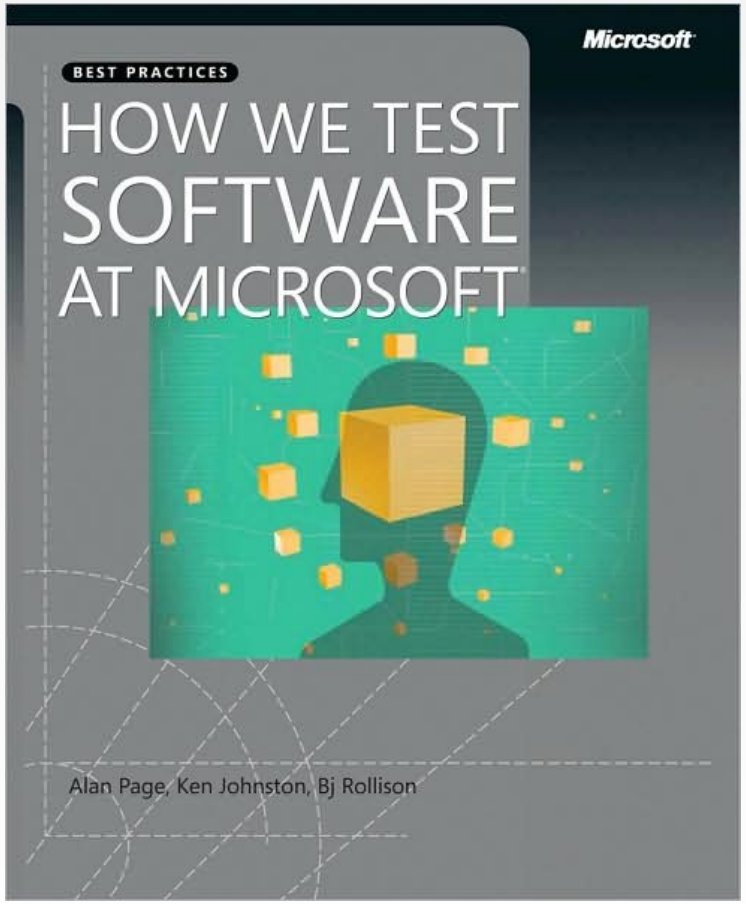
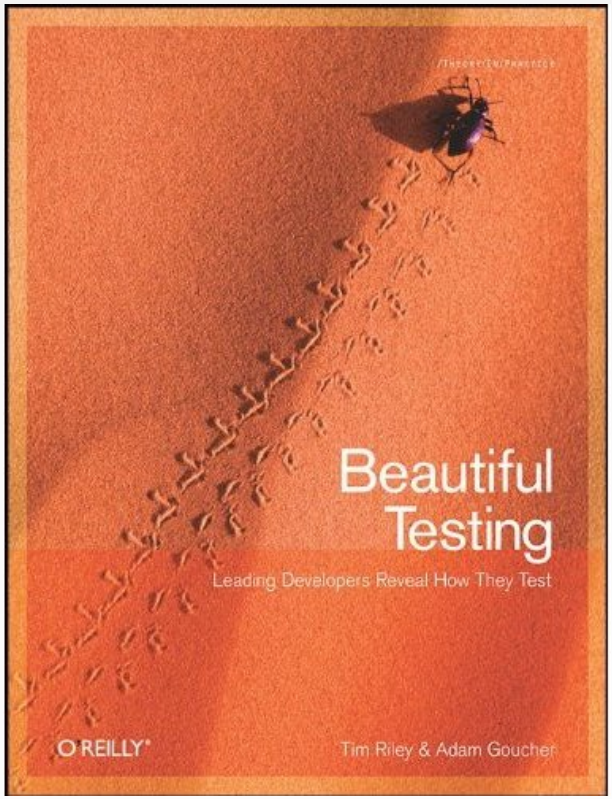
Peering Into the White Box: A testers approach to code reviews

Alan Page

Microsoft

self-promotion slide





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Code Reviews…really?

The Tester's Point of View

Code reviews *traditionally* a developer activity

- Developers write unit tests
- Developers ask "does this work?"
- Developers look at code one way, but…

- But testers still find functional bugs
- Testers ask "how can this fail?"
- Testers have a different perspective

Experiment: Have testers perform code reviews

Types of Reviews

Less formal
Less
effective
Less cost

More formal
More
effective
Greater cost

Ad hoc review

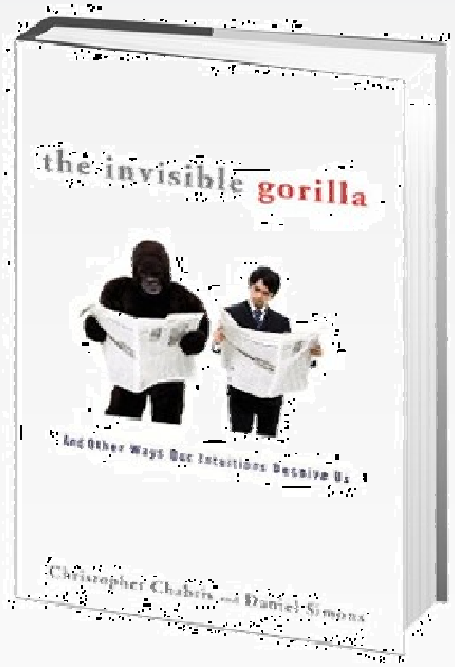
Formal Inspection

Based on Peer Reviews in Software by Wiegers, 2002

Approach

1. Kickoff meeting
2. Collect volunteers
3. Set expectations
4. Schedule meetings
5. Share checklist

Using a Checklist

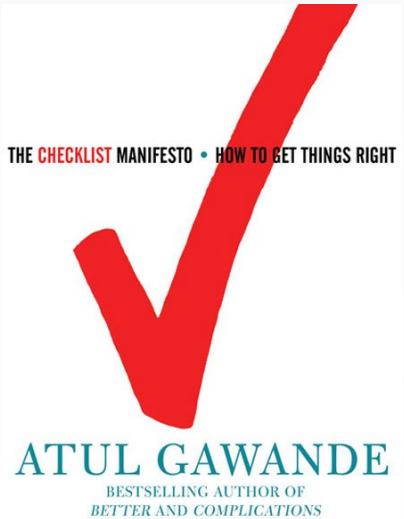


The illusion of attention

- If you look for everything, you'll miss something
- If you look for one thing, you'll miss other things

Mitigation

- Loop one at a time through a list of common errors



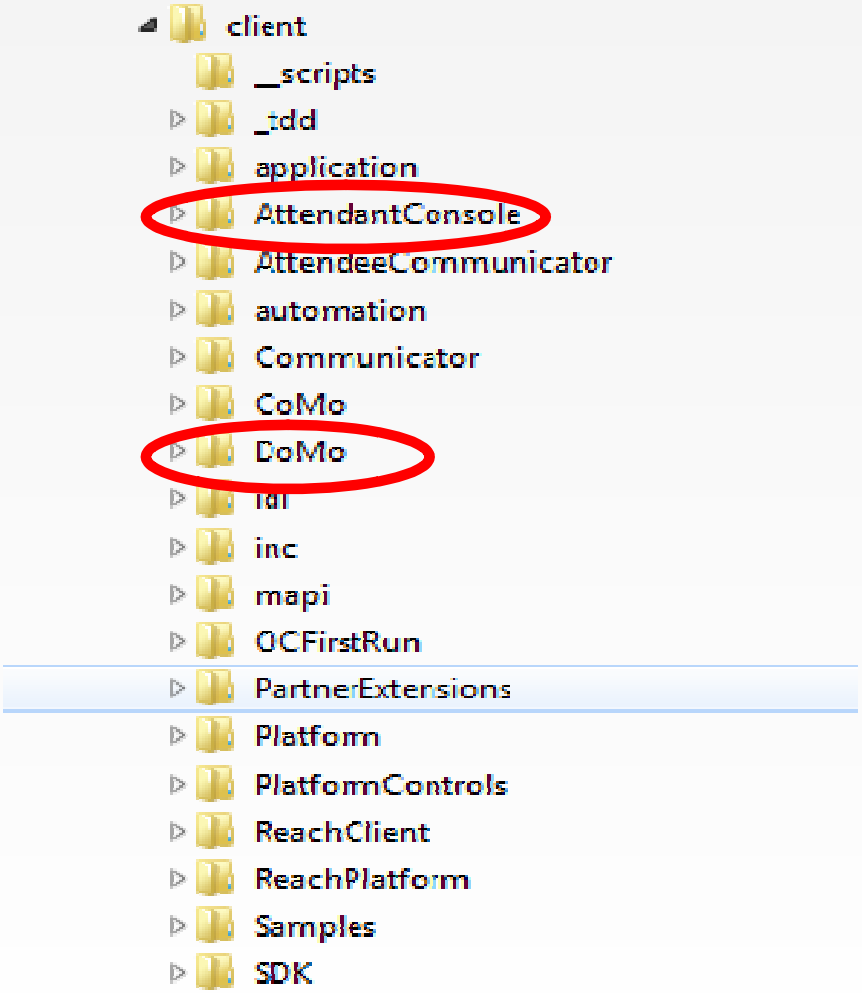
Selecting Code for Review

Churn

Complexity

Intuition

Convenience



Results

Four teams

Moderate engagement

Skill increase

Successful “Bug Hunting”

```
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Text))

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```

Comment [WL17]: [XD] Should we have two functions to convert to rtf or text?

Comment [TJL18]: Should yes, but this was discovered too late in the game. Under the hood the HtmlToText() could use HtmlToRtf() to do its work, but that implementation detail would be abstracted from the rest of the code.

Comment [WL19]: [WL] Shouldn't this be ERROR?

Comment [TJL20]: Yes.

```
pending:
```

Comment [XD31]: It seems to me that we update this length too early. If any operations below fail, we never restore the length to the original value.

Comment [TJL32]: That's valid. Should move it below the switch statement where we know the insertion operation succeeded

```
)Element,
:iconsInIM) ?
```

Comment [WL27]: [XD] Why is this variable here as it is never used

Comment [TJL28]: Was probably useful in debugging at some point, can be removed

Comment [WL29]: [XD] Should we put "all" instead of any?

Comment [TJL30]: OK by me

Lessons Learned

Not like other testing

Balance w/other activities

The Checklist

Develop “Experts”

Development team involvement

Bug Tracking

Future Plans

Continue with select team members

Inspection “SWAT”

Track comments and discussion

Are code reviews for you?

Resources

- Software Inspection – Tom Gilb & Dorothy Graham. Addison-Wesley Professional (January 10, 1994)
- The Best Kept Secrets of Peer Code Review - http://smartbear.com/codecollab-code-review-book.php
- Software Inspection (web article) - http://www.the-software-experts.de/e_dta-sw-test-inspection.htm
- Fagan Inspections (Wikipedia entry) - http://en.wikipedia.org/wiki/Fagan_inspection

- Are input parameters validated and checked for null?
- All exceptions must not be caught and sunk (i.e. not rethrown)
- Do the comments accurately describe the code?
- Examine loops for performance issues
- There must be no hard-coded strings and magic numbers in the code
- All user-visible strings must be localizable (i.e. retrieved from a resource file)
- Verify correctness of operators
- Is arithmetic safe for overflow and 64-bit math?
- Are the functions or source files exceptionally large or complex?
- Are COM interfaces properly ref counted?
- Are untrusted inputs validated?
- Check for properly constructed switch statements
- Are there unused elements in data structures?
- Are string buffers big enough for localized content?
- Does the new code duplicate code that exists elsewhere in the project?
- Are there unnecessary global variables?
- Is the code overly complex? Could it be simpler?
- Do the function and variable names make sense?
- All memory allocations should be checked for failure?
- Are comments appropriate and useful?
- Does the code have performance implications – if so, are optimizations possible?
- Are there spelling errors in names or comments?
- Have boundary conditions been checked?