Continuous Integration

The Sign of a Great Shop

By Jared Richardson

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RoleModel software

State of Software

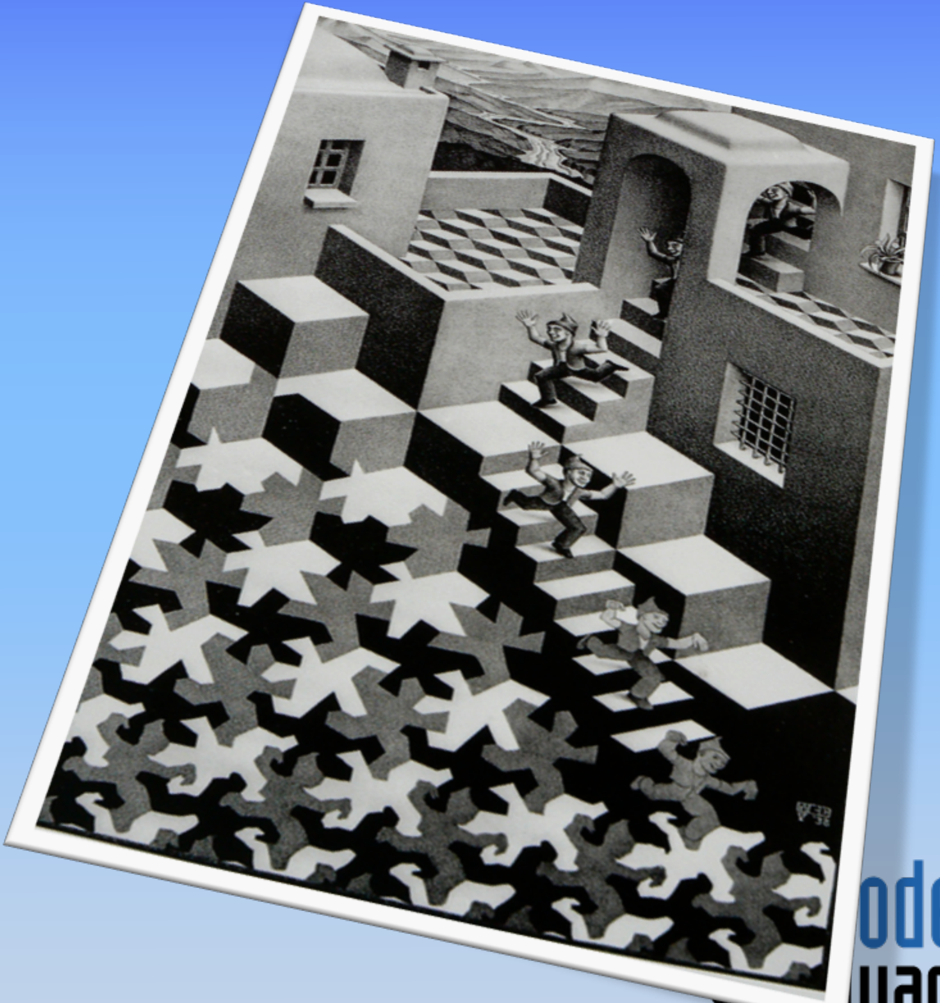
http://www.flickr.com/photos/markjsebastian/290364958/

Changing Features

Illustrate

Verify

Update



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http://www.flickr.com/photos/nglynn/387898959/

Compressed Schedules

- Minimize coding
- Minimize debugging
- Maximize focus

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http://www.flickr.com/photos/robbie73/3387189144/in/photostream/

Low Quality

Breaks

"Improvements"

Side effects

Brittle

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http://www.flickr.com/photos/virgu/37139949/

Three Problems

Changing features

Compressed schedules

Low quality

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How Do *We* Fix It?

(Actual Silver Bullet)

http://www.flickr.com/photos/elzey/4574528071/

Different Approaches

Relentless Automation

Different Approaches

Continuous Integration

Define a few terms

Definition

Practical

Easy

Effective

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Definition

Test

Uses your code

Returns a pass/fail result

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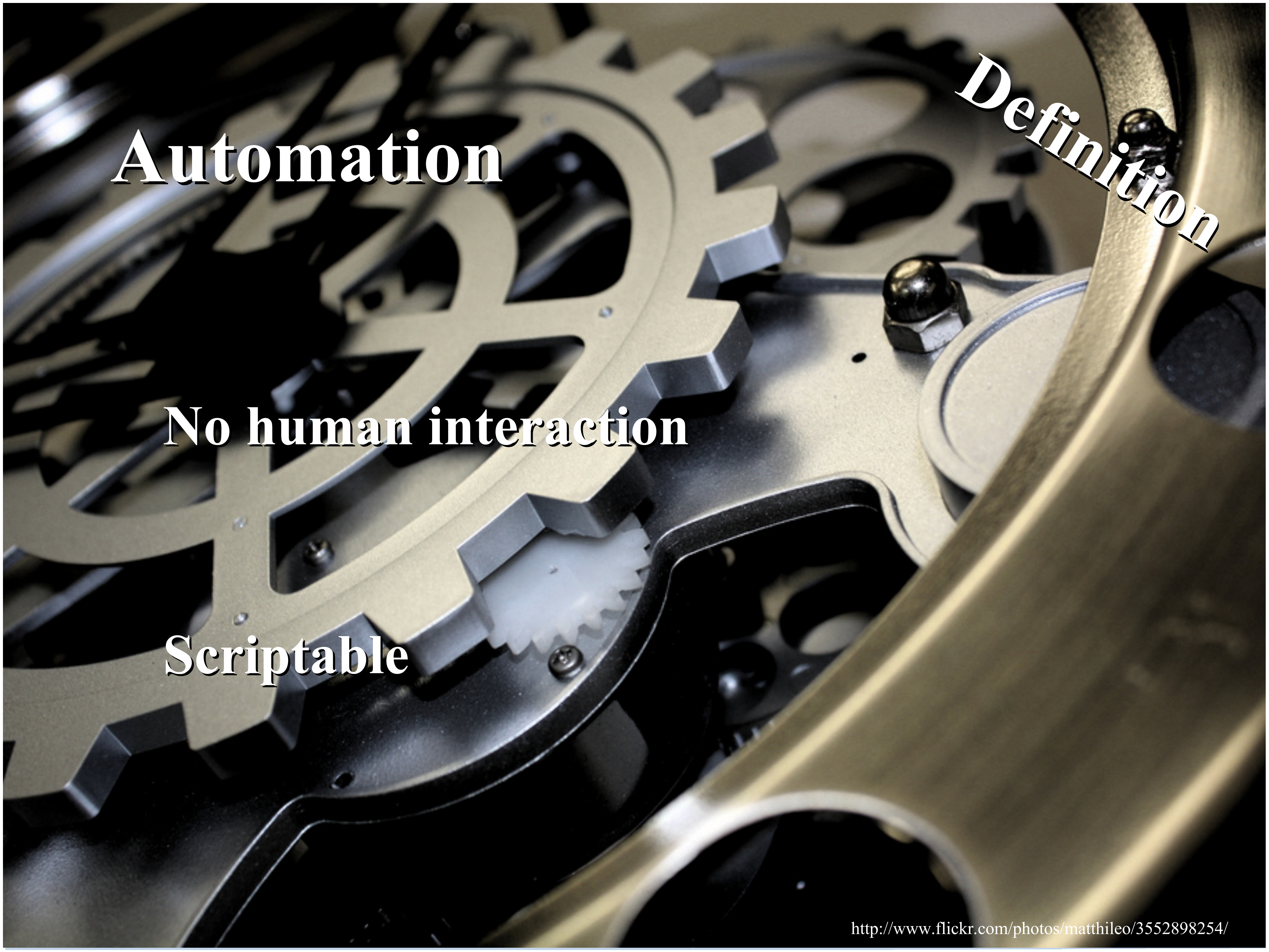

Automation

Definition

No human interaction

Scriptable

http://www.flickr.com/photos/matthileo/3552898254/

Practical Terms

Unit Tests

One method

No database

Self contained

Very fast

http://www.flickr.com/photos/kevino/1438502858/

API Tests

Subsystem or package level

Tests behavior

Variable speed

http://www.flickr.com/photos/30691679@N07/3808395213/

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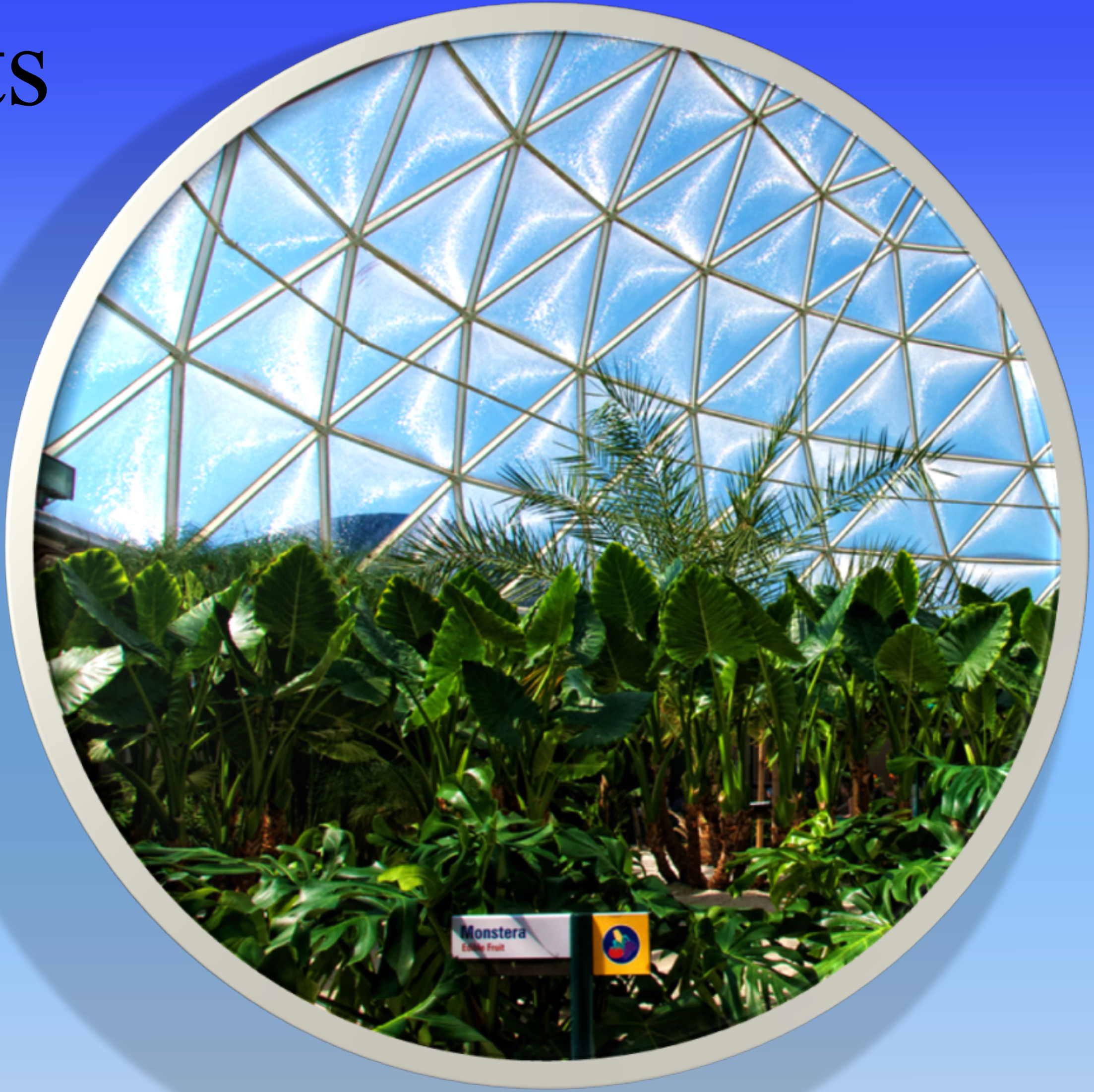
Integration Tests

Entire system

End to end

Slow



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http://www.flickr.com/photos/bobowen/4501875907/

Continuous Integration

Watches your source

Compiles on change

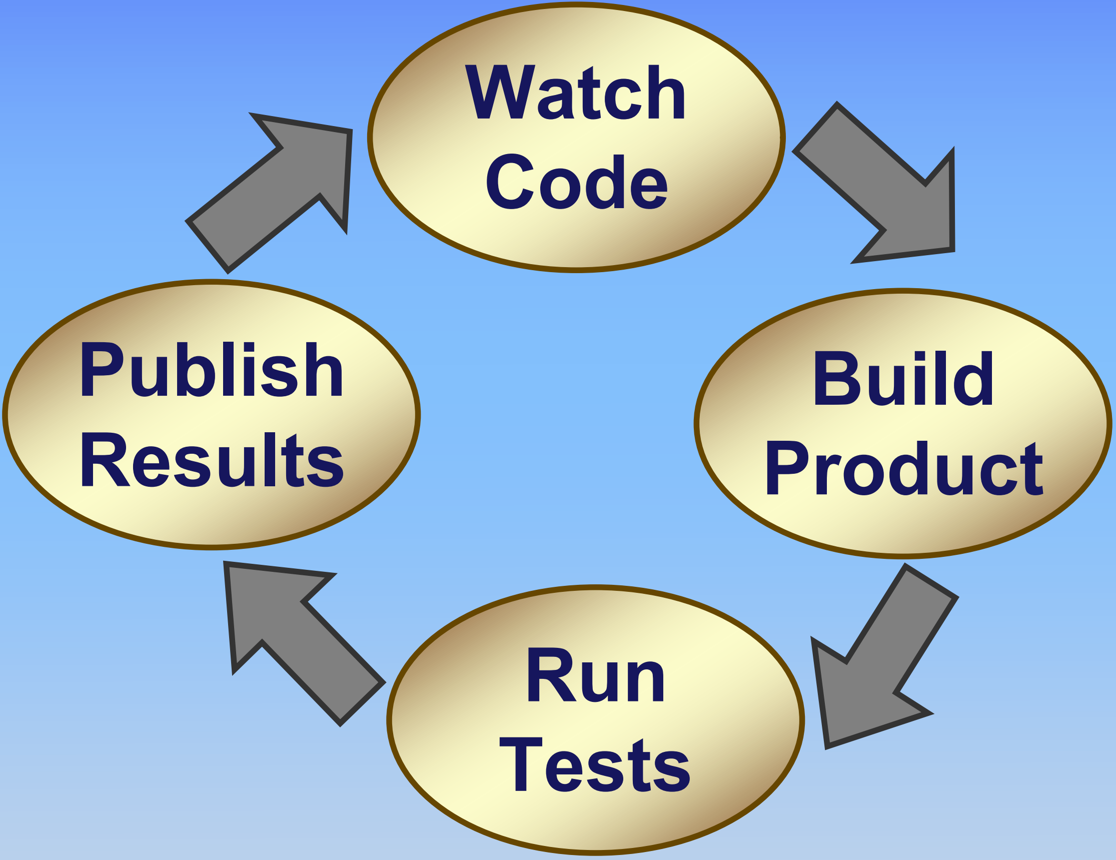
Runs tests

Shares results

Shines a light

http://www.flickr.com/photos/visualogist/3202396970/

Continuous Integration



Strategy

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Hope is Not a Strategy

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Complimentary Approaches

API Driven Development

Defect Driven Testing

API Driven

AKA Tracer Bullet Development

Define APIs

Test them

Code them

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Define APIs

System objects

Define your APIs

Public methods

Test Them

Add “canned data”

Make each method “work”

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Test Them

Write a test

Add to continuous integration

What Do We Have?

- Macro Object Orientation (MOO!)
- Defined APIs
- Sample data
- Baseline tests created

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Remember the Problems?

Changing features

Compressed schedules

Low quality

Benefits

Changing features
Compressed schedules
Low quality

Illustrate feature before coding

Measure of “done”

Can’t break unnoticed

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Defect Driven Testing

DDT

Find a bug

Add a test

Jazz it up

What’s Tested?

Modules with bugs

Who’s Testing?

Developers of broken modules

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When Do You Test?

On demand

Remember the Problems?

Changing features

Compressed schedules

Low quality

Benefits

Changing features
Compressed schedules
Low quality

Incrementally build

Test where needed

Learn as needed

Improve quality on the fly

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Tips

Integrated

Incremental

Instructional

The "I"'s have it!

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flickr.com/photos/sis/2435160277/in/photostream/

Integrated

From day one

Developers and testers pair

Developers write tests

Testers advise

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Incremental

Not an event

A process

“Getting in shape”

Incremental

Did you add code today?

Then add tests

Not a post ship 3 month event

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Instructional

You write tests for *your* code

NO EXCEPTIONS

Instructional

Who should learn

From your mistakes?

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That was the introduction…

Jenkins

http://jenkins-ci.org/

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Benefits

Open source

Strong community

Cross platform

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Benefits

Multi-machine builds

On demand tool installation

Trivial UI

Console output during builds

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Benefits

Monitors external jobs too

“Permanent” links to artifacts

Tagging support

Many, many plug-ins

Demo…

```
Started by user anonymous
Building remotely on second CI machine
Updating svn://svn-server/junit
 U         bin/MyMath.class
 U         bin/TestMyMath.class
At revision 1
no change for svn://svn-server/junit since the previous build
Unpacking http://archive.apache.org/dist/ant/binaries/apache-ant-1.8.2-bin.zip to
/jenkins/tools/Ant_1.8.2 on second CI machine
[junit sample] $ /jenkins/tools/Ant_1.8.2/bin/ant
Buildfile: /jenkins/workspace/junit sample/build.xml
```

```
no change for svn://svn-server/junit since the previous build
Unpacking http://archive.apache.org/dist/ant/binaries/apache-ant-1.8.2-bin.zip
to /jenkins/tools/Ant_1.8.2 on second CI machine
```

Anti Patterns

Turn off email

Turn of tests

Build nightly/weekly. Call it “CI”

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Anti Patterns

Senior developers write code

Junior developers write tests

Anti Patterns

Seniors developers write code

QA writes the tests

Anti Patterns

Seniors developers code

No one writes tests!

Anti Patterns

Everyone writes code

Buy a tool to write tests

The Theme

Lazy developers

Move heaven and earth

To maintain the status quo

(writing crap)

You Drive the Change

Bring ideas

Suggest improvements

Change the game

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http://www.flickr.com/photos/vodcars/4132650949/

Be the change you want

to see in the world.

-Gandhi

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Be the change you want

to see in your shop.

-Jared

[redacted]

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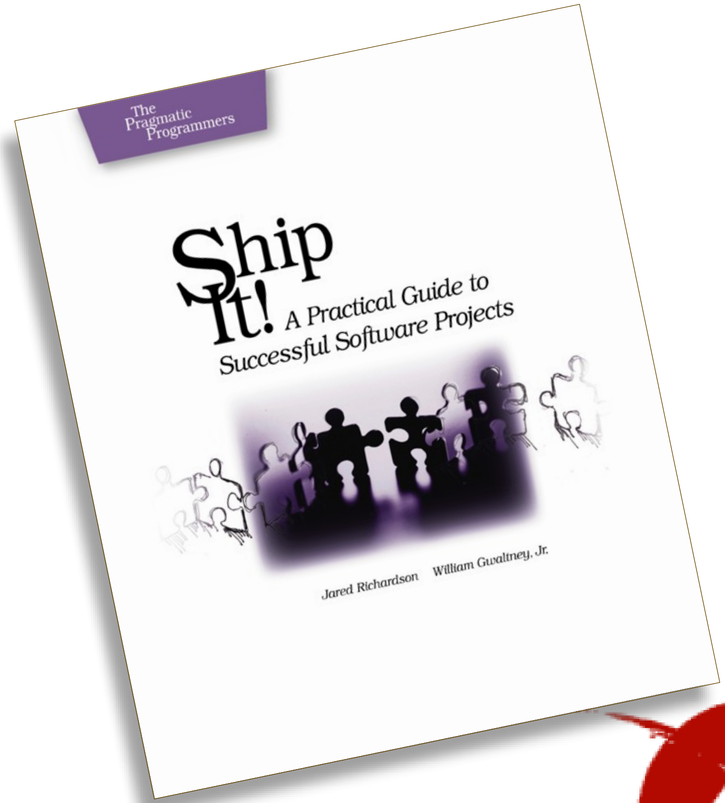
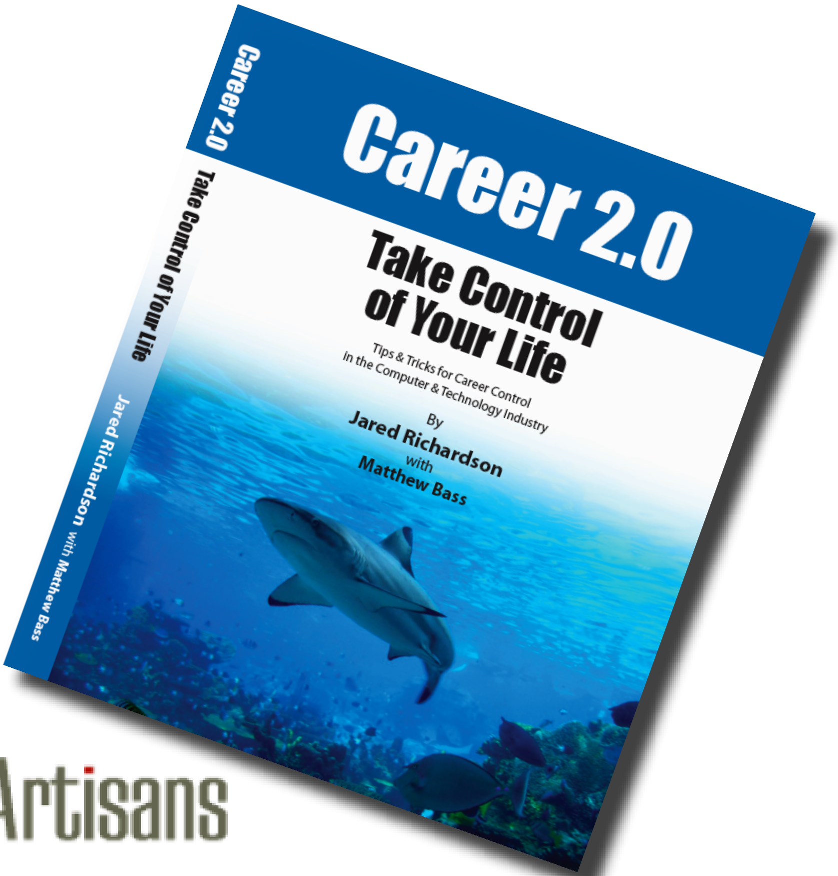
Custom
Software
Solutions


The Pragmatic Programmers
Ship It! A Practical Guide to Successful Software Projects
Jared Richardson William Gwaltney, Jr.


Career 2.0
Career 2.0
Take Control of Your Life
Tips & Tricks for Career Control In the Computer & Technology Industry
By
Jared Richardson
with
Matthew Bass
Take Control of Your Life
Jared Richardson with Matthew Bass

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Continuous Integration: Sign of a Great Shop

Jared Richardson, RoleModel Software Relentless automation is the sign that your software team has discovered how valuable their time is and how much of their day can be wasted performing trivial tasks. Using Jenkins, an open source tool as an example, Jared Richardson demonstrates how to get started with continuous integration, a powerful automation technique that binds your team together and help ensures that your project runs smoothly and efficiently. The concept is simple—after every code check in, code is compiled and comprehensive automated tests are run. However, like so many great techniques, it's easy to describe but difficult to master. Jared explains how continuous integration, implemented with the appropriate tools, forces frequent developer integrations, thus eliminating a large amount of uncertainty and project jitter. Learn why continuous integration encourages developers to share code more frequently and produces a culture that demands comprehensive and maintainable automated tests.

Find Jared on the web at http://AgileArtisans.com

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