

Review Processes

- Quality and Reviews
 - efficacy of Q/A techniques
 - benefits of reviews
 - types of reviews
- Formal Reviews
 - the process
 - the roles
 - risks and how to manage them
- Informal Review Processes
 - differences and trade-offs

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Ways to improve quality

- Try to be careful
 - follow established best practices
 - reduce number of mistakes we make
- Peer Reviews
 - get other skilled people to check our work
 - before we do further work based on it
- Testing
 - test for all the problems we can think of
 - try to find the mistakes after we make them
 - go back and fix them before we ship

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Reviews

- get other sets of eyes to review our work
 - to find errors and omissions
 - to encourage developers to do better work
- review each major completed work product
 - fix requirements before we do architecture
 - fix architecture before we do the design
 - fix design before we write the code
 - understand how to test code before we write it
 - fix code before we test and ship it
- enabling us to ship better products
 - on-time, with lower development & support costs

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Benefits of Reviews

- They can be better than testing
 - finds more problems than testing
 - finds problems sooner and more efficiently
- They are excellent training tools
 - process, methodology, standards, technique
- They improve information dissemination
 - reviewers learn other parts of the product
- They improve programming skills
 - as people learn from others' mistakes

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Many types of reviews

- Reviews for almost every project phase
 - Requirements reviews
 - Architectural reviews
 - Design reviews
 - Test Plan reviews
 - Code reviews
- Often used as acceptance criteria
 - before moving on to next project phase
- Different reviews ask different questions
 - but the process remains the same

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Quality and Quality Assurance

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Requirements Reviews

- Ensuring we are building the right thing
- user-level requirements
 - clear and well justified, widely agreed to
 - traceable and prioritized
 - relatively complete and stable
 - do we believe we can satisfy them?
- validate component-level requirements
 - reasonable, complete, consistent, testable
 - do they add up to the user-level requirements

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Architectural Reviews

- Review architecture prior to design
- Is it capable of meeting requirements?
 - embraces all applicable standards
 - no performance or robustness issues
- Will it be practical to build & support?
 - all components well specified, look doable
 - reasonable use of off-the-shelf technology
 - good modularity, well abstracted interfaces
- Is there anything here we'll regret later?

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Design Reviews

- Review Design prior to implementation
- Is the design reasonable?
 - it will satisfy all component requirements
 - no major concerns about it working
 - complete, correct, and relatively simple
- Is it clear how to build this component?
 - clearly achievable with existing technology
 - no significant open design questions
- Is the design testable?
 - adequately observable and controllable

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Test Plan Reviews

- Review proposed test cases
 - each clearly and adequately described
 - sufficient to cover all likely problems
 - no redundant or useless test cases
- Review proposed testing strategy
 - enables code to be tested as developed
 - clear how all tests will be implemented
 - good use of standard automation technology
- How much confidence will it give us?

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Code Reviews

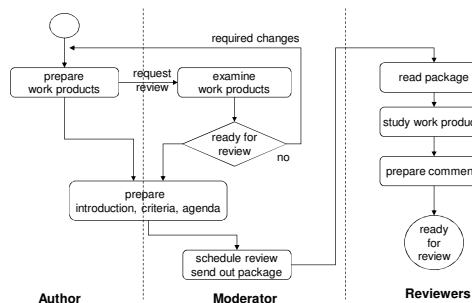
- Review Code prior to testing
- Does this code implement the design?
 - implements all specified functionality
 - appropriately handles all reasonable cases
- Is this code obviously correct?
 - unobviousness often hides incorrectness
- Does it conform to applicable standards?
 - naming, commenting, layout conventions
 - portability, tool enabling conventions, etc.

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Preparation for a Review



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Author

- person who created the work product
- Preparatory tasks
 - prepare the work product for review
 - all known problems should already be addressed
 - prepare introductory & background materials
- During the review
 - author is a passive observer of the review
 - may answer questions

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Review Materials - Introduction

- background
 - what project/component are we discussing
 - what do reviewers need to know about it
 - history, key problems, important decisions, etc.
 - where can they find additional information
 - requirements, designs, issue analyses
- goals of this review
 - specific work products will be reviewed
 - scope of this review (what is in/out of bounds) ●
 - what approval means

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Materials - the Work Products

- the work products to be reviewed
 - specifications, designs, code, test plans, etc.
 - these must speak for themselves
 - wasteful to review them before they're ready
- a plan to structure the review ●
 - a table-of-contents for the work product
 - what will be reviewed, in what order
 - correct order is often critical to understanding
 - what types of issues will be covered when
 - this is the basis for the review agenda

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Review Materials - Criteria

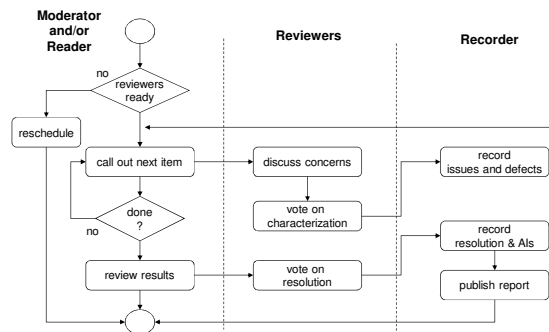
- requirements to be satisfied
 - customer, organizational, standards
- review check-lists
 - many organizations have review check-lists
 - questions to asked, problems to consider
 - they are evolved based on experience
 - e.g. at the end of McConnell's chapters
 - these can help the reviewers
 - by reminding them of things to consider
 - they can't substitute for thought/experience

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The Review Process



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The Review Moderator

- experienced person, other than the author ●
- Preparatory tasks
 - schedule the review
 - review & distribute the preparatory materials
 - prepare and distribute an agenda
- During the review
 - keep review moving per the agenda (w/o digressions, rat-holes, scope-excursions)
 - ensure all voices heard, no key points lost
 - ensure decisions & action items are recorded

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Reader

- experienced person, other than the author ●
- could be moderator
- during the review
 - guide the discussion through the code
 - following the prepared review materials
 - calling out each interesting element
 - asking for observations and issues

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Reviewers (2-6)

- adequate technical experience
 - all reviewers must understand work products
 - others may attend for training purposes
 - to learn the technology or review process
 - but these people are not there as reviewers
- breadth of relevant expertise
 - people familiar with the problem domain, related products, or components
- take the process seriously
 - do the preparation, fully participate

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Recorder

- take notes during the review
 - record all defects discovered
 - it is useful to assign a severity to each
 - record all issues raised
 - questions, suggestions, escalations, etc.
 - record decision and action items
 - accepted, major/minor revisions, further review
- publish a report of the review
 - recorder is often a Q/A or process person, observing process & collecting metrics

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Resolutions and Report

- Issue characterizations:
 - all issues must be clearly articulated
 - questions/issues (to be answered/resolved)
 - defects (to be fixed)
 - characterize as: major/minor/advice
- Review disposition:
 - approved (with noted changes)
 - requires another meeting
 - to review non-trivial fixes
 - to review proposed issue resolutions

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Potential Problems

- scope issues
 - digressions and rat-holes
 - revisiting past decisions
- productivity issues
 - materials difficult to understand
 - reviewers haven't done the preparation
 - reviewer burn-out
- ego issues
 - discussing people rather than problems
 - telling the author how to write his/her code
 - author defends his/her decisions

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In-Class Design Review

- need a volunteer architecture to review
 - guaranteed 90%/+20% on prelim architecture
- need a volunteer reviewing team
 - guaranteed 90%/+20% on review process
- schedule:
 - midnight Fri 10/12: architectural proposal due
 - midnight Sat 10/13: reviewability issues due
 - midnight Sun 10/14: revised proposal due
 - midnight Mon 10/15: reviewer notes due
 - Tue 10/16: in-class architectural review

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For Next Lecture

- Usability:
 - usability.net: User Centered Design
 - Talin: User Interface Design Principles
 - Bay: Designing Games that Don't Suck
- Usability Testing:
 - Wikipedia: Usability Testing
 - Thompson: Halo 3 – a New Science of Play
- Types of User Interfaces:
 - Nielsen: Web vs GUI interfaces
 - Kampe: Content Architecture
 - Kampe: CLI design

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