Yvonne and others

A tale on mobile test automation

Eddy Bruin
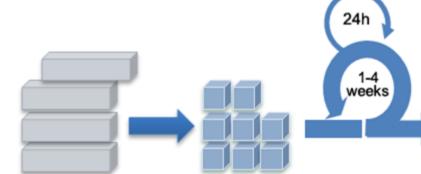**Samuël Maljaars**

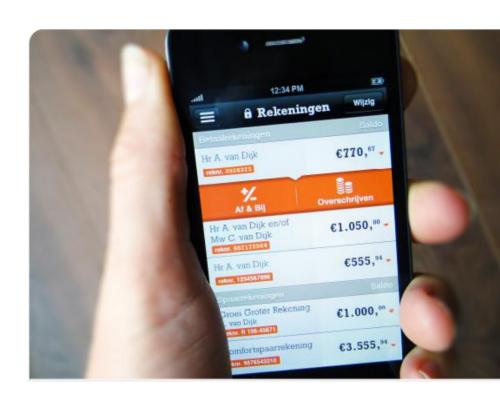**@ebruin**
@smaljaars
#yvonne

Yvonne

Filmpje 1

Filmpje 2

1 JAAR MOBIEL BANKIEREN BIJ DE ING

iOS Mobile App @ ING Netherlands

- Developed in-house
- Working on 10th major release since v1.0 November 2011
- Customized User Interface
- Native application
- Customer feedback is pivotal in release planning

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Challenges

- What devices to test ?
- How to 'touch' the devices ?
- What skills do I need ?
- What tools do I use ?
- Use simulators or not ?
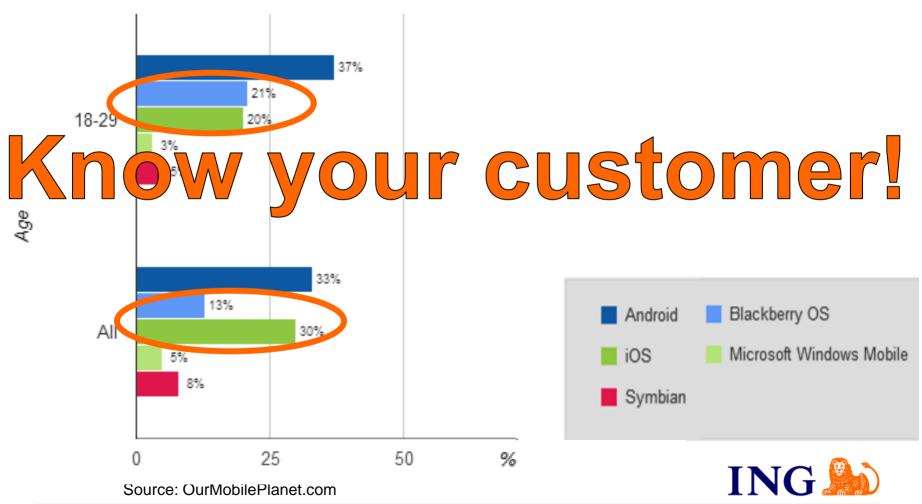- How to test mobile features? (GPS, Camera etc.)

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Fragmentation!

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Full Force Manual Testing
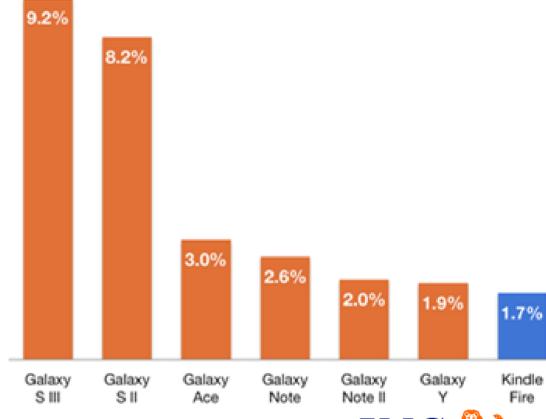
Know you customer

Mobile market share per age in NL April 2013

Source: OurMobilePlanet.com

Know your customer!

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User analytics based testing

Device Marketshare

Top 10 Android users by February 2013
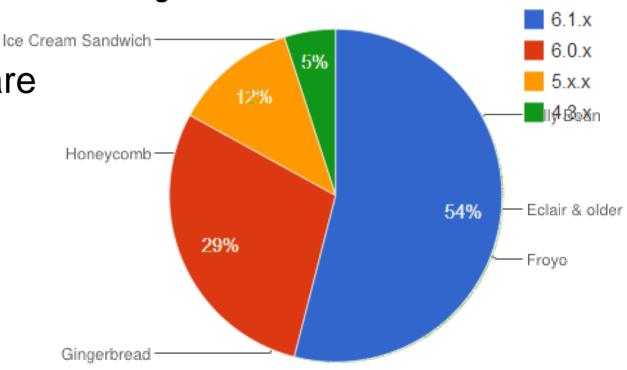
User analytics based testing

Device Marketshare

OS Version

Usage of iOS versions March 2013 **Usage of Android versions March 2013**

Ice Cream Sandwich

Honeycomb

Gingerbread

- 6.1.x
- 6.0.x
- 5.x.x
- 4.3.x Jelly Bean

Eclair & older

Froyo

5%

12%

54%

29%

Source: http://developer.android.com/about/dashboards/index.html

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User analytics based testing
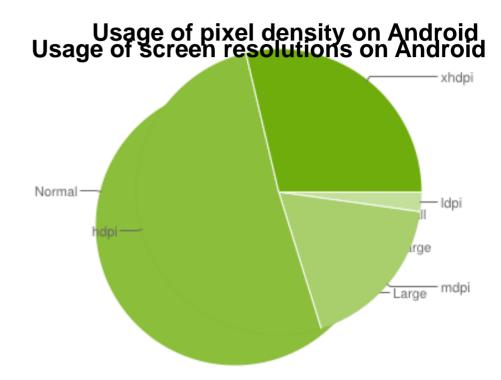
Device Marketshare
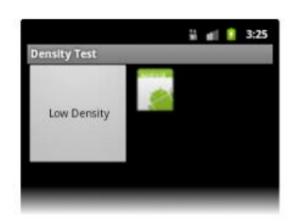
OS Version
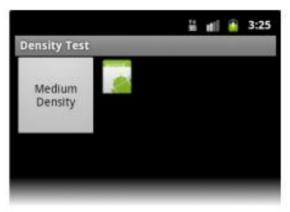
Screen size &
Pixel density

Usage of pixel density on Android
Usage of screen resolutions on Android

- xhdpi
- ldpi
- mdpi
- Normal
- hdpi
- Large
- rge
- ll

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Source: http://developer.android.com/about/dashboards/index.html
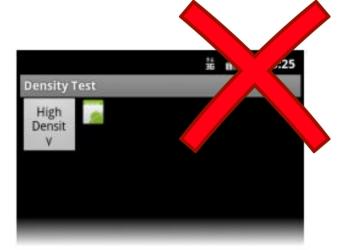
Screen size vs. Pixel density

Source: http://developer.android.com/about/dashboards/index.html

User analytics based testing

Device	%	px w	px h	~ppi	
	100.00%				
Samsung					
Total	60.44%				
Galaxy Ace	5.64%	320	480	165 m	
Galaxy Gio	2.34%	320	480	180 m	
Galaxy S	13.64%	480	800	233 l	
Galaxy S+	7.16%	480	800	233 l	
Galaxy S2	27.13%	480	800	217 l	
Galaxy S3				312? xl	
Galaxy Mini	1.38%	240	320	127 s	
Galaxy Note	1.46%	800	1280	285 xl	
Galaxy Y	0.80%	240	320	133 s	
Galaxy Y Pro / Txt	0.39%	320	240	154 s	
Galaxy 3	0.23%	240	400	146 s	
HTC					
Total	26.49%				
Cha Cha	0.41%	480	320	222 m	
Desire	4.90%	480	800		252
Desire HD	4.70%	480	800	217 l	
Desire S	3.04%	480	800		252
Desire Z / Vision	2.08%	480	800	252 l	
EVO 3D	0.22%	540	960		256
Legend	0.98%	320	480		180
Incredible S	0.45%	480	800		233
One X		720	1280	312 xl	
Sensation / HD2	3.77%	540	960		256

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Use the cloud

Use the crowd

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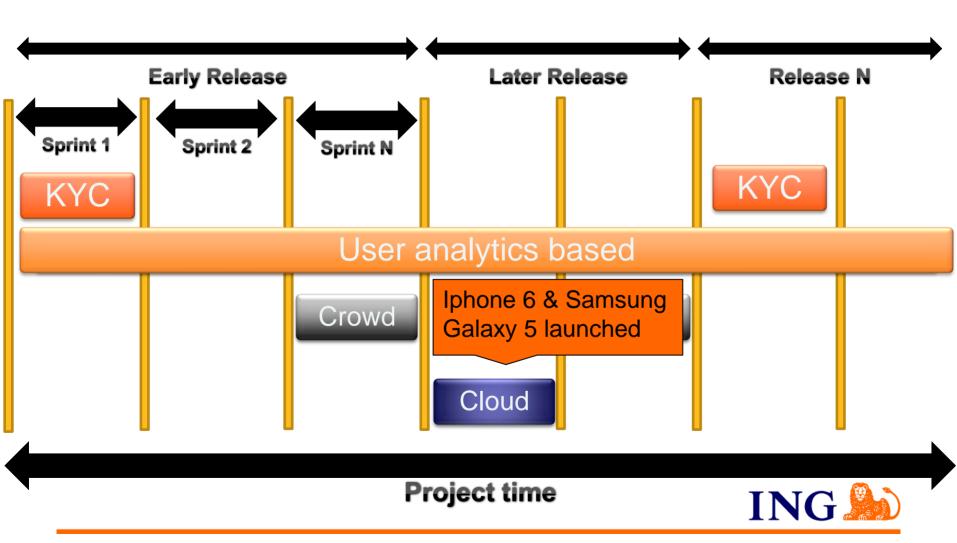
Use them together

YVONNE

=

Jenkins

+

UI automation scripts

+

battery chargers

+

shell scripts

+

...

1

#multipledevices
#OSversions #yvonne

Picture of multiple devices

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- Want does management want?
  - 1 tool
  - Test all device, OS combination
  - 100% tested
  - Maintainable test code
  - Low cost

There is no silver bullet (yet)

2

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How is testing mobile applications different?

- New test (automation) tools
  - White, Grey or black box testing
  - Real devices, simulator or cloud

…And more

Android – Testdroid / Robotium

- **Testing using robotium**

- **Test with source code or APK**

- **Learn to script in Java or…**

- **Execute on simulator and real devices**

- **Record tests using Testdroid**

  - **Record a lot of features**

  - **Object recognition**

  - **Executes test cases on one device…**

  - **…or execute in the cloud**
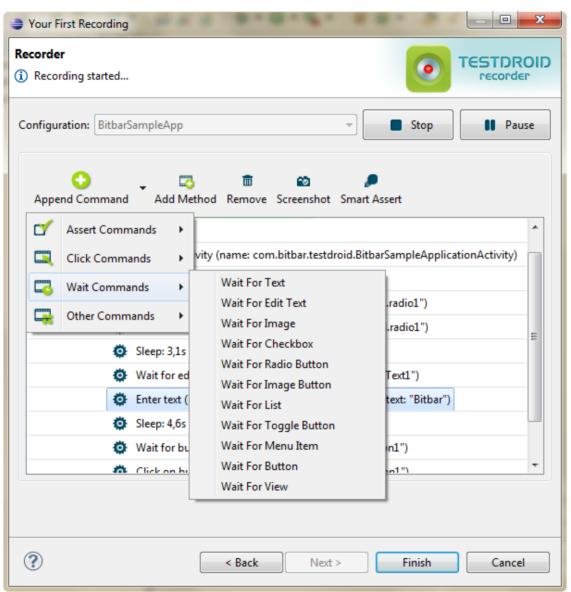
TESTDROID
recorder

Object Recognition
– Resource ID's
–Indexes
– Names

TESTDROID
cloud

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Android – Robotium

```java
public class TestMain extends ActivityInstrumentationTestCase2<Main> {
    private Solo solo;

    public TestMain() {
        super("com.calculator", Main.class);
    }

    @Override
    protected void setUp() throws Exception {
        super.setUp();
        solo = new Solo(getInstrumentation(), getActivity());
    }
```

```java
public void testDisplayBlackBox() {

    //Enter 10 in first editfield
    solo.enterText(0, "10");

    //Enter 20 in first editfield
    solo.enterText(1, "20");

    //Click on Multiply button
    solo.clickOnButton("Multiply");

    //Verify that resultant of 10 x 20
    assertTrue(solo.searchText("200"));

}
```

AndroidCalculator

11:51 AM

Enter two values and click on Calculate to multiply them.

Enter First Number

2

Enter Second Number

6

12.0

Multiply

Android – Testdroid

iOS & Android – Calabash

- **Write tests using Calabash**
- **Tests iOS and Android devices**
- **Source is needed**
- **Learn to script in ruby and…**
- **Use BDD scripting in**

```
Feature: Rating a stand
  Scenario: Find and rate a stand from the list
    Given I am on the List
    Then I should see a "rating" button
    And I should not see "Dixie Burger & Gumbo Soup"
    And take picture

    Then I touch the "rating" button
    And I should see "Dixie Burger & Gumbo Soup"
    And take picture
```
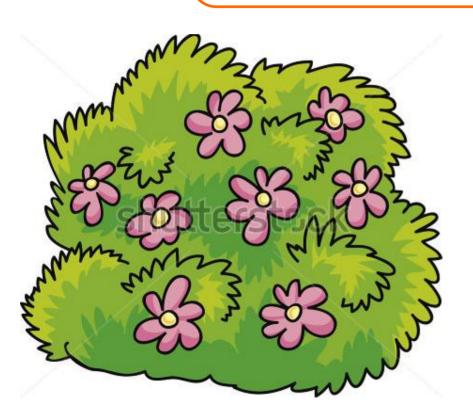
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#CodeStructure #UIA #yvonne

Global

Utility
Helper Classes
Test Data
Object Declaration

Every Screen

Elements
Actions

'LoginElements.js'
'LoginActions.js'

Tests

Test Cases
    (public)
Steps
        (private)

'LoginTests.js'

Scenario

Scenarios
Main file

'*LoginScenarios.js*'
'*Main.js'*
'Yvonne.js'

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Object declaration

- Prototype Constructors
- Public / Private Functions
- Improve readability
- Enforce consistency coding

Associative Arrays

- Test data driven
- Texts in App in central location

Screenshot

- External library included to save screenshots
- Pixel Perfect testing not automated before
- Base image compare with actual screenshot

Logging

- Export logging from Instruments Automation
- Use export as input for Dashboard
- Yvonne weather forecast
- Group chat app

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#CI
= Powerful
Enabler
#yvonne

TRANSPARANCY

OPS

DEV

"Are we ready for production?"

DEV

TEST

ING

Yvonne

2358
364
15.4%

08-03	07-03	06-03	05-03	04
☀	☀	⛅	☀	
277	716	411	469	1
22	107	72	52	
7.94%	14.9%	17.5%	11.0%	43
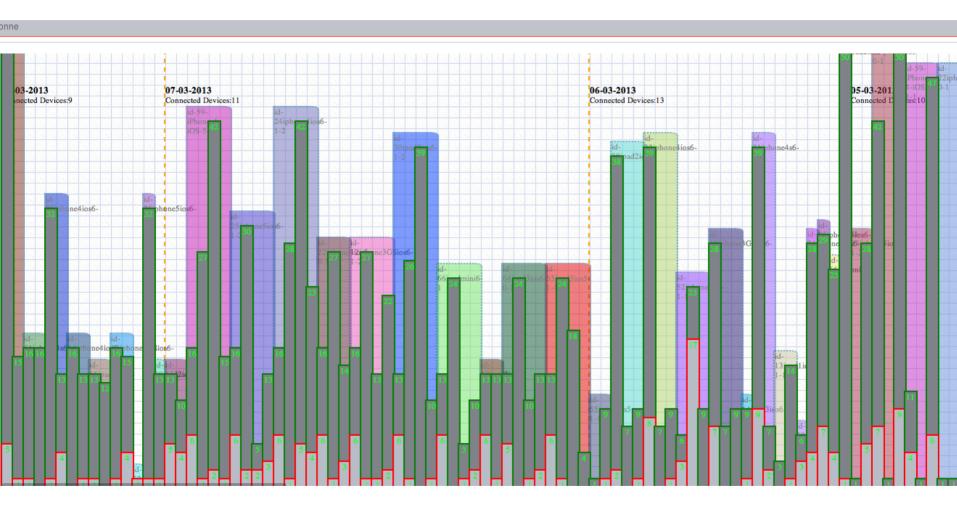
#Dashboard #WeatherReport

#Dashboard #BugsBaseline

#jenkins and #yvonne
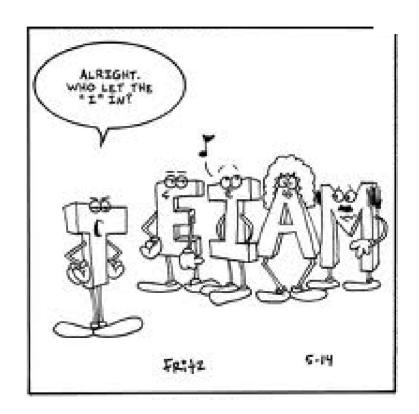
Wrap up

1. Multiple OS versions & devices

2. There is no silver bullet (yet)

3. Structure your UI code

4. CI powerful enabler

5. Test automation = team effort

@ebruin
@smaljaars
#yvonne

TEST·NET

Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING

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Eddy.bruin@capgemini.com
Samuel.maljaars@capgemini.com