

Acceptance & Integration Testing Using Behat

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Behaviour Driven Development (BDD)

Behaviour-driven development (BDD) takes the position that you can turn an idea for a requirement into implemented, tested, production-ready code simply and effectively, as long as the requirement is specific enough that everyone knows what's going on.

- Dan North

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Story as a way of describing the requirement
BDD verifies development meets story
Preferably in an automated way

Writing tests first in a customer friendly language

- Drinkwater et al 2011

The Problem

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Whats the problem we are solving.
Three elements of the team.
Delivering the product first time. Correctly.



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**BA / Product owner has all the knowledge
Write stories**



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Testers test implementation vs the story



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Dev – write the code
Automate the process of testing if code meets the requirements of a story

Behat

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Behaviour Driven Development Testing Framework

What Does It Test?

Scripts
API's
Web Pages
Models

Anatomy Of A Behat Test



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Describes the behaviour in a story
Human Readable
Samples Later



STEPS

HEARTBEAT / TRAGEDY

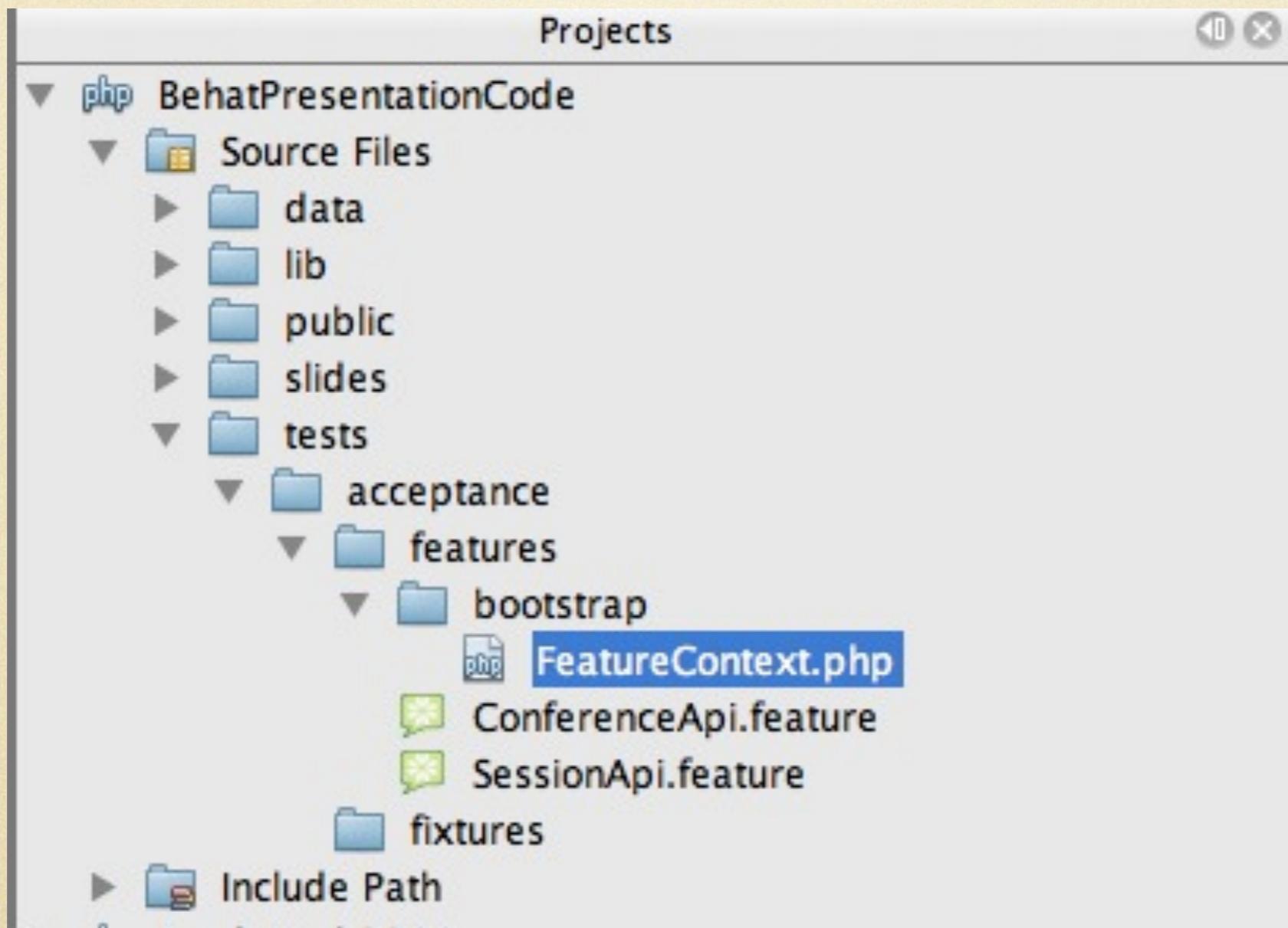
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PHP that maps to lines of the gherkin.
Behat parses gherkin and runs the associated
steps.

Writing Behat Tests

```
$ben > cd /path/to/projects/tests  
$ben > behat --init
```

Writing Behat Tests



Feature Files

Feature: Home Page

When visiting the PHPCon site

As a site visitor

I need to be able to see what conferences
are coming up

Scenarios

Scenario: Get all conferences

Given there is conference data in the database

When I go to the homepage

Then I should see three conferences in a table

Scenarios

Given
(Some Context)

When
(Some Event)

Then
(The Outcome)

Given *(Some Context)*

Given there is conference data in the database

When (Some Event)

When I go to the homepage

When I use the findConferences method

When I am on "/index.php"

When I fill in "search-text" with "PHP"

Executes whatever it is your testing.
A http call, a method invocation, a page load

Then (*The Outcome*)

Then I should see three conferences in a table

Then I should get a array of three conferences

Then I should see "PHPNW"

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An assertion.
Has it worked?
Are we seeing what we expect to see.

ConferenceService.feature

Feature: ConferenceService Class

In order to display conferences on
PHPCon site

As a developer

I need to be able to retrieve an array of
conference objects.

Scenario: Get all conferences

Given there is conference data in the database

When I use the findConferences method

Then I should get a array of three conferences

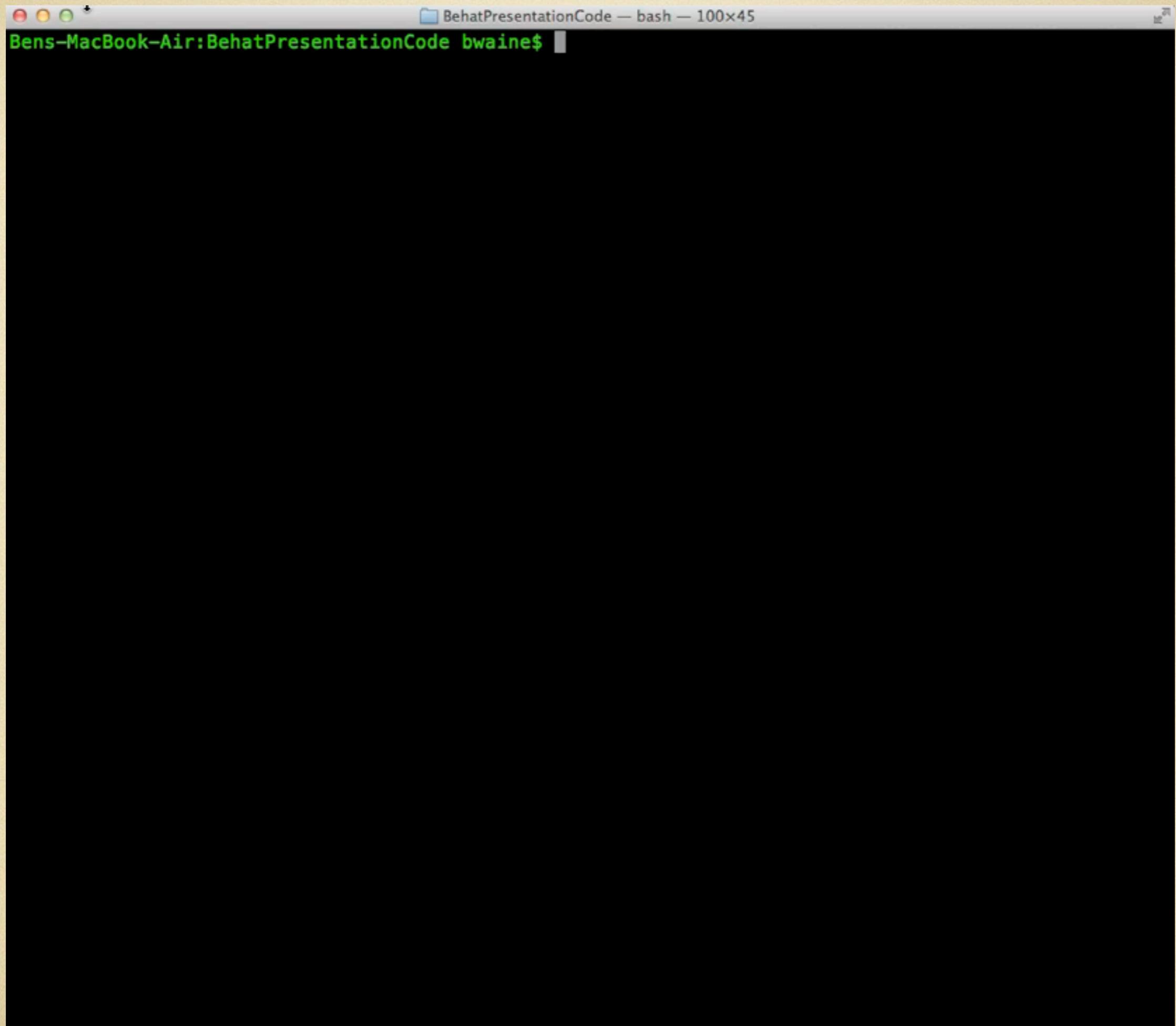
Written By our TESTERS – Fed In From BAs
How is this feature executed?

/ Everybody Stand Back /

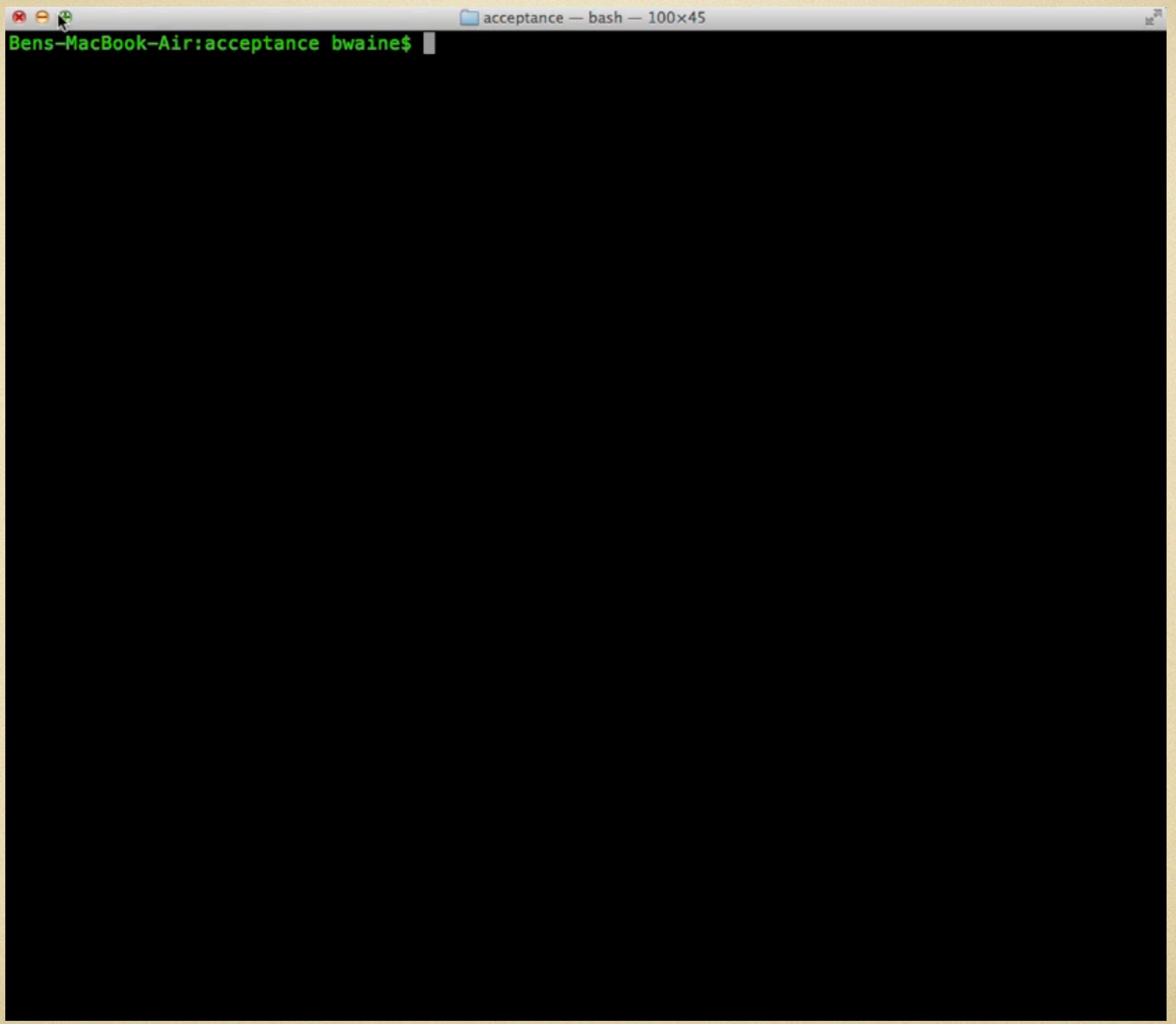
Behat Knows Regular Expressions

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PHP Annotations used to map steps to lines
Behat supplies regex.



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Fill in the Feature Context File

```
public function __construct(array $parameters)
{
    $params = array(
        'user' => $parameters['database']['username'],
        'password' => $parameters['database']['password'],
        'driver' => $parameters['database']['driver'],
        'path' => $parameters['database']['dbPath'],
    );

    $con = \Doctrine\DBAL\DriverManager::getConnection($params);

    $confMapper = new \PHPCon\Conference\Mapper($con);
    $confService = new \PHPCon\Conference\Service($confMapper);

    $this->service = $confService;
}
```

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The Feature context file

- Every feature gets a instance. Set up some resources.
- Set up the object to test – similar to PHPUnit's set up method.

Fill in the Feature Context File

```
/**  
 * @Given /^there is conference data in the database$/  
 */  
public function thereIsConferneceDataInTheDatabase()  
{  
    $fileName = self::$dataDir . 'sample-conf-session-data.sql';  
    self::executeQueriesInFile($fileName);  
}
```

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Remember – Given sets the state.
Loads an sql fixture to the DB.

Fill in the Feature Context File

```
/**  
 * @When /^I use the findConferences method$/  
 */  
public function iUseTheFindConferencesMethod()  
{  
    $this->result = $this->service->findConferences();  
}
```

Remember – When executes the thing you want to test.

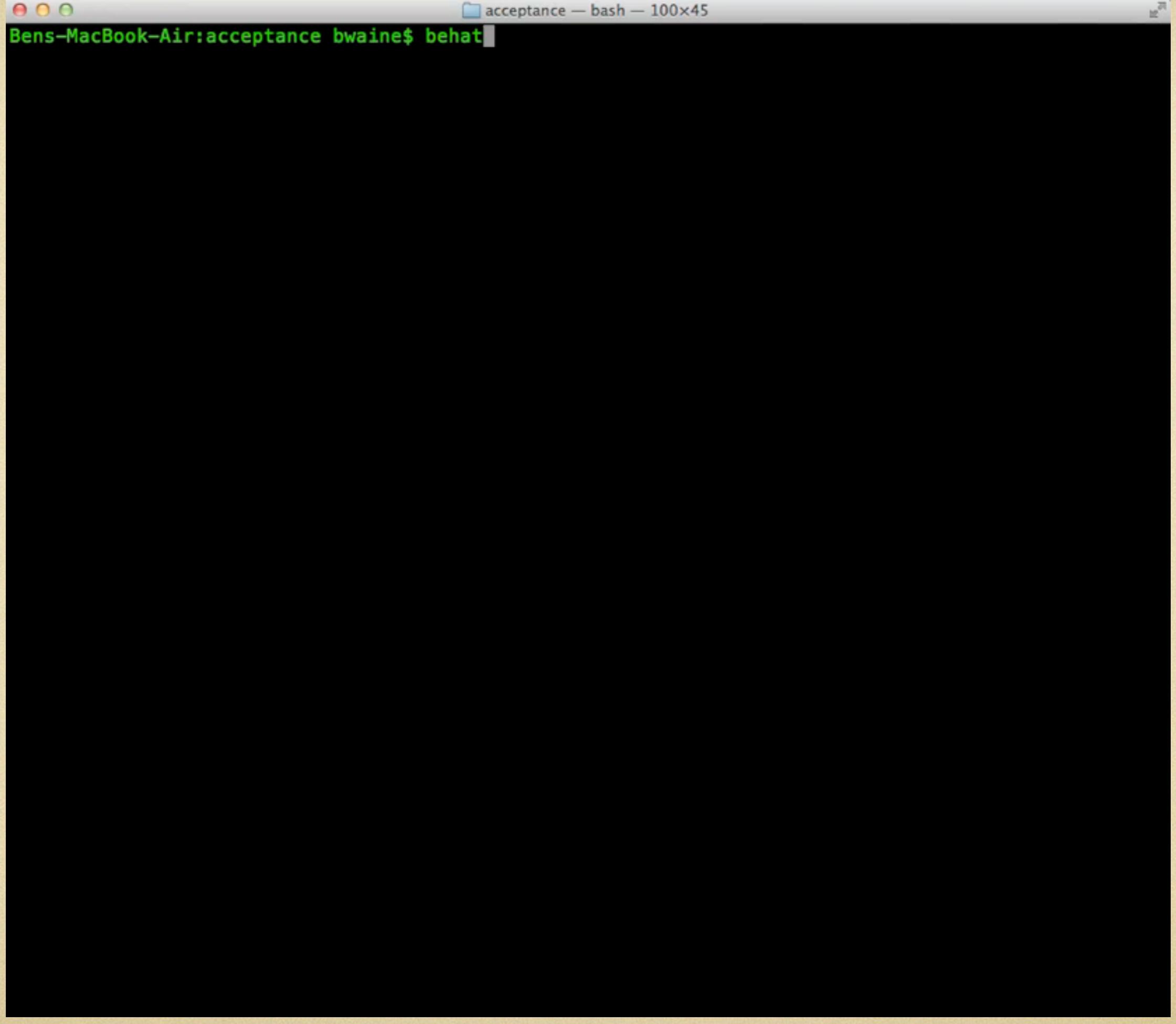
Fill in the Feature Context File

```
/**  
 * @Then /^I should get a array of (\d+) conferences$/  
 */  
public function iShouldGetAnArrayOfConferences($numberOfCons)  
{  
    assertInternalType('array', $this->result);  
    assertEquals($numberOfCons, count($this->result));  
}
```

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Remember – This verifies the output
Also – identified a number. Passes the number into the method.

Bens-MacBook-Air:acceptance bwaine\$ behat



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Failing Test

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If exceptions are encountered

Add some application code.....

Bens-MacBook-Air:acceptance bwaine\$ behat

A screenshot of a Mac OS X desktop showing a terminal window. The window title bar reads "acceptance — bash — 100x45". The main area of the terminal is black and contains the command "Bens-MacBook-Air:acceptance bwaine\$ behat" in white text. The desktop background is a light beige color.

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Passing Test!

What about the UI?

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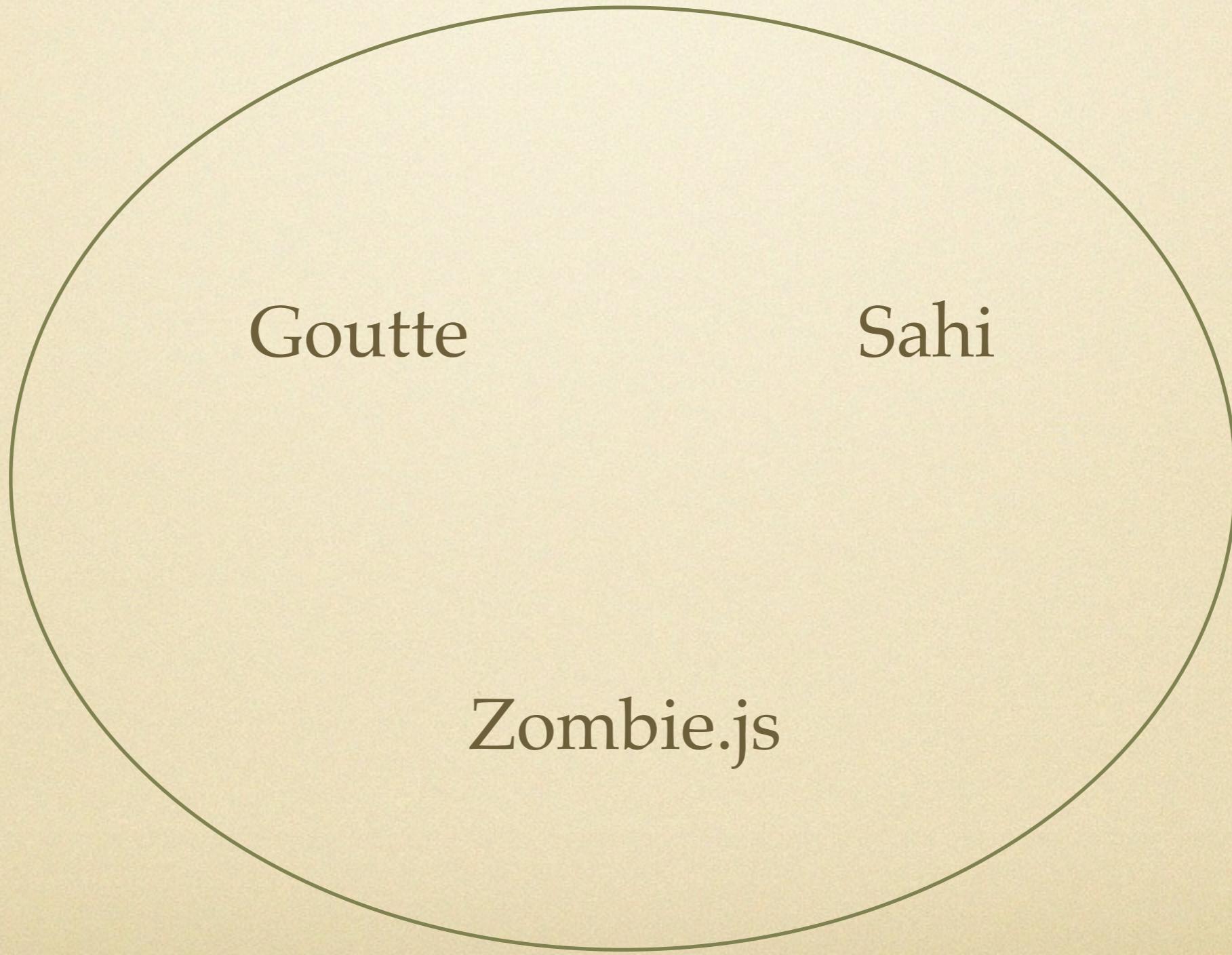
We've covered testing a service class. But how do you test the UI?

Mink

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Part of the Behat Project.
A abstraction over a number of different browser testing tools.

Mink



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Goutte – headless browser
Sahi – like selenium
Zombie.js –

Extend Mink Context

Includes predefined steps

Use Bundled steps to create
higher level abstractions.

My Amazing PHP Conference Website!

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We need a UI to test
introducing.....

Example

Using Minks Bundled Steps

Scenario: View all conferences on the homepage

Given there is conference data in the database

When I am on "/index.php"

Then I should see "PHPNW" in the ".conferences" element

And I should see "PHPUK" in the ".conferences" element

And I should see "PBC11" in the ".conferences" element

```

class FeatureContext

    public function __construct(array $parameters)
    {
        $this->useContext('subcontext_alias',
            new UIContext($parameters));
    }

    // REST OF FEATURE CONSTRUCTOR

}

```

```

# features/bootstrap/UIContext.php

use Behat\Behat\Context\ClosedContextInterface,
Behat\Behat\Context\BehatContext,
Behat\Behat\Exception\PendingException;

use Behat\Gherkin\Node\PyStringNode,
Behat\Gherkin\Node\TableNode;

require_once 'mink/autoload.php';

class UIContext extends Behat\Mink\Behat\Context\MinkContext
{
}

```

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- 1) Linking feature files
- 2) All steps included ‘out the box’

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Bens-MacBook-Air:acceptance bwaine\$
Bens-MacBook-Air:acceptance bwaine\$ behat

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Abstracting your scenario

Scenario: View all conferences on the homepage

Given there is conference data in the database

When I am on the "home" page

Then I should see "PHPNW" in the "conferences" table

And I should see "PHPUK" in the "conferences" table

And I should see "PBC11" in the "conferences" table

```

class UIContext extends Behat\Mink\Behat\Context\MinkContext
{
    protected $pageList = array(
        "home" => '/index.php',
    );
    protected $elementList = array(
        "conferences table" => '.conferences'
    );
    /**
     * @When /^I am on the "([^\"]*)" page$/
     */
    public function iAmOnThePage($pageName) {
        if(!isset($this->pageList[$pageName])) {
            throw new Exception('Page Name: ' . ' not in page list');
        }
        $page = $this->pageList[$pageName];
        return new When("I am on \"\$page\"");
    }

    /**
     * @Then /^I should see "([^\"]*)" in the "([^\"]*)"$/
     */
    public function iShouldSeeInThe($text, $element) {
        if(!isset($this->elementList[$element])) {
            throw new Exception('Element: ' . $element . ' not in element list');
        }
        $element = $this->elementList[$element];
        return new Then("I should see \"\$text\" in the \"\$element\" element");
    }
}

```

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A simple abstraction that makes a map of pages > urls and elements > css selectors.
 Example of step delegation.
 Now you never change the feature file. Just steps.

Bens-MacBook-Air:acceptance bwaines\$

acceptance — bash — 127x48

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Javascript Testing with.....

Sahi

Back To:
My Amazing PHP Conference
Website!

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We need a UI to test
introducing.....

Example

@javascript

Scenario: Use autocomplete functionality to complete a input field

Given there is conference data in the database

When I am on the "home" page

When I fill in "search-text" with "PHP"

And I wait for the suggestion box to appear

Then I should see "PHPNW"

Great Reuse

@javascript

Scenario: Use autocomplete functionality to complete a input field

Given there is conference data in the database

When I am on the "home" page

When I fill in "search-text" with "PHP"

And I wait for the suggestion box to appear

Then I should see "PHPNW"

```
// In the UIContext class
/**
 * @Given /^I wait for the suggestion box to appear$/
 */
public function iWaitForTheSuggestionBoxToAppear()
{
    $this->getSession()->wait(5000,
        $(".suggestions-results").children().length > 0"
    );
}
```

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Get session – gets you mink
Wait,
Then execute jquery!

Bash terminal window titled "acceptance — bash — 173x48". The window contains the command prompt "Bens-MacBook-Air:acceptance bwaine\$". The window has three tabs at the top: "bash", "java", and "acceptance".

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Data

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How do you supply your data?

SQL Fixture

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**Can be difficult to maintain.
Hides Data in a fixture NOT in your scenarios.**

Phabric

Inserting Data From Gherkin Tables

Transforming Table Headings to DB col names

Transforming Table data using user defined callbacks

Inserting Relational Data

Example

Scenario:

Given The following events exist

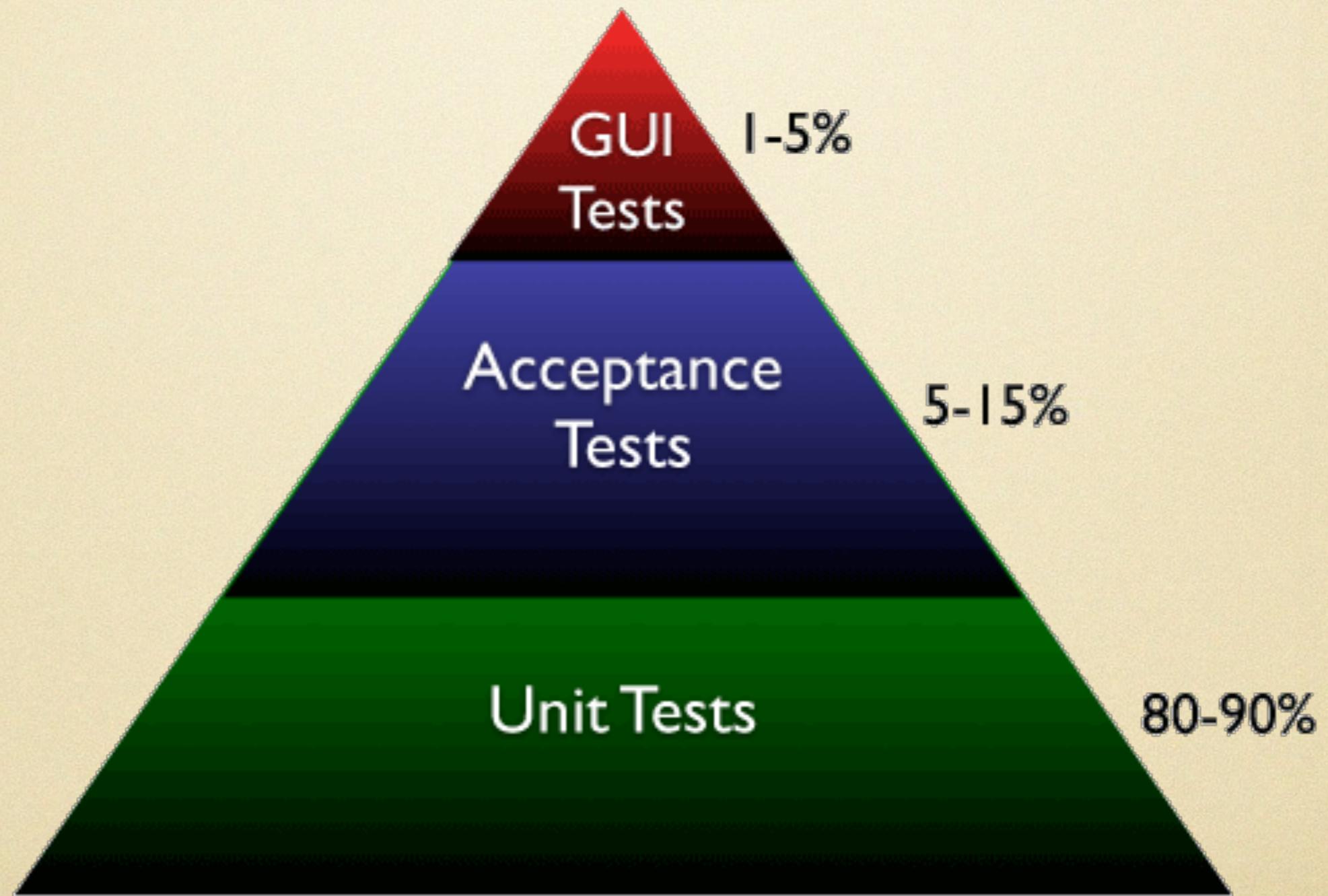
Name	Date	Venue	Desc
PHPNW	08/10/2011 09:00	Ramada Hotel	An awesome conf!
PHPUK	27/02/2012 09:00	London Business Center	Quite good conf.

When I select all records from the event table

Then I should see the following records

name	datetime	venue	description
PHPNW	2011-10-08 09:00:00	Ramada Hotel	An awesome conf!
PHPUK	2012-02-27 09:00:00	London Business Center	Quite good conf.

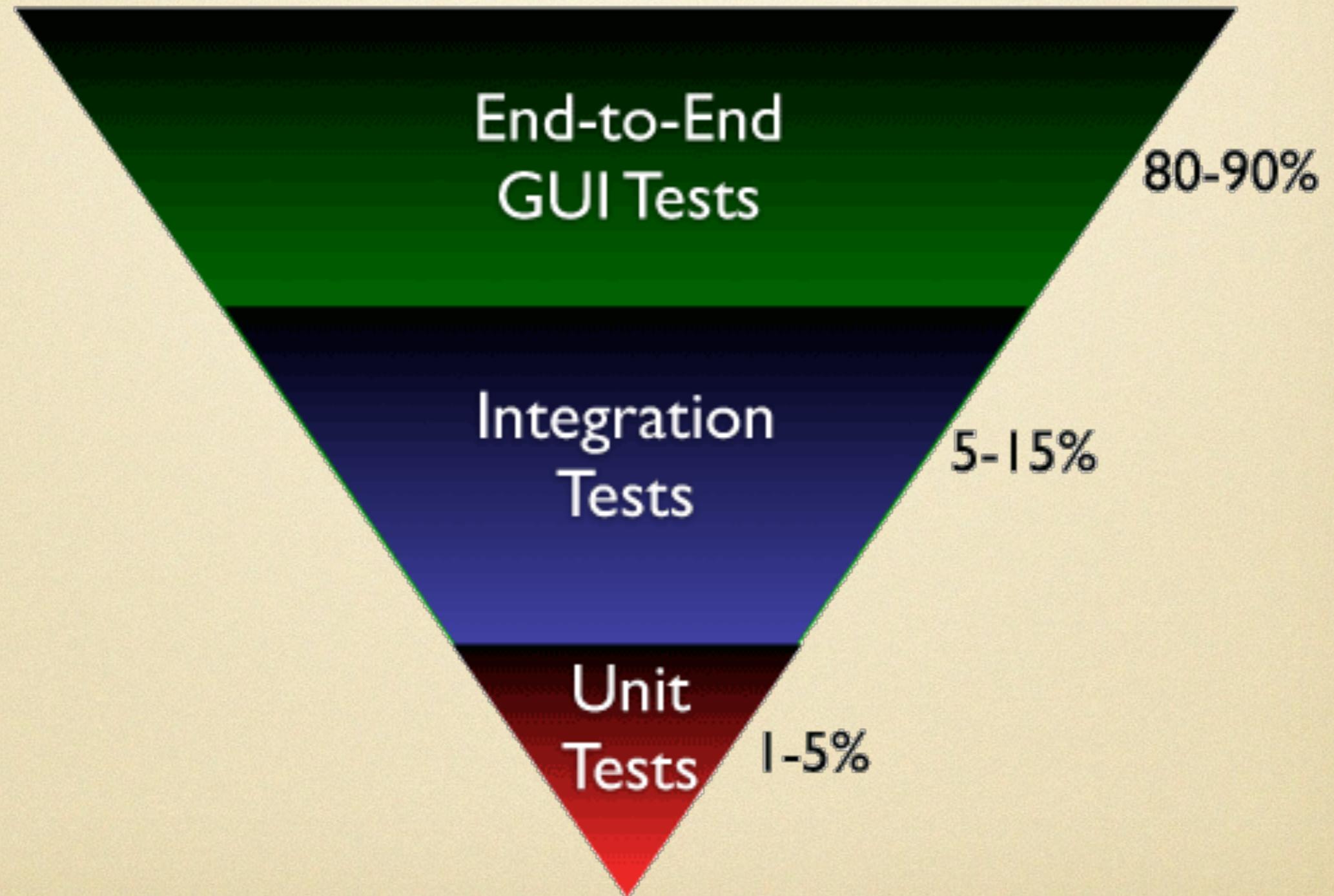
Balance.



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The place of acceptance and integration tests

A whole world of trouble.



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Takes a long time to run,
Harder to implement, when they break you have to do this again!
not as reassuring!

Questions?

Links

Behat Github Page: <https://github.com/Behat/Behat>

Mink On Github: <https://github.com/Behat/Mink>

Website: <http://behat.org/>

Phabric On Github: <https://github.com/benwaine/Phabric>

joind.in: <http://joind.in/3732>