

Behavior Driven GUI Testing

Mobile Dev + Test 2015

by Amanda Burma



About me



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About froglogic

- HQ in Hamburg, Germany
- Founded in 2003
- US presence since 2009
- Product focus on Squish
 - Squish GUI Tester (Cross-Platform/Cross-Technology GUI Test Automation)
 - Squish Coco (C, C++, C# and Tcl Code Coverage)
- More than 3,000 customers world-wide



Overview

- What is BDD and TDD?
- Why BDD and BDT with Mobile Apps?
- Automating a Behavior Driven Mobile GUI Test
- Integrating BDT and Mobile Test Automation frameworks

What is Behavior Driven Development (BDD)?

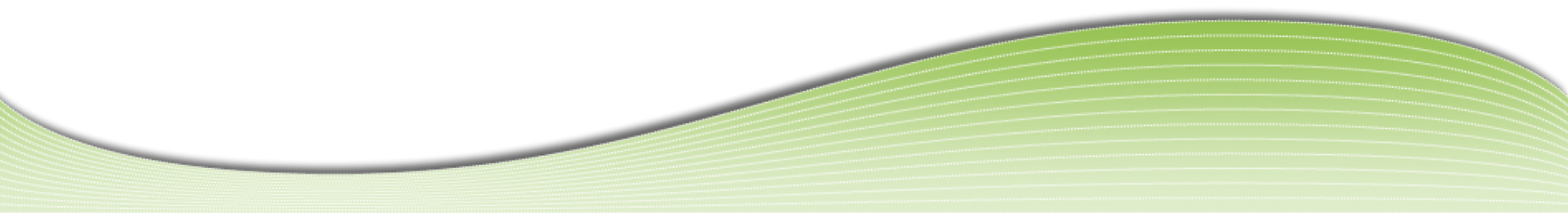
What is Behavior Driven Testing (BDT)?



“BDD is a second-generation, outside-in, pull-based, multiple-stakeholder, multiple-scale, high-automation, agile methodology. It describes a cycle of interactions with well-defined outputs, resulting in the delivery of working, tested software that matters.” - Dan North

http://en.wikipedia.org/wiki/Behavior-driven_development

OR...



What is BDD?

What is BDT?



- Based on **Test Driven Development**
 - Write a (failing) test
 - Implement feature until test passes
 - Unit-Test level granularity (inside-out)

- But
 - Focus on application's behavior and specification
 - Describe in a human-readable DSL (e.g. Gherkin)
 - Reduce focus on implementation details

Versatile usage of Feature Files

- User story / feature specification
- Communicate with customer / users
- Document acceptance test
- Create walk-through sequence for manual tests
- Produce storyboard for test automation

Why Behavior Driven Development?

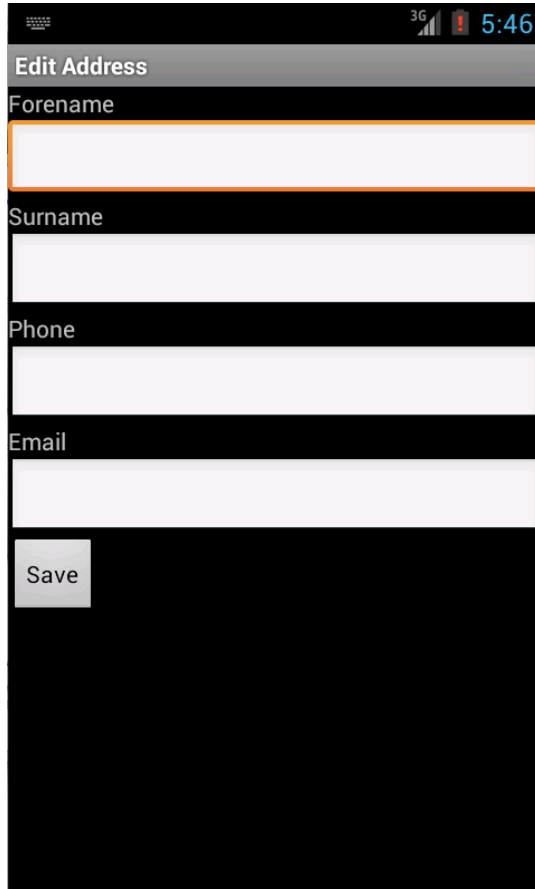
Why Behavior Driven Testing?



- “Test first” development on a higher level
- Clearly separate test logic from implementation
- Allow non-programmers to define features & tests
- Have a common, single language to communicate

What is BDD / BDT?

Android Address Book App

This screenshot shows the 'Edit Address' screen of an Android application. The screen has a black background with white text. At the top, there is a status bar showing '3G', a battery icon, and the time '5:46'. Below the status bar is a title bar with the text 'Edit Address'. The main content area contains four white input fields with black borders, labeled 'Forename', 'Surname', 'Phone', and 'Email' from top to bottom. The 'Forename' field is currently selected, indicated by an orange border. At the bottom of the screen, there is a grey button with the text 'Save'.This screenshot shows the 'Address Book' screen of the same Android application. The screen has a black background with white text. At the top, there is a status bar showing '3G', a battery icon, and the time '5:47'. Below the status bar is a title bar with the text 'Address Book'. The main content area is empty, showing a large black rectangle. At the bottom of the screen, there is a grey button with the text 'Add Address'.

What is BDD / BDT?

Android Address Book App

Feature: Validate address book entry

Scenario: Add address book entry

Given the Address book App is running

When I click Add Address

And enter Tom in the Forename field

And enter Smith in the Surname field

And enter 123.123.1234 in the Phone field

And enter tom@smith.com in the Email field

And click Save

Then the list contains the matching forename value

And the list contains the matching surname value

**Feature File
(Gherkin)**

What is BDD / BDT?

Android Address Book App

Feature: Invalid phone number

Scenario: Invalid phone number

Given the Address book App is running

When I click Add Address

And enter Tom in the Forename field

And enter Smith in the Surname field

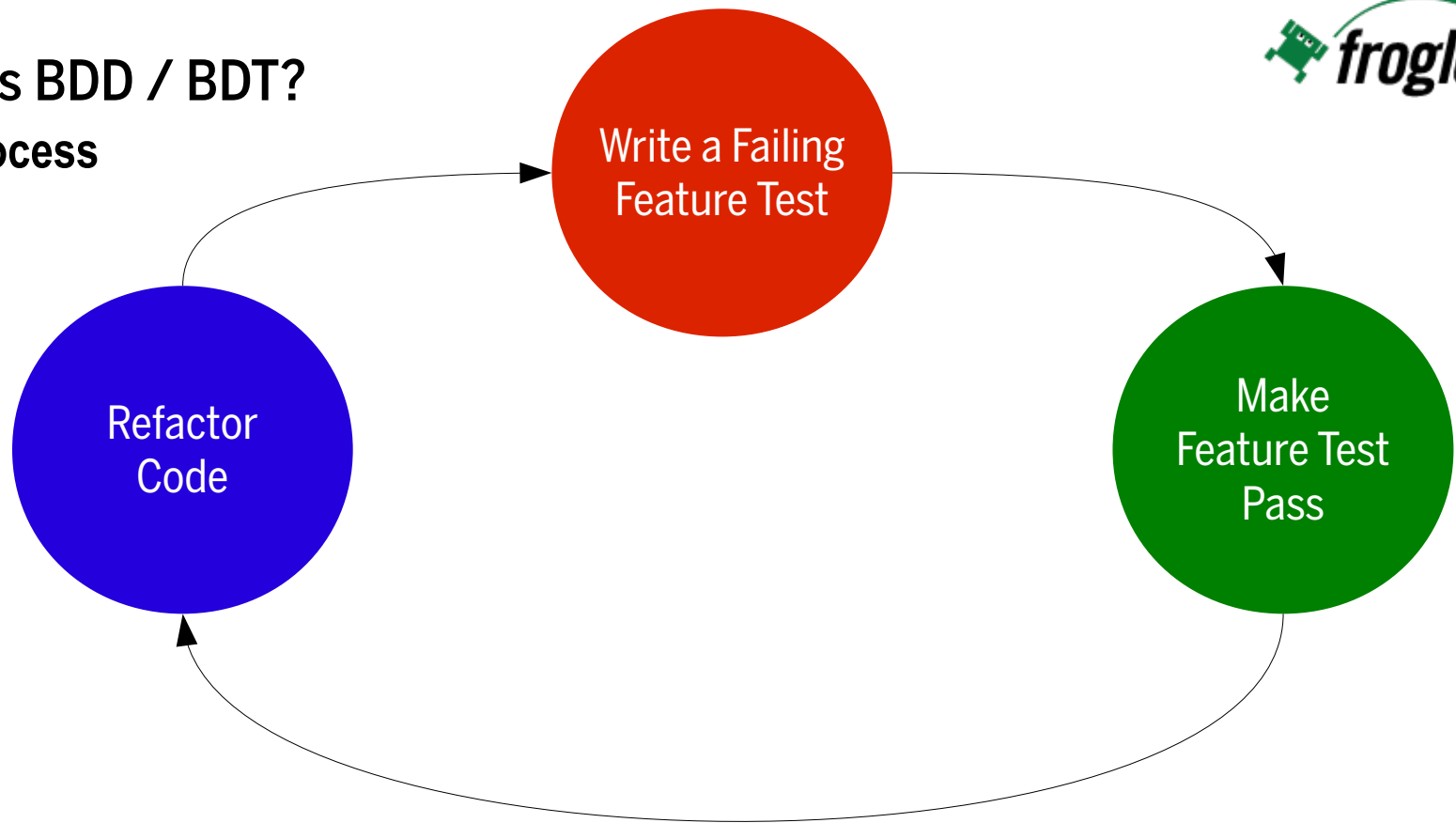
And enter Smith in the Phone field

Then the Phone field does not contain Smith

Feature File
(Gherkin)

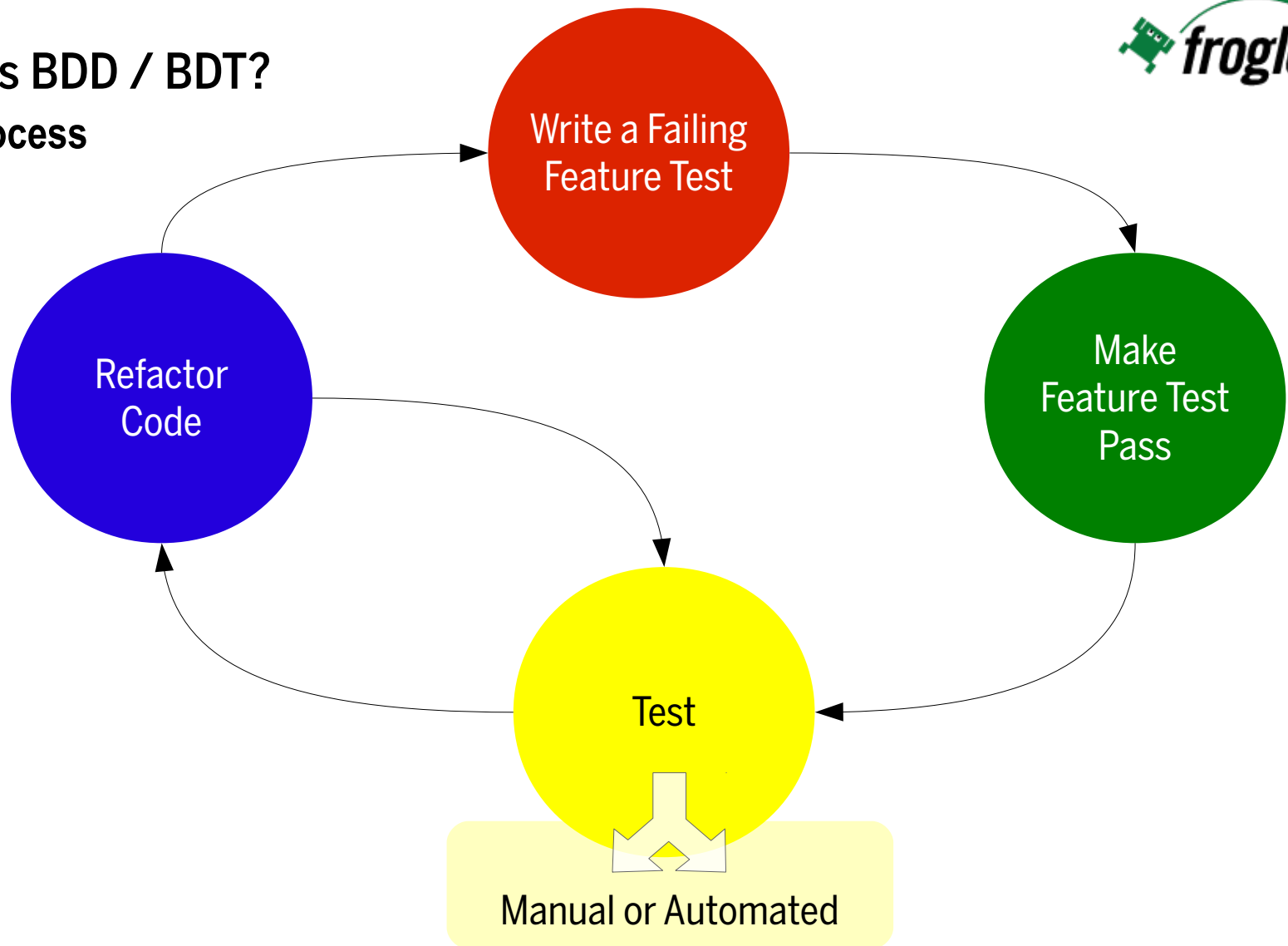
What is BDD / BDT?

The Process



What is BDD / BDT?

The Process



Automating a Behavior Driven GUI Test Requirements

- BDT framework
- Test Automation framework (GUI test tool, ...)
- The 'Glue'

BDT Framework

Generate Skeletons

- Parse Feature files
- Generate step definition skeletons
 - (functions and annotations) in a preferred language

Test.feature

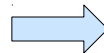
Feature: Validate address book entry

Scenario: Add address book entry

Given the Address book App is running

When I click Add Address

....



Test.py

```
@Step("Given the Address book App is running")
```

```
def step(context):  
    test.warning("Implement me")
```

```
@Step("When I click Add Address")
```

```
def step(context):  
    test.warning("Implement me")
```

BDT Framework

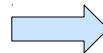
Run Feature Files

- Parse Feature files
- Execute Feature files by mapping steps to step definitions (functions)
- Reporting

Test.py

```
@Step("Given the Address book App is running")
def step(context):
    test.warning("Implement me")

@Step("When I click Add Address")
def step(context):
    test.warning("Implement me")
```



Test.feature

```
Feature: Validate address book entry

Scenario: Add address book entry
    Given the Address book App is running
    When I click Add Address
    ....
```


Test Automation Framework

Requirements

- Support the specific UI technology of the application
- Support the scripting/programming language of the BDT framework
- Tool for convenient test creation, maintenance and debugging

Test.py

```
@Step("Given the Address book App is running")
def step(context):
    test.warning("Implement me")

@Step("When I click Add Address")
def step(context):
    test.warning("Implement me")
```

Integrating BDT and Test Automation frameworks

Requirements

- Need to “speak the same language”
- Reporting
- Debugging

BDT Frameworks

- Cucumber
- JBehave
- Behave
- SpecFlow
- RSpec
- Lettuce
- Squish GUI Tester
- ...

Test Automation Frameworks

- CppUnit
- GoogleTest
- xUnit
- NUnit
- JUnit
- Squish GUI Tester
- HP QTP / UFT
- Rational Functional Tester
- Selenium
- ...

Live Demo

BDD GUI Test for Cross-Platform Unit Converter

- Valid Address book entry
- Invalid Address book entry
- Passing parameters
- Scenario outline



Questions?

Contact me

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Download

Free & supported Squish GUI Tester trial

www.froglogic.com/evaluate



About Squish GUI Tester

- Cross-Platform / Cross-GUI Technology Test Automation
 - Windows, Linux, Mac OS X, Unix, Embedded OS', RTOS', Mobile
 - Java (Swing/AWT, SWT/RCP, JavaFx), Qt/QML/QtQuick, Web, MFC, WinForms, WPF, iOS, Cocoa, Carbon, Android, Tk, Flex, ...
- Object-based GUI object identification
- Record & Playback
- Powerful scripting (JavaScript, Python, Ruby, Tcl, Perl)
- Eclipse-based IDE
- **Built-in BDD framework and support**
- Batch-testing & Command-line tools
- Remote/distributed testing architecture
- Integrations: Microsoft ALM, HP QC/ALM, Rational RQM, Seapine TCM, SpiraTest, MKS, XStudio, Jenkins, Hudson, TeamCity, Bamboo, Robot Framework, JUnit, Maven, ...