

Présentation IUT Agile Mai 2014  
#iutagile <http://iutagile.com>

# Continuous Integration

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This document:  
[http://arnaud.nauwynck.free.fr/IUT-Agile-2014-  
ContinuousInt.pdf](http://arnaud.nauwynck.free.fr/IUT-Agile-2014-ContinuousInt.pdf)

# Summary

- What is Continuous Integration ?
- Presentation of Tools Ecosystem
- Live Demo with...
  - Test Driven (TDD) perspective
  - Most important Tools
  - Focusing on Java
  - In 1h30 !!! Fasten Seat Belts ....

# Who I Am

- IT Passionate
- IT Architect since ~7 years
- Working at SGCIB – Lyxor, Paris - La Défense
- Doing Archi, Dev, Tools, DevOps... on Java/C#
- Prof at IUT ~ 15 days/year

# Continuous + Integration

In French : “Intégration Continue” ...

2 Math terms ... with precise semantics

2 “common” terms

In Computer science ??

= Automated Build, Test & Deployment ... Tools

# What is “Continuous Integration” ?

I WILL USE GOOGLE BEFORE ASKING DUMB QUESTIONS.



# “Continuous” Google rank #3 = Jenkins

Google continuous

Web Images Books Videos Shopping More Search tools

About 83,200,000 results (0.19 seconds)

Showing results for **continuous**  
Search instead for [continous](#)

**con·tin·u·ous**  
*/kən'tīnyūəs/*

*adjective*

1. forming an unbroken whole; without interruption.  
"the whole performance is enacted in one continuous movement"  
synonyms: [unceasing](#), [uninterrupted](#), [unbroken](#), [constant](#), [ceaseless](#), [incessant](#), [steady](#), [sustained](#), [solid](#), [continuing](#), [ongoing](#), without a break, [nonstop](#), [around/round-the-clock](#), [persistent](#), [unremitting](#), [relentless](#), [unrelenting](#), [unabating](#), [unrelieved](#), without respite, [endless](#), [unending](#), [never-ending](#), [perpetual](#), [everlasting](#), [eternal](#), [interminable](#); [More](#)
2. **GRAMMAR**  
another term for [progressive](#) (sense 3 of the adjective).

[Continuous function - Wikipedia, the free encyclopedia](#)

[en.wikipedia.org/wiki/Continuous\\_function](http://en.wikipedia.org/wiki/Continuous_function) ▾ Wikipedia ▾

In mathematics, a **continuous** function is a function for which, intuitively, "small" changes in the input result in "small" changes in the output. Otherwise, a function ...  
[History - Real-valued continuous functions](#) - [Continuous functions between ...](#)

[Continuous - Merriam-Webster Online](#)

[www.merriam-webster.com/dictionary/continuous](http://www.merriam-webster.com/dictionary/continuous) ▾ Merriam-Webster ▾

continuing without stopping : happening or existing without a break or interruption. Full Definition of **CONTINUOUS**. 1. : marked by uninterrupted extension in ...



Welcome to Jenkins CI! | Jenkins CI  
[jenkins-ci.org/](http://jenkins-ci.org/) ▾ Jenkins ▾

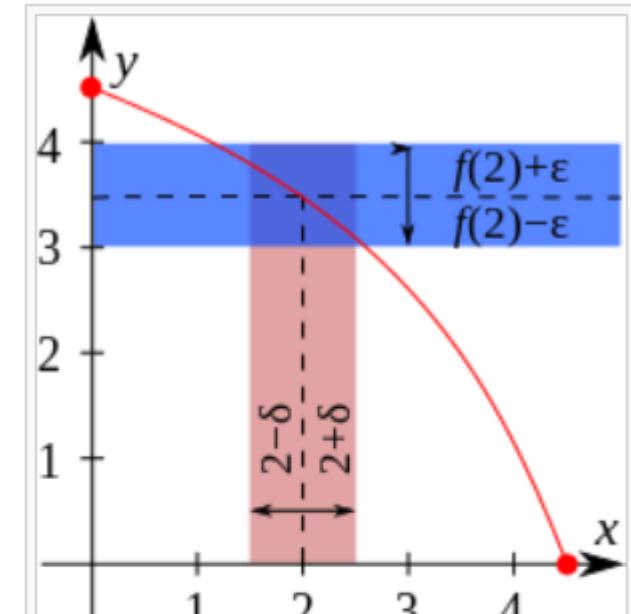


Illustration of the  $\epsilon$ - $\delta$ -definition: for  $\epsilon=0.5$ ,  $c=2$ , the value  $\delta=0.5$  satisfies the condition of the definition.

[http://en.wikipedia.org/wiki/Continuous\\_function](http://en.wikipedia.org/wiki/Continuous_function)

# “Integration” Google rank #4 = Jenkins !

Google integration +Arnaud

Web Images Books Videos News More Search tools

About 113,000,000 results (0.28 seconds)

**Integration - Wikipedia, the free encyclopedia**  
[en.wikipedia.org/wiki/Integration](https://en.wikipedia.org/wiki/Integration) ▾ Wikipedia  
Integration may refer to: Contents. 1 Sociology and economy; 2 Mathematics; 3 Electronics engineering; 4 Genetics/Enzymology; 5 Other uses; 6 See also ...  
Integral - Social integration - Racial integration - System integration

**Integration testing - Wikipedia, the free encyclopedia**  
[en.wikipedia.org/wiki/Integration\\_testing](https://en.wikipedia.org/wiki/Integration_testing) ▾ Wikipedia  
Integration testing (sometimes called integration and testing, abbreviated I&T) is the phase in software testing in which individual software modules are ...

**Integration | Define Integration at Dictionary.com**  
[dictionary.reference.com/browse/integration](https://dictionary.reference.com/browse/integration) ▾  
an act or instance of combining into an integral whole. 2. an act or instance of integrating a racial, religious, or ethnic group. 3. an act or instance of integrating an ...  
Integrationist - Integration by parts - Contour integration - Constant of integration

**Welcome to Jenkins CI! | Jenkins CI**  
[jenkins-ci.org/](https://jenkins-ci.org/) ▾ Jenkins

## Integral

Integration is an important concept in mathematics and, together with its inverse, differentiation, is one of the two main operations in calculus. [Wikipedia](#)

### Related topics

The term integral may also refer to the related notion of the antiderivative, a function F whose derivative is the given function f. [Wikipedia](#)

**Explore:** Derivative

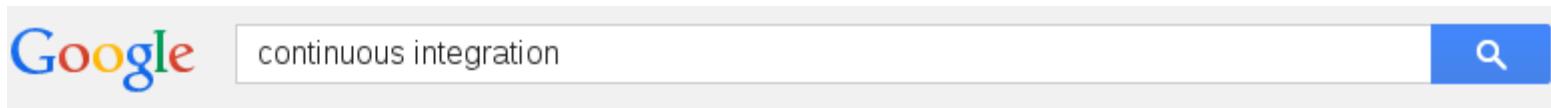
**Calculus**, historically known as infinitesimal calculus, is a mathematical discipline focused on limits, functions, derivatives, integrals, and infinite series. [Wikipedia](#)

**Explore:** Calculus, Derivative

The integrals encountered in a basic calculus course are deliberately chosen for simplicity; those found in real applications are not always so accommodating. [Wikipedia](#)

**Explore:** Calculus, Real number

# “Continuous Integration” Google



Commercial  
#1



About 13,300,000 results (0.24 seconds)

**Continuous Integration - Automated build, test & deployment** ⓘ  
**Ad** [www.atlassian.com/CI-Software](http://www.atlassian.com/CI-Software) ▾  
Free fully functional 30-day trial.  
Atlassian has 7,193 followers on Google+  
[Free Trial](#) · [Pricing](#) · [Features](#) · [Got Jenkins?](#)

Theory  
#2



**Continuous integration - Wikipedia, the free encyclopedia**  
[en.wikipedia.org/wiki/Continuous\\_integration](http://en.wikipedia.org/wiki/Continuous_integration) ▾ Wikipedia ▾  
**Continuous integration** (CI) is the practice, in software engineering, of merging all developer working copies with a shared mainline several times a day.  
[Comparison of continuous ...](#) · [Continuous delivery](#) · [Travis CI](#) · [Beech method](#)

Practise  
#3



**Welcome to Jenkins CI! | Jenkins CI**  
[jenkins-ci.org/](http://jenkins-ci.org/) ▾ Jenkins ▾  
Jenkins is an open-source **continuous integration** server with 300+ plugins to support all kinds of software development.  
You've visited this page 3 times. Last visit: 12/10/13

**Continuous Integration - Martin Fowler**  
 [martinfowler.com/.../continuousIntegration.html](http://martinfowler.com/.../continuousIntegration.html) ▾ Martin Fowler ▾  
by Martin Fowler  
May 1, 2006 · Although **Continuous Integration** is a practice that requires no particular tooling to deploy, we've found that it is useful to use a Continuous ...

# Wikipedia



**WIKIPEDIA**  
The Free Encyclopedia

[Main page](#)  
[Contents](#)  
[Featured content](#)  
[Current events](#)  
[Random article](#)

[Create account](#) [Log in](#)

[Article](#)

[Talk](#)

[Read](#)

[Edit](#)

[View history](#)

Search



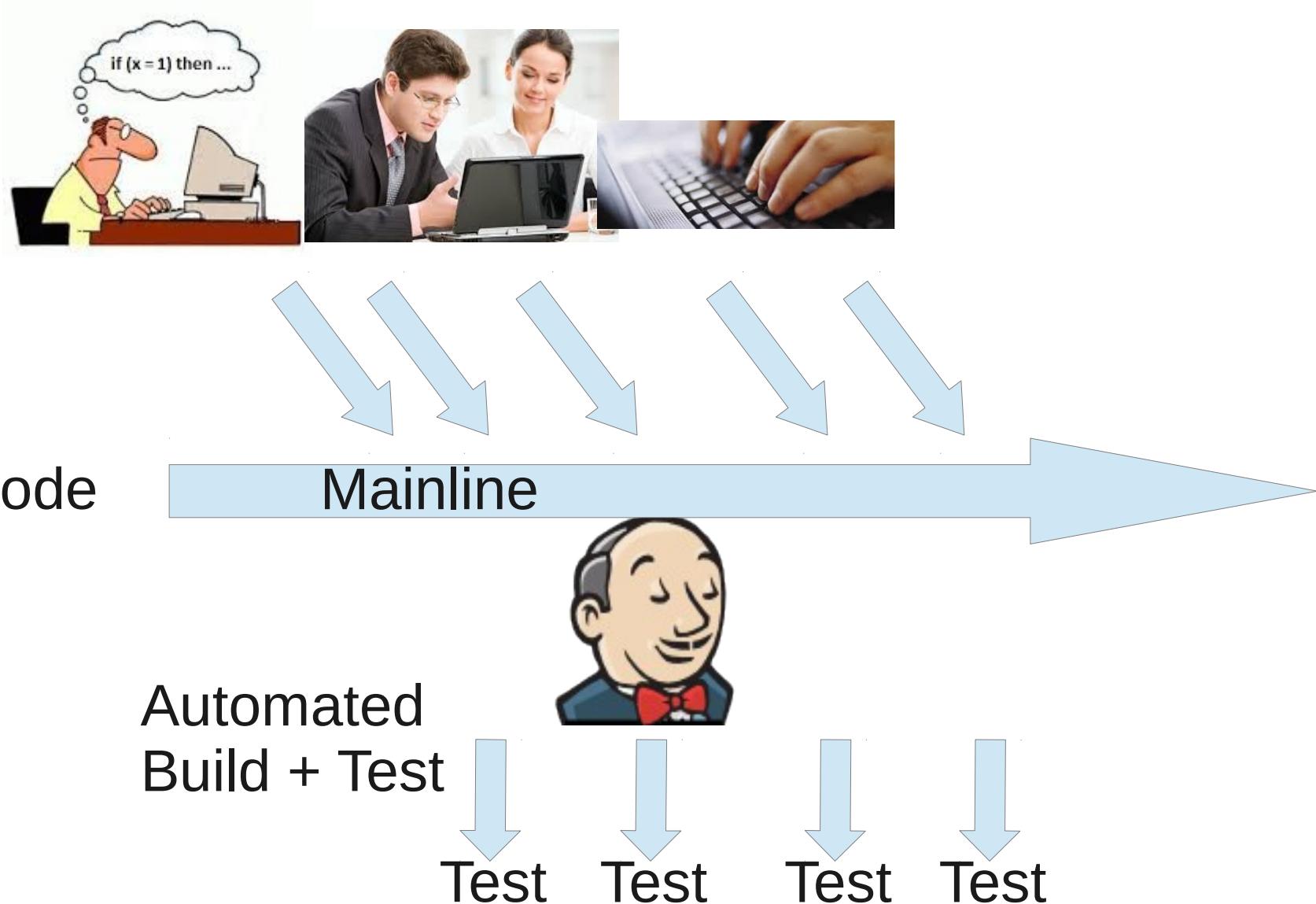
## Continuous integration

From Wikipedia, the free encyclopedia

**Continuous integration (CI)** is the practice, in [software engineering](#), of merging all developer working copies with a shared [mainline](#) several times a day. It was first named and proposed as part of [extreme programming](#) (XP). Its main aim is to prevent integration problems,

CI was originally intended to be used in combination with automated unit tests written through the practices of [test-driven development](#).

# Merge Work - \*/Day - Mainline - Test



# Meet Jenkins



# Jenkins

<http://jenkins-ci.org>

The screenshot shows the Jenkins website homepage. At the top, there's a banner for the "Jenkins User Conference 2014" with locations Boston, Berlin, Herzliya, and San Francisco. Below the banner, there are four main sections: "Meet Jenkins" (with a cartoon Jenkins character icon), "Use Jenkins" (with a people icon), "Customize Jenkins" (with a puzzle piece icon), and "Extend Jenkins" (with a wrench and screwdriver icon). A sidebar on the right contains links for "Download Jenkins" (Java Web Archive (.war) or native package options for various operating systems like Windows, Ubuntu/Debian, Mac OS X, etc.), "People", "Build History", "Manage Jenkins", and "Credentials". At the bottom, there are links for "jenkins ci feeds" (RSS XML) and "site license" (Creative Commons Attribution 4.0 International license). A "Fork me on GitHub" button is also visible.

<http://localhost:8080/jenkins>

The screenshot shows the Jenkins web interface dashboard. It features a large Jenkins character illustration in the center. On the left, there are links for "New Item", "People", "Build History", "Manage Jenkins", and "Credentials". On the right, there are sections for "Build Queue" (which is currently empty) and "Build Executor Status" (showing two idle executors). At the bottom, there are links for "Help us localize this page", "Page generated: Apr 28, 2014 11:13:46 PM", "REST API", and "Jenkins ver. 1.561".

# Meet Jenkins



# Jenkins

<http://jenkins-ci.org>

The screenshot shows the Jenkins website homepage. At the top, there's a banner for the "Jenkins User Conference 2014" with locations Boston, Berlin, Herzliya, and San Francisco. Below the banner, there are four main sections: "Meet Jenkins" (with a cartoon Jenkins character icon), "Use Jenkins" (with a people icon), "Customize Jenkins" (with a puzzle piece icon), and "Extend Jenkins" (with a wrench and screwdriver icon). A sidebar on the right contains links for "Download Jenkins" (Java Web Archive (.war) or native package options for various operating systems like Windows, Ubuntu/Debian, Mac OS X, etc.), "People", "Build History", "Manage Jenkins", and "Credentials". At the bottom, there are links for "jenkins ci feeds" (RSS XML) and "site license" (Creative Commons Attribution 4.0 International license). A "Fork me on GitHub" button is also visible.

<http://localhost:8080/jenkins>

The screenshot shows the Jenkins web interface dashboard. It features a large Jenkins character icon in the center. On the left, there are links for "New Item", "People", "Build History", "Manage Jenkins", and "Credentials". On the right, there are sections for "Build Queue" (empty) and "Build Executor Status" (two entries: #1 Idle and #2 Idle). A search bar and a "ENABLE AUTO REFRESH" button are at the top right. At the bottom, there are links for "Help us localize this page", "Page generated: Apr 28, 2014 11:13:46 PM", "REST API", and "Jenkins ver. 1.561".

# What



Jenkins

<http://jenkins-ci.org>

“An extendable open source **continuous integration server**”

Get Project  
Source Code



Build Project  
Output

Archive Build  
results,  
Test reports,  
Emails ...

# How



# Jenkins

“An **extendable** open source continuous integration server”

Get Project  
Source Code



Trigger  
from SVN, GIT,  
Or other events



Jobs & Plugins



Build Project Output

Export Build results  
Html, reports,  
Emails ...

🟡	☀️	Accumulo-1.8
🔵	☀️	Accumulo-1.8-Hadoop-2
🔵	☀️	Accumulo-1.8
🔵	☁️	Accumulo-Master
🔴	🌧️	Accumulo

Launch “builds”  
Processes  
(maven, ant,  
.cmd, graddle, ...)

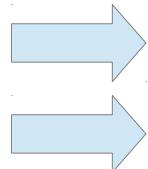
# Get Hands Dirty



# Jenkins

Start as

- tomcat
- standalone jar



**Tomcat/bin/startup.sh**  
**java -jar jenkins.war**

Check log OK

```
[INFO: Started SelectChannelConnector@0.0.0.0:8080  
Apr 28 2014 11:12:36 PM winstone Logger logInternal
```

```
Apr 28, 2014 11:12:43 PM hudson.WebAppMain$3  
INFO: Jenkins is fully up and running  
Effective SlaveRestarter on master: null
```



Open Browser

**http://localhost:8080**

The screenshot shows the Jenkins dashboard at <http://localhost:8080>. The page features a large, friendly cartoon character of a man with a red bow tie and a blue suit. The main navigation menu includes links for "New Item", "People", "Build History", "Manage Jenkins", and "Credentials". Below the menu, there are sections for "Build Queue" and "Build Executor Status". The "Build Queue" section states "No builds in the queue." The "Build Executor Status" section lists two executors, both of which are "Idle". A message at the top right says "Welcome to Jenkins! Please [create new jobs](#) to get started." At the bottom, there are links for "Help us localize this page" and "Page generated: Apr 28, 2014 11:13:46 PM". The footer also includes the Jenkins version information: "Jenkins ver. 1.561".

# Jenkins “Hello World”

## Get Hands Dirty



# Jenkins

[Advanced Project Options](#)

#### Source Code Management

- CVS
- CVS Projectset
- Git
- None
- Subversion

#### Build Triggers

- Build after other projects are built
- Build periodically
- Gerrit event
- Poll SCM

#### Build Environment

- SSH Agent

#### Build

- [Add build step ▾](#)
- [Execute Windows batch command](#)
- [Execute shell](#)
- [Invoke Ant](#)
- [Invoke top-level Maven targets](#)

[Save](#) [Apply](#)

- Add Build Step “Execute Shell”
- Enter shell text  
echo Hello World
- click SAVE

**Build**

**Execute shell**

Command `echo Hello World`

See [the list of available environment variables](#)

**Add build step ▾**

**Post-build Actions**

**Add post-build action ▾**

[Save](#) [Apply](#)

The screenshot shows the Jenkins build configuration page. In the 'Build' section, there is a single 'Execute shell' step. The 'Command' field contains the text 'echo Hello World'. Below the command, there is a link to 'See the list of available environment variables'. At the bottom of the page, there are 'Save' and 'Apply' buttons.

# Jenkins > Job



# Jenkins

A screenshot of a web browser displaying the Jenkins interface for the 'Hello World' job. The browser's title bar shows 'Hello World [Jenkins]'. The address bar contains 'localhost:8080/job/Hello%20World/'. The main content area is titled 'Project Hello World'. On the left, there is a sidebar with links: 'Back to Dashboard', 'Status', 'Changes', 'Workspace', 'Build Now', 'Delete Project', and 'Configure'. Below these are buttons for 'Build History (trend)', 'RSS for all', and 'RSS for failures'. A large Jenkins logo is overlaid on the left side of the page. To the right of the main content, there are buttons for 'add description' and 'Disable Project'. At the bottom, there are links for 'Help us localize this page', 'Page generated: Apr 28, 2014 11:45:02 PM', 'REST API', and 'Jenkins ver. 1.561'.

Hello World [Jenkins]

localhost:8080/job/Hello%20World/

Jenkins

Project Hello World

Back to Dashboard

Status

Changes

Workspace

Build Now

Delete Project

Configure

Build History (trend)

RSS for all RSS for failures

Permalinks

add description

Disable Project

Help us localize this page

Page generated: Apr 28, 2014 11:45:02 PM

REST API

Jenkins ver. 1.561

# Build Now (3/3)



# Jenkins

## Build = instance of launching a Job

The screenshot shows the Jenkins interface for the 'Hello World' project. At the top, there's a header bar with the Jenkins logo and the URL 'localhost:8080/job/Hello%20World/'. Below the header is a blue navigation bar with the Jenkins logo and the text 'Project Hello World'. On the left, a sidebar lists project management options: 'Back to Dashboard', 'Status', 'Changes', 'Workspace', 'Build Now', 'Build scheduled', and 'Configure'. A large arrow points from the 'Build Now' button in the sidebar to the 'Build History' section below. The 'Build History' section displays three build logs: '#3 Apr 28, 2014 11:58:55 PM', '#2 Apr 28, 2014 11:57:55 PM', and '#1 Apr 28, 2014 11:56:57 PM'. To the right of the history, there are links for 'Workspace' and 'Recent Changes'. At the bottom, there are RSS feed links for 'RSS for all' and 'RSS for failures'. A footer link at the very bottom reads 'Help us localize this page'.

Project Hello World

Build History (trend) —

- #3 Apr 28, 2014 11:58:55 PM
- #2 Apr 28, 2014 11:57:55 PM
- #1 Apr 28, 2014 11:56:57 PM

RSS for all RSS for failures

Help us localize this page

# Jenkins > Job > Build #



# Jenkins

Build History (trend) —

- #3 Apr 28, 2014 11:58:35 PM
- #2 Apr 28, 2014 11:57:55 PM
- #1 Apr 28, 2014 11:56:57 PM

RSS for all RSS for failures

Hello World #4 [Jenkins]

localhost:8080/job/Hello%20World/4/

## Jenkins

ENABLE AUTO REFRESH

Started 6 min 58 sec ago  
Took 16 ms

Build #4 (Apr 28, 2014 11:58:52 PM)

No changes.

Started by anonymous user

Back to Project

Status

Changes

Console Output

Edit Build Information

Delete Build

Previous Build

> Job > Build # > Console



# Jenkins



A screenshot of the Jenkins interface showing the build history for a job named "Hello World". The history shows three builds: #3 (Apr 28, 2014 11:58:35 PM), #2 (Apr 28, 2014 11:57:55 PM), and #1 (Apr 28, 2014 11:57:55 PM). Build #1 is selected, and its details are shown below. The URL is localhost:8080/job/Hello%20World/8/.



A screenshot of the Jenkins interface showing the details for Build #8. The build status is "No changes." and it was "Started by anonymous". The URL is localhost:8080/job/Hello%20World/8/.

**Build #8 (A)**

- Back to Project
- Status
- Changes
- Console Output
- Edit Build Information
- Delete Build
- Previous Build

No changes.  
Started by anonymous



A screenshot of the Jenkins interface showing the console output for Build #6. The build was started by user "anonymous" and completed successfully. The log output includes the command "echo Hello World" and the response "Hello World". The URL is localhost:8080/job/Hello%20World/6/console.

**Console Output**

Started by user [anonymous](#)  
Building in workspace /home/arnaud/.hudson/jobs/Hello%20World/workspace  
[workspace] \$ /bin/sh -xe /tmp/hudson8864584126984085661.sh  
+ echo Hello World  
Hello World  
Finished: SUCCESS

# Navigation



# Jenkins

Dashboard > Job > Build > Result

URL = Navigation Toolbar = Navigation into jenkins object

The screenshot shows the Jenkins dashboard at [localhost:8080](http://localhost:8080). The navigation bar at the top has a plus icon. Below it, the URL bar shows [localhost:8080](http://localhost:8080). The main title is "Jenkins". The left sidebar includes links for "New Item", "People", "Build History", and "Manage Jenkins". The central area displays a table with columns "All", "S", "W", and "Name ↓". A single job entry for "Hello World" is listed, with a link to its details.

The screenshot shows the Jenkins job details for "Hello World" at [localhost:8080/job>Hello World/](http://localhost:8080/job>Hello World/). The navigation bar at the top has a plus icon. Below it, the URL bar shows [localhost:8080/job>Hello World/](http://localhost:8080/job>Hello World/). The main title is "Jenkins". The left sidebar lists options: "Back to Dashboard", "Status", "Changes", "Workspace", "Build Now", "Delete Project", and "Configure". The central area features a large Jenkins logo with the text "Project Hello World". Below the logo are links for "Workspace" and "Recent Changes". At the bottom, there are sections for "Build History" (with a "trend" button), "Permalinks", and RSS feeds for "RSS for all" and "RSS for failures".

# Contextual Action / Menu



# Jenkins

## From Object / Action Menu

A screenshot of the Jenkins interface showing build #8. The page title is "Hello World #8 [Jenkins]". The main content area displays "Build #8 (A)" with a status icon. Below it, the message "No changes." is shown. To the right, it says "Started by anonymous". On the left, there is a sidebar with several actions:

- Back to Project
- Status
- Changes
- Console Output
- Edit Build Information
- Delete Build
- Previous Build

A screenshot of the Jenkins interface showing the console output for build #6. The page title is "localhost:8080/job/Hello World/6/console". The main content area displays "Console Output" with a status icon. Below it, the message "Started by user anonymous" is shown. To the right, the console output is displayed:

```
Building in workspace /home/arnaud/.hudson/jobs/Hello World/workspace  
[workspace] $ /bin/sh -xe /tmp/hudson8864584126984085661.sh  
+ echo Hello World  
Hello World  
Finished: SUCCESS
```

On the left, there is a sidebar with several actions:

- Back to Project
- Status
- Changes
- Console Output
- View as plain text
- Edit Build Information
- Delete Build

## Directly From Context Menu

A screenshot of the Jenkins interface showing the build history for the "Hello World" job. The page title is "Hello World". The main content area displays the build history table. A context menu is open over the row for build #8, listing the following options:

- Changes
- Console Output
- Edit Build Information
- Delete Build

A screenshot of the Jenkins interface showing the details for build #8. The page title is "Hello World". The main content area displays the build details. A context menu is open over the "Console Output" link in the sidebar, listing the following options:

- Changes
- Console Output
- Edit Build Information
- Delete Build

# Is That All ? Is It Used ?

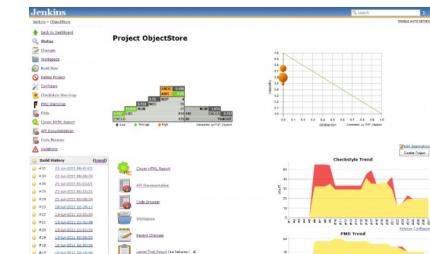


# Jenkins

NOT just a CRON !!!



Plugins => Huge Value Added  
... on reports  
... Integration of MANY Tools



Build History => Reports, Stats, Trends, ...



De Factor Standard – in Industry & Open-Source

Ultra Active



# How Much Extensible Configurable ?



Jenkins

Cf <http://jenkins-ci.org>



Customize Jenkins

Choose from over 600 plugins to customize Jenkins exactly to your needs.

600 Plugins !



Configurable + extensible

<https://github.com/jenkinsci>

<https://github.com/search?q=jenkins&ref=cmdform>



Explore Gist Blog Help

Search

jenkins

We've found 5,385 repository results

	<b>Repositories</b>	5,385
	Code	404,622
	Issues	61,033
	Users	1,217

[opscode-cookbooks/jenkins](#)

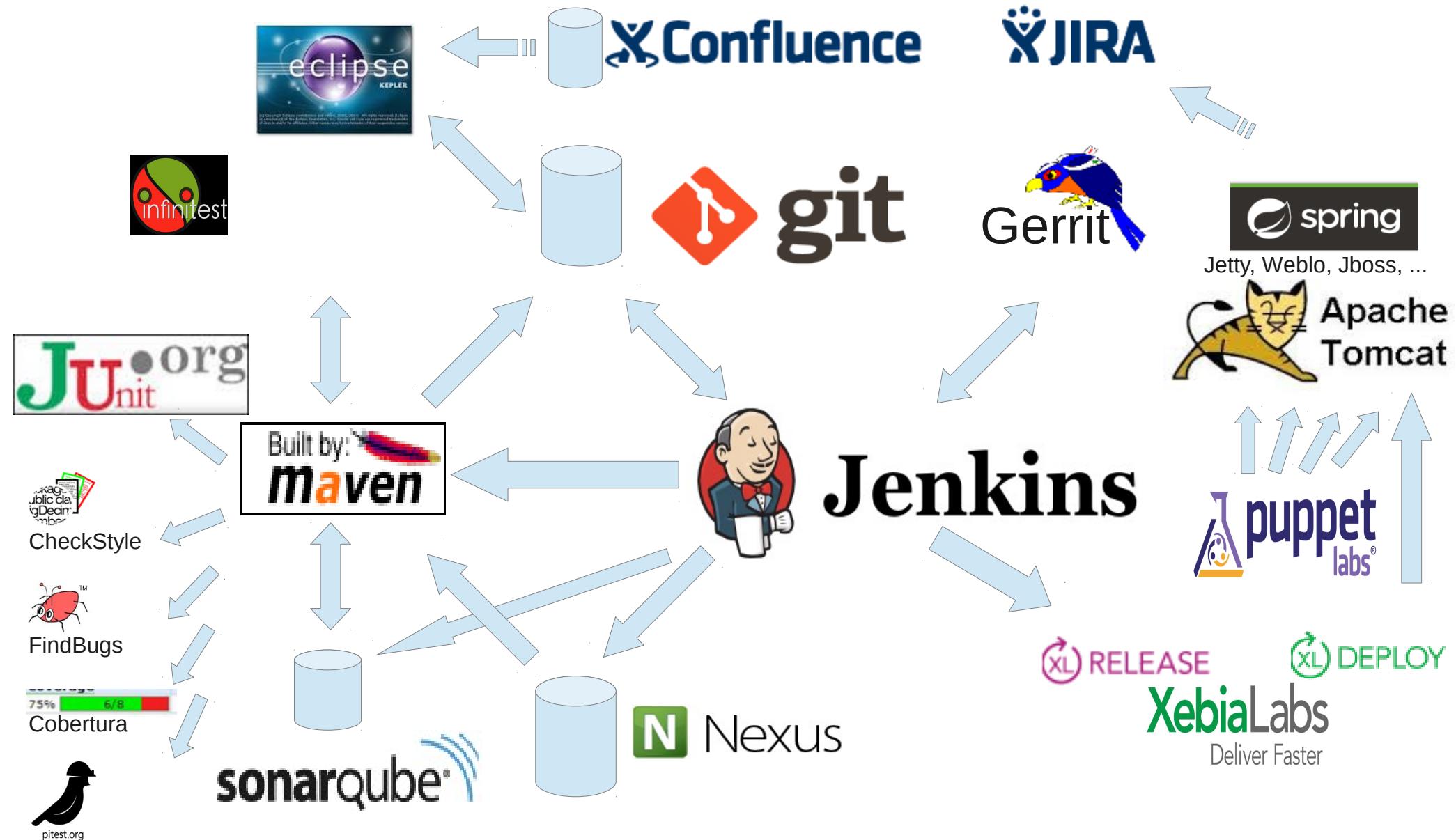
Development repository for Opscode Cookbook

Last updated 2 minutes ago

Fork me on GitHub

5385 GitHub Repos

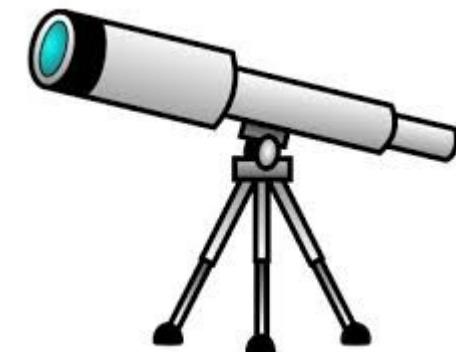
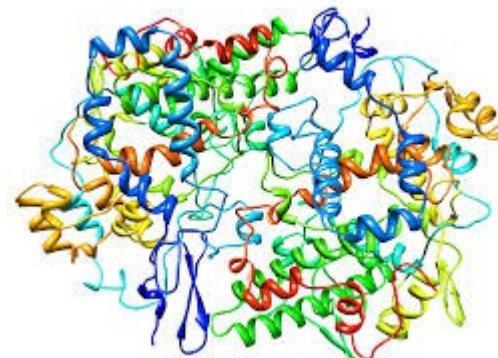
# Tools Ecosystem / Plugins



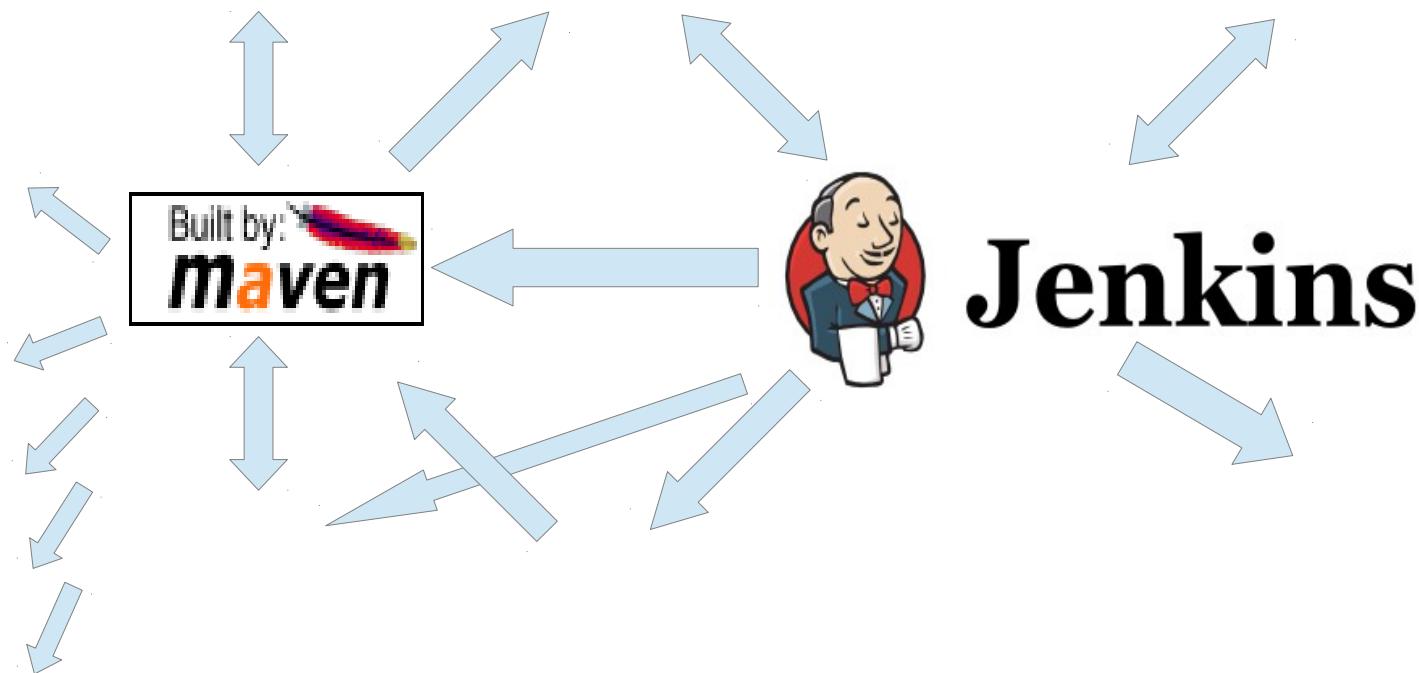
# Don't Panic...



# First Review It ... Several Ways

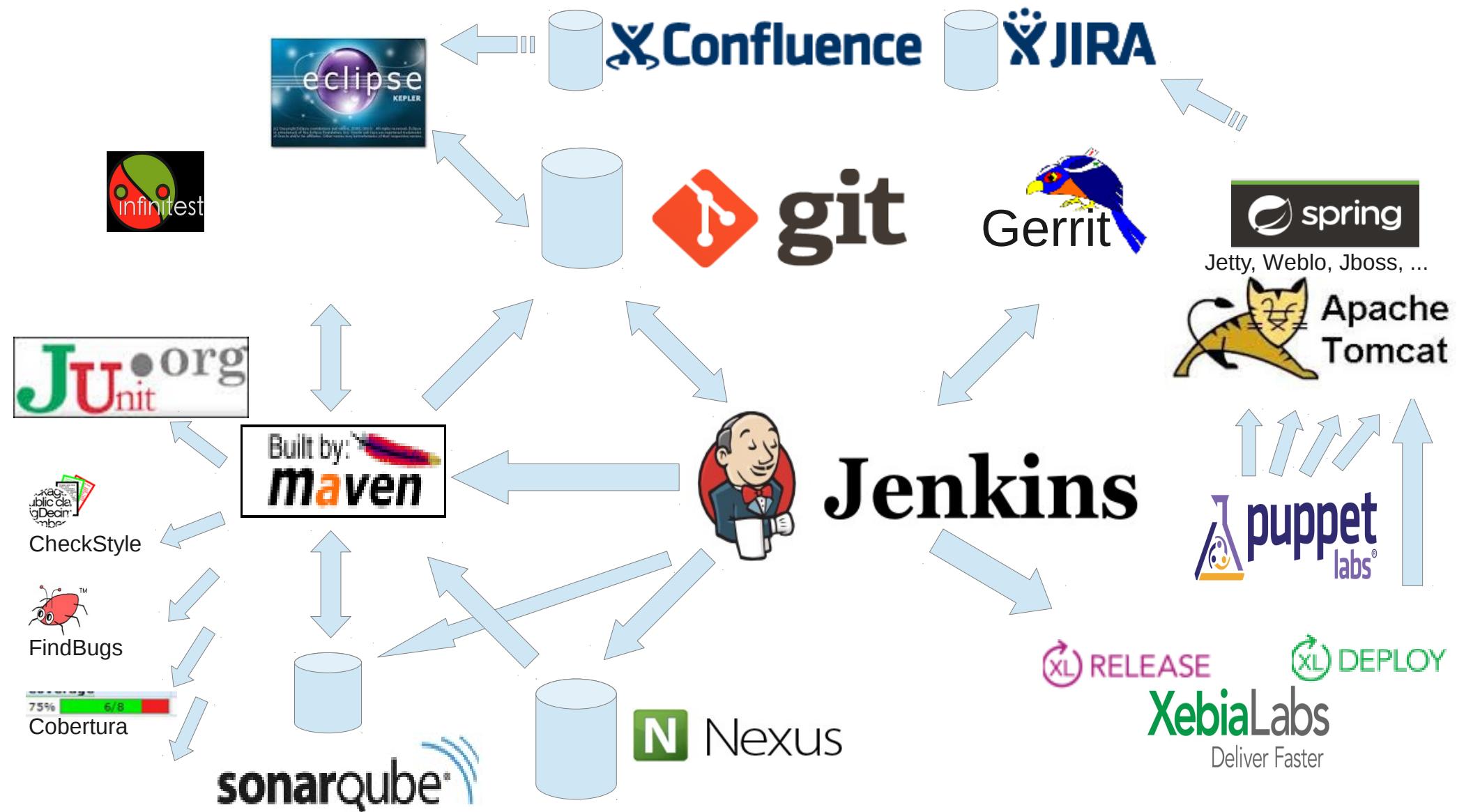


# CORE Interconnected Tools



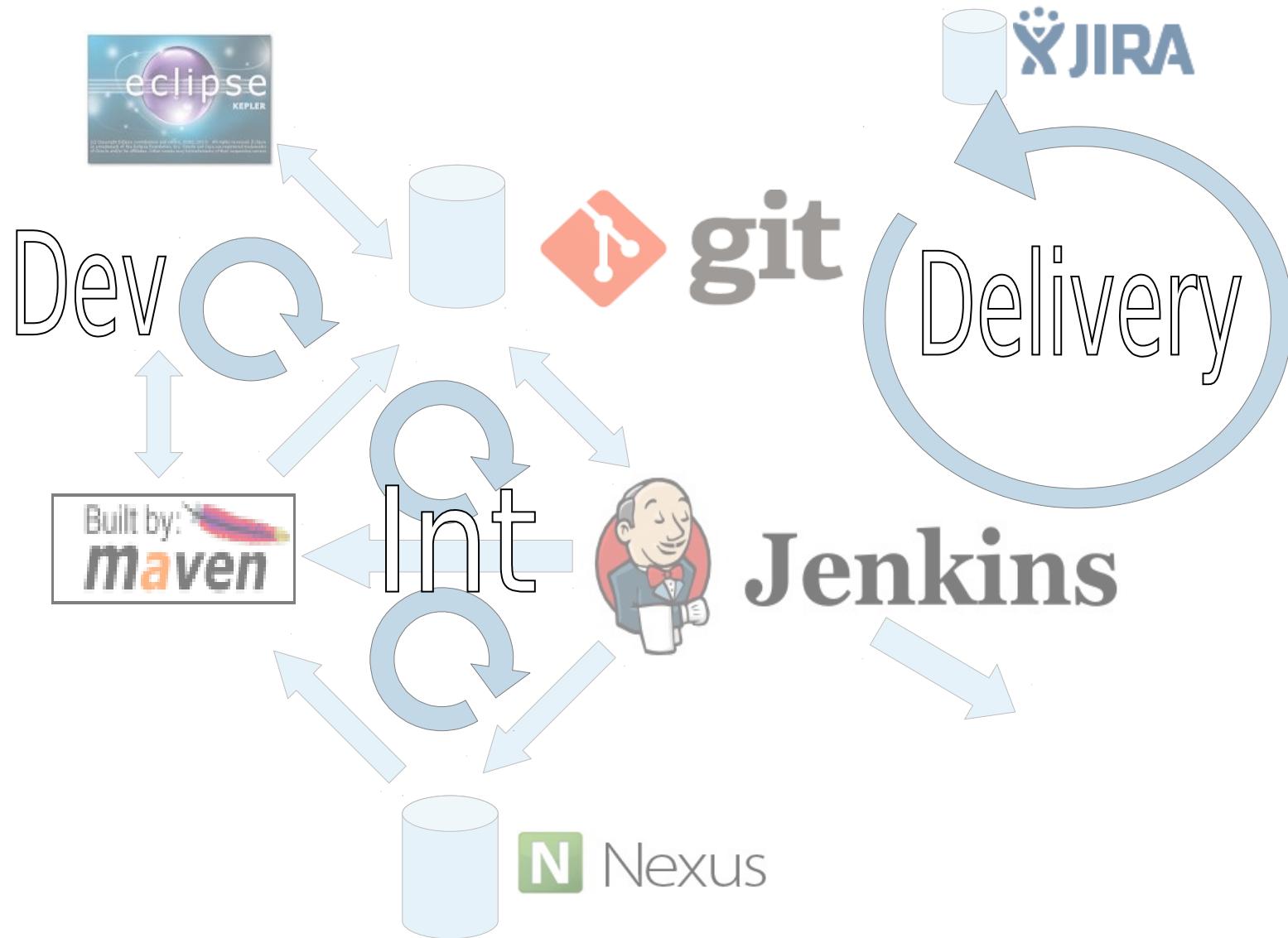
# Quizz ...

## Find Circular Loop ?

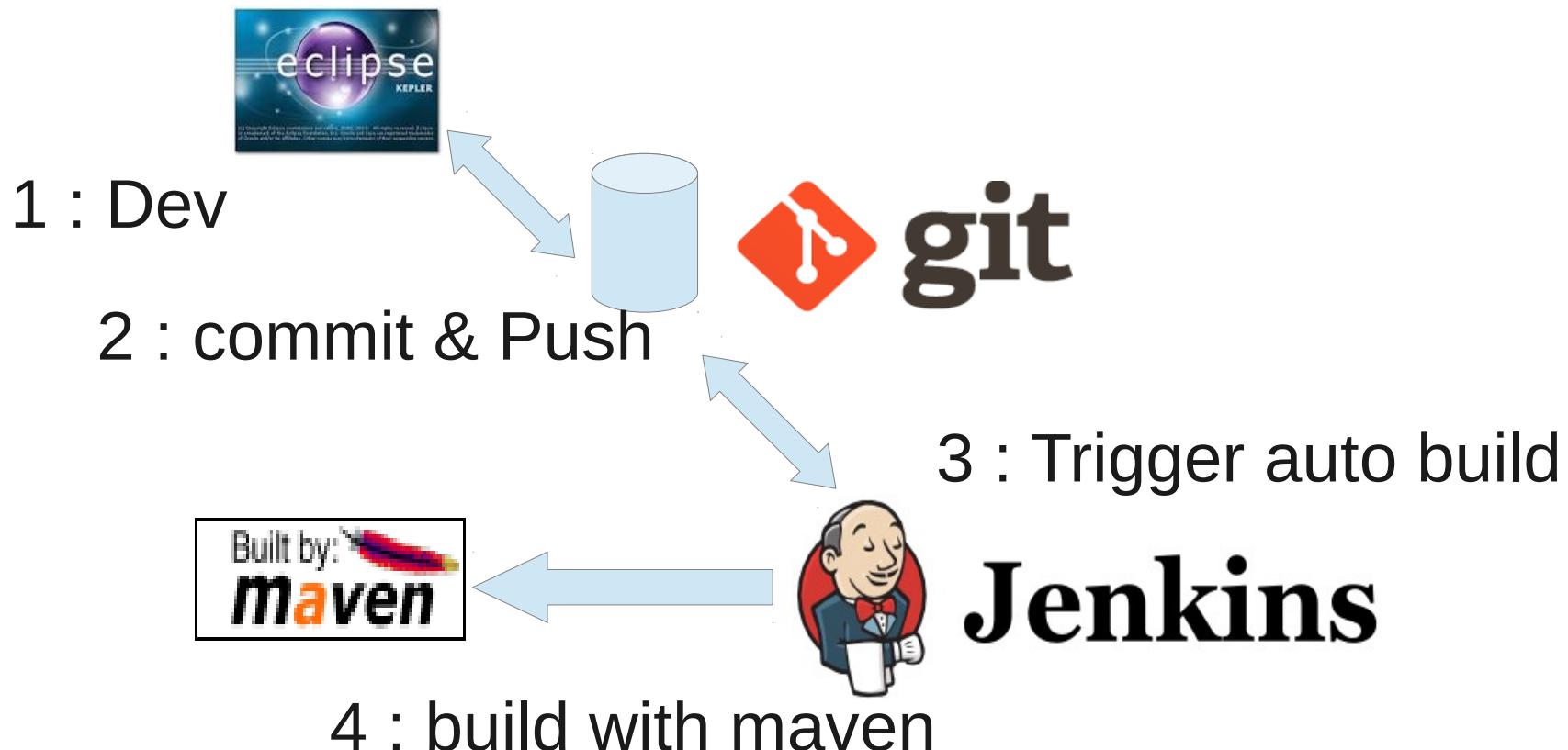


# Core Workflow

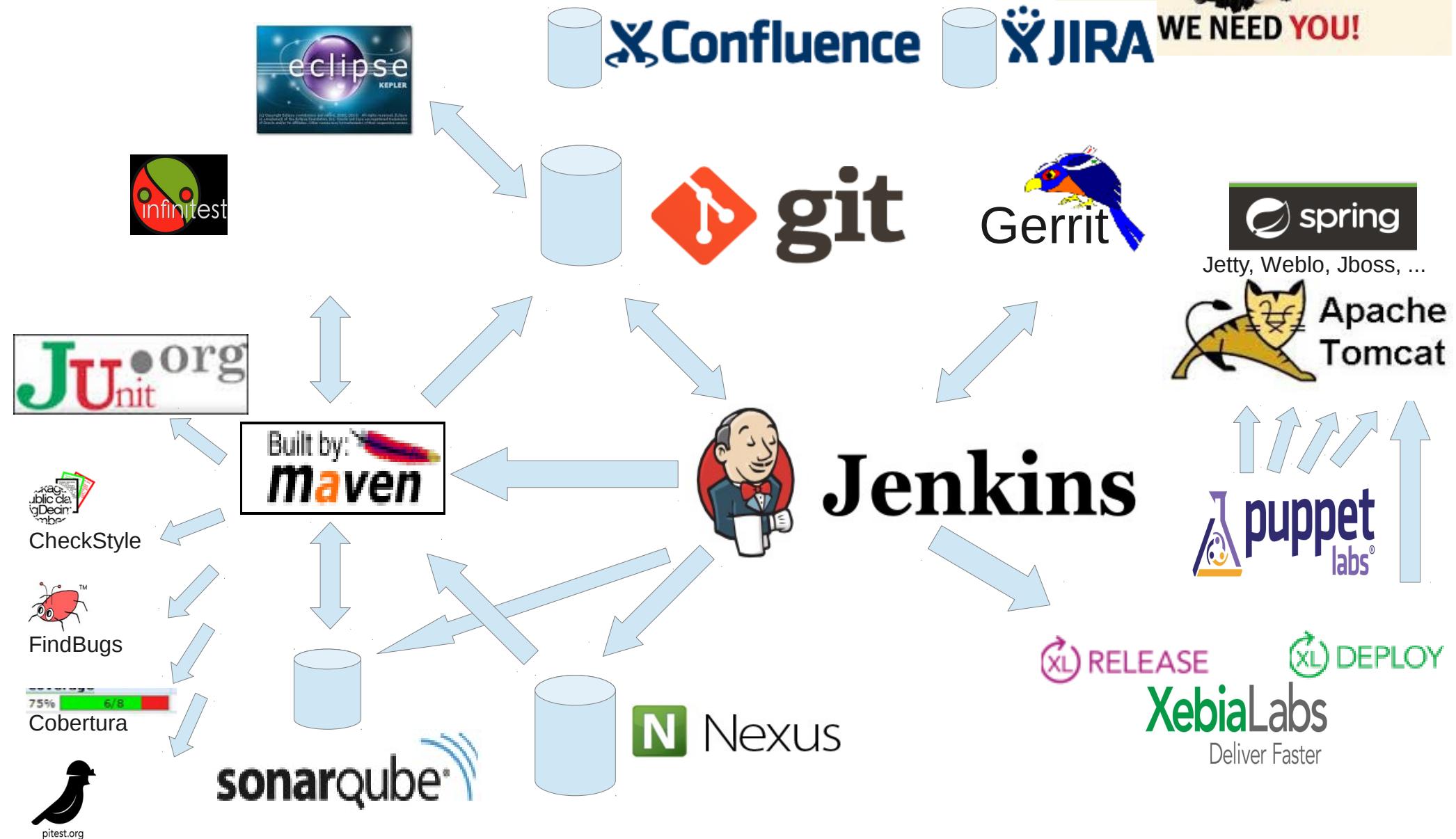
## Dev → Integration → Delivery



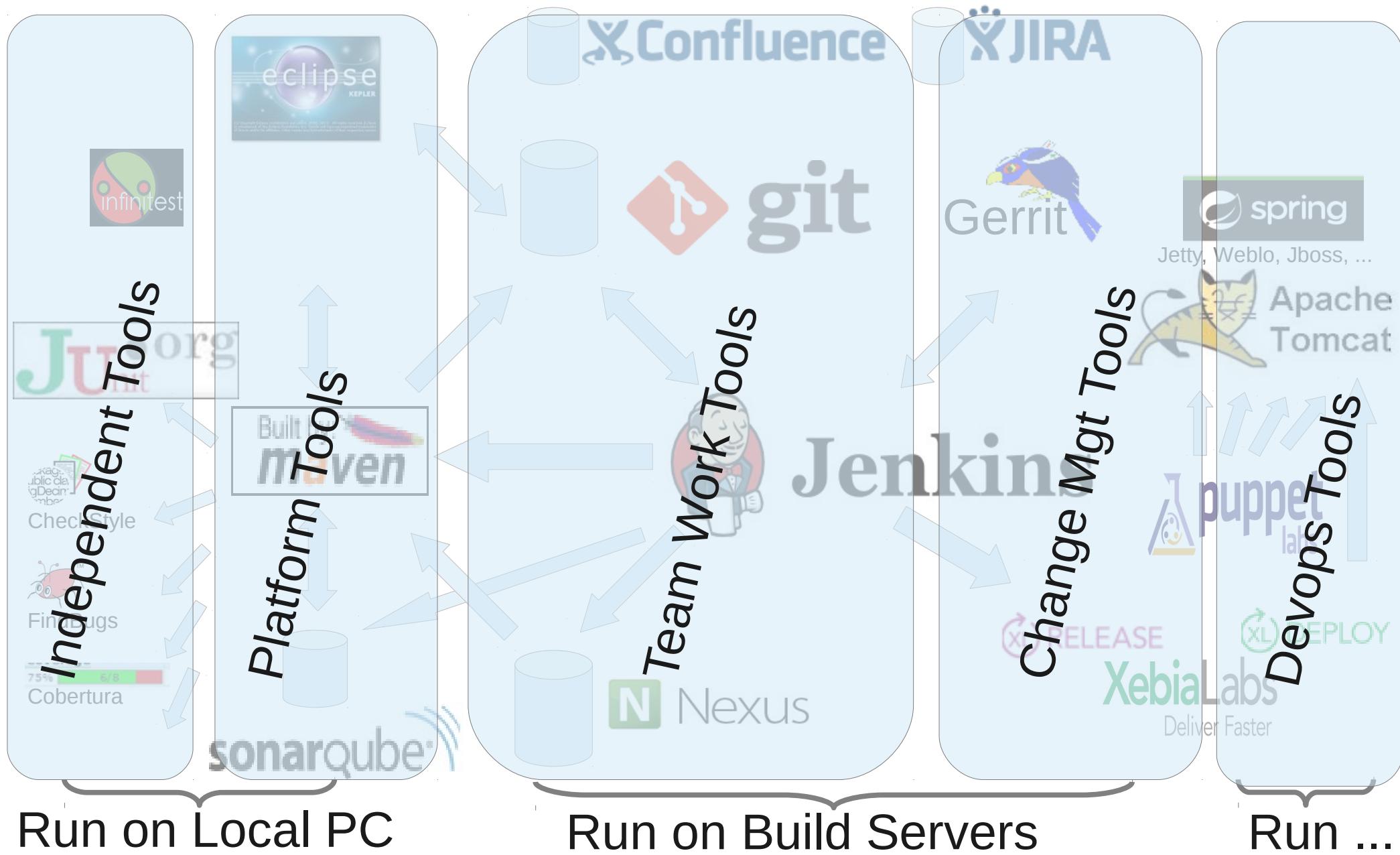
# Day to Day Development Workflow



# Divide in Groups ?



# Divide By Run Location / Category



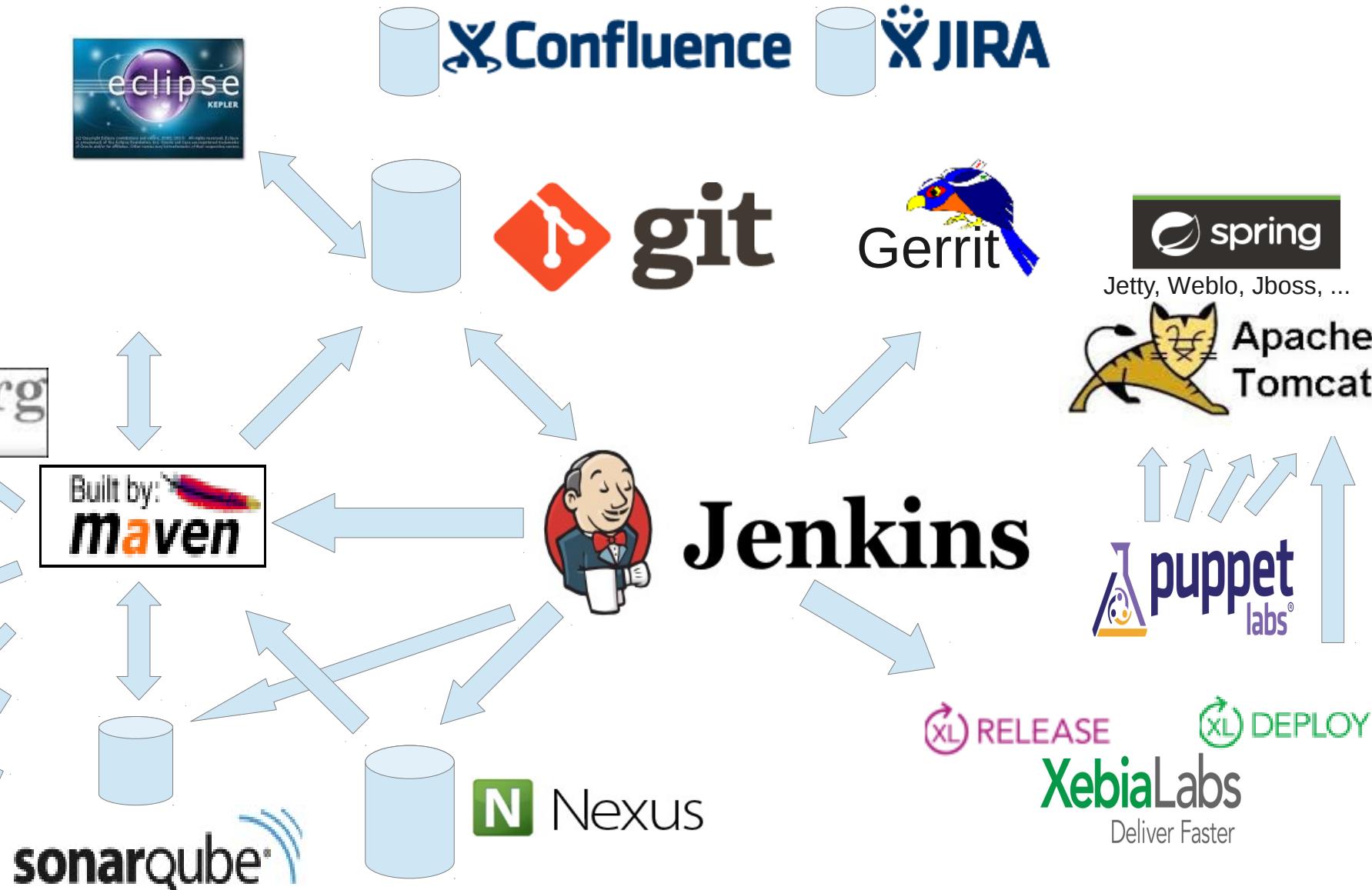
# Quizz ...

What's Common ?

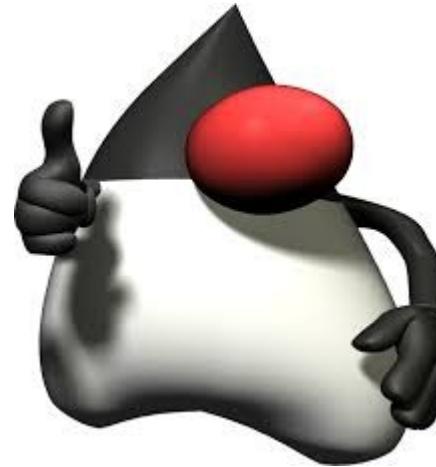
( & Who are Intruders )



WE NEED YOU!



# Render unto Caesar the things...



The intruder were..

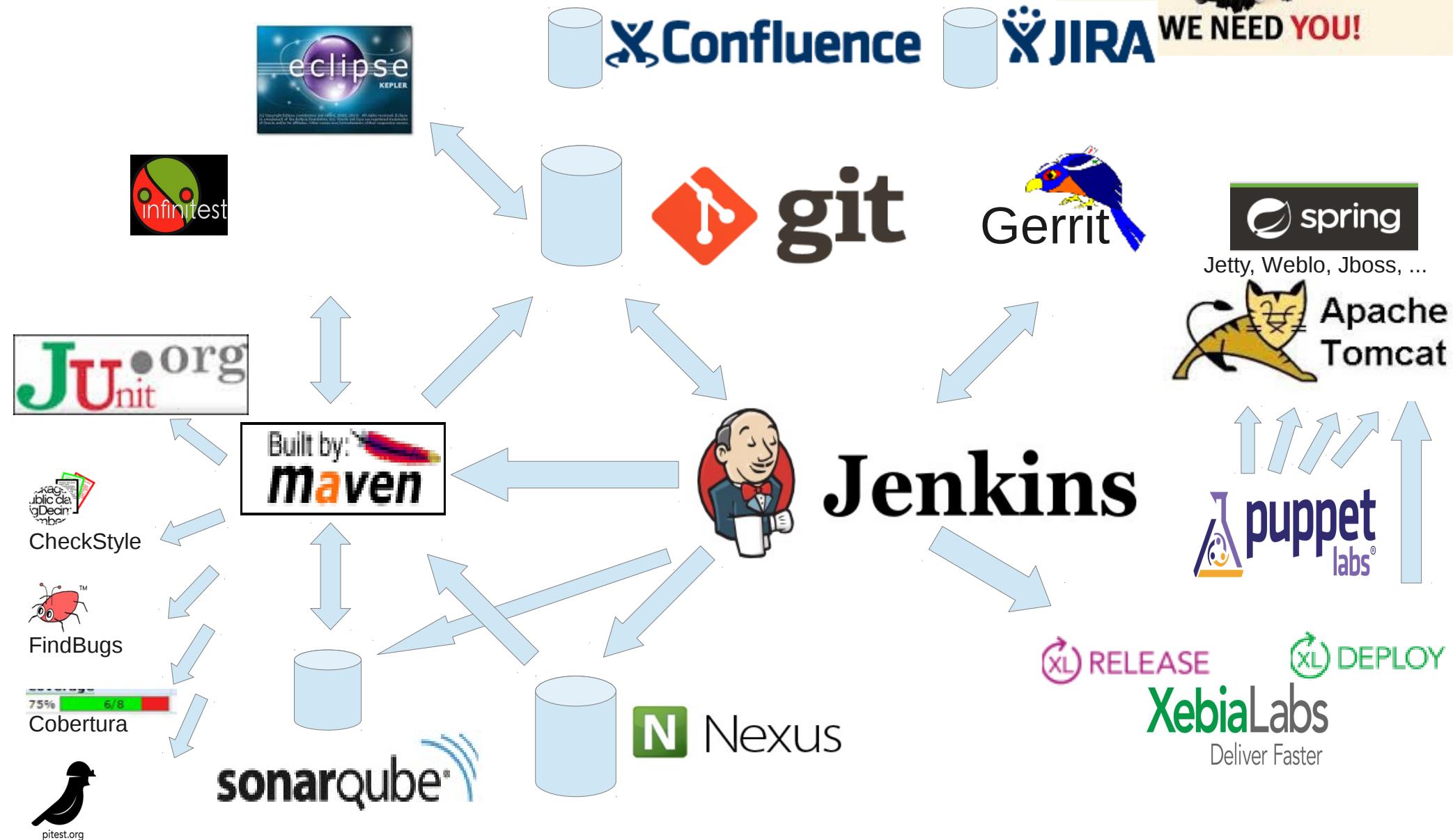


But Jgit is here :



And no real equivalent !  
(glu, smartfrog??)

# Commons Availability ?



# Open Source - Free - \$ ...



Except Almost Free:

 **Confluence**

 **JIRA**

Free Use for  
Open Source Projects

 **sonarqube**

 **Nexus**

Free with \$\$ Support  
Non free Features

Except:



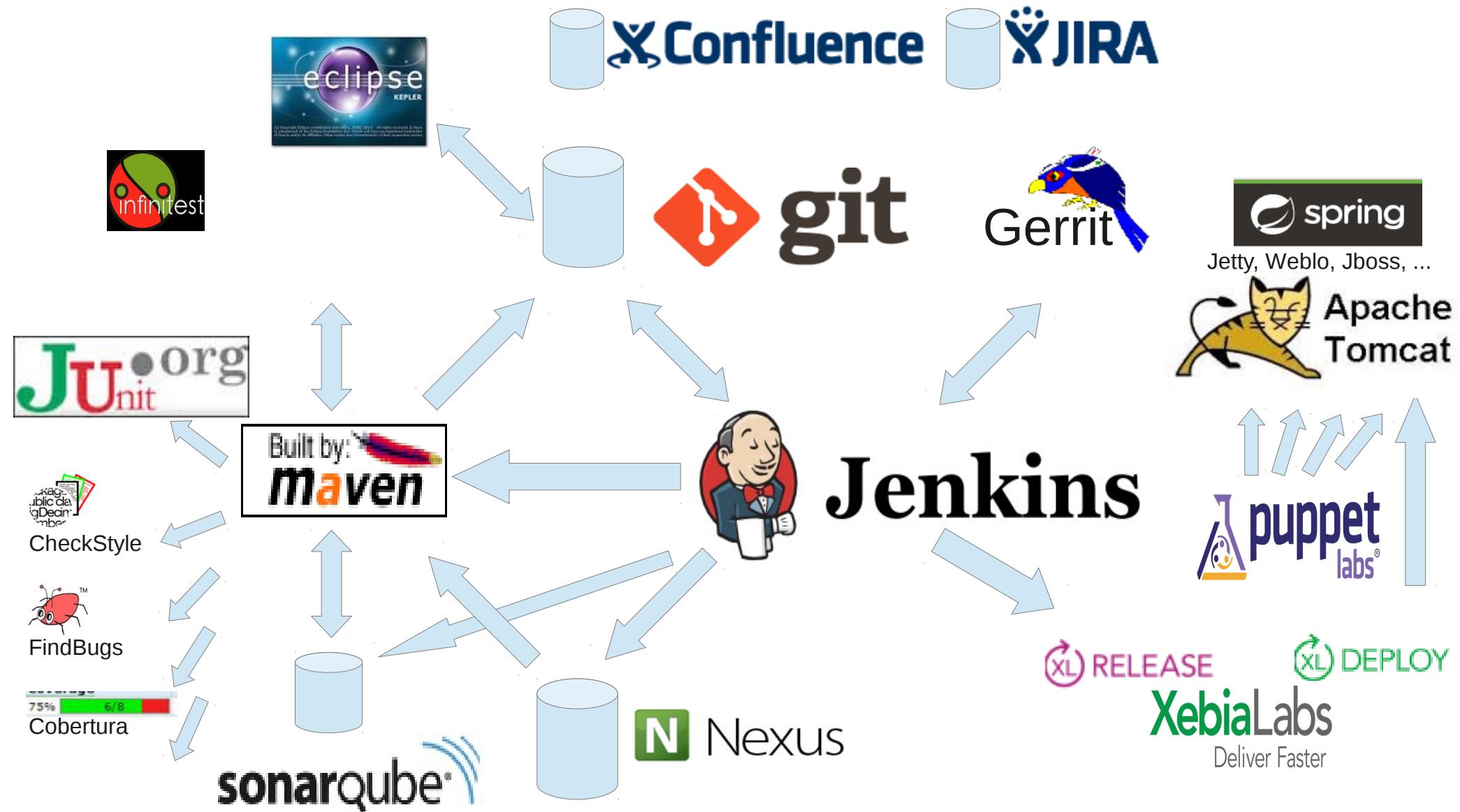
 **XebiaLabs**  
Deliver Faster

No Source & Not Free !

# Tools / Langage Library ?



WE NEED YOU!



# All Tools “Agnostic” ... except these Libraries



**WE NEED YOU!**

From Beginning  
(TDD Test)

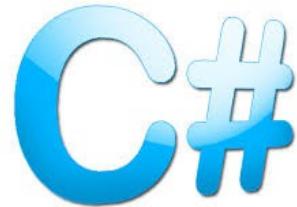


To End  
(IOC, JEE App Server)

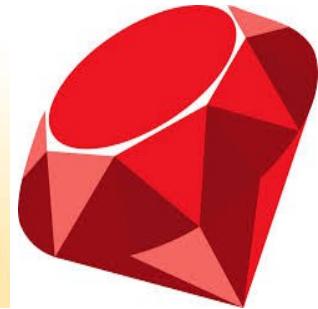
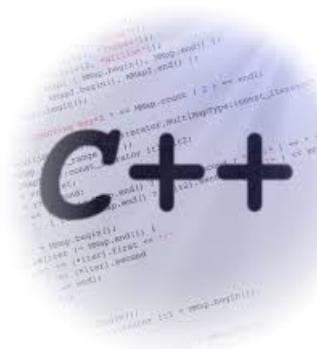


2 Java CORE Libraries  
MUST-HAVE for Continuous Integration

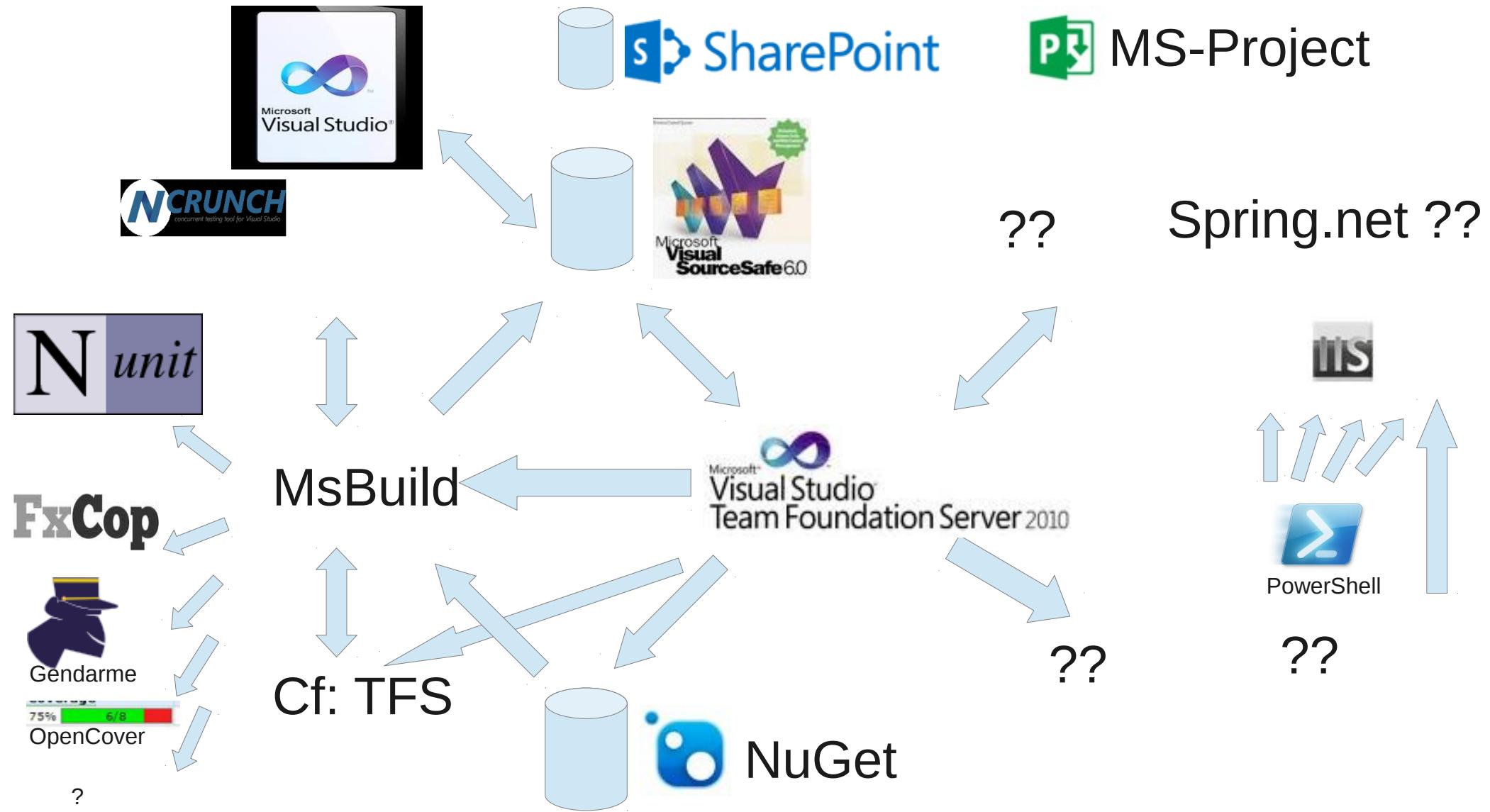
# Continuous Integration for Others ?



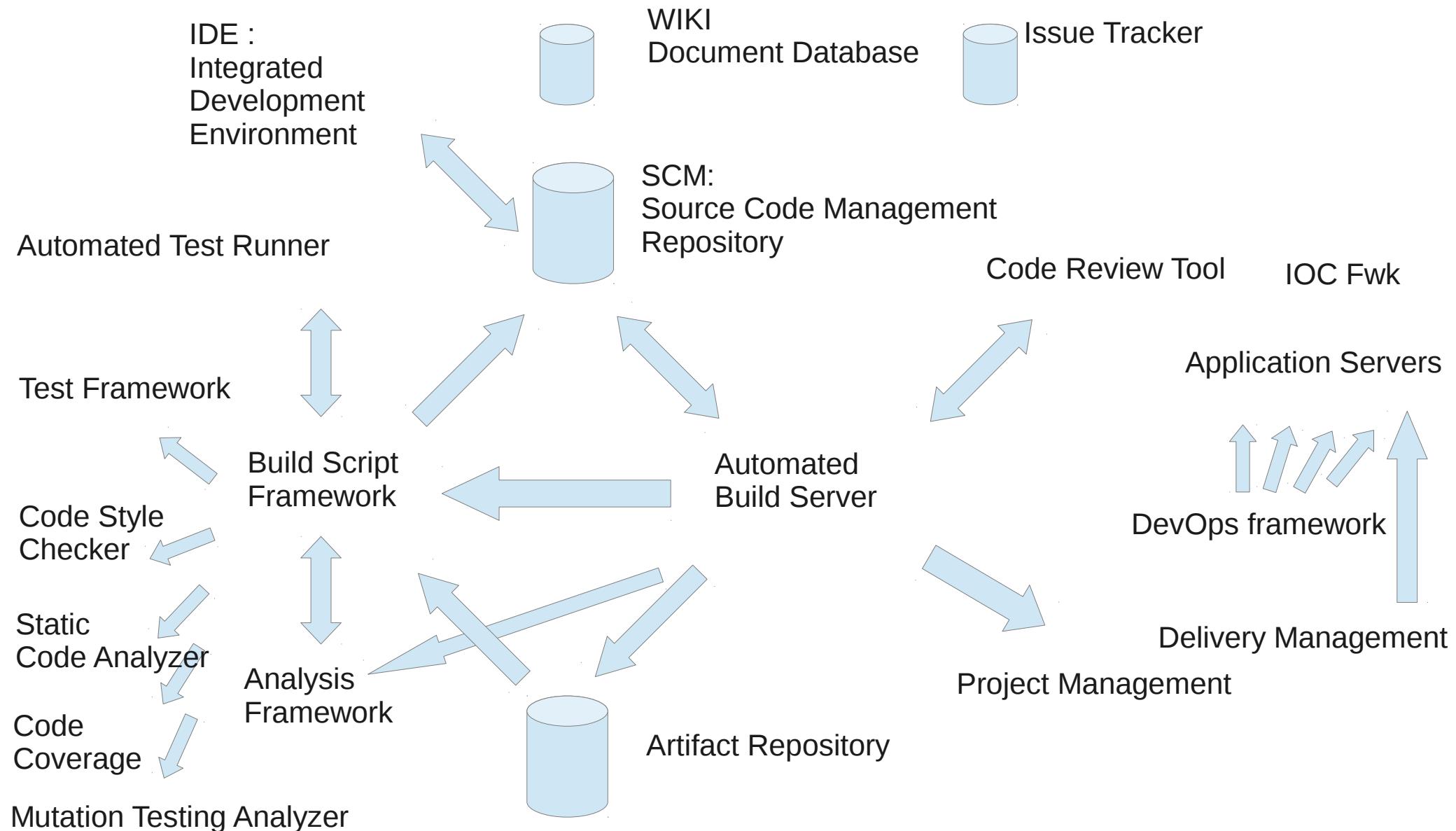
JavaScript™



# Translate => C# Micro\$oft™



# Translate => Generic Name



# Pause Before ...



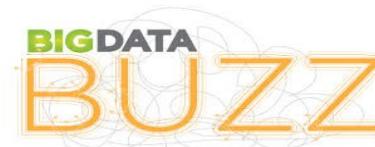
# Start Simple, and TDD Test First !



# TDD

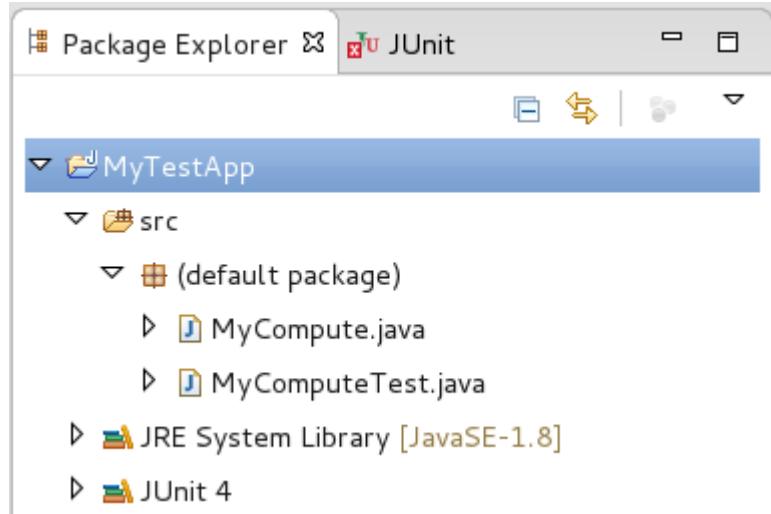
# Test Driven Development

= Test First ... => Test



# Get Hands Dirty

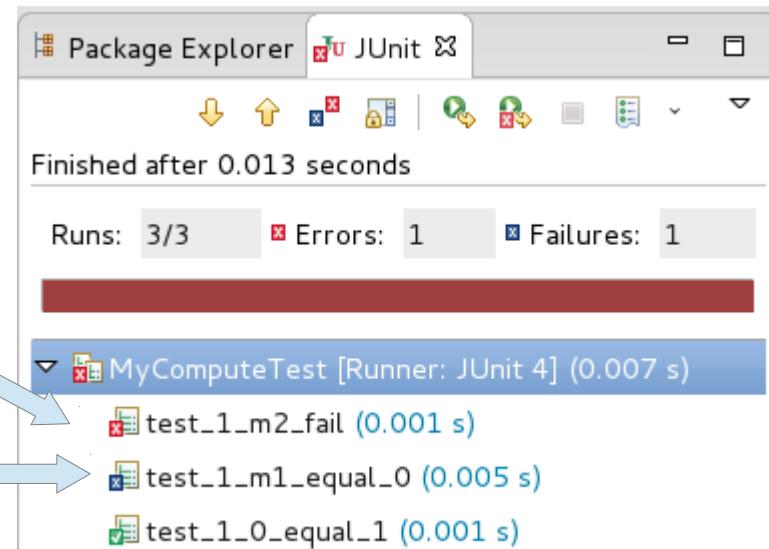
## Create Simple Project ...



```
public class MyCompute {  
  
    public int compute(int param1, int param2) {  
        if (param2 == -2) throw new IllegalStateException();  
        return param1 + ((param2 > 0)? param2 : 0);  
    }  
}
```

```
import org.junit.Test;  
  
public class MyComputeTest {  
  
    private MyCompute tested = new MyCompute();  
  
    @Test  
    public void test_1_0_equal_1() {  
        // Prepare  
        int param1 = 1, param2 = 0;  
        // Perform  
        int res = tested.compute(param1, param2);  
        // Post-Check  
        Assert.assertEquals(1, res);  
    }  
  
    @Test  
    public void test_1_m1_equal_0() {  
        // Prepare  
        int param1 = 1, param2 = -1;  
        // Perform  
        int res = tested.compute(param1, param2);  
        // Post-Check  
        Assert.assertEquals(0, res);  
    }  
  
    @Test // (expected=IllegalStateException.class)  
    public void test_1_m2_fail() {  
        // Prepare  
        int param1 = 1, param2 = -2;  
        // Perform  
        tested.compute(param1, param2);  
    }  
}
```

# Running Junit Tests



Crashed with Exception

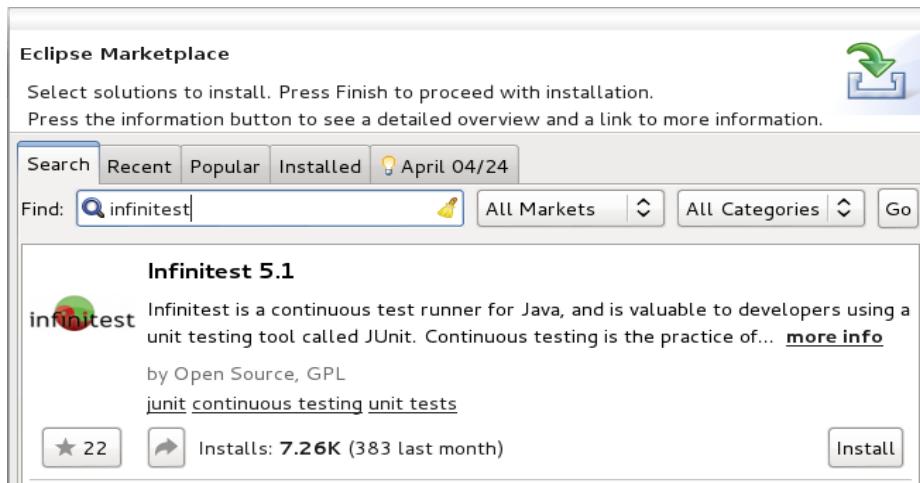
Test Assertion Failure  
expected XX, got YY

Test finished OK

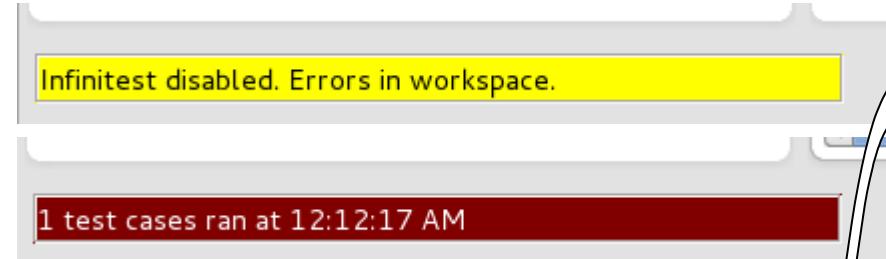
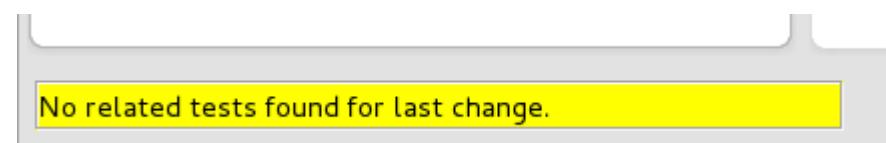
# InfiniTest

# Background Test Runner

Install



Then Show Running (Bottom Left)



# InfiniTest Markers

When Error => Shown as “Compile Error” Marker



The screenshot shows an IDE interface with a project tree on the left and a code editor on the right.

**Project Tree:**

- MyTestApp
- src
- (default package)
- MyCompute.java
- MyComputeTest.java
- MyComputeTest
- tested
- test\_1\_0\_equal\_1() : void
- test\_1\_m1\_equal\_0() : void
- test\_1\_m2\_fail() : void

**Code Editor:**

```
public void test_1_m1_equal_0() {
    // Prepare
    int param1 = 1, param2 = -1;
    // Perform
    int res = tested.compute(param1, param2);
    // Post-Check
    Assert.assertEquals(0, res);
}

@Test
//(expected=IllegalStateException.class)
public void test_1_m2_fail() {
    // Prepare
    int param1 = 1, param2 = -2;
    // Perform
}
```

A tooltip is displayed over the second test method, containing the text: "IllegalStateException in MyComputeTest.test\_1\_m2\_fail".

**IDE Status Bar:**

- Problems X
- @ Javadoc
- Declaration

2 errors, 1 warning, 0 others

**Problems View:**

Description	Resource	Location	Type
Errors (2 items)			
AssertionError (expected:<0> but was:<1>) in MyComputeTest.test_1_m1_equal_0	MyComputeTest.java	line 33	Infinitest Test Failure
IllegalStateException in MyComputeTest.test_1_m2_fail	MyComputeTest.java	line 43	Infinitest Test Failure

# Victory Celebration Pause TDD in Eclipse



Develop TDD FAST  
on Local PC  
in Eclipse + Eclipse Junit + Eclipse InfiniTTest



What's next ?

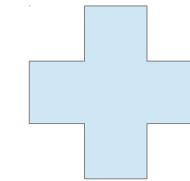


Share on other PC ... not having Eclipse ?

# Welcome Maven pom.xml



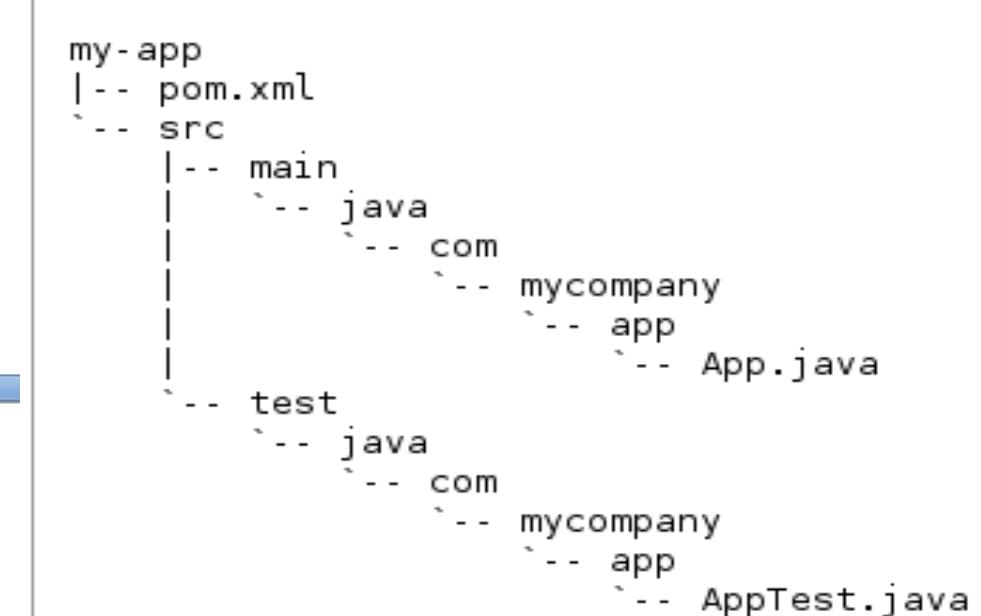
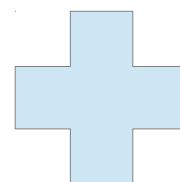
```
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">  
  <modelVersion>4.0.0</modelVersion>  
  
  <groupId>com.mycompany.app</groupId>  
  <artifactId>my-app</artifactId>  
  <version>1.0-SNAPSHOT</version>  
  <packaging>jar</packaging>  
  
  <name>Maven Quick Start Archetype</name>  
  <url>http://maven.apache.org</url>  
  
  <dependencies>  
    <dependency>  
      <groupId>junit</groupId>  
      <artifactId>junit</artifactId>  
      <version>4.8.2</version>  
      <scope>test</scope>  
    </dependency>  
  </dependencies>  
</project>
```



Repo

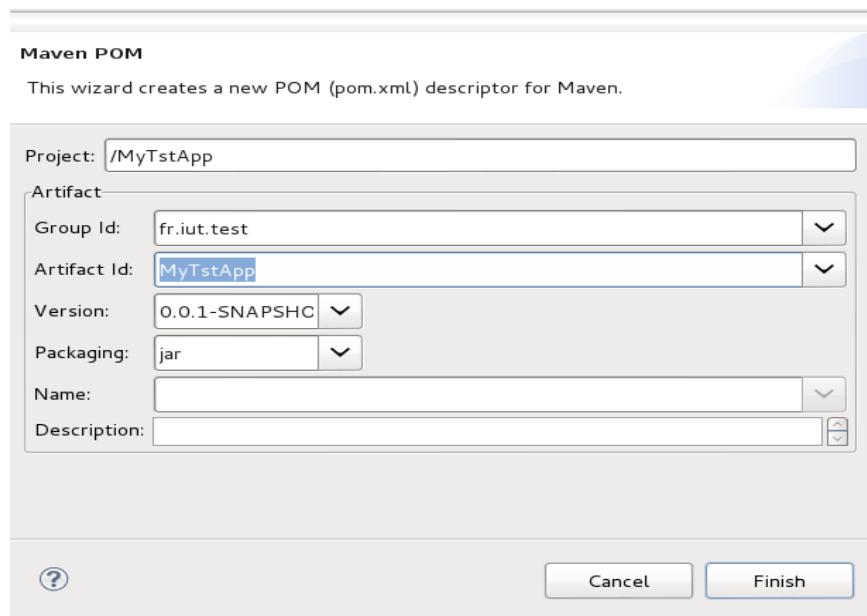
Project  
POM

Std  
Layout



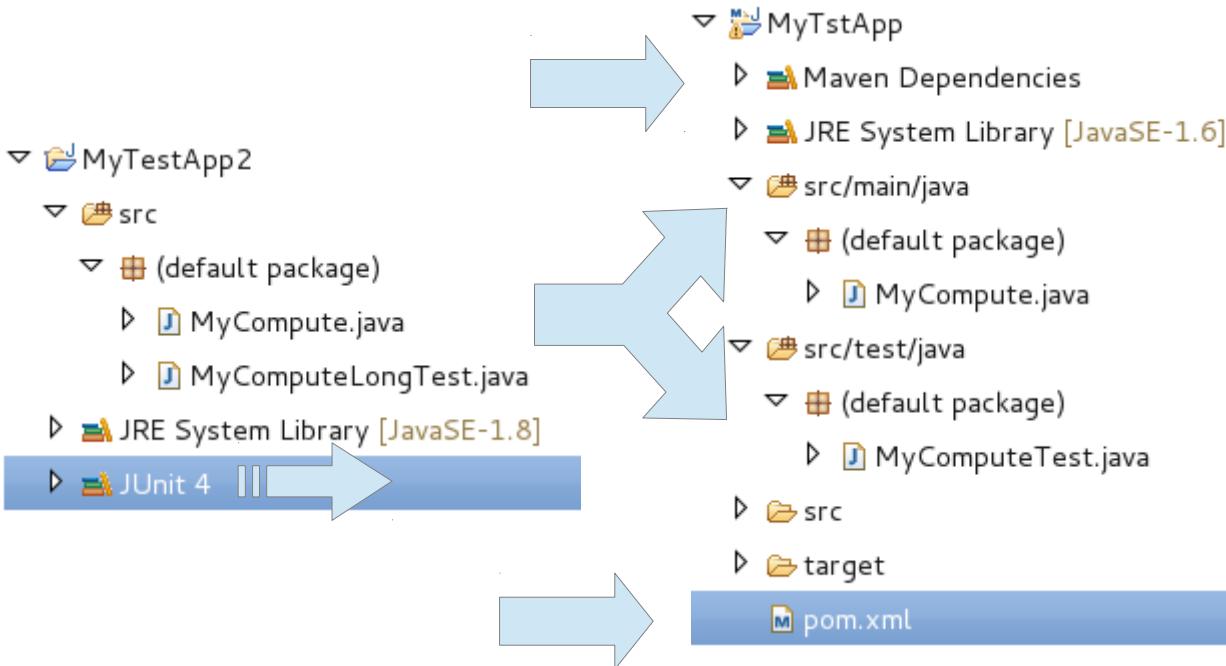
# Get Hands Dirty

## Convert to Maven - from Eclipse



```
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">
  <modelVersion>4.0.0</modelVersion>
  <groupId>fr.iut.test</groupId>
  <artifactId>MyTstApp</artifactId>
  <version>0.0.1-SNAPSHOT</version>
  <build>
    <sourceDirectory>src</sourceDirectory>
    <plugins>
      <plugin>
        <artifactId>maven-compiler-plugin</artifactId>
        <version>3.1</version>
        <configuration>
          <source>1.6</source>
          <target>1.6</target>
        </configuration>
      </plugin>
    </plugins>
  </build>
</project>
```

# Convert ... src/{main,test}/java + Junit Dependency



```
object xmlns="http://maven.apache.org/POM/4.0.0" xmlr
modelVersion>4.0.0</modelVersion>
groupId>fr.iut.test</groupId>
artifactId>MyTstApp</artifactId>
version>0.0.1-SNAPSHOT</version>

dependencies>
<dependency>
  <groupId>junit</groupId>
  <artifactId>junit</artifactId>
  <version>4.11</version>
</dependency>
</dependencies>

<build>
  <plugins>
    <plugin>
      <artifactId>maven-compiler-plugin</artifactId>
      <version>3.1</version>
      <configuration>
        <source>1.6</source>
        <target>1.6</target>
      </configuration>
    </plugin>
  </plugins>
</build>
</project>
```

# Build With Maven

## Build the Project

```
mvn package
```

The command line will print out various actions, and end with the following:

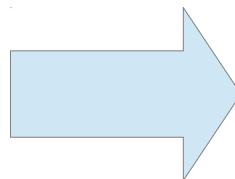
```
...
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: 2 seconds
[INFO] Finished at: Thu Jul 07 21:34:52 CEST 2011
[INFO] Final Memory: 3M/6M
[INFO] -----
```

### Running Maven Tools

#### Maven Phases

Although hardly a comprehensive list, the following phases are commonly used:

- **validate**: validate the project is correct and complete
- **compile**: compile the source code of the project
- **test**: test the compiled source code using unit tests
- **package**: take the compiled code and package it
- **integration-test**: process and clean up the environment before running integration tests
- **verify**: run any checks to verify the package
- **install**: install the package into the local repository
- **deploy**: done in an integration environment, release sharing with other developers and projects



Compile + test + jar ...

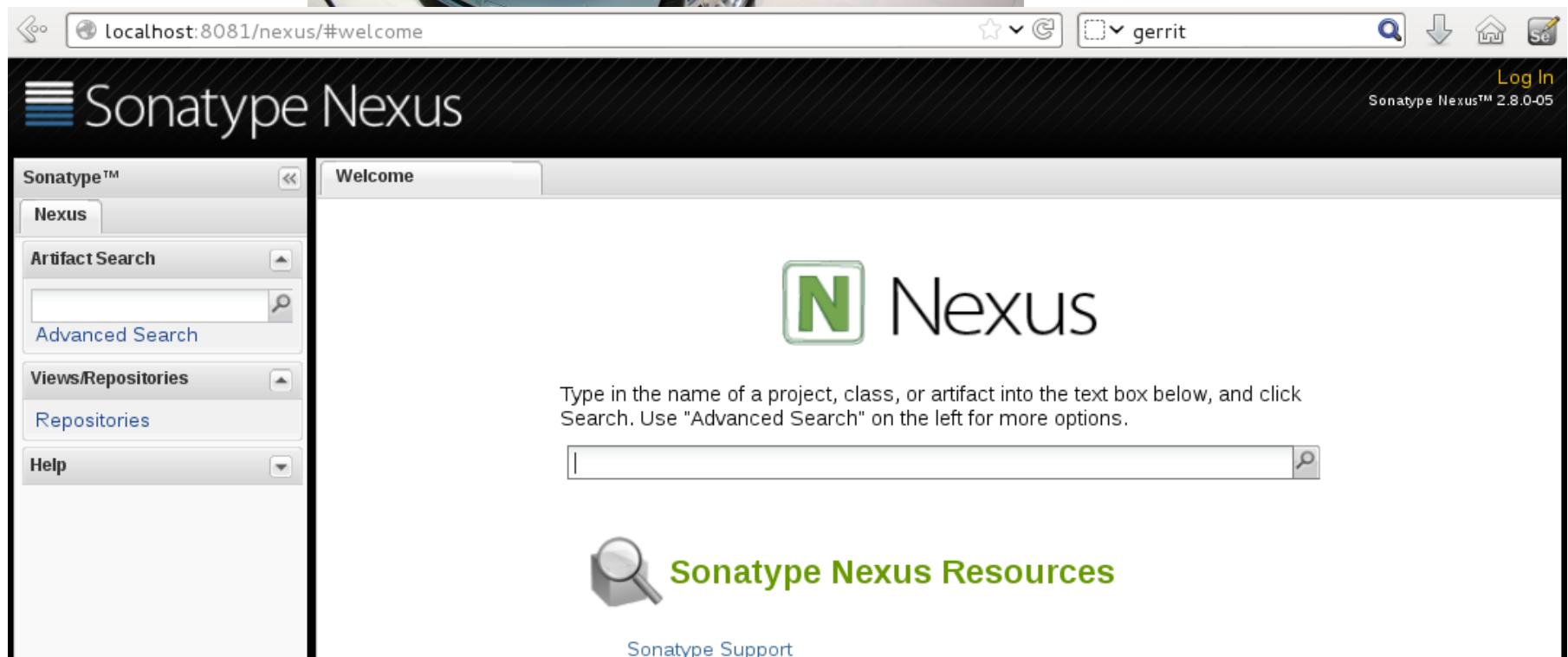
Cf LifeCycle / Plugins Mojo

There are two other Maven lifecycles to note below:

- **clean**: cleans up artifacts created by previous builds
- **site**: generates site documentation for the project

# Download Dependencies ?

## .. cf Nexus Repository



localhost:8081/nexus/#welcome

Sonatype Nexus

Log In  
Sonatype Nexus™ 2.8.0-05

Welcome

Nexus

Type in the name of a project, class, or artifact into the text box below, and click Search. Use "Advanced Search" on the left for more options.

Artifact Search

Advanced Search

Views.Repositories

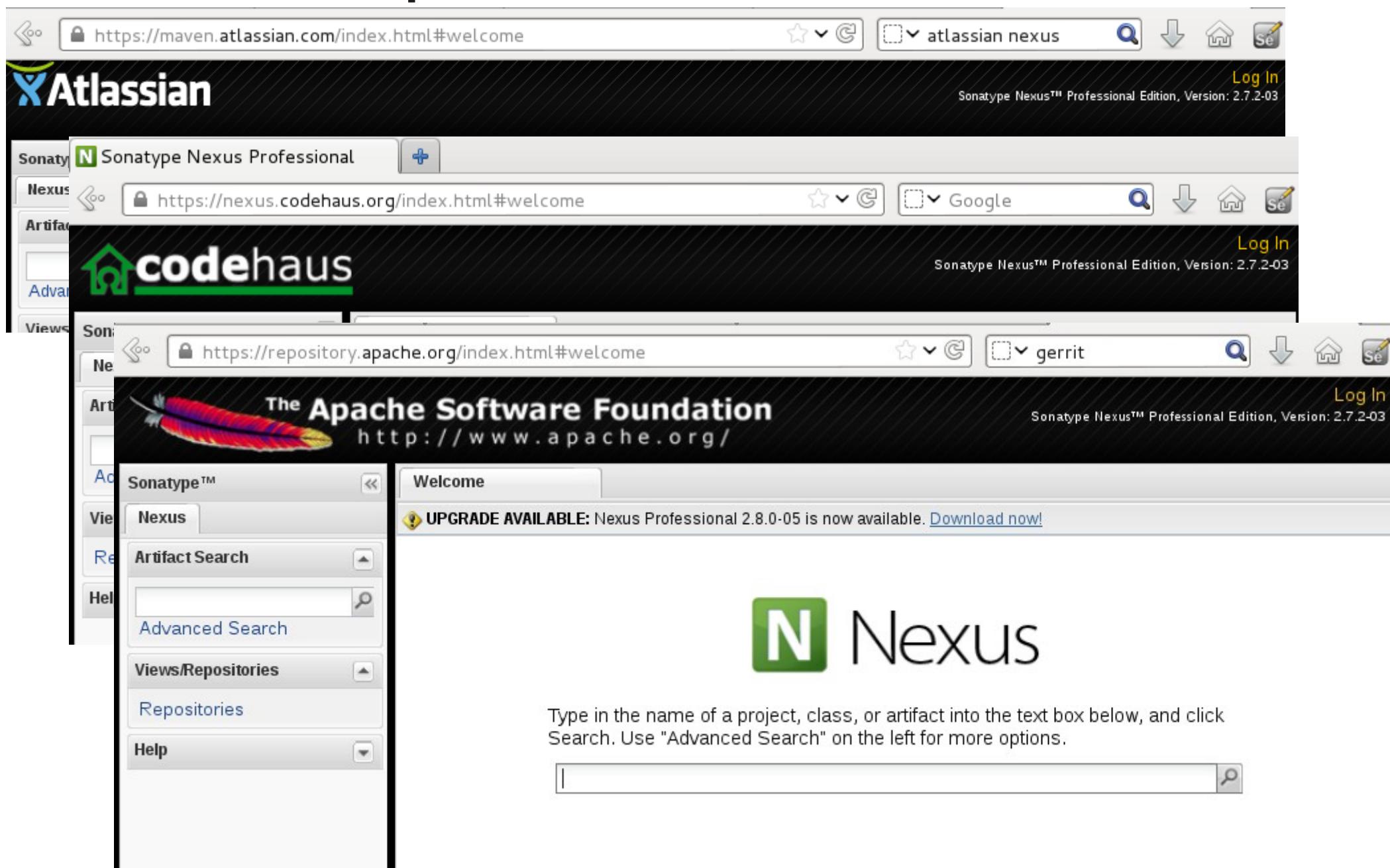
Repositories

Help

Sonatype Nexus Resources

Sonatype Support

# Public Repositories on Internet



The screenshot shows a web browser window with three tabs open, each displaying a different public repository interface:

- Atlassian**: The first tab shows the Sonatype Nexus Professional interface. The URL is <https://maven.atlassian.com/index.html#welcome>. The interface includes a search bar, a sidebar with options like Sonatype, Nexus, Artifacts, Advanced, Views, and Help, and a central content area with a "Welcome" message and a "UPGRADE AVAILABLE" notice.
- codehaus**: The second tab shows the Sonatype Nexus Professional interface. The URL is <https://nexus.codehaus.org/index.html#welcome>. It has a similar layout with a sidebar and a central content area featuring the "codehaus" logo.
- The Apache Software Foundation**: The third tab shows the Apache Software Foundation website. The URL is <https://repository.apache.org/index.html#welcome>. It features the Apache feather logo and the text "The Apache Software Foundation" and "http://www.apache.org/".

Each tab's header includes standard browser controls (back, forward, search, etc.) and the Sonatype Nexus Professional branding.

# Search Maven Dependency (Example : Mockito)



## The Central Repository

[SEARCH](#) | [ADVANCED SEARCH](#) |

2

mockito-all

SEARCH

### Search Results

GroupId	ArtifactId	Last Version	Updated	Download
<a href="#">org.mockito</a>	mockito-all	<a href="#">1.9.5-all (20)</a>	14-Oct-2012	<a href="#">pom</a> <a href="#">jar</a> <a href="#">avadoc</a> <a href="#">sources</a>
<a href="#">com.google.code.maven-play-plugin.com.google.code.eamelinck-mockito</a>	mockito-all	<a href="#">1.9.1-20110911</a>	01-Mar-2013	<a href="#">pom</a> <a href="#">jar</a> <a href="#">avadoc</a> <a href="#">sources</a>

### Search Results

GroupId	ArtifactId	Version	Updated	Download
<a href="#">org.mockito</a>	mockito-all	<a href="#">1.9.5</a>	14-Oct-2012	<a href="#">pom</a> <a href="#">jar</a> <a href="#">avadoc</a> <a href="#">sources</a>
<a href="#">org.mockito</a>	mockito-all	<a href="#">1.9.5-rc1</a>	30-Jun-2012	<a href="#">pom</a> <a href="#">jar</a> <a href="#">avadoc</a> <a href="#">sources</a>
<a href="#">org.mockito</a>	mockito-all	<a href="#">1.9.0</a>	20-Dec-2011	<a href="#">pom</a> <a href="#">jar</a> <a href="#">avadoc</a> <a href="#">sources</a>
<a href="#">org.mockito</a>	mockito-all	<a href="#">1.9.0-rc1</a>	28-Jul-2011	<a href="#">pom</a> <a href="#">jar</a> <a href="#">avadoc</a> <a href="#">sources</a>
<a href="#">org.mockito</a>	mockito-all	<a href="#">1.8.5</a>	25-May-2010	<a href="#">pom</a> <a href="#">jar</a> <a href="#">sources</a>
<a href="#">org.mockito</a>	mockito-all	<a href="#">1.8.4</a>	17-Mar-2010	<a href="#">pom</a> <a href="#">jar</a> <a href="#">sources</a>
<a href="#">org.mockito</a>	mockito-all	<a href="#">1.0.0</a>	07-Mar-2010	<a href="#">pom</a> <a href="#">jar</a> <a href="#">sources</a>

### Dependency Information

#### Apache Maven

```
<dependency>
  <groupId>org.mockito</groupId>
  <artifactId>mockito-all</artifactId>
  <version>1.9.5</version>
</dependency>
```

#### Apache Buildr

#### Apache Ivy

#### Groovy Grape

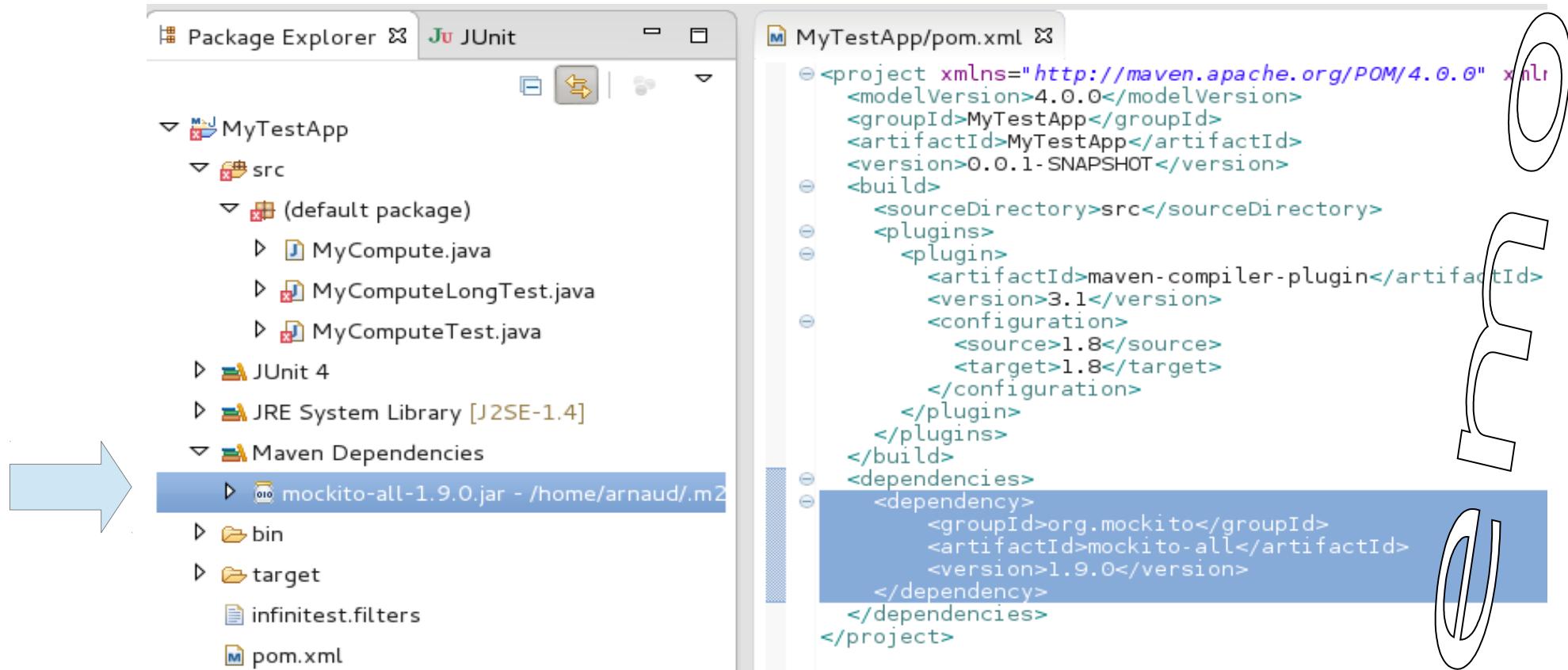
#### Grails

#### Scala SBT

#### Leiningen

# Add Dependency in Pom.xml

To Download ... simply wait eclipse auto-build !!



Or “mvn install”

# Maven

- TRULY AWESOME ... Industry Standard ... MUST-HAVE
- But Xml verbose...
- Deprecated Alternatives  
Compile.sh / compile.bat ... with javac + jar, Makefile

ant



- For C# ... Msbuild +



- Other Modern alternatives ?



# Build Without Maven ? ...



Liens

Lexique

La FAQ

Présentation

Bienvenue

Publication

Consulting

Formations/Certifications

Témoignages

Galerie

Accueil >> La FAQ

## La FAQ

### **- Pouvez-vous résumer La RACHE en une phrase ?**

De manière générale la méthode RACHE consiste à prendre des initiatives ne se limitant pas à concevoir des solutions, mais également à faire des trucs insolites, totalement curieux, franchement loupés ou carrément prises de tête. En d'autres termes, La RACHE est une approche basée sur les bonnes pratiques pour la fourniture de services informatiques de qualité s'appuyant sur des processus complexes que tout le monde préfère ignorer.

### **- La RACHE est-t-elle une méthode normalisée ?**

Oui, tout à fait ! La RACHE est certifiée par l'organisation internationale de normalisation conforme à l'ISO-1664



# Victory Celebration Pause



Maven – platform independent build

Questions so far ?

# Victory Celebration Pause



Maven – platform independent build



What's next ?



Backup on usb key?



Share / email changes to colleagues ?



Apply changes

Questions so far ?



# GIT – Source Code Mgt



Local Dev



Team Dev



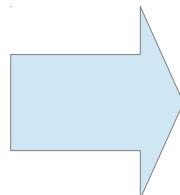
Backup on usb key?



Share / email changes to colleagues ?



Apply changes



# git



Git Commit



Git Push



Git Branch/Merge



# 1 minute GIT Demo

```
$ git init
Initialized empty Git repository in /mnt/a_1tera2/homeData/arnaud/
/continuous-int/demo-dir/my-app/.git/
$ 
$ git st
# On branch master
#
# Initial commit
#
# Untracked files:
#   (use "git add <file>..." to include in what will be committed)
#
#       .gitignore
#       pom.xml
#       src/
nothing added to commit but untracked files present (use "git add"
$ 
$ git add pom.xml src
$ 
$ git commit -m "init"
[master (root-commit) e6a19da] init
 3 files changed, 69 insertions(+)
 create mode 100644 pom.xml
 create mode 100644 src/main/java/com/mycompany/app/App.java
 create mode 100644 src/test/java/com/mycompany/app/AppTest.java
$ █
```



# Start Git Server

## 1) Copy to "Bare" repos

```
$ mkdir git-repos  
$ cd git-repos  
$ cp -rf ../testfoo-mvc/.git testfoo-mvc.git  
$ cat testfoo-mvc.git/config | sed 's/bar = false/bare = true/g' > testfoo-mvc.git/config  
$ touch testfoo-mvc.git/git-daemon-export-ok
```

## 2) Start Simplest as possible server = (git:// protocol)

```
$  
$ git daemon --reuseaddr --base-path=. --export-all --enable=receive-pack
```

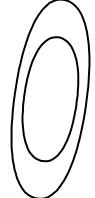
## 3) Clone on client

```
$  
$ git clone git://localhost/testfoo-mvc  
Cloning into 'testfoo-mvc'...  
remote: Counting objects: 132, done.  
remote: Compressing objects: 100% (119/119), done.  
remote: Total 132 (delta 30), reused 0 (delta 0)  
Receiving objects: 100% (132/132), 75.00 KiB, done.  
Resolving deltas: 100% (30/30), done.  
$
```

# Commit – Push Pull (fetch+merge)

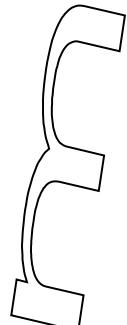
## 1) Local commit

```
$ git add pom.xml
$ git commit -m "added comment"
[master b3dfcec] added comment
 1 file changed, 1 insertion(+)
```



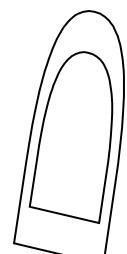
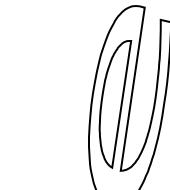
## 2) Push to Git server

```
$ git push origin
Counting objects: 5, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 294 bytes, done.
Total 3 (delta 2), reused 0 (delta 0)
To git://localhost/testfoo-mvc
  4b3a983..b3dfcec master -> master
$
```



## 3) Pull from other

```
$ git pull origin master
From git://localhost/testfoo-mvc
 * branch            master      -> FETCH_HEAD
Updating d2fa761..4b3a983
Fast-forward
 pom.xml |    5 +++++
 1 file changed, 5 insertions(+)
$
```





# Gerrit Code Review

All My Projects People Plugins Documentation

Changes Drafts Draft Comments Watched Changes Starred Changes

**Change-Id:** I53cce7b97d08b32528632728b445eaecd9189cf6

<b>Owner</b>	Lars Vogel
<b>Project</b>	demo/gerrittest
<b>Branch</b>	master
<b>Topic</b>	
<b>Uploaded</b>	Jul 9, 2013 3:26 PM
<b>Updated</b>	Jul 9, 2013 3:28 PM
<b>Submit Type</b>	Merge if Necessary
<b>Status</b>	Review in Progress

• Need Code-Review

Name or Email or Group  Add Reviewer

► Dependencies

Reference Version: Base ▾

► Patch Set 1 3a31d3c33293fb4d679075ffe2e9c3bbeefde2bc

► Patch Set 2 b881e9d0258dabca6f48fdb7a8e2b8760394a1b0

▼ Patch Set 3 222d9746e29d2fa9e13c9b83f87b71df2fd1865f

<b>Author</b>	Lars Vogel <Lars.Vogel@gmail.com>	Jul 9, 2013 3:23 PM
<b>Committer</b>	Lars Vogel <Lars.Vogel@gmail.com>	Jul 9, 2013 3:28 PM
<b>Parent(s)</b>	e6b1cdc8226e1c274c213524e5779da4f53242a	Adds readme
<b>Download</b>	<a href="#">checkout</a>   <a href="#">pull</a>   <a href="#">cherry-pick</a>   <a href="#">patch</a>   <a href="#">Anonymous HTTP</a>   <a href="#">SSH</a>   <a href="#">HTTP</a>   git fetch http://angelus:8080/demo/gerrittest refs/changes/02/2/3 && git checkout FETCH_HEAD	

Review Abandon Change Rebase Change

File Path	Comments	Size	Diff	Reviewed
► Commit Message			Side-by-Side	Unified
A test/.classpath		6 lines	Side-by-Side	Unified
A test/.project		17 lines	Side-by-Side	Unified
A test/.settings/org.eclipse.jdt.core.prefs		11 lines	Side-by-Side	Unified
A test/src/test/Test.java		10 lines	Side-by-Side	Unified
	+44, -0	All Side-by-Side	All Unified	

Comments [Expand Recent](#) | [Expand All](#) | [Collapse All](#)

Lars Vogel Uploaded patch set 2. 3:28 PM  
Lars Vogel Uploaded patch set 3. 3:28 PM

Add Comment

NO Time for Demo Here !!  
(Internet Access - OpenID) ??

# Victory Celebration Pause



Maven – platform independent build



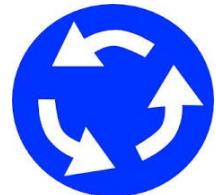
GIT Source Code Management

Questions so far ?

# Victory Celebration Pause



- Maven – platform independent build
- GIT Source Code Management
- What's next ?
- Repeat Compile on every Commit
- ...  
...



# Local Dev Loop

## FAST Part of Continuous Integration



Develop



Build + Test



Refactor



(Agile Pulse)



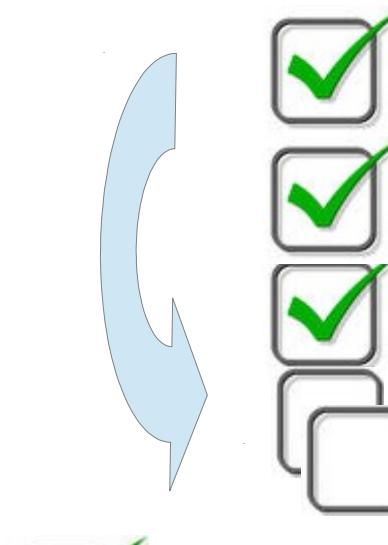
GIT Commit + Push



Pomodoro & Coffe-Time Break



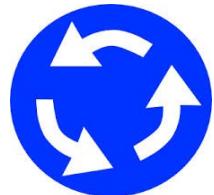
# Slow Parts Hidden ? And Repetitions ?



- GIT Commit + Push
- Compile scripts, post-build scripts
- Build / Test history
- Email, Publish, Reports ...
- Deliver To UAT..Prod from my PC

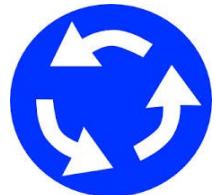


# Continuously ... 1000x



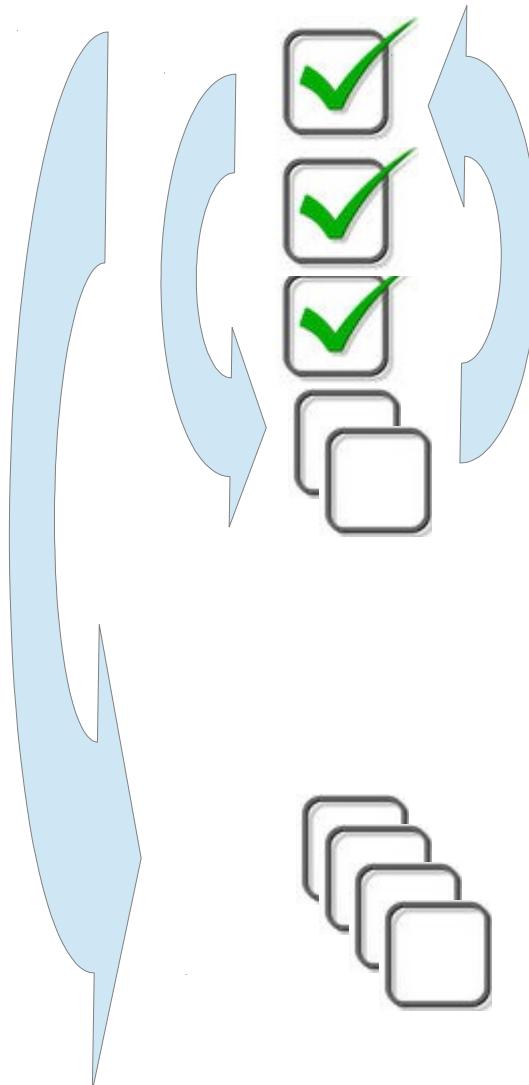
Type “mvn install” + email  
+ archive tests + archive build  
+ copy + start/stop... + ...





# Continuous Integration

## Requirements : FASTER outer Loop



Develop

Build + Test

Refactor (Agile Pulse)

Whatever if Automated &  
transparent to me ...



**Jenkins**



Whatever if Automated  
& transparent to others

# New Jenkins Maven Job



# Jenkins

**Jenkins** search ?

Jenkins > All >

**New Item** Item name

**Build a free-style software project**  
This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

**Build a maven2/3 project**  
Build a maven 2/3 project. Jenkins takes advantage of your POM files and drastically reduces the configuration.

**Build multi-configuration project**  
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.

**Monitor an external job**  
This type of job allows you to record the execution of a process run outside Jenkins, even on a remote machine. This is designed so that you can use Jenkins as a dashboard of your existing automation system.  
[See the documentation for more details.](#)

**Copy existing item**  
Copy from

or..

OK



# Jenkins

# Create First Job (1/3)

New Item

Welcome to Jenkins! Please [create new jobs](#) to get started.

## Jenkins

Jenkins > Hello World > configuration

Back to Dashboard Status Changes Workspace Build Now Delete Project Configure

Build History (trend) RSS for all RSS for failures

Project name: Hello World

Description:

[Escaped HTML] Preview

Discard Old Builds  
 This build is parameterized  
 Disable Build (No new builds will be executed until the project is re-enabled.)  
 Execute concurrent builds if necessary

Advanced Project Options Advanced...

Source Code Management

... fill : SCM + Build Trigger



# Jenkins

## Job > Conf > SCM

### Source Code Management

- CVS
- CVS Projectset
- File System
- Git

#### Repositories

Repository URL  ? ?

#### Credentials

- none -  
Add

Advanced...

Add Repository

Delete Repository

#### Branches to build

Branch Specifier (blank for 'any')  ?

Add Branch

Delete Branch

#### Repository browser

?

#### Additional Behaviours

Add ▾

- None
- Subversion

# Job > Conf > Build Trigger



# Jenkins

## Build Triggers

- Build whenever a SNAPSHOT dependency is built
- Build after other projects are built
- Build periodically
- Gerrit event
- Poll SCM

## Schedule

H/2 \* \* \* \*



## Advanced Project Options

Would last have run at Wednesday, May 7, 2014 10:18:46 PM CEST; wou  
2014 10:18:46 PM CEST.

Quiet period

Quiet period

30

Number of seconds

Retry Count

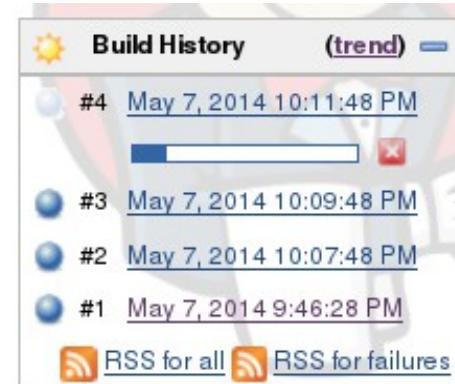
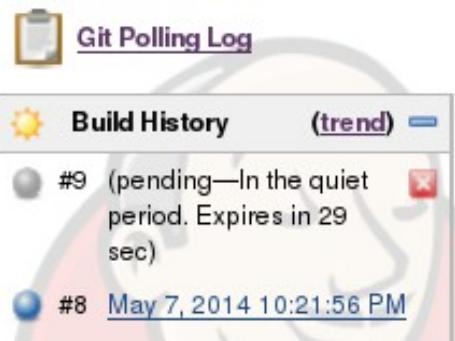
Ignore post-commit hooks

## REQUIRED for automated build on commit ...



## Git Polling Log

```
Started on May 7, 2014 10:23:48 PM
Using strategy: Default
[poll] Last Built Revision: Revision 26ecaabe...
Done. Took 43 ms
Changes found
```





# Jenkins

# Conf > Maven + Steps

## Pre Steps

Add pre-build step ▾

## Build

Maven Version

maven-3.2.1



Root POM

pom.xml



Goals and options



Advanced...

## Post Steps

- Run only if build succeeds    Run only if build succeeds or is unstable    Run regardless of build result

Should the post-build steps run only for successful builds, etc.

Add post-build step ▾

## Build Settings

E-mail Notification

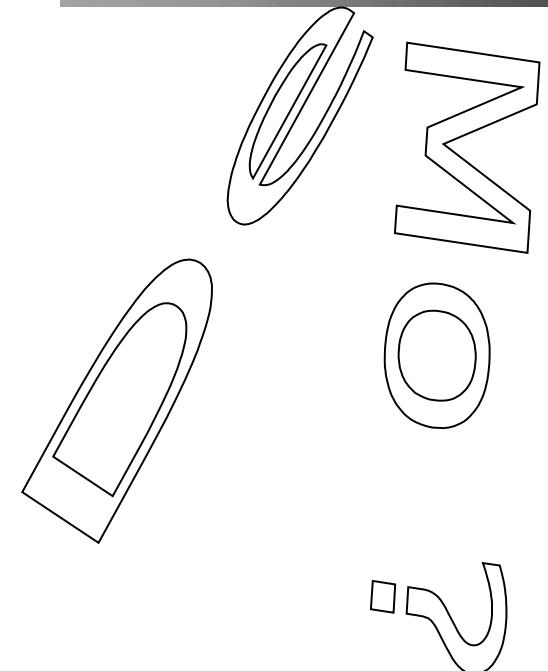
## Post-build Actions

Add post-build action ▾

# Relaunch Build Now .. or Trigger on Commit



# Jenkins



# It Works ! Red → Blue



# Jenkins

Build History (trend) —

- #3 May 1, 2014 1:08:11 AM
- #2 May 1, 2014 1:05:28 AM
- #1 May 1, 2014 12:40:15 AM

RSS for all RSS for failures

## Permalinks

- [Last build \(#2\), 2 min 41 sec ago](#)
- [Last failed build \(#2\), 2 min 41 sec ago](#)
- [Last unsuccessful build \(#2\), 2 min 41 sec ago](#)

Build History (trend) — PERMALINKS

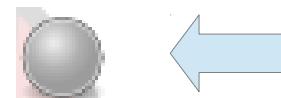
W	Description
#3	Build stability: 2 out of the last 3 builds failed.
#2	Build stability: 2 out of the last 3 builds failed.



Build SUCCESS



Build FAILED



Job Disabled (view in dashboard)

# Buid Result ... Junit Test Trend



# Jenkins

Workspace      Build Now      Delete Maven project      Configure      Modules      Git Polling Log

Build History (trend) [#15 May 7, 2014 10:45:43 PM](#)  
[#14 May 7, 2014 10:45:10 PM](#)  
[#13 May 7, 2014 10:44:23 PM](#)  
[#12 May 7, 2014 10:36:22 PM](#)  
[#11 May 7, 2014 10:30:41 PM](#)

Recent Changes      Workspace      [Latest Test Result \(no failures\)](#)

Permalinks

- Last build (#15), 15 sec ago
- Last stable build (#15), 5 sec ago
- Last successful build (#15), 15 sec ago
- Last unstable build (#14), 48 sec ago
- Last unsuccessful build (#14), 48 sec ago

Details...

Test Result Trend

Build Number	Count
#10	9
#11	9
#12	9
#13	9
#14	10
#15	9

Test added 0 +1  
Test Error +1 0  
Test OK -1 0

Unstable = Build OK... but Test Fail

Stable = Build + Test OK

# Test Result History Details



## Test Result

1 failures ( $\pm 0$ )

Module	Fail	(diff)	Total	(diff)
<a href="#">com.foo:foo</a>	1		10	

## Failed Tests

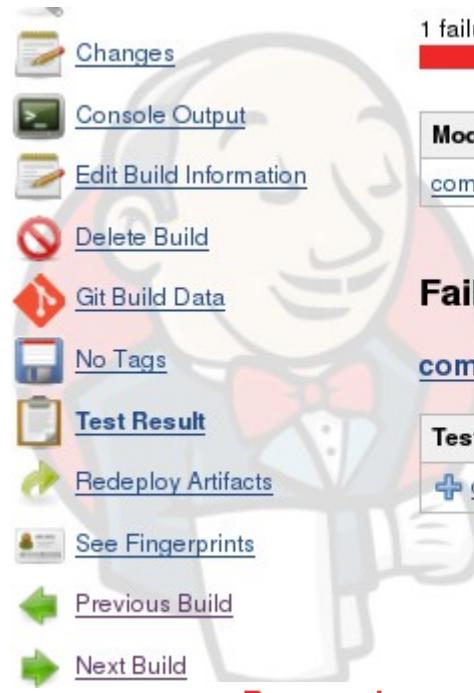
[com.foo:foo](#)

Test Name	Duration	Age
<a href="#">+ com.foo.DummyUnstableTest.testUnstable</a>	0.002	6

See in previous build

Test in Failure  
Since 6 builds

# Test Result



1 failures (+1)  10 tests (±0)

Module	Fail	(diff)	Total	(diff)
com.foo:foo	1	+1	10	

**Failed Tests**

com.foo:foo

Test Name	Duration	Age
+ com.foo.DummyUnstableTest.testUnstable	0.002	1

**Failure detail:**  
**Log + assert + exception**

Failing for the past 1 build (Since #16)  
Took 2 ms.  
[add description](#)

## Error Message

expected:<0> but was:<1>

## Stacktrace

```
java.lang.AssertionError: expected:<0> but was:<1>
at org.junit.Assert.fail(Assert.java:88)
at org.junit.Assert.failNotEquals(Assert.java:743)
at org.junit.Assert.assertEquals(Assert.java:118)
at org.junit.Assert.assertEquals(Assert.java:555)
at org.junit.Assert.assertEquals(Assert.java:542)
at com.foo.DummyUnstableTest.testUnstable(DummyUnstableTest.java:19)
```

Failure = +1  
this build

Age=1 :  
Test is NEW Failure

# Dashboard Meteo Per Job

Jenkins ➤ [ENABLE AUTO REFRESH](#)

[New Item](#)  [People](#)  [Build History](#)  [Project Relationship](#)  [Check File Fingerprint](#)  [Manage Jenkins](#)  [add description](#)

All	S	W	Name ↓	Last Success	Last Failure	Last Duration
		<a href="#">Hello World</a>	2 days 1 hr - #8	N/A	35 ms	
		<a href="#">test-app</a>	34 min - #3	36 min - #2	5.4 sec	

Icon: [S](#) [M](#) [L](#)

[Legend](#)  [RSS for all](#)  [RSS for failures](#)  [RSS for just latest builds](#)

Last  
Build  
(binary value)

Average  
Recent Builds  
Range scale = Meteo clouds



# Meteo Example

<https://hudson.eclipse.org/hudson/>



# Jenkins

[People](#)  
[Build History](#)  
[Project Relationship](#)  
[Check File Fingerprint](#)

Build Queue	
No builds in the queue.	

Build Executor Status	
<a href="#">Master 0/1</a>	Idle
<a href="#">Fastlane 0/2</a>	Idle
<a href="#">hudson-perf1-tests 0/1</a>	Idle
<a href="#">hudson-slave1 0/5</a>	Idle
<a href="#">hudson-slave2 0/2</a>	Idle
<a href="#">hudson-slave4 0/5</a>	Idle
<a href="#">hudson-slave6 0/2</a>	Idle
<a href="#">hudson-slave7(ppc64) offline</a>	Offline
<a href="#">hudson-slave8(ppc64) 0/8</a>	Idle
<a href="#">mac-tests 0/4</a>	Idle
<a href="#">mac-tests2 0/4</a>	Idle
<a href="#">windows7tests 0/1</a>	Idle



Eclipse.org Hudson for builds

[Go: Hudson Sandbox](#)

- HIPP instances: [ECF](#) | [EGit](#) | [eTrice](#) | [Gyrex](#) | [Hudson project](#) | [LinuxTools](#) | [OCL](#) | [Orion](#) | [PTP](#) | [Sapphire SWTBot](#) | [UMLo Xtext](#)
- [Request HIPP for your project](#)

All	Buckminster	EMF	Eclipse and Equinox	EclipseLink	Hudson	Jetty-RT	Modeling	Mylyn	Repository Aggregation
S	W	Job ↓					Last Success	Last Failure	
●	⚡	aether-ant-nightly					19 hr (#34)	22 days (#31)	
●	⚡	aether-core-nightly					11 days (#323)	22 days (#322)	
●	⚡	amalgam-1.2.0					1 day 14 hr (#300)	22 days (#299)	
●	⚡	amp-integration					2 yr 11 mo (#24)	2 yr 10 mo (#59)	
●	⚡	amp-nightly					1 yr 11 mo (#1174)	1 yr 2 mo (#1188)	
●	⚡	babel-tools-indigo-nightly					11 mo (#56)	1 mo 4 days (#63)	
●	⚡	babel-tools-indigo-release					1 yr 2 mo (#3)	1 yr 2 mo (#2)	
●	⚡	bpel-helios					8 mo 7 days (#222)	1 mo 4 days (#232)	
●	⚡	bpel-juno					6 mo 8 days (#103)	1 mo 4 days (#115)	
●	☀	bpmn2-nightly					8 mo 11 days (#15)	N/A	
●	☀	buckminster-egf-helios					10 mo (#217)	N/A	
●	☀	buckminster-egf-indigo					10 mo (#138)	N/A	
●	☀	buckminster-egf-juno					12 mo (#67)	N/A	
●	☀	buckminster-egf-kepler					N/A	N/A	
●	☀	buckminster-egf-luna					N/A	N/A	
●	☀	buckminster-egf-trunk-nightly					7 mo 13 days (#88)	N/A	
●	☀	buckminster-emf-diffmerge-helios					11 mo (#30)	N/A	
●	☀	buckminster-emf-diffmerge-master					6 days 5 hr (#50)	N/A	
●	☀	buckminster-head					1 mo 4 days (#230)	N/A	
●	☀	buckminster-maintenance					1 mo 20 days (#118)	N/A	
●	☀	buckminster-sphinx-0.7-helios					1 yr 11 mo (#289)	N/A	

~25 visible  
out of ~300

# Another Meteo ?



# Jenkins

<https://builds.apache.org/>

Screenshot of the Jenkins Apache Software Foundation build status page:

The page shows the Jenkins interface with the Apache Software Foundation logo at the top. It displays the build status for various projects, including Abdera, Accumulo, ActiveMQ, and others. The build queue and executor status are also visible.

**Build Queue (8)**

- sis-dev
- Blur-master-jdk7
- Blur-master-jdk7-hadoop2
- ctakes-trunk-package
- Tuscany-2x
- sling-healthcheck-1.6
- ServiceMix-POM
- archiva-all-maven-3.x-with-web-it-is-windows

**Build Executor Status**

#	Status
1	Idle freebsd1
2	Idle  hadoop-win1 (offline) hadoop0
1	Idle hadoop1
1	Idle hadoop11
1	Idle hadoop2
1	Idle hadoop4
1	Idle hadoop5
1	Idle hadoop7
1	Idle hadoop8
1	Idle hadoop9
	lucene (offline)
	enaliost1 (offline)

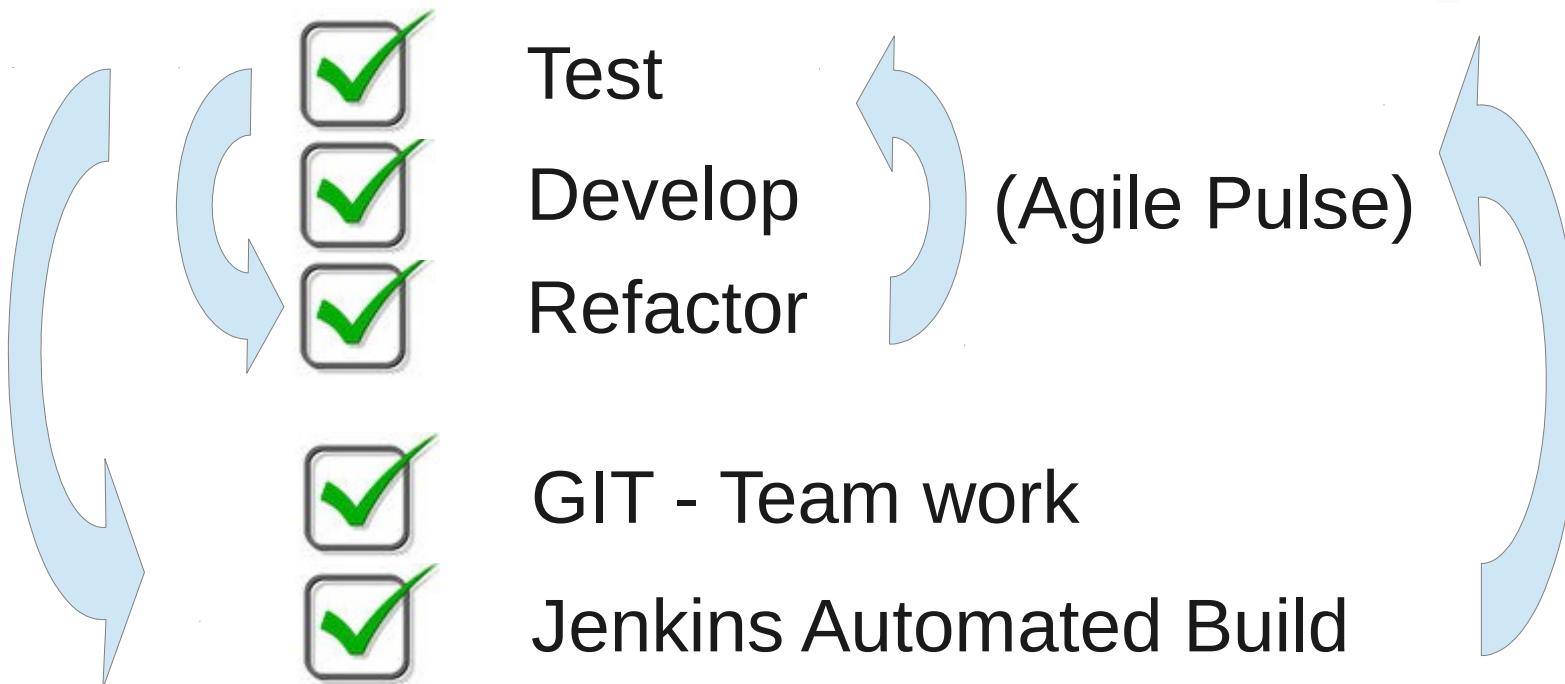
**The Apache Software Foundation**  
http://www.apache.org/

This is a public build and test server for [projects](#) of the [Apache Software Foundation](#). All times on this server are UTC.  
See the [Jenkins wiki page](#) for more information about this service.

All	POI	Wave tests	Last Success	Last Failure
S	W	Name	Time	Time
●	●	Abdera-trunk	2 days 8 hr - #1840	1 c
●	●	Abdera2-trunk	12 hr - #935	N/A
●	●	Accumulo-1.4	3 hr 57 min - #279	N/A
●	●	Accumulo-1.5	7 hr 2 min - #291	N/A
●	●	Accumulo-1.5-Hadoop-2	4 hr 44 min - #291	N/A
●	●	Accumulo-1.6	4 hr 2 min - #386	N/A
●	●	Accumulo-Master	5 hr 4 min - #879	1 c
●	●	ACE-trunk	20 days - #238	13 d
●	●	ActiveMQ	N/A	6 c
●	●	ActiveMQ Protocol Buffer	N/A	3 r
●	●	ActiveMQ-Apollo	3 mo 28 days - #987	N/A
●	●	ActiveMQ-Apollo-Deploy	3 mo 28 days - #423	N/A
●	●	ActiveMQ-Java7	16 days - #318	17 d
●	●	ActiveMQ-SysTest-Trunk	N/A	3 r
●	●	ActiveMQ-Trunk-Deploy	1 day 23 hr - #937	4 c
●	●	Allura	7 hr 4 min - #627	N/A
●	●	ant-on-openjdk-8	19 days - #27	20 d
●	●	Ant-test-windows	N/A	N/A
●	●	Ant BuildFromPOMs	17 hr - #381	21 d
●	●	Ant Nightly	10 days - #425	N/A

~25 visible  
out of >= 1000

# Victory Celebration Pause



Questions So Far ?

# Full Victory ??



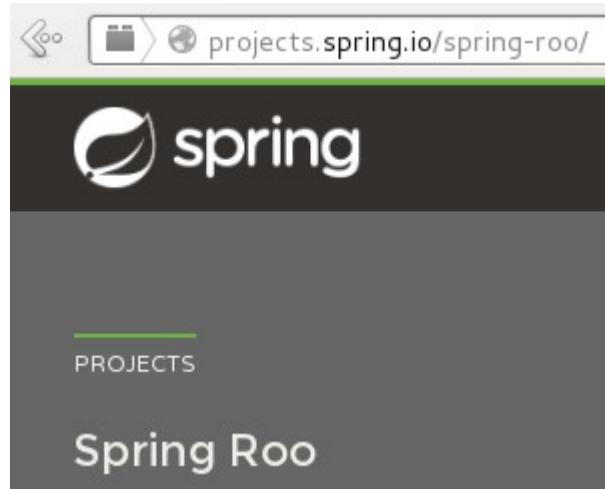
- 
- Test
  - Develop
  - Refactor
  - 
  - GIT - Team work
  - Jenkins Automated Build
  - 
  - Integration Tests / Real Apps
  - Deliver to Envs : INT,UAT,TNH,PROD
  - DevOps / Monitoring
- (Agile Pulse)

# Creating a Real Java Web App

- Objective : run a WebApp != HelloWorld
  - on tomcat/jetty
  - Using Standard Modern techno  
Spring + JPA + Eclipselink (on server-side)  
Whatever on client-side (jspx, GWT, json+Angular)
  - Test .. Test ... Test
- Constraint: <= 3 minutes for Demo time!
- Several alternatives ... as “Wizards”



# A WebApp in LESS Than 3 mn

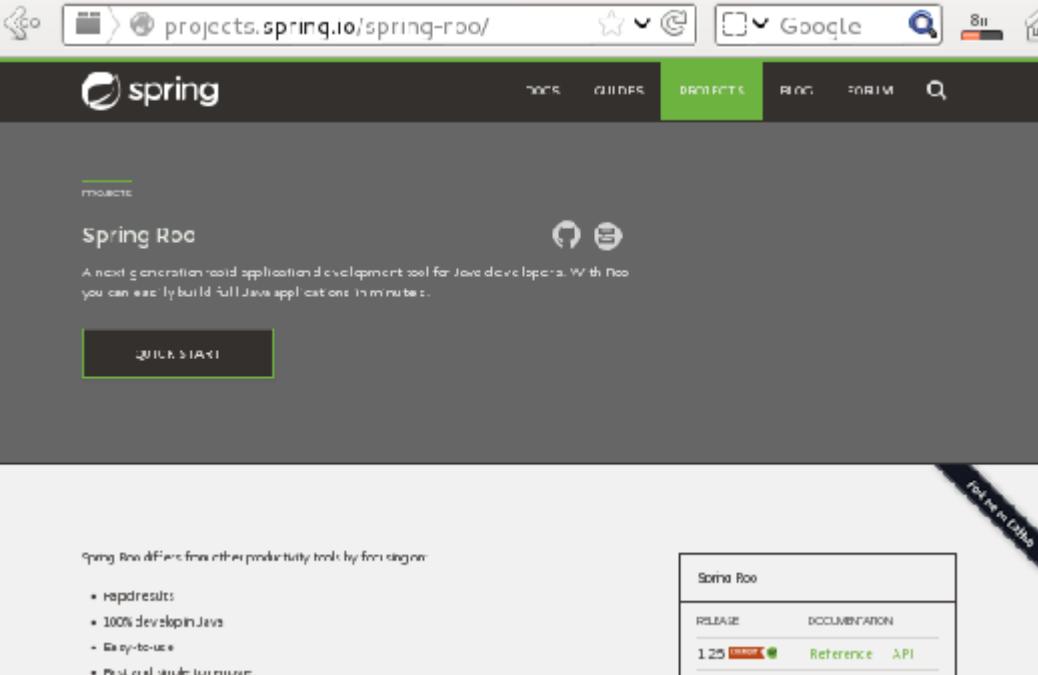


Welcome to Spring Roo.  
roo>

<http://start.spring.io/>



# ROO - Get Hands Dirty



The screenshot shows the Spring Roo project page on the Spring website. The URL is projects.spring.io/spring-roo/. The page features a dark header with the Spring logo and navigation links for Docs, Guides, Projects (highlighted), Blog, Forum, and Search. Below the header, there's a section for the Spring Roo project, which includes a 'QUICK START' button. A sidebar on the left lists reasons why Spring Roo differs from other productivity tools, such as rapid results, 100% development in Java, being easy-to-use, and having a fast and simple workflow. At the bottom, there's a terminal window showing a command-line session of the Spring Roo tool.

```

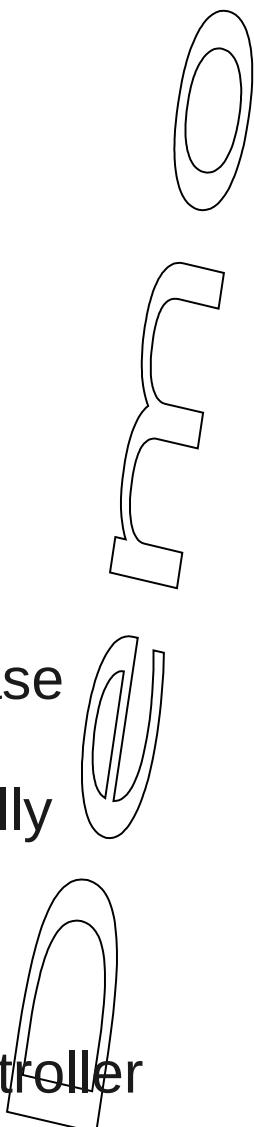
mkdir hello
cd hello
roo
roo> hint
roo> project --topLevelPackage com.foo
roo> jpa setup --provider HIBERNATE --database HYPERSONIC_IN_MEMORY
roo> entity jpa --class ~.Timer --testAutomatically
roo> field string --fieldName message --notNull
roo> hint web mvc
roo> web mvc setup
roo> web mvc all --package ~.web
roo> selenium test --controller ~.web.TimerController
roo> web gut setup
roo> web gut all --proxyPackage ~.client.proxy --requestPackage ~.client.request
roo> perform tests
roo> quit
  
```

**ZOOM**

hint  
 project --topLevelPackage com.foo  
 jpa setup --provider HIBERNATE --database HYPERSONIC\_IN\_MEMORY  
 entity jpa --class ~.Timer --testAutomatically  
 field string --fieldName message --notNull  
 web mvc setup  
 web mvc all --package ~.web  
 selenium test --controller ~.web.TimerController

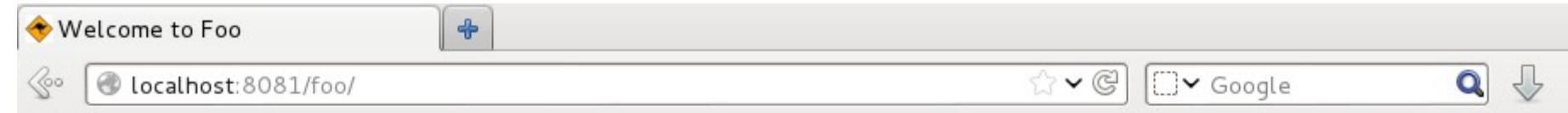


Welcome to Spring Roo.  
 roo>





# Launching Roo WebApp



## TIMER

Create new Timer

List all Timers

## SELENIUM TESTS

Test Suite

Create

Save .. redirect: View

## Welcome to Foo

### Welcome to Foo

Spring Roo provides interactive, lightweight and user customizable tooling that enables rapid delivery of high performance enterprise Java applications.

[Home](#) | Language: | Theme: [standard](#) | [alt](#)

Sponsored by SpringSource

List

## List all Timers

### Message

test

test 2

View, Update, Delete

# Forgot TDD Test Promises ?



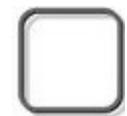
TDD in Hello World  
FAST dev env



maven build  
Real WebApp



launched + test .. MANUALLY only !!



What's next ?



Do same with real JEE project... Tomcat, Spring  
tackle complexity



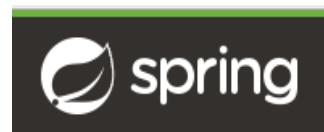
# Small < Medium < Big Tests

## Integration Tests

**Small** Test : Real Unit Test  
... using in memory (Mockito)



**Medium** Test : Integration Test with **White Box**  
... (no real client / server, ex: Spring Junit)



**Big** Test : Integration Test with **Black Box**  
... using Selenium + REAL server



Integration  
Tests



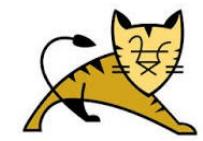
# HTTP Client Integration Test (Medium test)

```
<dependency>
    <groupId>org.jsoup</groupId>
    <artifactId>jsoup</artifactId>
    <version>1.7.3</version>
    <scope>test</scope>
</dependency>

public class TimerHttpIT {

    @Test
    public void testHttpGetIndex() throws Exception {
        // Perform
        Document doc = Jsoup.connect("http://localhost:8080/foo").get();
        Element titleElt = doc.select("head > title").get(0);
        String titleText = titleElt.text();

        // Post-check
        Assert.assertEquals("Welcome to Foo", titleText);
    }
}
```



# Launching \*IT.java Integration Test from Maven

Integration-test  
\*IT.java

```
<plugin>
  <groupId>org.apache.maven.plugins</groupId>
  <artifactId>maven-failsafe-plugin</artifactId>
  <executions>
    <execution>
      <phase>integration-test</phase>
      <goals>
        <goal>integration-test</goal>
      </goals>
    </execution>
  </executions>
</plugin>
```

```
<plugin>
  <groupId>org.eclipse.jetty</groupId>
  <artifactId>jetty-maven-plugin</artifactId>
  <configuration>
    <webAppConfig>
      <contextPath>/foo</contextPath>
    </webAppConfig>
    <stopPort>10000</stopPort>
    <stopKey>STOP</stopKey>
  </configuration>
  <executions>
    <execution>
      <id>start-jetty</id>
      <phase>pre-integration-test</phase>
      <goals>
        <goal>run</goal>
      </goals>
      <configuration>
        <scanIntervalSeconds>0</scanIntervalSeconds>
        <daemon>true</daemon>
      </configuration>
    </execution>
    <execution>
      <id>stop-jetty</id>
      <phase>post-integration-test</phase>
      <goals>
        <goal>stop</goal>
      </goals>
    </execution>
  </executions>
</plugin>
```

Pre-integration-test  
= start

Post-integration-test  
= stop



# Big Test – Real Browser + Selenium Record-Replay

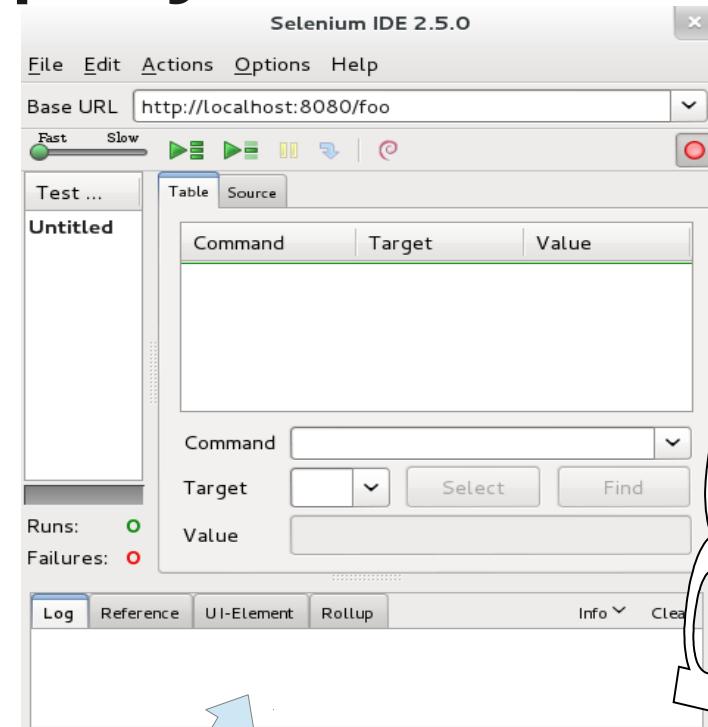
## Clue 1 ... From ROO script

```
roo> selenium test --controller ~.web.TimerController
Updated SRC_MAIN_WEBAPP/selenium/test-timer.xhtml
Updated SRC_MAIN_WEBAPP/selenium/test-suite.xhtml
```

## Clue 2 ... From WebApp

The screenshot shows a web browser window with the URL `localhost:8080/foo/resources/selenium/test-timer.xhtml`. The page title is "Selenium test for TimerController". The page contains a table with the following data:

Selenium test for TimerController		
open	<code>http://localhost:8081/foo/timers?form&amp;lang=en_US</code>	
type	<code>_message_id</code>	<code>someMessage1</code>
clickAndWait	<code>//input[@id = 'proceed']</code>	
verifyText	<code>_s_com_foo_Timer_message_message_id</code>	<code>someMessage1</code>



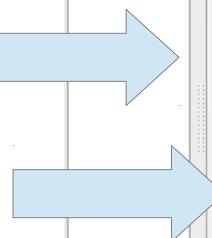


# Selenium Test

list count  
before



Save new



list count  
after  
Assert +1

test-list - Selenium IDE 2.5.0

File Edit Actions Options Help

Base URL <http://localhost:8080/foo>

Fast Slow ⏪ ⏩ ⏴ ⏵ ⏹ ⏸

Test ... test-list

Table Source

Command	Target	Value
open	http://localhost:8080/foo/timers	
clickAndWait	link=List all Timers	
storeXpathCount	//div[@id='_title_pl_com_foo_Timer_id_pane']/... rowCountBefore	
echo	rowCountBefore: \${rowCountBefore}	
clickAndWait	link>Create new Timer	
type	id=_message_id	created for test list
clickAndWait	id=proceed	
clickAndWait	link=List all Timers	
storeXpathCount	//div[@id='_title_pl_com_foo_Timer_id_pane']/... rowCountAfter	
echo	rowCount: \${rowCountBefore} -> \${rowCount...}	
assertEval	\${rowCountAfter} - \${rowCountBefore}	1

Command

Target

Select Find

Runs: 0 Failures: 0

Log Reference UI-Element Rollup

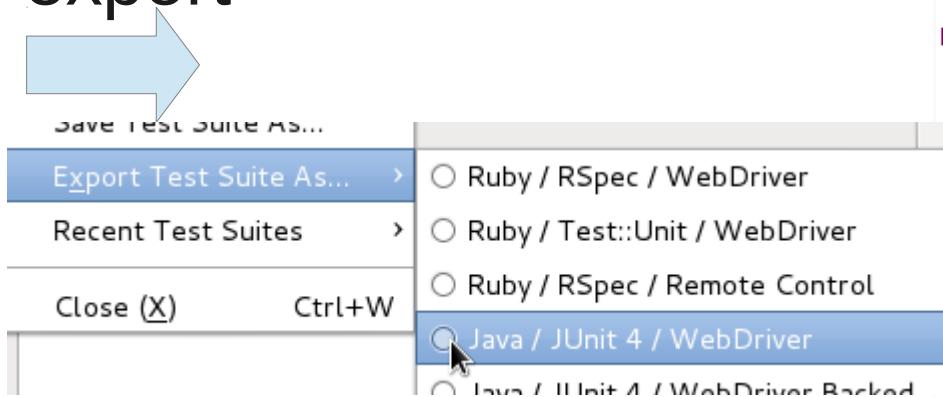
```
[info] Executing: [open] http://localhost:8080/foo/timers
[info] Executing: [clickAndWait] link=List all Timers
[info] Executing: [storeXpathCount] //div[@id='_title_pl_com_foo_Timer_id_pane']/table/tbody/tr | rowCountBefore
[info] Executing: [echo] rowCountBefore: ${rowCountBefore}
[info] echo: rowCountBefore: 7
[info] Executing: [clickAndWait] link>Create new Timer
[info] Executing: [type] id=_message_id | created for test list
[info] Executing: [clickAndWait] id=proceed
[info] Executing: [clickAndWait] link=List all Timers
[info] Executing: [storeXpathCount] //div[@id='_title_pl_com_foo_Timer_id_pane']/table/tbody/tr | rowCountAfter
[info] Executing: [echo] rowCount: ${rowCountBefore}-> ${rowCountAfter}
[info] echo: rowCount: 7 -> 8
[info] Executing: [assertEval] ${rowCountAfter} - ${rowCountBefore} | 1
[info] script is: 8 - 7
```

Info Clear

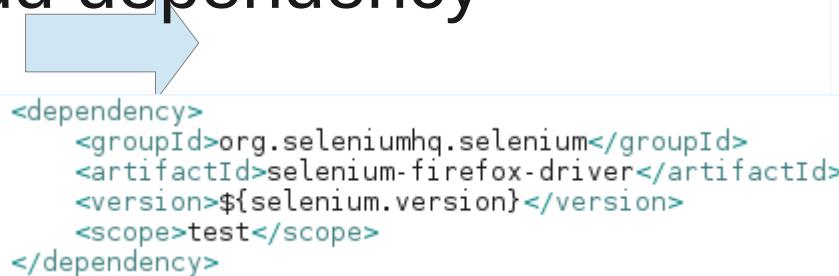


# Selenium Test Exported in Java

export



Add dependency



Refactor  
test

TimerSeleniumIT.java

```
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.firefox.FirefoxDriver;

public class TimerSeleniumIT {
    private WebDriver driver;
    private String baseUrl = "http://localhost:8080/foo";
    private StringBuffer verificationErrors = new StringBuffer();

    @Before
    public void setUp() throws Exception {
        driver = new FirefoxDriver();
        driver.manage().timeouts().implicitlyWait(30, TimeUnit.SECONDS);
        driver.get("http://localhost:8080/foo");
        System.out.println("Done init FirefoxDriver");
    }

    @Test
    public void testTimerSeleniumIT() throws Exception {
        System.out.println("testTimerSeleniumIT ...");
        doSaveNewTimer("created for test list 1");

        System.out.println("click List All timers...");
        driver.get(baseUrl);
        driver.findElement(By.linkText("List all Timers")).click();
        int rowCountBefore = driver.findElements(By.xpath("//div[@id='t:timers']/table/tbody/tr")).size();
        System.out.println("rowCountBefore: " + rowCountBefore);

        doSaveNewTimer("created for test list 2");
        doSaveNewTimer("created for test list 3");

        driver.get(baseUrl);
        driver.findElement(By.linkText("List all Timers")).click();
        int rowCountAfter = driver.findElements(By.xpath("//div[@id='timers']/table/tbody/tr")).size();

        System.out.println("rowCount: " + rowCountAfter + " (was " + rowCountBefore + ")");
        Assert.assertEquals(rowCountBefore + 2, rowCountAfter);
    }

    private void doSaveNewTimer(String timerName) {
        System.out.println("click Create New Timer...");
        driver.get(baseUrl);
        driver.findElement(By.linkText("Create new Timer")).click();
        driver.findElement(By.id("_message_id")).clear();
        driver.findElement(By.id("_message_id")).sendKeys(timerName);
        driver.findElement(By.id("proceed")).click();
    }
}
```

# Results Automated Test Start + Test + Stop



Launch

```
$ mvn install -P integration -DskipTests=false  
[INFO] Scanning for projects...
```

```
[INFO] Started Jetty Server ←  
[INFO]  
[INFO] --- maven-failsafe-plugin:2.17:integration-test (default) @ foo ---  
[INFO] Failsafe report directory: /mnt/a_1tera2/homeData/arnaud/perso/devPerso/continuous-int/demo-dir/testf
```

-----  
T E S T S  
-----

```
Running com.foo.TimerSeleniumIT  
Done init FirefoxDriver  
testTimerSeleniumIT ...  
click Create New Timer...  
click List All timers...  
rowCountBefore: 2  
click Create New Timer...  
click Create New Timer...  
rowCount: 4 (was 2)  
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 5.447 sec - in com.foo.TimerSeleniumIT
```

Results :

```
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
```

```
[WARNING] File encoding has not been set, using platform encoding UTF-8, i.e. build is platform dependent!  
[INFO]  
[INFO] --- jetty-maven-plugin:9.2.0.M0:stop (stop-jetty) @ foo --- ←  
[INFO]
```

# Real Java WebApp Integration Tests Victory Celebration



Integration Tests / Real Apps

Questions so far ?

# Real Java WebApp Integration Tests Victory Celebration



Integration Tests / Real Apps

next ? 



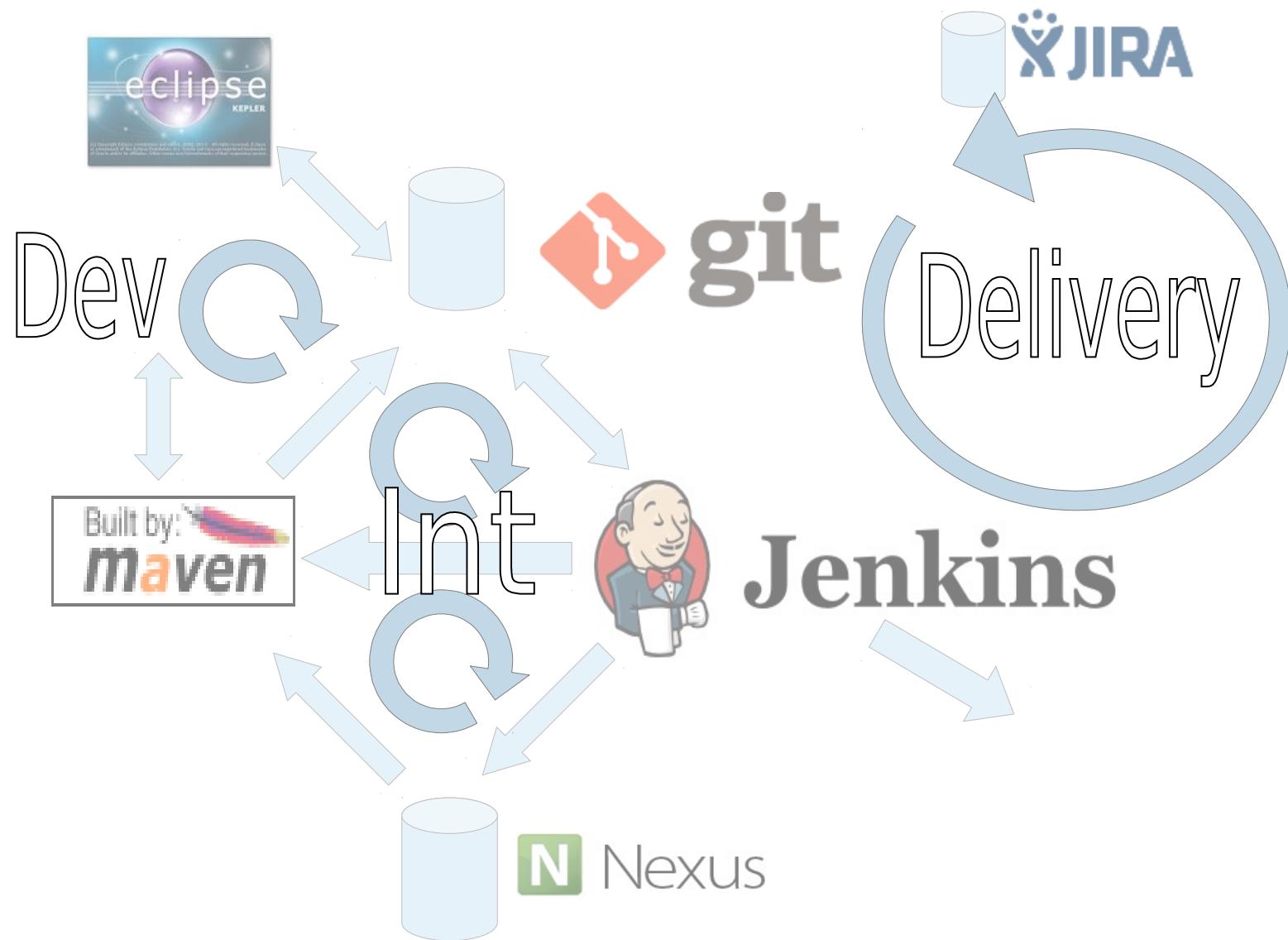
Deliver to Envs : INT,UAT,TNH,PROD



DevOps / Monitoring

# Workflow Reminder ...

Dev → Integration → Delivery



# XL Deploy (XebiaLabs (c) )