Twitter4J, Jenkins and Regression
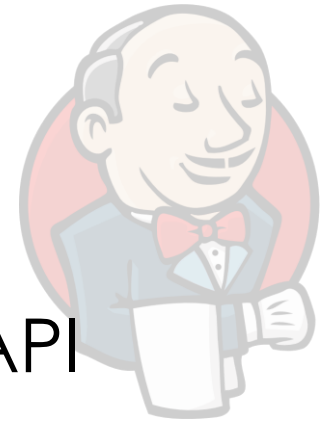
Yusuke Yamamoto
Twitter4J.org

http://twitter4j.org/

Who am I

- 10+ years experience in Java
- 4+ years experience in the Twitter API
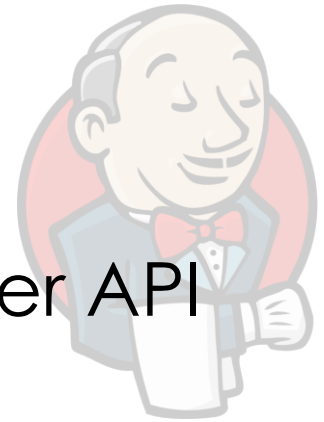- Author of open-source tools including:
  - Samurai `http://samuraism.jp/samurai/`
  - Twitter4J `http://twitter4j.org/`

Yusuke Yamamoto
@yusukeyamamoto Tokyo Japan
I'm: #twitter4j #samurai
http://samuraism.jp/blog/

What is Twitter4J

- An open-source library for the Twitter API
- Available since Jun 2007
- Compatible with
  - Java 1.4.2+
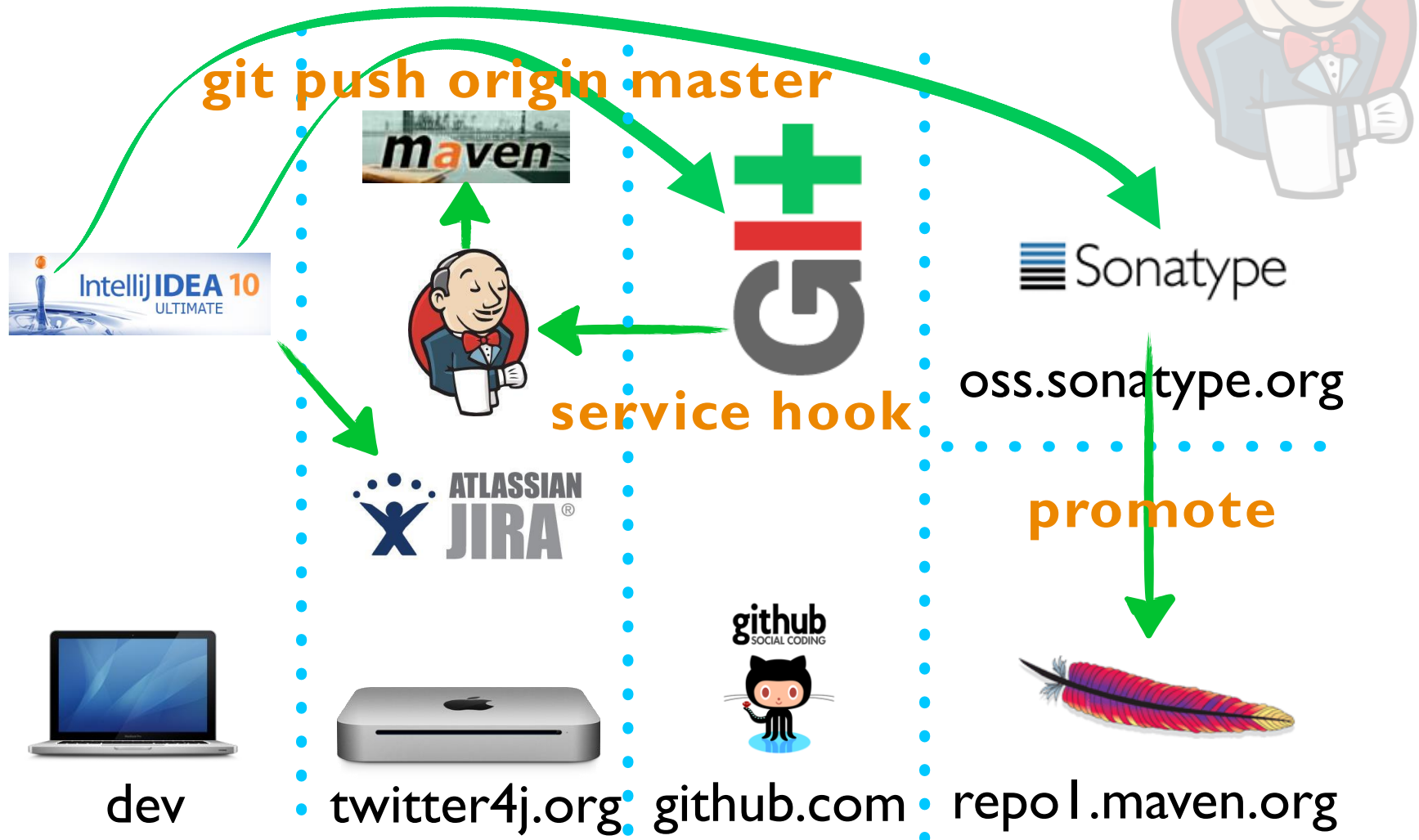 - Android
  - Google App Engine

Tools powering Twitter4J

Maven Central repo

Tools and Development cycle

release:perform

git push origin master

service hook

oss.sonatype.org

promote

dev   twitter4j.org github.com repo1.maven.org

Test-driven development

1. Write a test case which fails

2. Implement and commit

3. Run tests

4. ☺ **NO regression**

the Timeline

- Jun 2007:   Started Twitter4J project

- Mar 2009:   Applied Hudson

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With Jenkins applied, your software should be regression free…

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- **Oct 2010:   Critical regression found**

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The how and why

The issue

- Version: Twitter4J 2.1.5
- Symptom: certain method calls fail with 401

401:Authentication credentials were missing or incorrect.

Direct cause of the issue

- bug in StringUtil – introduced in v2.1.5
  - leads invalid OAuth signature in certain condition

```
public static String[] split(String str, String separator){
 String[] returnValue;
 int index;
 if(-1 == str.indexOf(separator)){
  returnValue = new String[0];
 }else{
...
```

	expected	actual
split("foo,bar",",")	{"foo", "bar"}	√ {"foo", "bar"}
split("foobar",",")	{"foobar"}	☹ {}

Why StringUtil.split()

- String#split() - @since Java1.4
- Found of a compatibility issue with CLDC
  - CLDC doesn't support String#split()

```
Caused by: java.lang.NoSuchMethodError: java.lang.String: method
split(Ljava/lang/String;)[Ljava/lang/String; not found
 at
twitter4j.conf.PropertyConfiguration.setFieldsWithTreePath(Ljava/util/P
roperties;Ljava/lang/String;)V(PropertyConfiguration.java:196)
 at
```

General cause of software regressions

W/ test cases

- not enough test coverage
- test failure(s) ignored

W/O test cases

- implementation wrongly modified
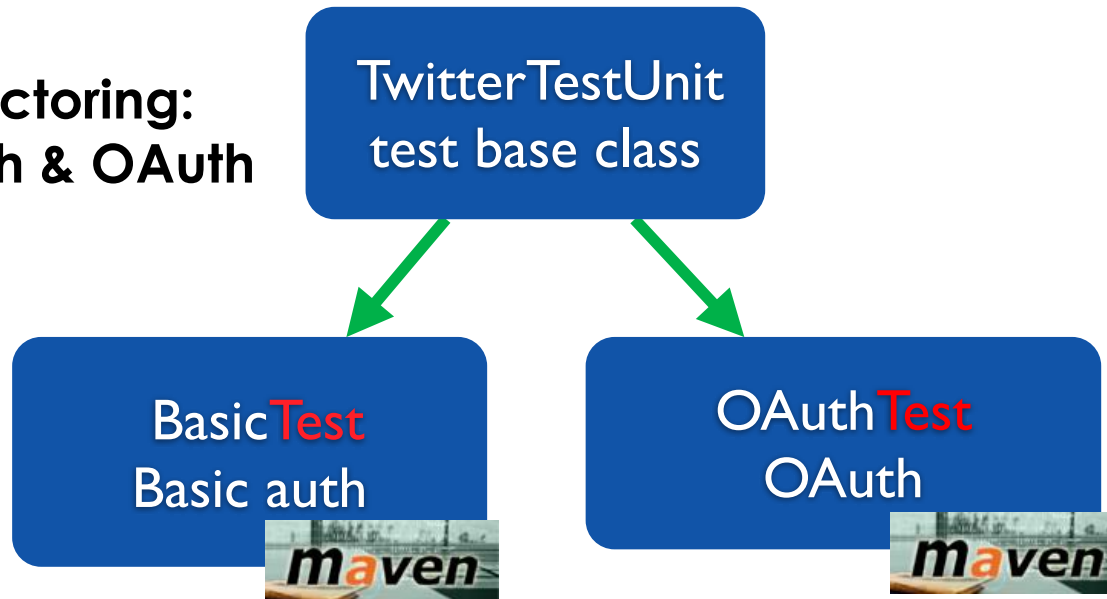- external resource became incompatible

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General cause of software regressions

W/ test cases	W/O test cases
not enough test coverage	implementation wrongly modified
test failure(s) ignored	external resource became incompatible

Ignoring failed test cases

- Generally not recommended

  but

- Sometimes you need to, because
  - external resource not available

    or

  - test failure caused by a component managed by other committer

General cause of software regressions

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General cause of software regressions

W/ test cases	W/O test cases
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test failure(s) ignored	external resource became incompatible
test case wrongly modified	

ruined tests with Basic auth deprecation

before refactoring:
Basic auth & OAuth

TwitterTestUnit
test base class

BasicTest
Basic auth

maven

OAuthTest
OAuth

maven

after refactoring:
OAuth only

not recognized by Maven

TwitterTestUnit

maven
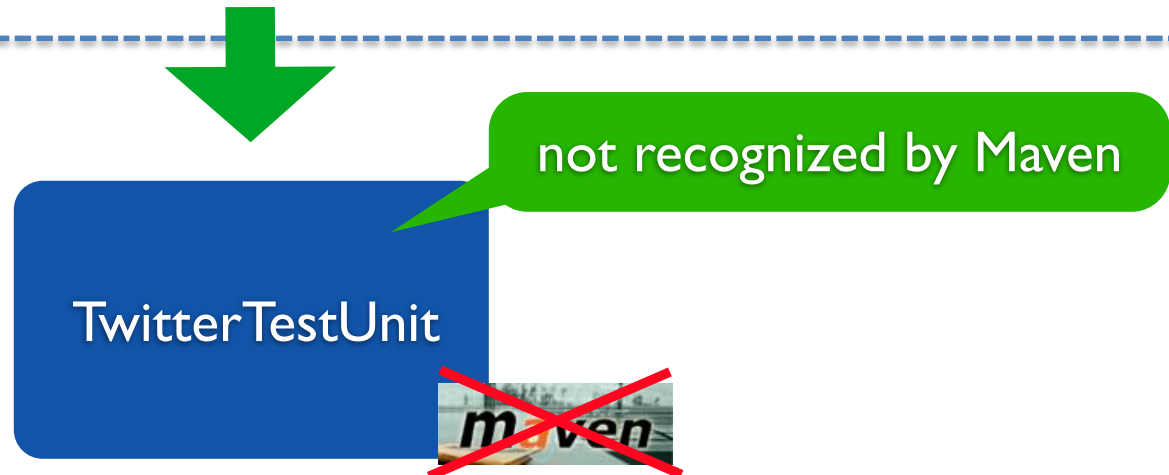
Lessons learned - 1

- check the Ages of failed tests

All Failed Tests

Test Name	Duration	Age
>>> twitter4j.TwitterTest.testRetweetMethods	9.396	1
>>> twitter4j.TwitterTest.testFollowers	14.409	1
>>> twitter4j.auth.OAuthTest.testBrowserClient	1.311	1
>>> twitter4j.SearchAPITest.testTrends	2.064	93

Lessons learned - 2

- **be very careful when you refactor test cases**
- make sure that
  - number of test cases doesn't change many
  - code coverage doesn't decrease
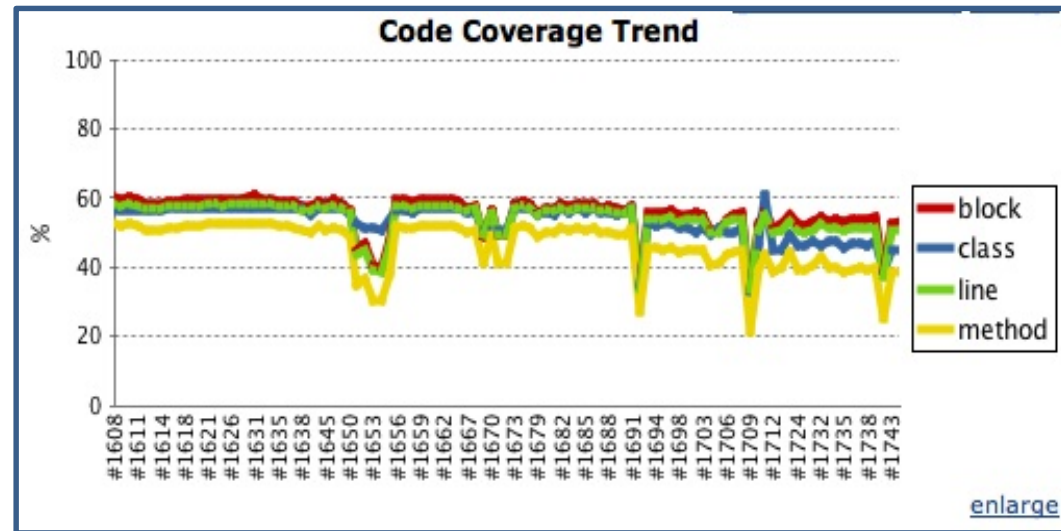
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