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Develop Software with Confidence Improving Quality Assurance through Developer Testing

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Practices Experience Knowledge Automation

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Develop Software with Confidence

Improving Quality Assurance through
Developer Testing
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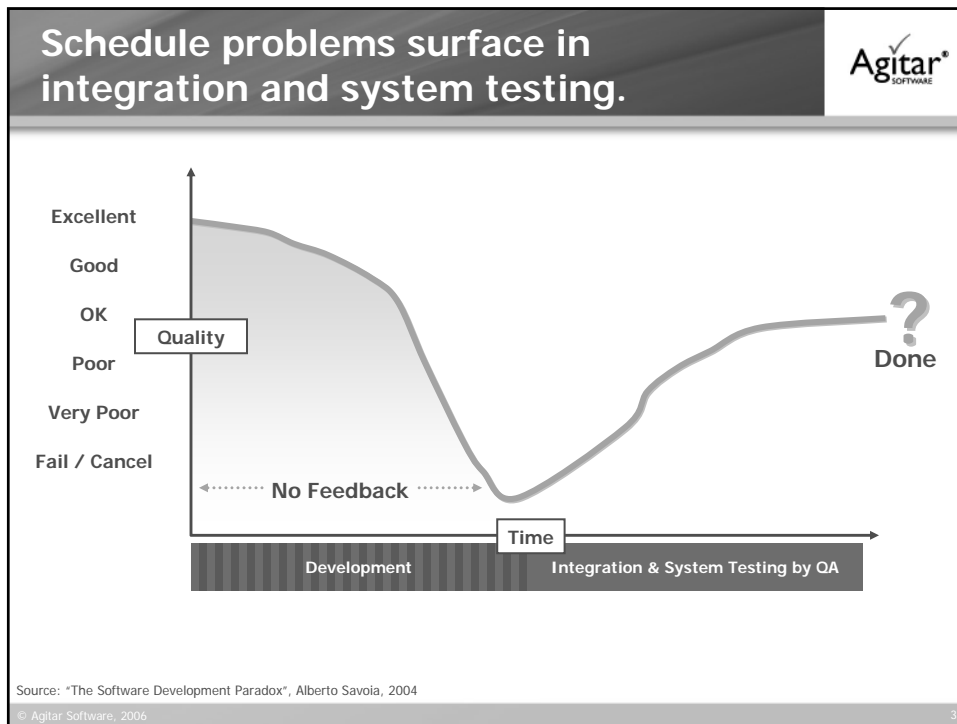
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Software development organizations share common goals.



*Release software that works,
meeting the business need for
new functionality,
when it's needed,
at the budgeted cost*

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Why are the problems found late in the cycle instead of earlier?

- ✓ QA validates the behavior: do we get the proper output for the test input?
- ✓ QA looks for regressions: does the existing behavior still work as intended?
- ✓ QA considers the user: can the user of the software accomplish their task?

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Developer testing is different than tests from Quality Assurance.



- ✓ Allows developer to confirm some part of the code works as expected
 - not the same as the product working
- ✓ Provides feedback while doing
 - faster feedback → lower cost of failure
 - downstream efficiency
- ✓ Developers write tests to change the code

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Tests are required to be in control while you make changes.

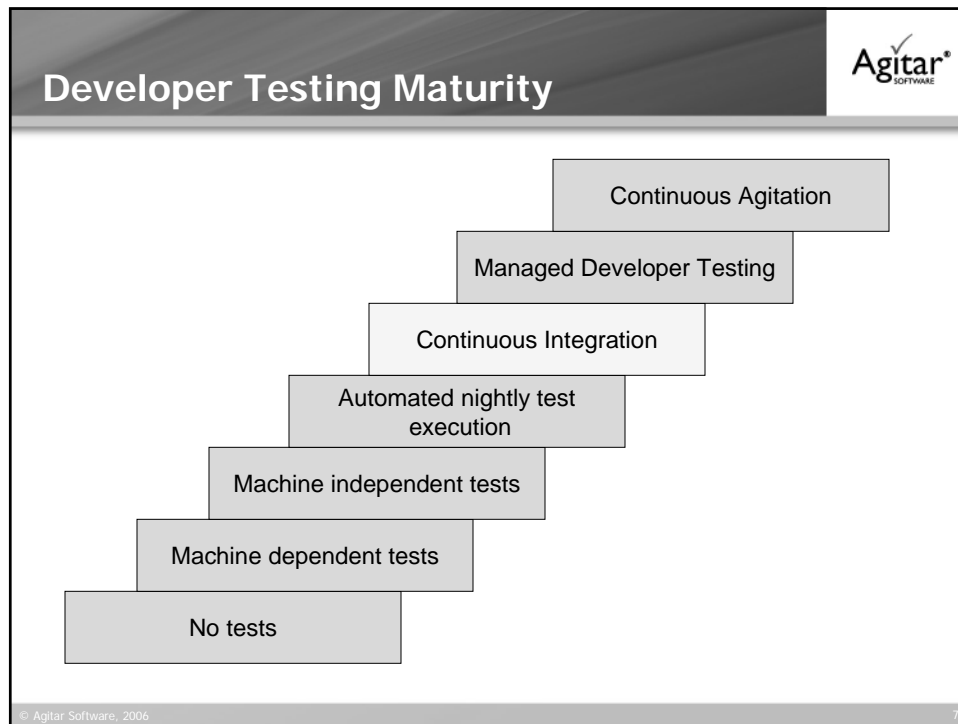


“Code without tests is bad code. It doesn’t matter how well written it is; it doesn’t matter how pretty or object-oriented or well-encapsulated it is. **With tests, we can change the behavior of our code quickly and verifiably.** Without them we really don’t know if our code is getting better or worse.”

– Michael Feathers, “Working Effectively with Legacy Code”

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Research support

- ✓ "Trade-offs between Productivity and Quality in Selecting Software Development Practices", IEEE Software, Sept-Oct 2003
- ✓ Impact of daily builds: **93** percent gain in productivity
- ✓ Impact of regression testing on code check-in: **36** percent reduction in defect rate
- ✓ Recommendation: Frequent builds with regression tests on each build
 - Michael Cusumano, MIT Sloan School of Management

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Importance of Automating Tests




- ✓ Tests are code: "software rots if not used"
- ✓ Good tests fail

Imperfect tests, run frequently, are much better than perfect tests that are never written at all.

– Martin Fowler

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Continuous Agitation Math




- ✓ Dashboard project
agitation build
 $5316 \text{ test points} \times 1241 \text{ builds} = 6.6 \text{ million opportunities for feedback}$
- ✓ Agitator project
agitation build
 $32668 \text{ test points} \times 5407 = 176 \text{ million opportunities}$

nightly build
 $32668 \text{ test points} \times 557 = 18 \text{ million opportunities}$

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Impact of Continuous Agitation



- ✓ More features **and** higher quality
- ✓ Engineering staffing 40% lower than projected
- ✓ Release agility
 - added new functionality 2 weeks before ship
 - shipped 1 week early

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Developer testing as an entrance criteria to system test?



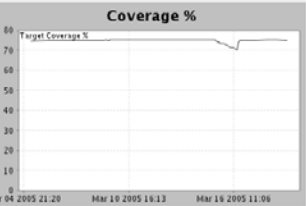
Agitar Management Dashboard
Project cc_agitator [3/19/05 9:51 AM]

Trends

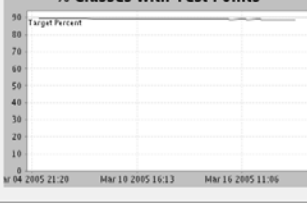
Test Failures



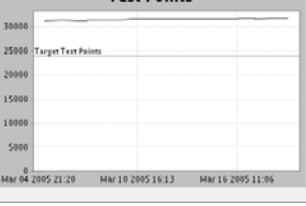
Coverage %



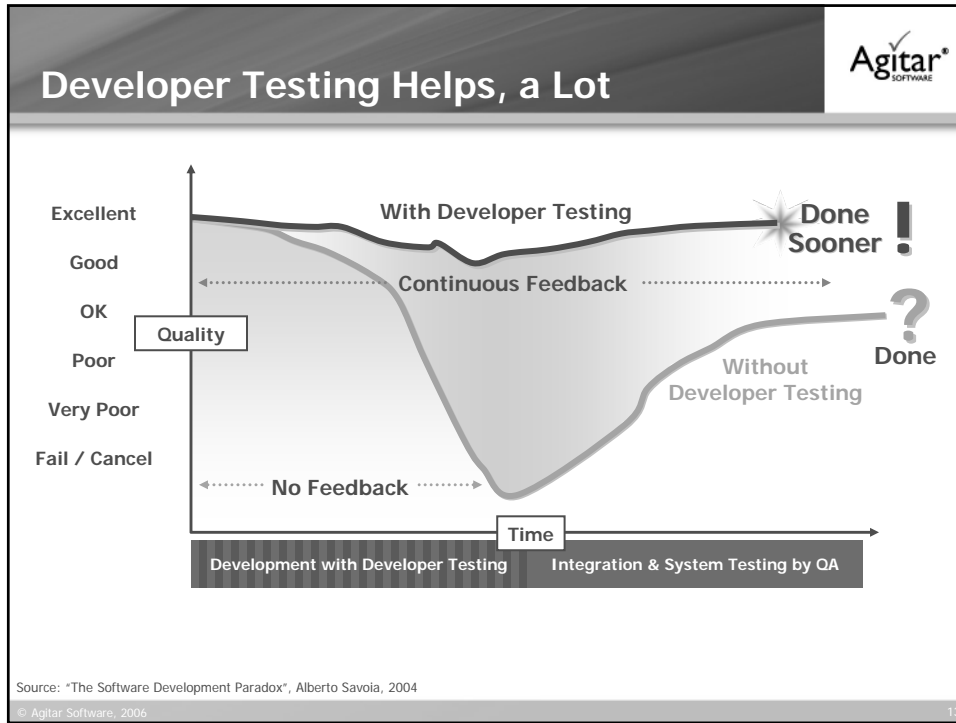
% Classes with Test Points



Test Points



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Our customers show proven results from adopting developer testing.

- Largest Indian Systems Integrator:** "Using Agitar is the best way to improve development"
- Major Municipal Gas Utility:** 90% reduction in bugs reaching QA
- Major Financial Services Company:** 85% reduction in unit-testing hours
- Large Retail Web Site:** 1st 0% downtime quarter, 95% cut in cost of bugs
- Global Supplier of Healthcare Equipment:** 90% cut in defect remediation cost

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Developer testing helps organizations meet their goals.



The best thing you can do to dramatically improve your software is to have developers test their code

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Questions

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