
Inspections

Typical Software Defect Profile



Inspections

Typical Software Defect Profile with Inspections in early phases



Inspections

Benefits of introducing early phase inspections

- Dramatic reduction in phase-phase defect transmission
- Order of magnitude reduction in delivered defects
- Significant gains in productivity (25% - 35% overall)
- Much less rework - 30% less overall cost & earlier finish
- Discovery of defects that testing wouldn't expose

Disbenefits of introducing early phase inspections

- Early investment of total development cost
- Isn't "sexy" or "high tech"
- Not as simple as it seems

Software Inspection: An Industry Best Practice - IEEE CS 1996

Inspections

Do's and Don'ts of Inspections

- Don't author bash
- Do provide adequate preparation time
- Do involve only those who are absolutely necessary in inspection sessions



Software Inspections: An Effective Verification Process
by Ackerman, Buchwald, Lewski - IEEE Software 1989

Fagan Inspections

Five elements

- Six well-defined inspection steps
- Four well-defined inspection roles
- The formal collection of process and product data
- The intermediate/development product being inspected
- Supporting infrastructure



Software Inspections: An Effective Verification Process
by Ackerman, Buchwald, Lewski - IEEE Software 1989

Fagan Inspections

Six well-defined inspection steps

1. Planning
2. Overview - *for getting all inspectors up to speed*
3. Preparation - *to ready inspectors for meeting*
4. Meeting - *the main focus of time and effort*
5. Rework - *to resolve issues uncovered at meeting*
6. Follow-up - *to ensure issues have been resolved*

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Six well-defined inspection steps

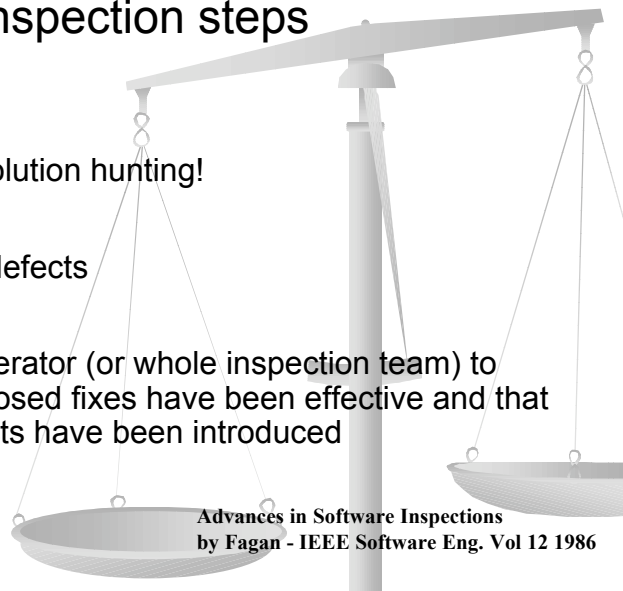
- Planning
 - Inspection materials to meet entry criteria
 - Arrange for appropriate participants
 - Arrange meeting place
- Overview
 - Educate participants on what is to be inspected
 - Assign inspection roles to participants
- Preparation
 - Participants learn material and prepare to fulfill their assigned roles

Advances in Software Inspections
by Fagan - IEEE Software Eng. Vol 12 1986

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Six well-defined inspection steps

- Meeting
 - Find defects. No solution hunting!
- Rework
 - Author reworks all defects
- Follow-up
 - Verification by moderator (or whole inspection team) to assure that all proposed fixes have been effective and that no secondary defects have been introduced

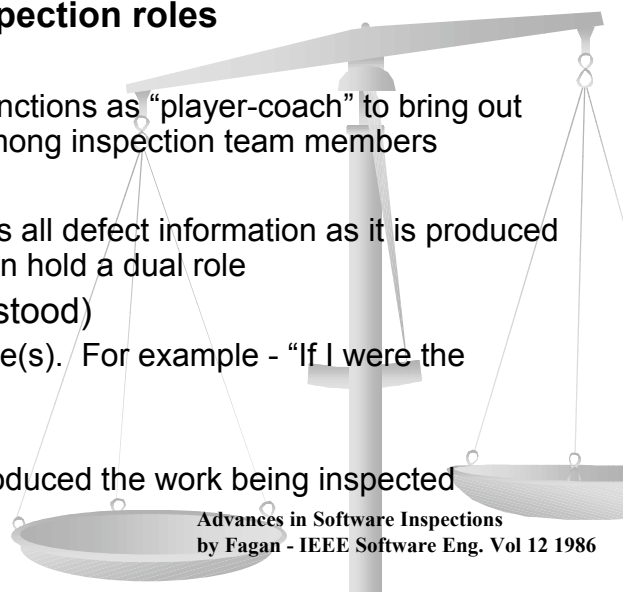


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Four well-defined inspection roles

- Moderator
 - Key participant. Functions as “player-coach” to bring out the best synergy among inspection team members
- Recorder
 - Collects and records all defect information as it is produced during meeting. Can hold a dual role
- Reader (least understood)
 - Provides perspective(s). For example - “If I were the implementor ...”
- Producer / Author
 - The person who produced the work being inspected



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by Fagan - IEEE Software Eng. Vol 12 1986

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The formal collection of process and product data

- Dates
 - *Product distributed for inspection*
 - *Of inspection meeting*
 - *Rework was completed*
- Type of inspection and whether initial or repeat
- Identity of product and inspectors
- Size of material inspected
- Duration times for preparation and inspection meeting
- Number, type and severity of defects found

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The development product being inspected

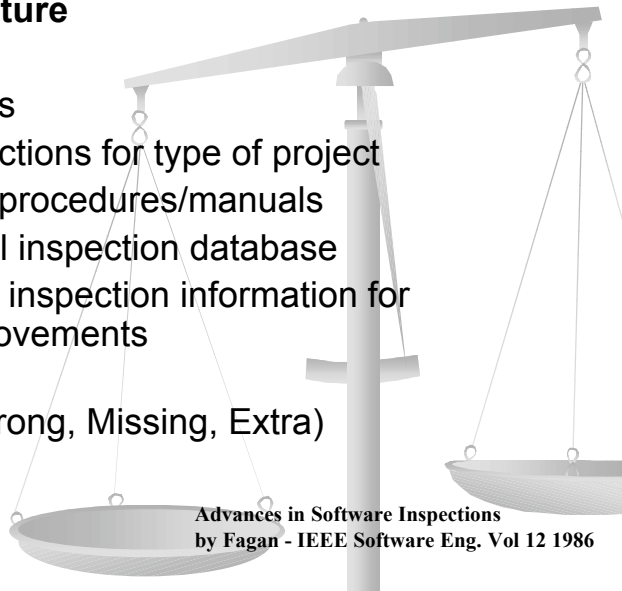
- Entry criteria
 - Existence of (inspected) product predecessors
 - *Inspected, detailed design document exists for code module inspection*
 - Conformance to proforma standards for inspection
 - *Page layout for ease of reading*
 - *Line and page numbering for referencing*
 - Satisfaction of automated checks
 - *Spell and grammar checks done*
 - *CASE tool diagrammatics checked for consistency*
 - *Code is compilable*

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Supporting infrastructure

- Training of inspectors
- Applicability of inspections for type of project
- Updating inspection procedures/manuals
- Maintaining historical inspection database
- Analysis of historical inspection information for identification of improvements
 - Inspection metrics
- Type-ing defects (Wrong, Missing, Extra)



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