

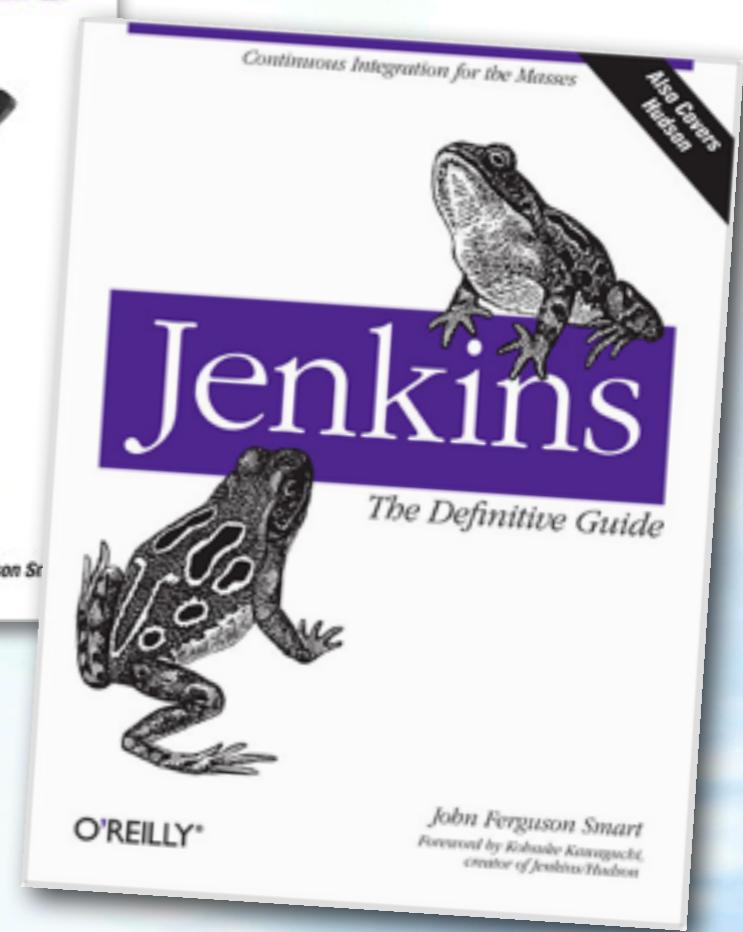


Continuous Integration

Continuous Quality

Continuous Delivery

Who is this guy, anyway?



WAKALEO CONSULTING
OPTIMIZING YOUR SOFTWARE DEVELOPMENT PROCESS



WAKALEO CONSULTING

OPTIMIZING YOUR SOFTWARE DEVELOPMENT PROCESS

Training and Consulting Services in

- ✓ TDD, BDD and ATDD
- ✓ Automated Acceptance and Regression Testing
- ✓ Build Automation and Continuous Delivery
- ✓ Clean Coding Practices

Continuous Delivery

Getting value to the business.

Fast.

Often.

Continuous Delivery: everyone wants it

***But Continuous Delivery is impossible
without Continuous Quality***



Quality must be built in to the process

So how do you deliver?





Successful projects start with a shared vision

“We are going to build an online classifieds website”



You define goals to achieve your vision

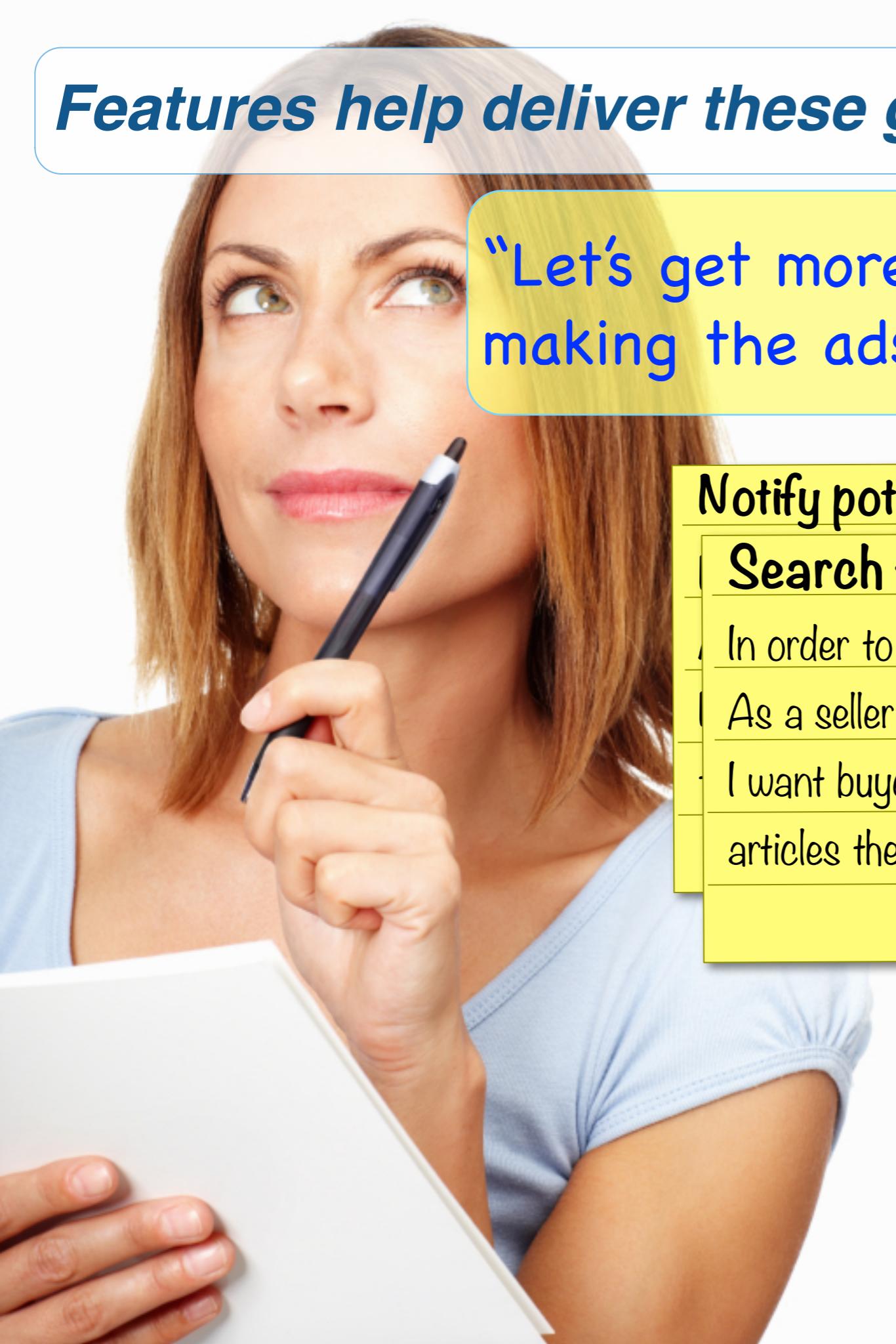
A photograph of four people in a business meeting. A man in the foreground on the left has his hand to his chin, looking thoughtful. Behind him, two men and a woman are looking towards the right. One man is pointing his finger towards a whiteboard. The scene is set in an office environment with a whiteboard in the background.

“Let’s increase advertising revenue by letting sellers post their classified ads

“Let’s get more sales for our advertisers by making the ads easier to find online.”

Goals that will deliver business value

Features help deliver these goals

A woman with long brown hair, wearing a light blue t-shirt, is shown from the chest up. She is holding a black pen against her chin with her right hand, looking upwards and to the left with a thoughtful expression. Her left hand is visible at the bottom left corner, holding the edge of a white sheet of paper.

“Let’s get more sales for our advertisers by making the ads easier to find online.”

Notify potential buyers about new items

Search for online ads

In order to increase sales of advertised articles

As a seller

I want buyers to be able to easily find ads for articles they want to buy

We use examples and stories to explore the features

Search for online ads

“Searching by category”

“Searching by keyword and category”

“Searching by keyword and location”

“Filter ads by price”



We use examples and stories to explore the features

Search for online ads



Searching by keyword and location

Given Sally wants to buy a puppy for her son

When she looks for ads in the 'Pets and Animals' category containing

the word 'puppy' in New South Wales

Then she should obtain a list of ads for puppies in New South Wales.

Acceptance Criteria illustrate and validate the stories

We automate the acceptance criteria

`search_by_keyword_and_location.story`

Scenario: Searching by keyword and location

Given Sally wants to buy a puppy for her son

When she looks for ads in the 'Pets and Animals' category containing
the word 'puppy' in New South Wales

Then she should obtain a list of ads for puppies in New South Wales.

And we implement the acceptance criteria

search_by_keyword_and_location.story

Scenario: Searching by keyword and location

Given Sally wants to buy a puppy for her son

When she looks for ads in the 'Pets and Animals' category containing the word 'puppy' in New South Wales

Then she should obtain a list of ads for puppies in New South Wales.

```
class SearchScenarioSteps {
    @Steps
    BuyerSteps buyer

    @Given('Sally wants to buy a $present for her son')
    def buyingAPresent(String present) {
        buyer.opens_home_page()
    }

    @When('she looks for ads in the $category category containing $keyword in $region')
    def adSearchByCategoryAndKeywordInARegion(String category, String keyword, String region) {
        buyer.chooses_region(region)
        buyer.chooses_category_and_keywords(category, keyword)
        buyer.performs_search()
    }

    @Then('she should obtain a list of $category ads containing the word $keyword from advertisers in $region')
    def resultsForACategoryAndKeywordInARegion(String category, String keyword, String region) {
        buyer.should_only_see_results_with_titles_containing(keyword)
        buyer.should_only_see_results_from_region(region)
        buyer.should_only_see_results_in_category(category)
    }
}
```

We can now execute our automated acceptance tests

The screenshot shows the Thucydides test results dashboard. At the top, there's a navigation bar with 'thucydides' logo, 'Home', 'Test Results' (which is selected), 'Features', 'Stories', and 'History'. Below the navigation, a large orange circle indicates 100% coverage. To the right, there are two sections: 'All available tags' and 'Tests'.

All available tags:

Features	Stories
Posting A New Ad	Price Per Photo
Search For Online Ads	Searching By Keyword

Tests:

Tests	Steps	Fail	Pend	Ignore	Skip	Stable	Duration (seconds)
Searching by keyword and category in a specified region	3	0	3	0	0	0	0.01
Searching by keyword and location	3	0	3	0	0	0	0.01
The price of an ad varies based on the number of photos	18	0	18	0	0	0	0.05

A yellow callout bubble points to the 'Searching by Keyword and Location' test, which is circled in red. The text inside the bubble says: "‘Searching by keyword and location’ is now a pending test".

...and implement the application code for that feature

thucydides

Home Test Results Features Stories History

Test Results: All Tests

3 tests: 1 passed , 2 pending , 0 failed

Coverage

All available tags

Features

Posting A New Ad	0%
Search For Online Ads	76.9%

Stories

Price Per Photo	0%
Searching By Keyword	76.9%

When it is implemented, it will be displayed as a passing test

Tests

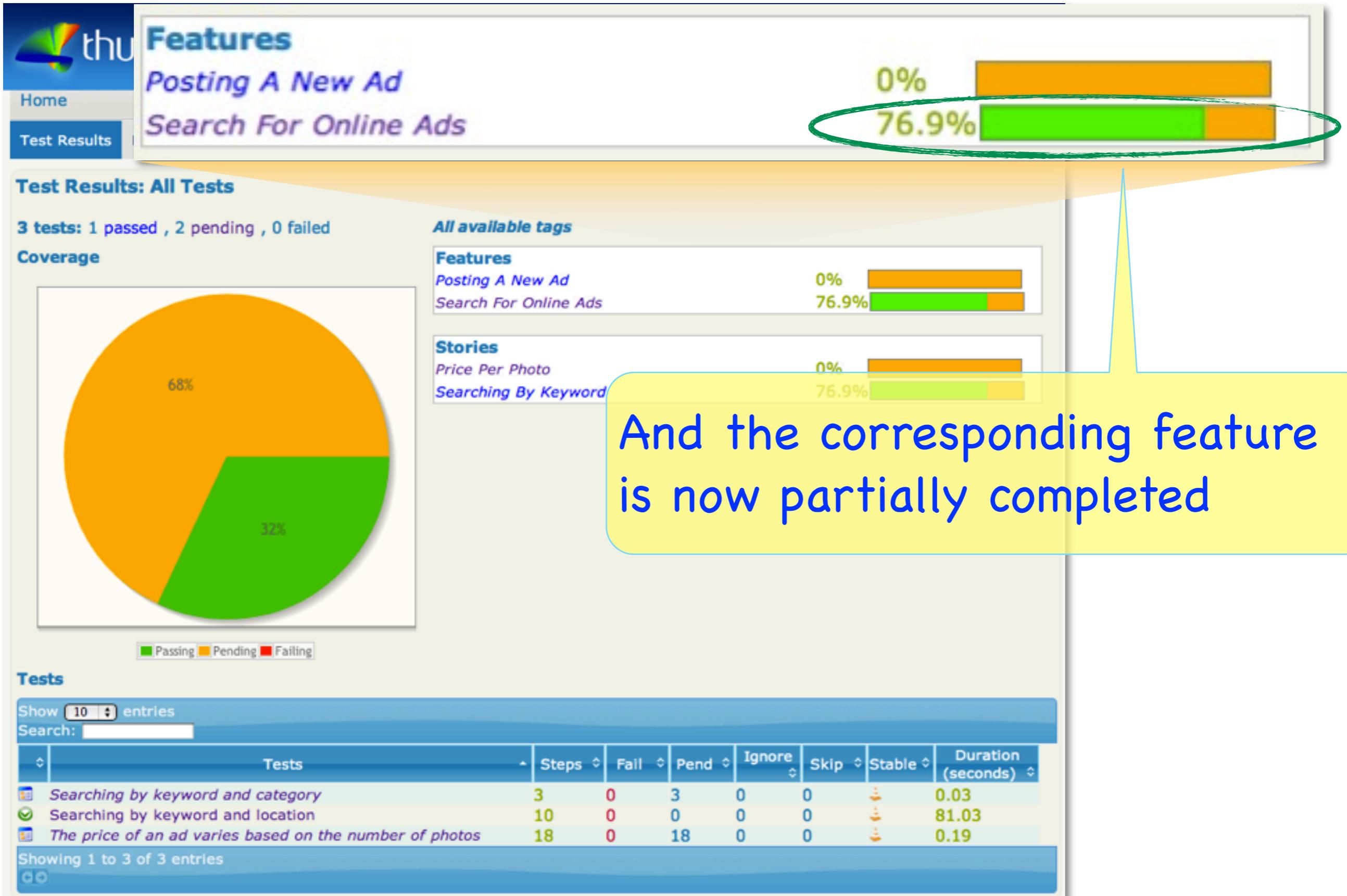
Tests	Steps	Fail	Pend	Ignore	Skip	Stable	Duration (seconds)
Searching by keyword and category	3	0	3	0	0	0	0.03
Searching by keyword and location	10	0	0	0	0	0	81.03
The price of an ad varies based on the number of photos	18	0	18	0	0	0	0.19

Show 10 entries Search:

Showing 1 to 3 of 3 entries

A yellow callout bubble points from the text "When it is implemented, it will be displayed as a passing test" to the "Pending" status in the table row for "Searching by keyword and location". A red circle highlights the "Pending" status in the same row.

...and implement the application code for that feature



A woman with vibrant red hair and black-rimmed glasses is shown from the waist up, looking directly at the camera with a wide-eyed, surprised expression. She is wearing a bright orange button-down shirt. The background is plain white.

What's so important about
automating the Acceptance Criteria?



So why automate your acceptance criteria?

They define your goals

So why automate your acceptance criteria?



They keep you on track

So why automate your acceptance criteria?

They provide better visibility



So why automate your acceptance criteria?

They allow faster release cycles

So why automate your acceptance criteria?



Reduce Risk

So why automate your acceptance criteria?



Reduce Costs

Jenkins - it's how we automate stuff, boss.

Compile and Test

Quality Gateways

Release Candidates

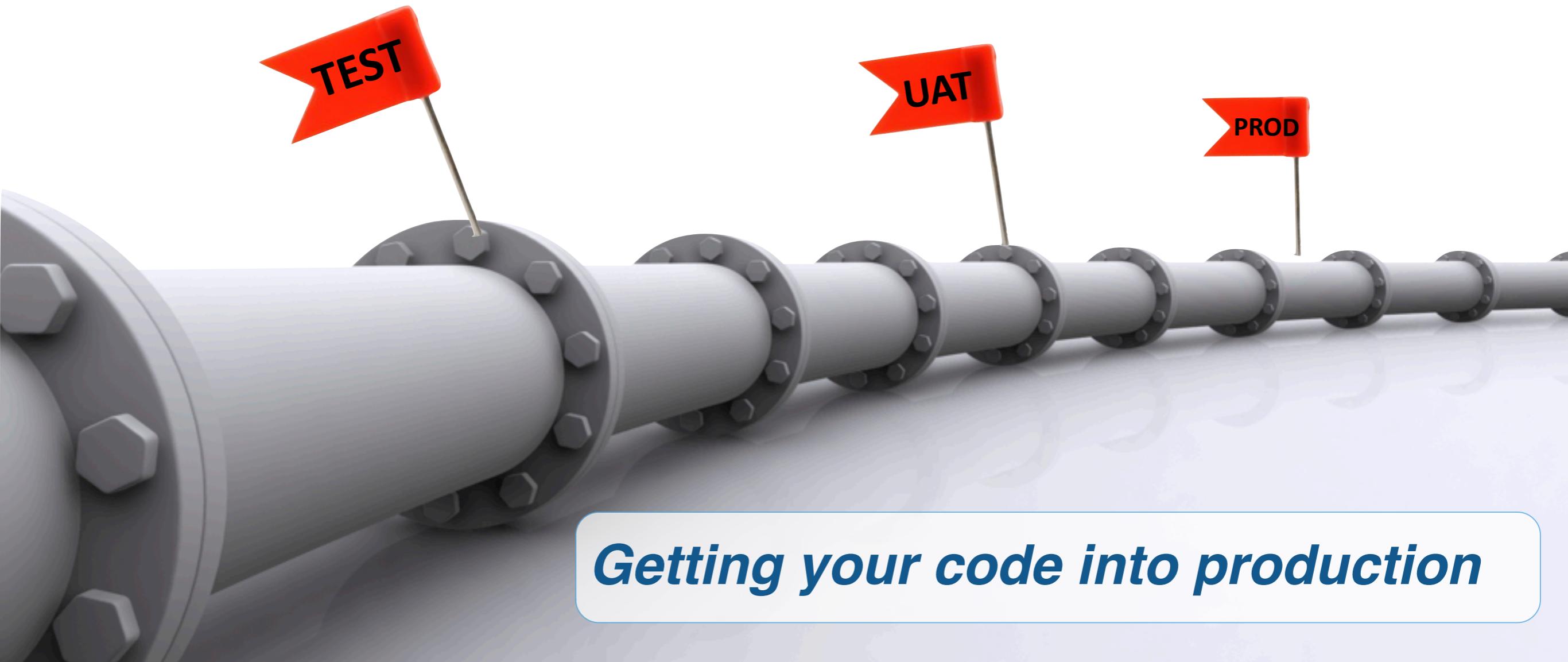
Reporting and Documentation

Automated Deployment

Continuous Delivery



Build Pipelines



Getting your code into production

A simple build pipeline

Build and Fast Tests

Slower Tests

Acceptance Tests

Code Quality Metrics

Release Candidate

Deploy to Test

Deploy to UAT

Deploy to Production

Each step is a quality gateway

TEST

UAT

PROD

Build and initial tests

Build and Fast Tests

Slower Tests

Acceptance Tests

Code Quality Metrics

Release Candidate

Deploy to Test

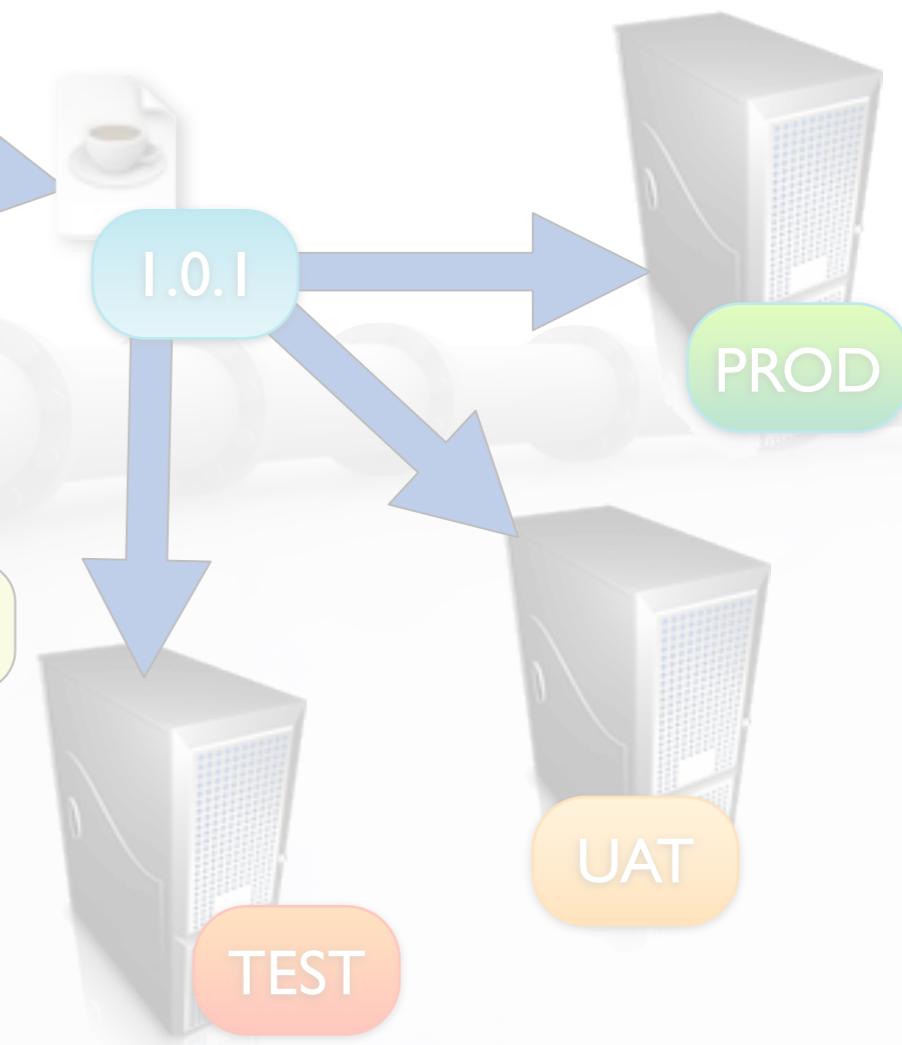
Deploy to UAT

Deploy to Production

✓ **Fail fast**

✓ **Let people know**

✓ **Never ignore a broken build**



Build and initial tests

Build and Fast Tests

 Fail fast



build

PROD

UAT

TEST

Build and initial tests

Build and Fast Tests

 **Fail fast**

Slower tests



Let people know

Ignore a broken build

build

PROD

UAT

TEST

Build and initial tests

Build and Fast Tests

✓ Fail fast

The screenshot shows a 'Test Result Trend' chart with 'count' on the y-axis (0 to 2000) and time on the x-axis. The chart displays a fluctuating blue line with several sharp peaks reaching up to 2000. Below the chart is a configuration panel for notifications:

Trigger	Send To Recipient List	Send To Committers	Send To Requester	Include Culprits	More Configuration	Remove
First Failure	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	+ (expand)	Delete
Still Failing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	- (collapse)	Delete
Recipient List: project.lead@acme.com						
Subject: \$PROJECT_DEFAULT_SUBJECT						
Content: \$PROJECT_DEFAULT_CONTENT						

Below the configuration panel, there are arrows pointing downwards towards the text 'Deploy to UAT' and 'Deploy to Production'. A large orange button at the bottom left says '...'. A green box on the left lists 'Instant Messaging Plugin', 'Email-ext Plugin', 'Hudson Sounds Plugin', and '...'.

TEST

UAT

PROD

Automated Acceptance Tests

Build and Fast Tests

Slower Tests

Acceptance Tests

Code Quality Metrics

Release Candidate

Deploy to Test

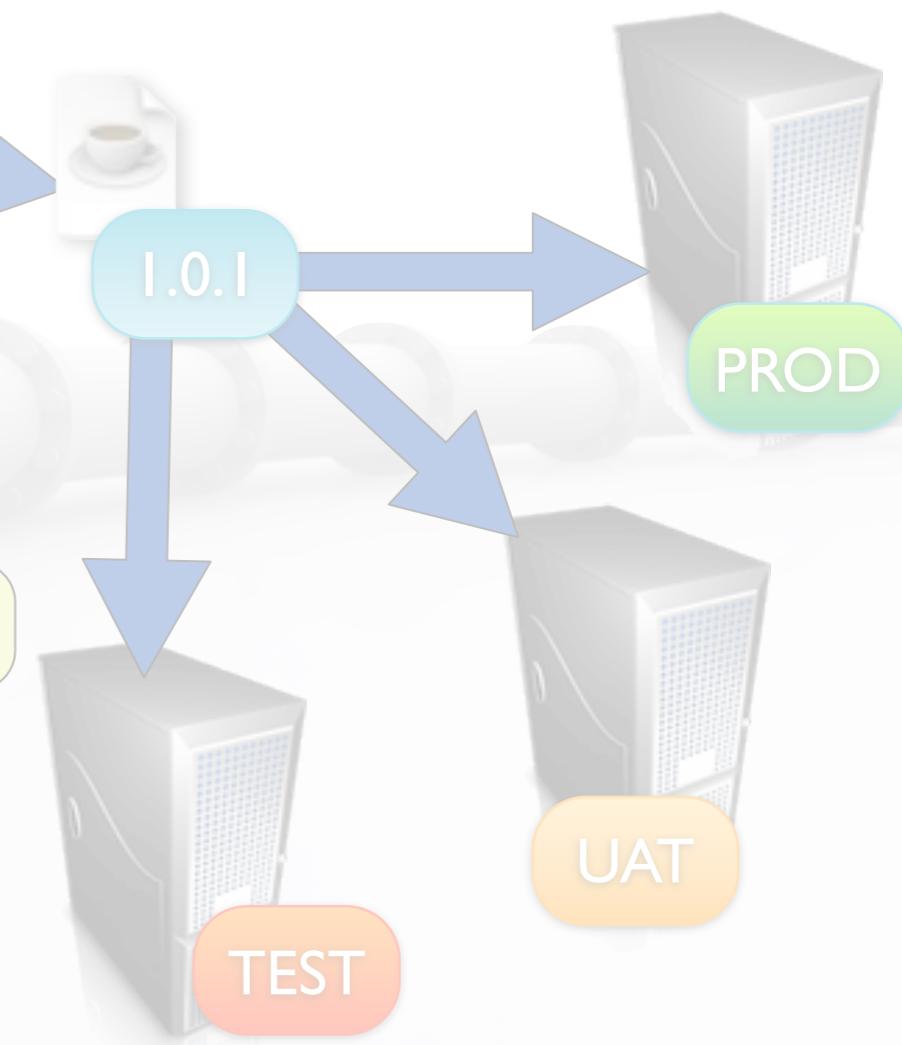
Deploy to UAT

Deploy to Production

✓ **Progress reports**

✓ **Living Documentation**

✓ **Help for testers**



Automated Acceptance Tests

Build and Fast Tests



Progress reports

Make them fast

PROD

Distributed builds

Selenium Grid

SauceLabs

...

Automated Acceptance Tests

Build and Fast Tests



Progress reports

Make them public



PROD

Notifications
HTML Publisher Plugin
...

Automated Acceptance Tests

Build and Fast Tests



Progress reports

The screenshot illustrates the integration of Jenkins and Thucydides for automated acceptance testing. On the left, the Jenkins interface shows a project named "placemyad-default". A large blue overlay text "Make them public" is placed over the Jenkins header. On the right, a separate window displays the "thucydides" report for the same project. The report includes a "Test Results: All Tests" summary showing 47 tests: 40 passed, 0 pending, 7 failed. Below this is a pie chart showing test coverage: 83% Passing, 13% Pending, and 4% Failing. To the right of the chart is a table of actions with their status (e.g., Create Ad 100%, Log In 75.9%). At the bottom, a section titled "Divisions" shows coverage for "Nwm" at 100% and "Qnp" at 65.9%. A green button labeled "HTML Publisher Plugin" is overlaid at the bottom left.

Jenkins

Project placemyad-default

Make them public

HTML Publisher Plugin

Thucydides Report

Workspace

Recent Changes

Latest Test Result (7 failed)

Build History (trend)

- Last build (#92), 1 day 20 hr ago
- Last stable build (#53), 1 mo 1 day ago
- Last successful build (#92), 1 day ago
- Last failed build (#87), 8 days ago
- Last unstable build (#92), 1 day ago
- Last unsuccessful build (#92), 1 day ago

RSS for all RSS for failures

Permalinks

- Last build (#92), 1 day 20 hr ago
- Last stable build (#53), 1 mo 1 day ago
- Last successful build (#92), 1 day ago
- Last failed build (#87), 8 days ago
- Last unstable build (#92), 1 day ago
- Last unsuccessful build (#92), 1 day ago

Actions

Action	Status
Create Ad	100%
Enter Ad Details	100%
Enter Job Title	100%
Hide Price	100%
Log In	75.9%
Log Out	75.9%
Publish	100%
Search	0%
Select Classification	100%
Select Date	100%
Select Property	100%
Select Style	100%
View Ad Details	100%
View Ad Listings	100%
View Confirmation Page	100%
View Search Results	0%

Divisions

Division	Status
Nwm	100%
Qnp	65.9%

PROD

Checking Code Quality

Build and Fast Tests

Slower Tests

Acceptance Tests

Code Quality Metrics

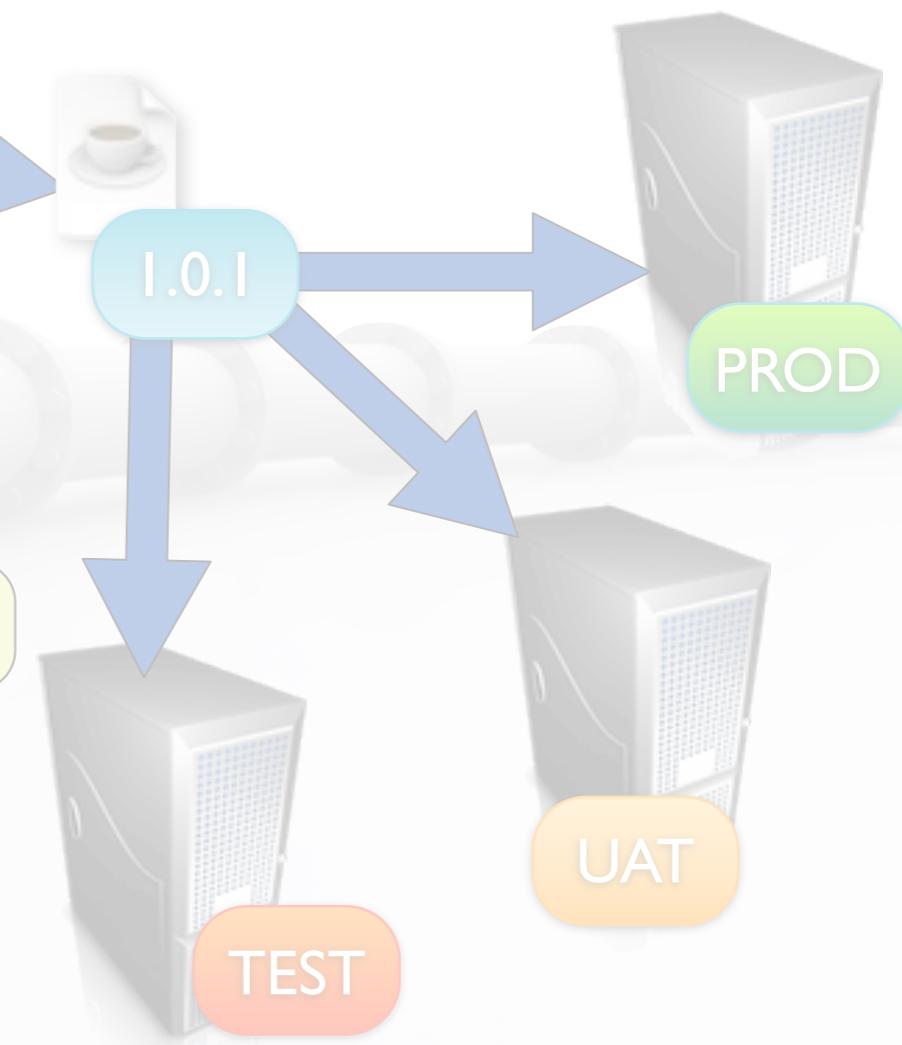
Release Candidate

Deploy to Test

Deploy to UAT

Deploy to Production

- ✓ If a metric matters, fail the build
- ✓ Proactive Code Quality
- ✓ Complements Sonar



Checking Code Quality

Build and Fast Tests



If a metric matters, fail the build



UAT

TEST

PROD

Checking Code Quality

Build and Fast Tests



If a metric matters, fail the build

Slower Tests

Accept



PROD



UAT

TEST

Checking Code Quality

Build and Fast Tests



If a metric matters, fail the build

Slow Tests

Proactive Code Quality

Post-build Actions

Publish Cobertura Coverage Report

Cobertura xml report pattern `**/target/site/cobertura/coverage.xml`

This is a file name pattern that can be used to locate the cobertura xml report files (for example with Maven2 use `**/target/site/cobertura/coverage.xml`). The path is relative to the module root unless you have configured your SCM with multiple modules, in which case it is relative to the workspace root. Note that the module root is SCM-specific, and may not be the same as the workspace root. Cobertura must be configured to generate XML reports for this plugin to function.

Consider only stable builds

Include only stable builds, i.e. exclude unstable and failed ones.

Source Encoding `ASCII`

Coverage Metric Targets

Conditionals Add

Lines

Methods

Configure health reporting thresholds.
For the row, leave blank to use the default value (i.e. 80).
For the and rows, leave blank to use the default values (i.e. 0).

90 90 90

90 90 90

90 90 90

Deploy to Production

Enforcing code quality

Cobertura Plugin
Checkstyle Plugin
FindBugs Plugin

...

TEST

UAT

PROD



Generating a release candidate

Build and Fast Tests

Slower Tests

Acceptance Tests

Code Quality Metrics

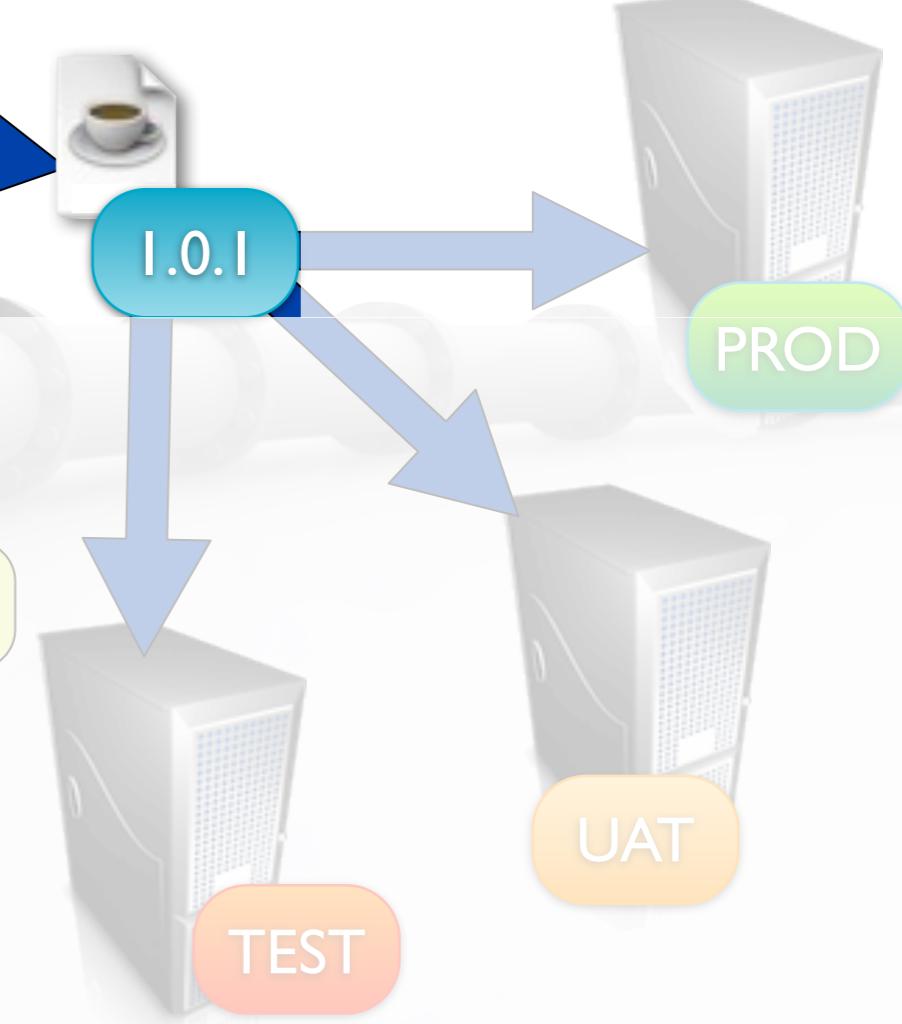
Release Candidate

Deploy to Test

Deploy to UAT

Deploy to Production

- ✓ Build a release candidate early
- ✓ Reuse, don't rebuild



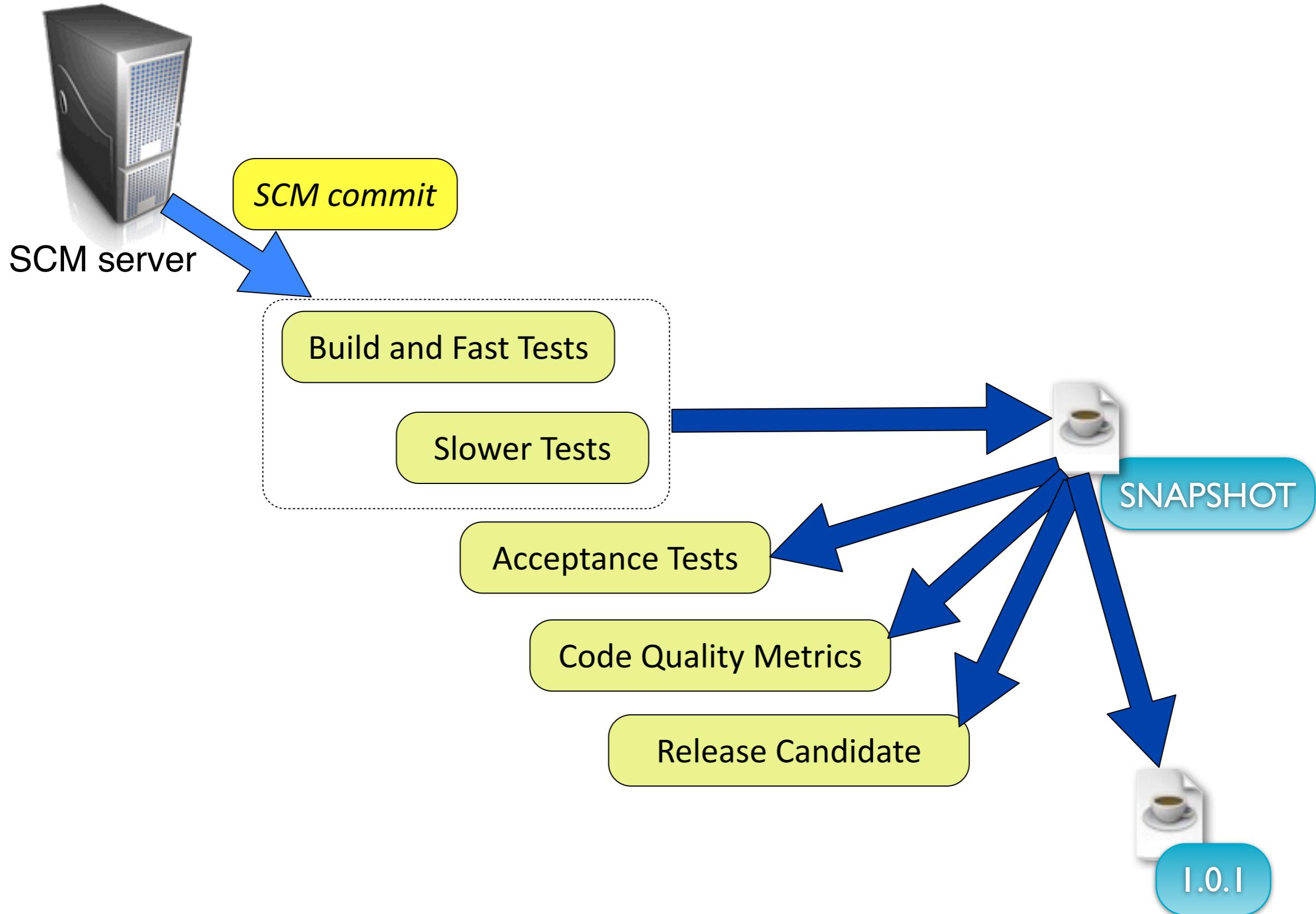
Generating a release candidate

Build and Fast Tests

 **Build a release candidate early**

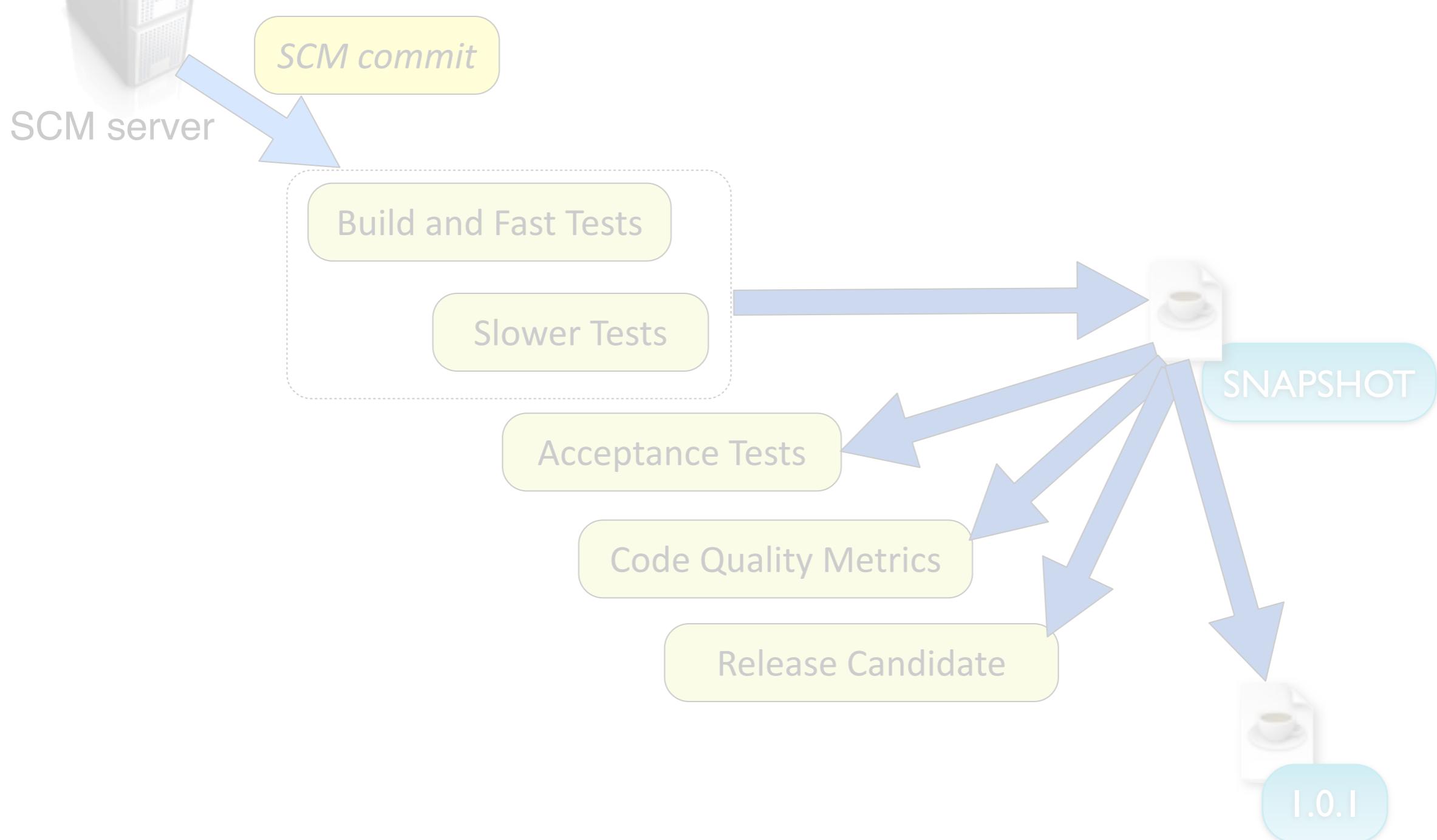


Generating a release candidate



Generating a release candidate

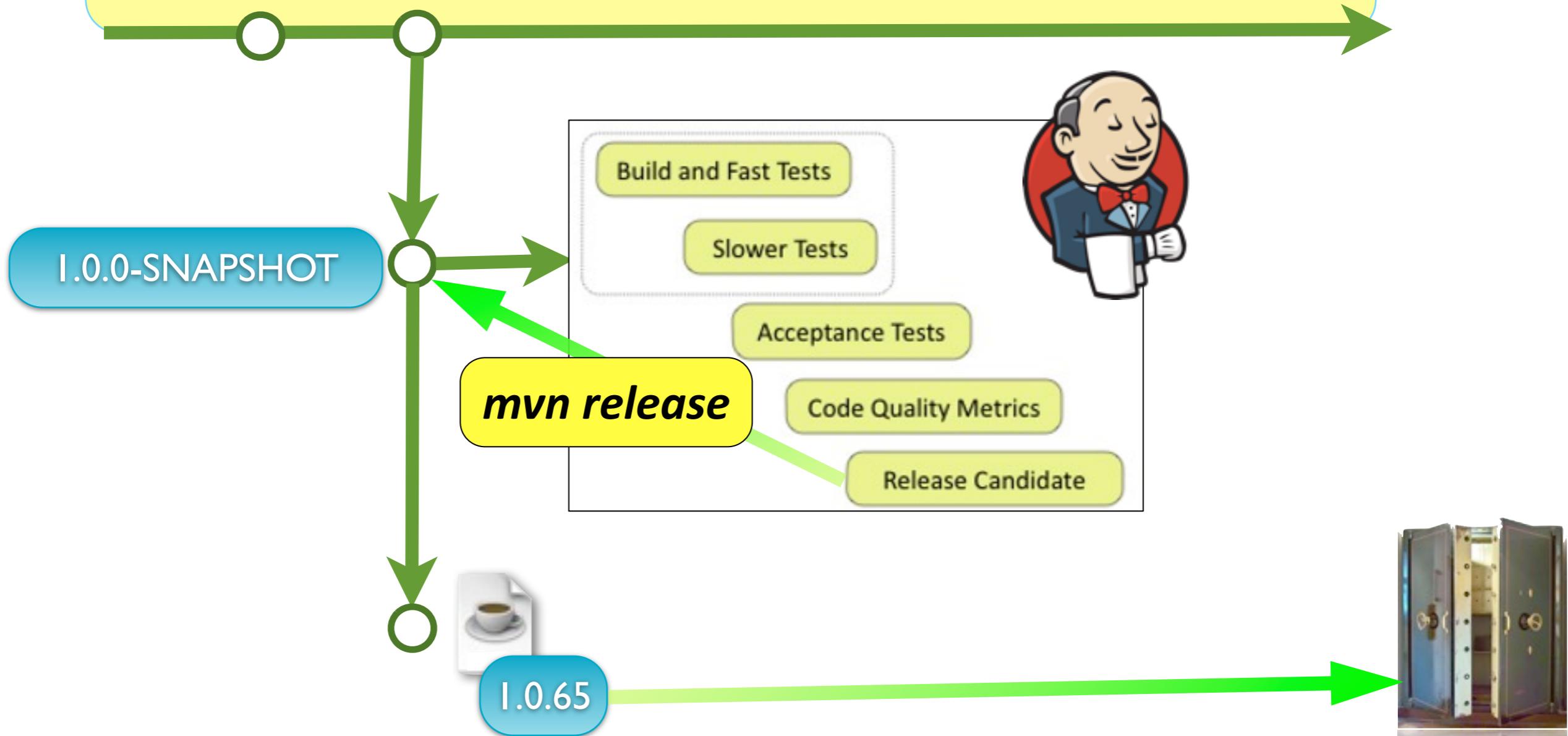
What about maven?



Generating a release candidate

What about maven?

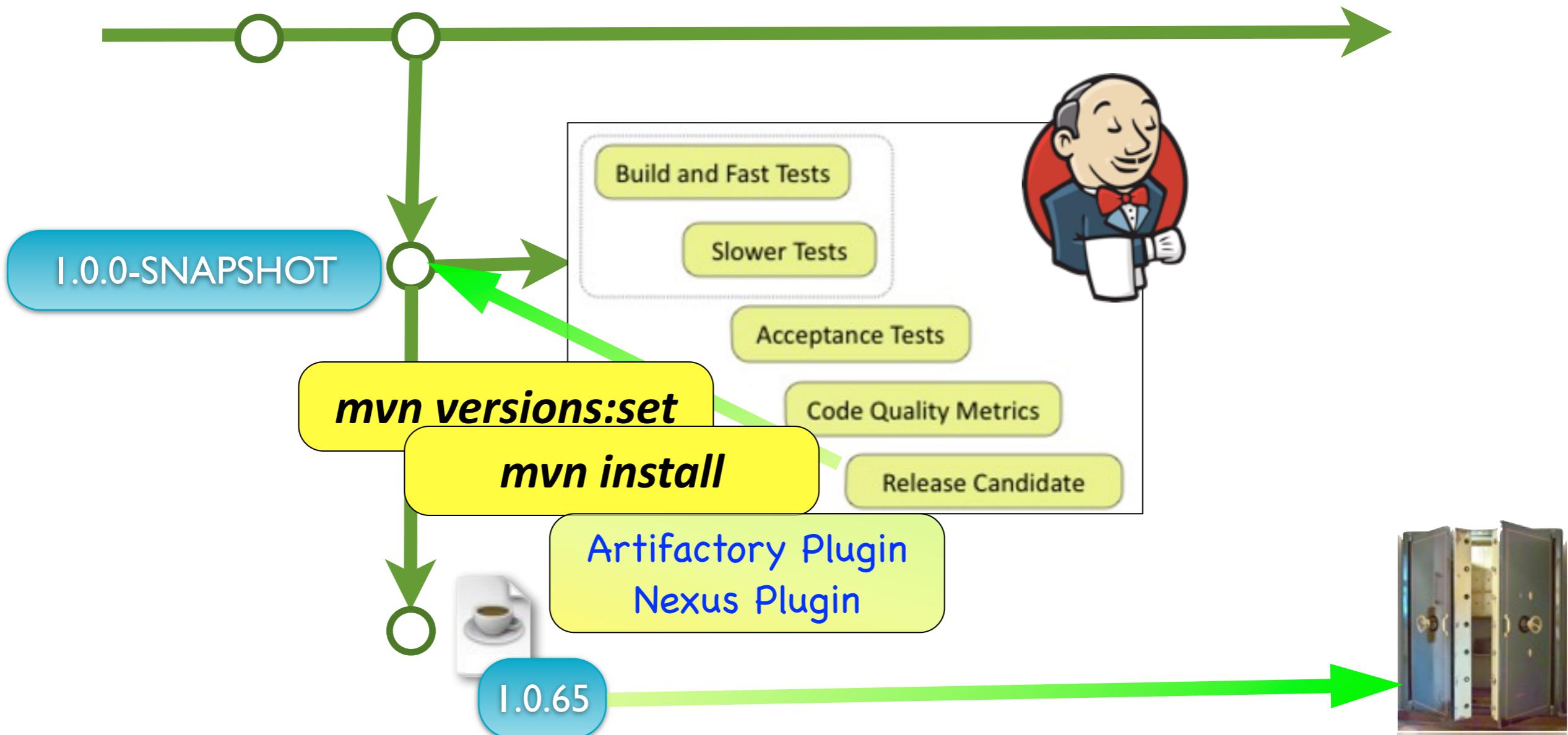
Strategy 1 : The Maven Release Plugin
but not as we know it...



Generating a release candidate

What about maven?

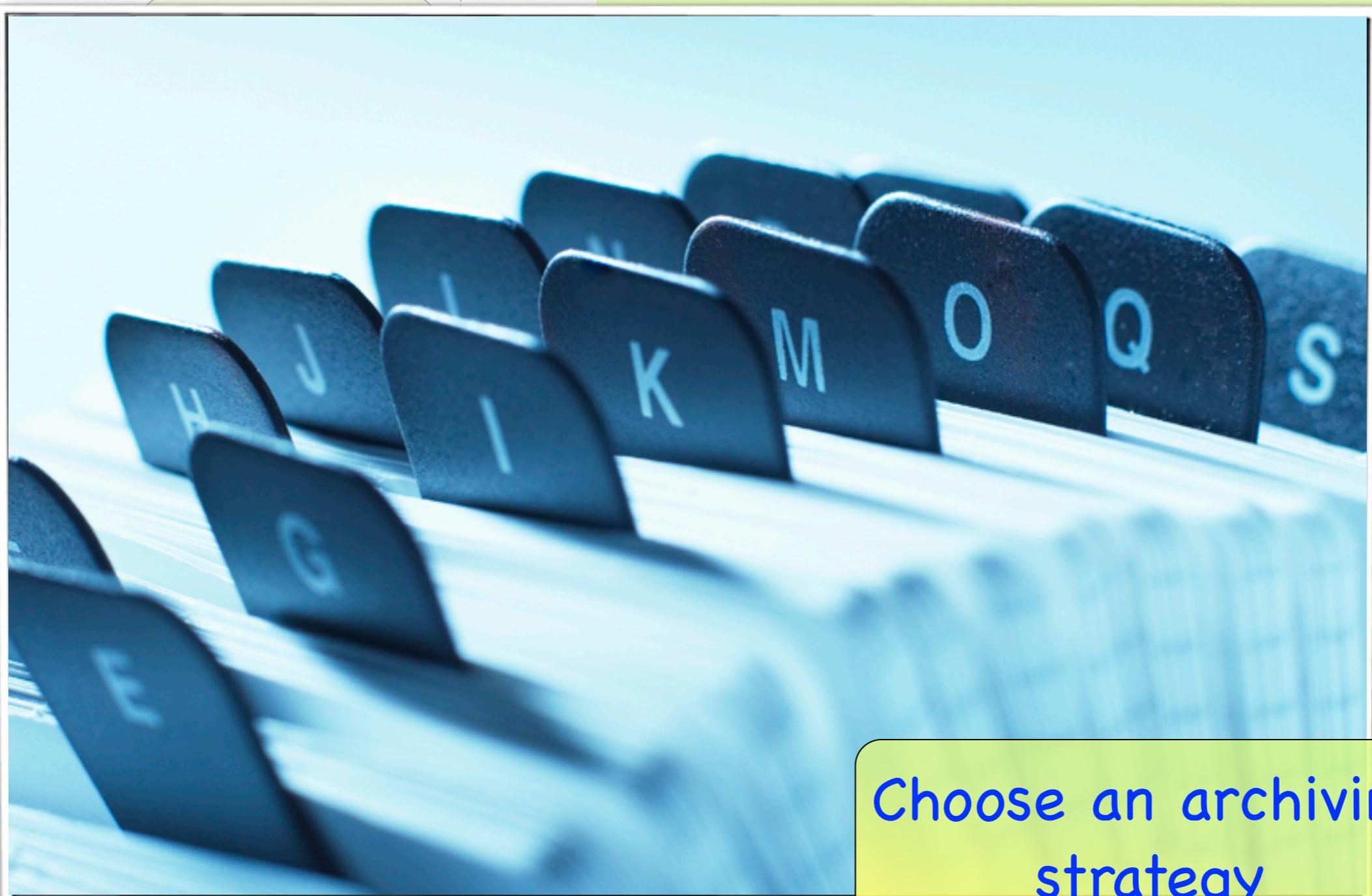
Strategy 2 : Just set the version



Generating a release candidate

Build and Fast Tests

✓ **Build a release candidate early**



Choose an archiving
strategy

TEST

UAT

PROD

Generating a release candidate

Build and Fast Tests

✓ Build a release candidate early

Slower Tests

✓ Reuse, don't rebuild

Acceptance Tests

Code Quality Metrics

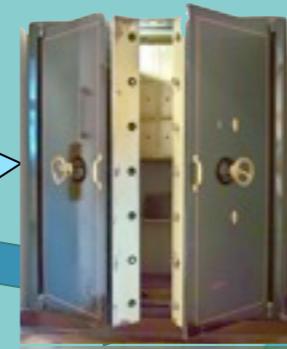


Rebuild

Reuse

1.0.1

Deploy to ...



1.0.1

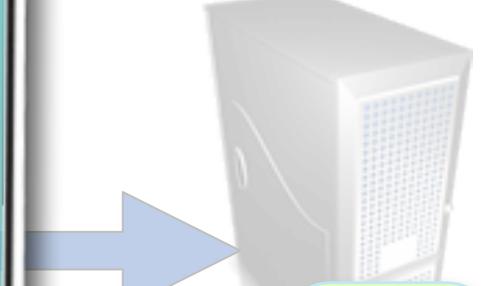
maven

Copy Artifacts Plugin
Artifactory Plugin
Nexus Plugin

...

Deploy to UAT

Deploy to Production



PROD



UAT

TEST

Automated Deployment

Build and Fast Tests

Slower Tests

Acceptance Tests

Code Quality Metrics

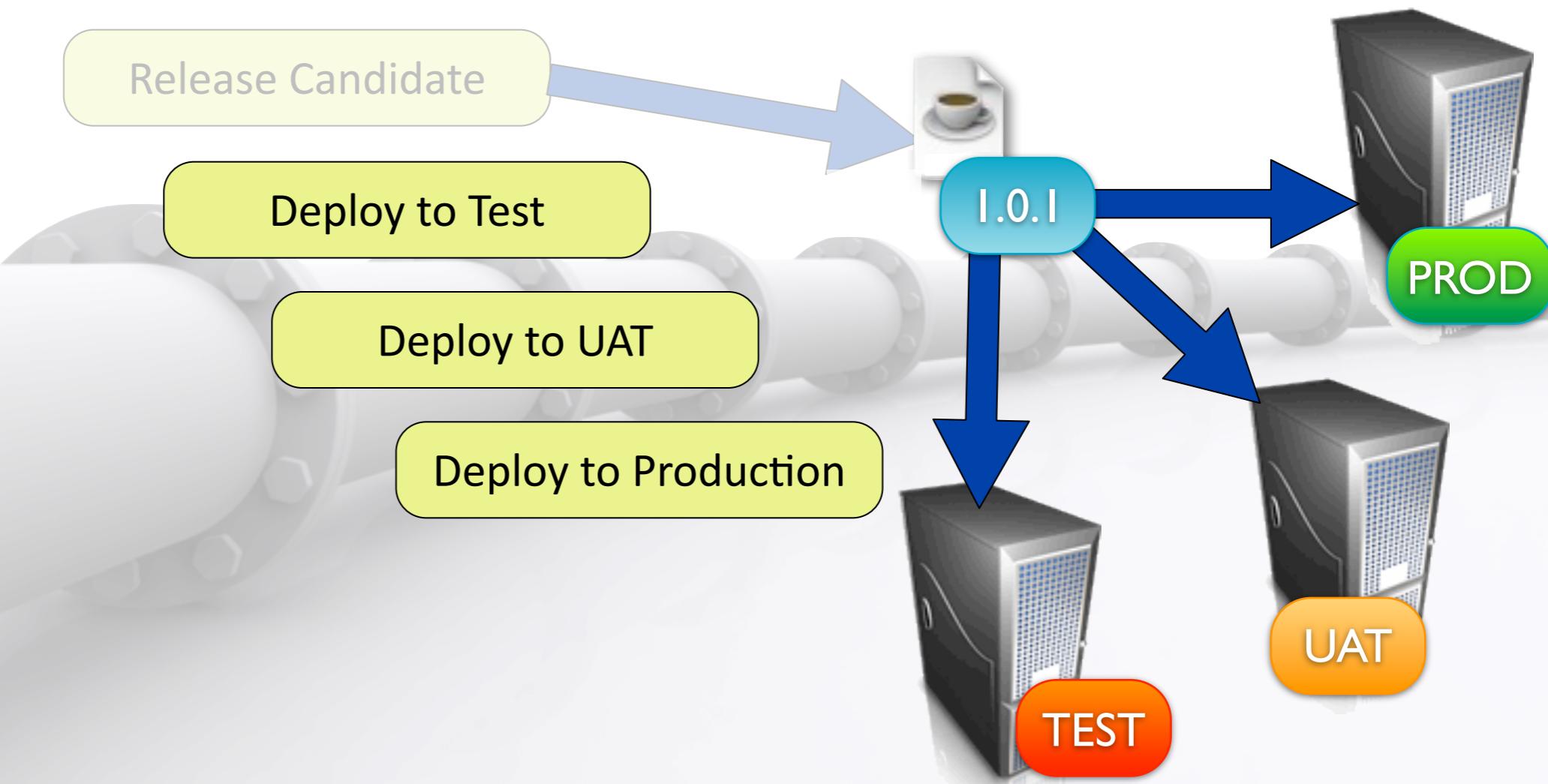
Release Candidate

Deploy to Test

Deploy to UAT

Deploy to Production

- ✓ Automate your deployments
- ✓ Reuse deployment processes
- ✓ Deploy your environments too



Automated Deployment

Build and Fast Tests



Automate your deployments

Deploy war/ear to a container

WAR/EAR files: **/target/*.war

Container: Tomcat 6.x

Manager user name: admin

Manager password:
Tomcat URL: http://localhost:8888

Deploy on failure:

Deploy to Test

Deploy to UAT

Deploy to Production

1.0.1

Deployer Plugin
SSH Plugin
...

processes
ments too



Visualizing the build process

Build and Fast Tests

Slower Tests

Acceptance Tests

Code Quality Metrics

Release Candidate

Deploy to Test

Deploy to UAT

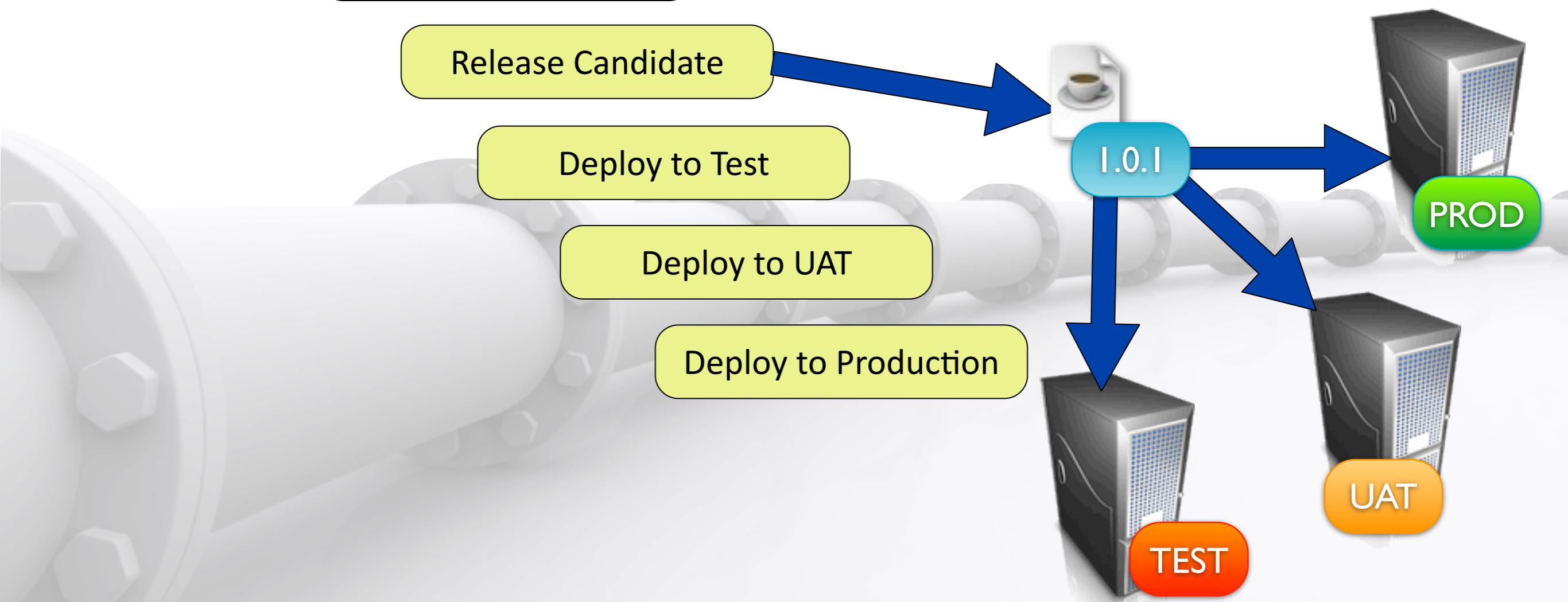
Deploy to Production

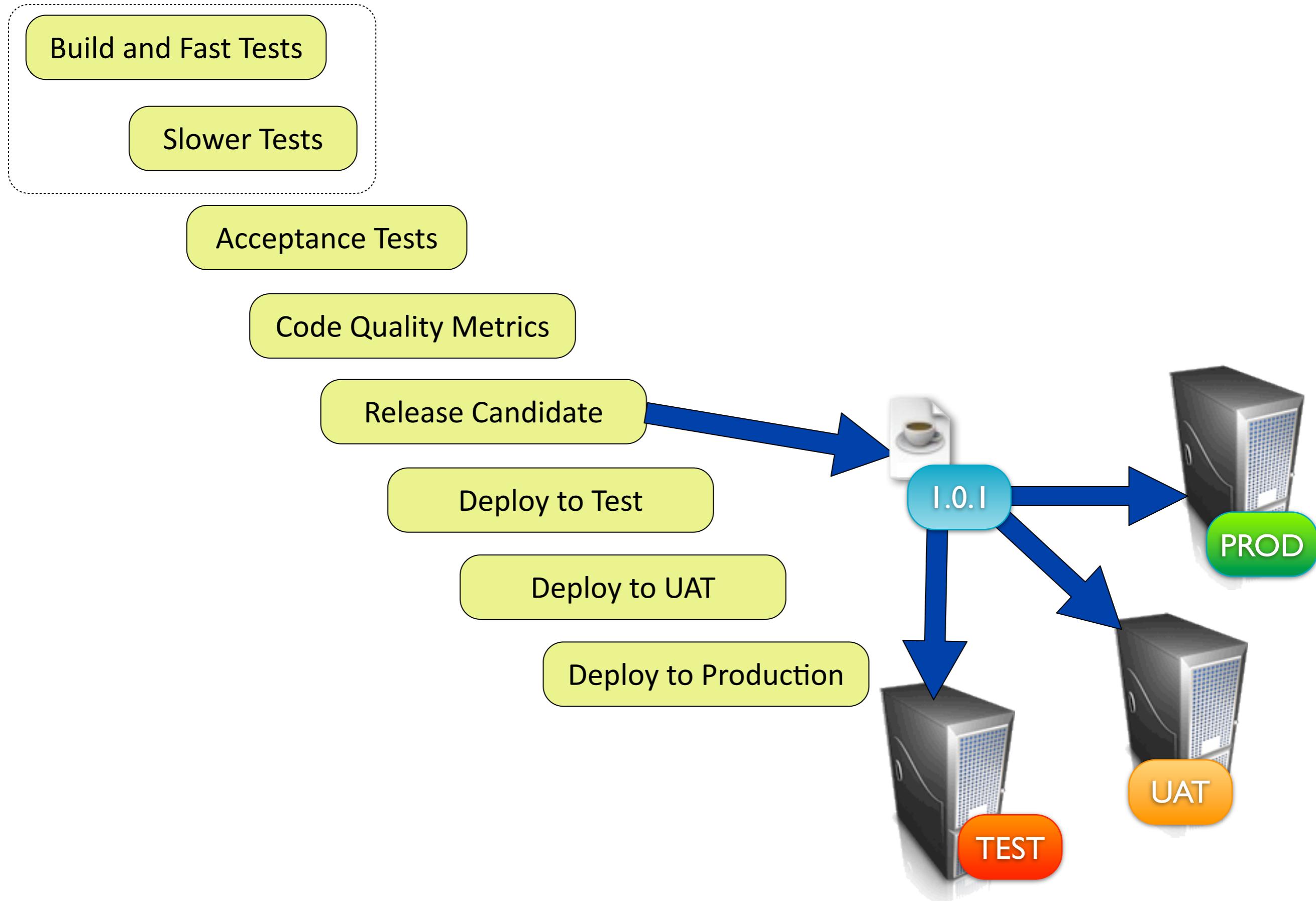
1.0.1

PROD

UAT

TEST





Visualizing the build process

Build and Fast Tests

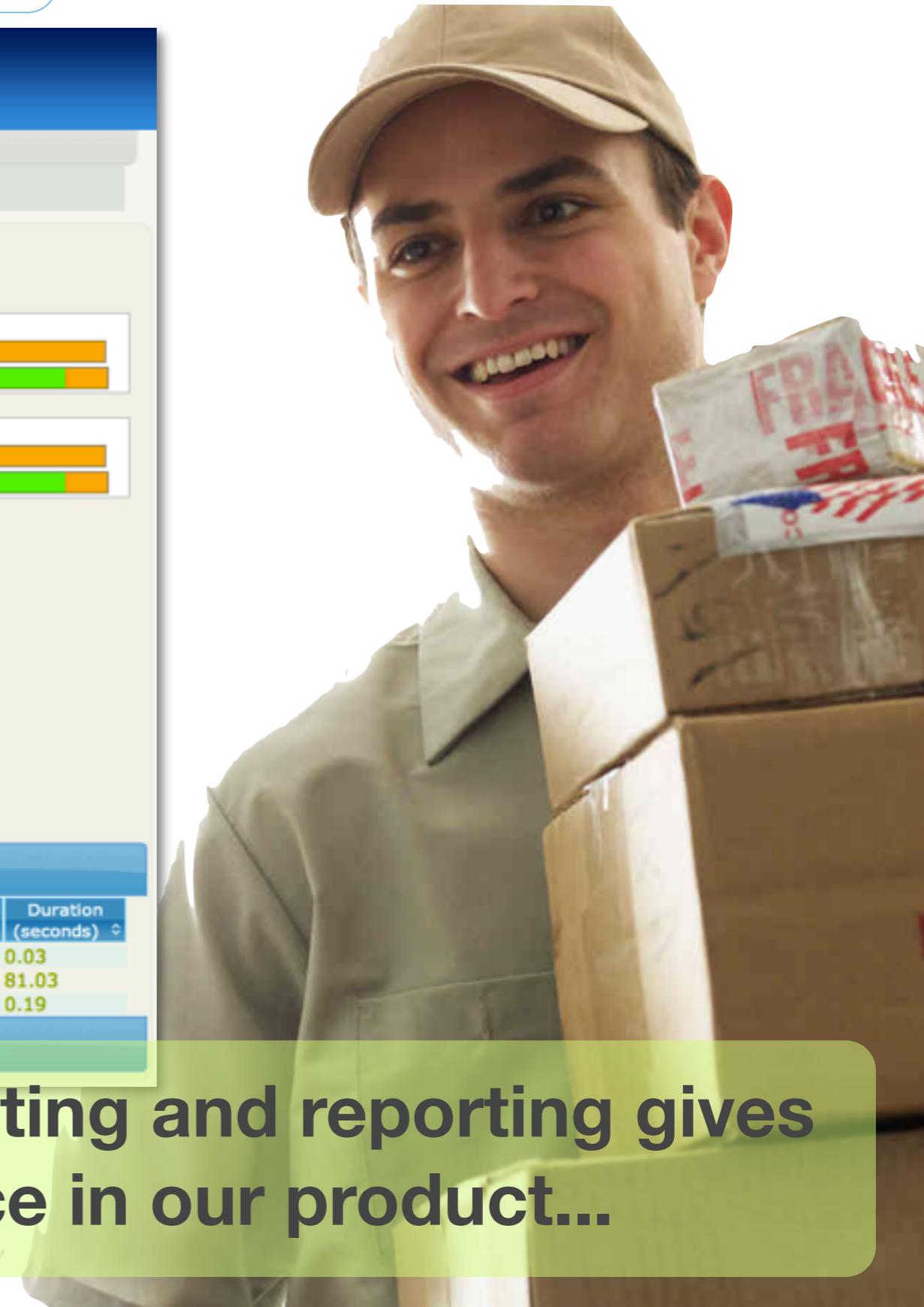
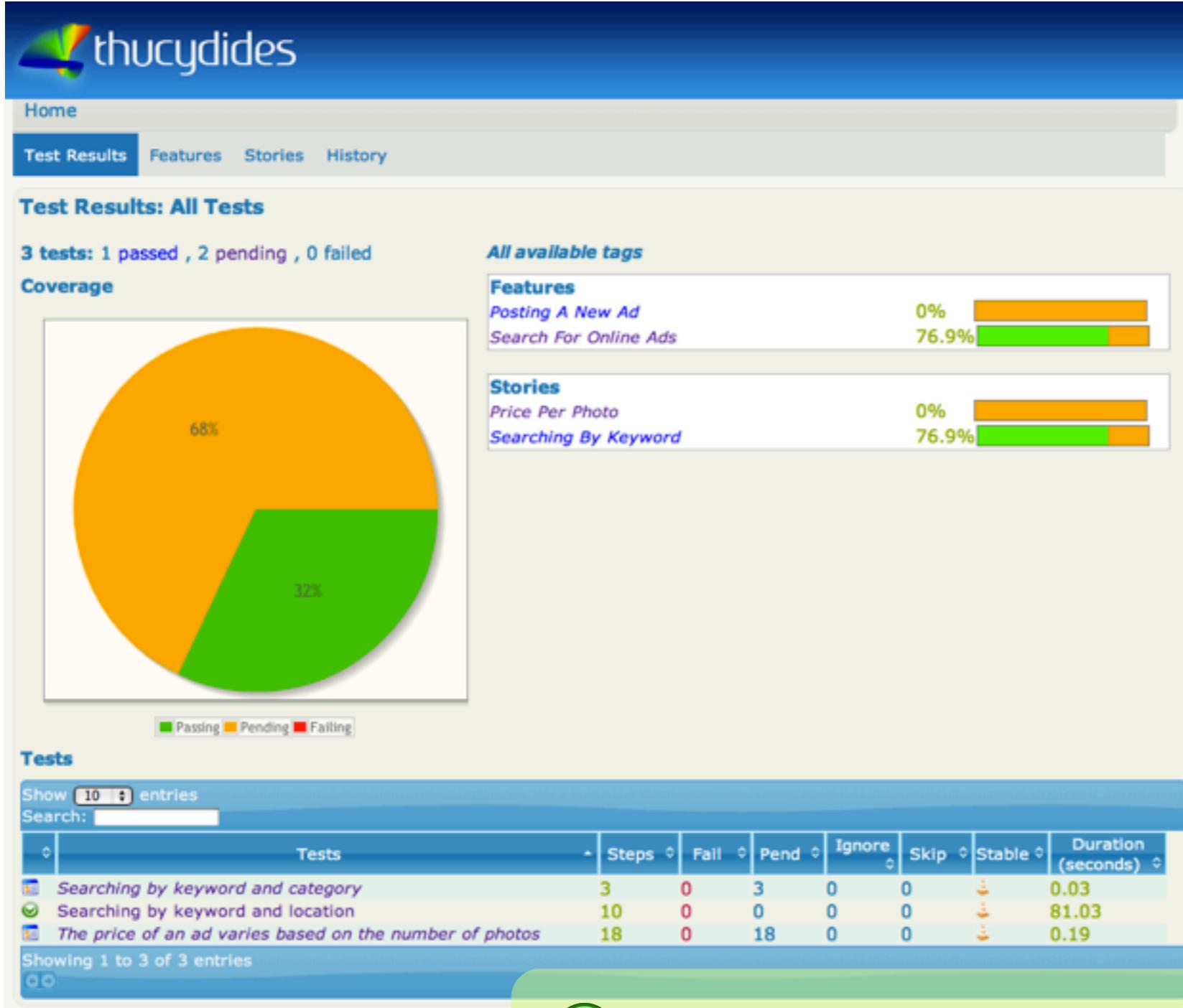


TEST

UAT

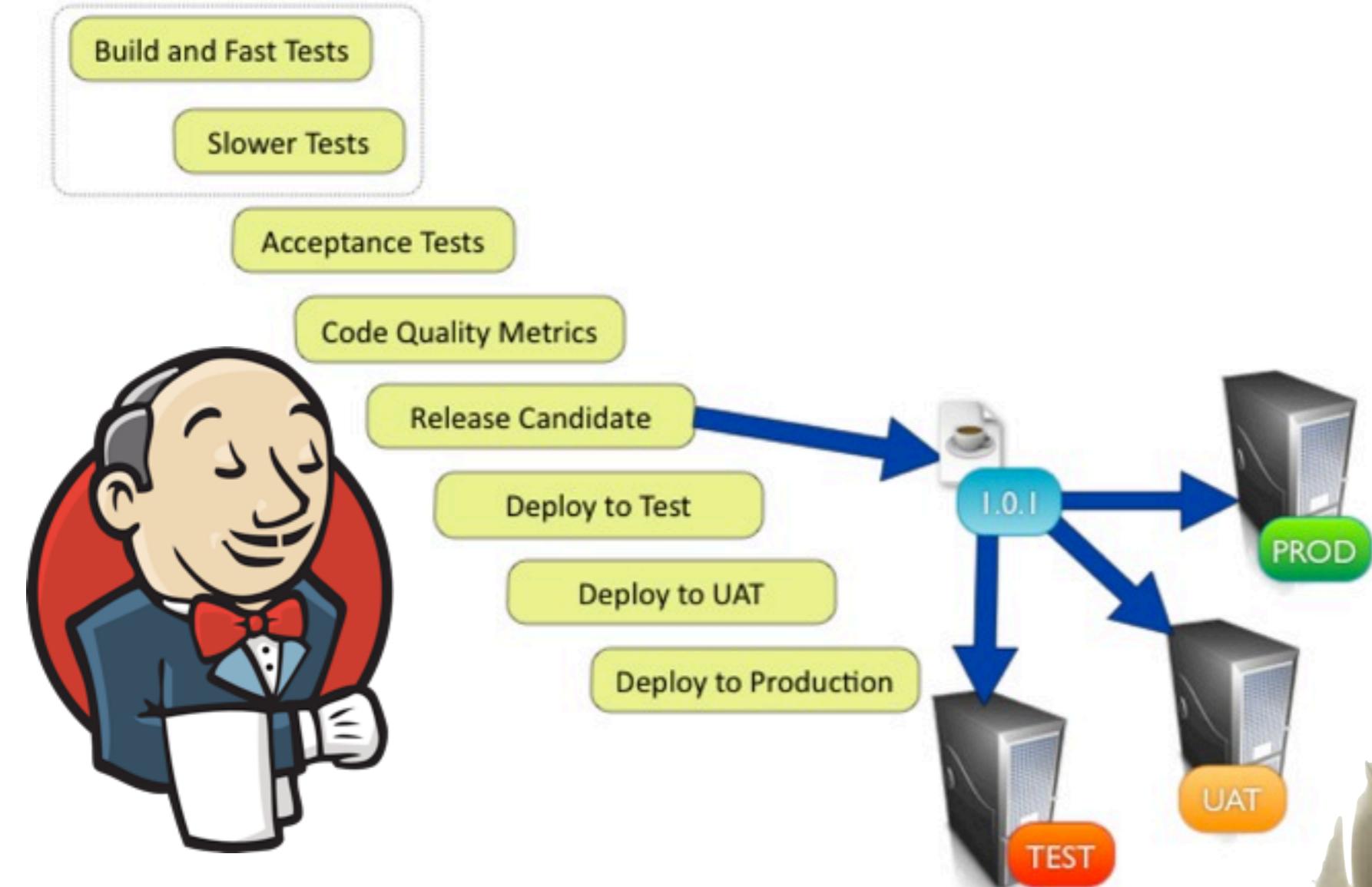
PROD

So how do you deliver?



Rigorous testing and reporting gives us confidence in our product...

So how do you deliver?



✓ And a Jenkins build pipeline makes automated delivery possible.

どうもありがとうございます

Thank You

John Ferguson Smart

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Web: <http://www.wakaleo.com>

Twitter: [wakaleo](#)



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- ✓ TDD, BDD and ATDD
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