Code Reviews in the Agile Process
- Exoweb's Story
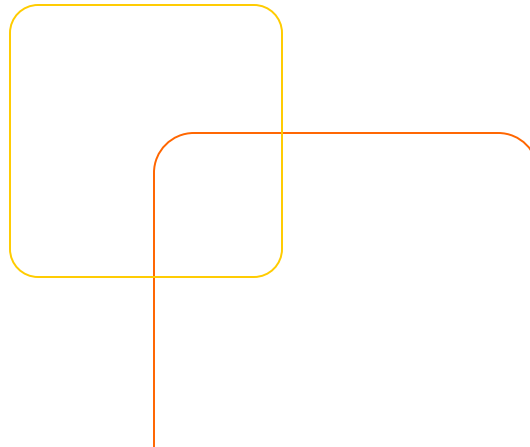
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Code Reviews - A 4 year journey

- Why we introduced code reviews
- First iteration - NASA style
- Second iteration - Top techs review
- Third iteration - Team based reviews!
- Tools we use
- Lessons learned/best practices

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- Project had been following agile development practices (Scrum) for 8 months
- Web-based, medium traffic but financial so accountability had to be very high
- Product was launched but we still had quality problems

Main practices we followed:

- Scrums/Daily Standup Meetings
- Continuous Integration
- Automated Testing
- Iterative Development
- Hiring Good People!

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Major Agile Methodology NOT Followed: Pair Programming

- Most developers tried it and it did not work out
- Used successfully a between a couple of individuals
- We would try PP 3 more times in different iterations over the following years

Problem:

- Quality wasn't good enough. Mistakes were still making it into production
- People weren't sufficiently aware of code others had written. Too much duplication in different modules

Solution:

- Code Reviews!
- Article on top ten software engineering practices no one follows
- Code Reviews were #1, with the most case studies and evidence of success

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First Iteration - NASA style code reviews (Formal Inspections)

- Code is assigned to team.
- Everyone must review it before meeting
- Meeting lasts no more than two hours
- Everyone has an assigned role

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Roles
- Author
- Moderator
- Reader
- Recorder
- Inspectors

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Problems:

- Very slow. Everyone has to prepare for at least 1-2 hours before meeting, then spend 2-3 hours in the meeting. 5 hours * 5 people = 25 man hours gone on a piece of code that took 8 man hours to write
- Scheduling meetings
- Everyone hates meetings

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Second iteration - Top techs review

- Best technical people reviewed all code committed
- Once reviewed by 2-3 people, code was considered completed. Comments emailed to author
- Reviews were done individually and separately
- Tools were added to Trac (ticketing system) to track code reviews

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Benefits:

- Code quality improved greatly! Many defects were found.

- Far less time wasted compared to NASA style

- Tech leads got better faster! Learned from everyone's mistakes and strengths

- Very flexible, since tech leads reviewed when they had time and no meetings required

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Drawbacks:

- Tech leads were spending most of their doing code reviews and not enough time writing code
- Juniors were improving far slower than tech leads. Different between them only got larger and larger

Third iteration - Team based reviews!

- Basically everyone reviewed every commit by their team members
- A review was complete only after all reviewers were finished
- Biggest difference with NASA method was no meetings
- Introduced a new class of review - CRITICAL!

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- Initially resulted in 50% slowdown in feature creation speed
- Some junior developers had zero personal productivity for 2-3 weeks as they reviewed
- Over time, everyone adjusted and most developers settled into a routine of 1-2 hours of code reviews in the morning
- Code reviews are classified as critical priority tasks to ensure they get done

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Final results:

- Slow down in feature completion speed is about 10-20%
- Defect rate drops dramatically
- Developer growth is much faster
- Colleagues have a much better understanding of each other's technical capabilities

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Trac

Undergoing review, count: 4

changeset	date	review	path	comment
5076 gaspar	Aug 27 23:16	delimy	HighNoon/trunk/	ref HN, fixed some tests for account and main handler, * left some
5039 favo	Aug 27 14:44	favo	HighNoon	Refs HN, Added session __eq__, __hash__, __repr__ Reverted log
5034 gaspar	Aug 27 13:22	delimy	HighNoon	ref HN, transfer main handler to sally.new, * left 'ChallengeMessge?
4836 favo	Aug 13 19:02	favo	HighNoon	Refs HN, - Refactored the auto login logic to more clear. - Always re

Awaiting code review , count: 105

	changeset	date	review	path	comment
☐	5097 slipster216	Aug 30 22:00	New	mirror2	Updating RenderTexture? to support texture targets up to
☐	5096 favo	Aug 30 16:35	New	HighNoon	Refs HN, comment out feature of r5083, back to one pro
☐	5095 favo	Aug 30 15:58	New	HighNoon	Refs HN, moved sally from support back to project root, whic...
☐	5094 favo	Aug 30 15:52	New	HighNoon	Refs HN, - clean highnoon.stats, move gun to models/gu
☐	5093 favo	Aug 30 15:43	New	HighNoon	Refs HN, clean fixtures.
☐	5092 favo	Aug 30 15:17	New	HighNoon	Refs HN, cleaned ports.
☐	5091 favo	Aug 30 14:52	New	HighNoon	Refs HN, - Moved settings/stats_settings to settings/stats
☐	5090 favo	Aug 30 14:33	New	HighNoon	Refs HN, - Moved test settigns back to settings.test - Ren

Trac

Code Review : 5076

Change Set : 5076

Version :	1
Reviewers :	delimy
Last Changed :	Fri Aug 28 10:58:03 2009
Status :	Undergoing review
Priority :	normal

Description

delimy

- what those log.err for?
- in localsession line6 _get_player, every access to session.player will generate one rpc ca assume a share-nothing env)

[Edit this CodeReview] [history]

trac Powered by **Trac 0.11.5**
By Edgewall Software.

Review Board

Image Forthcoming

Lessons Learned/Best Practices

DO

- Focus on logic and correctness
- Two levels of comments - must do and "nice to have". First must be done, second is optional
- One tech leader to make final decision in case of ambiguity
- Code review status must be tracked and public

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DON'T

- Fix design or structural issues
- Code review prototypes

Tweaks Added Later:

- Pair Code Reviews
- Design Reviews/Pair Design Reviews
- Pre-Commit Code Reviews

Questions?

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