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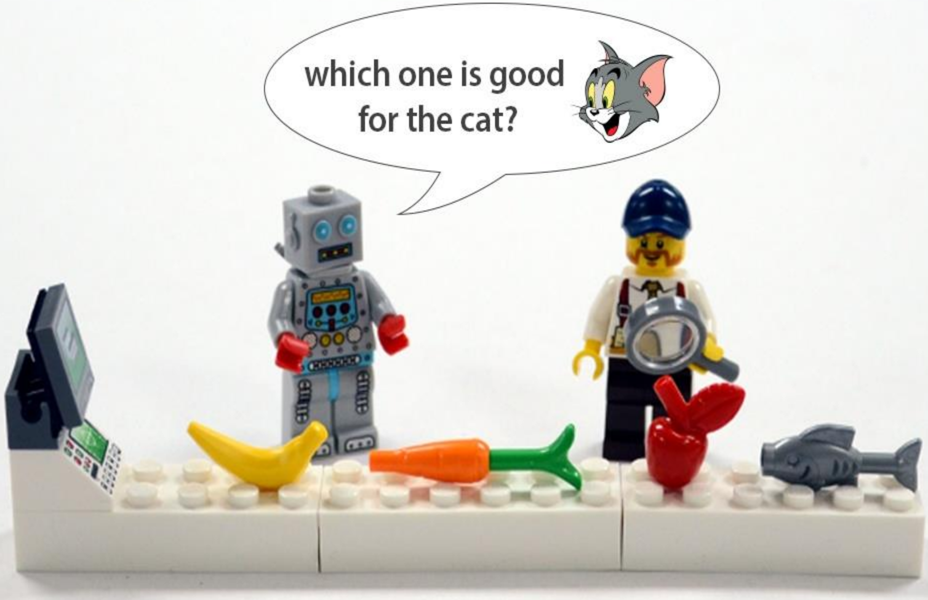
BDD in Automation Testing



Who Am I?

My name	Nguyen Thi Hong Thuy
Studied at	Danang University of Technology
	Master of Computer Science

IT developing experience started at University in 2004

Java Developer at MagRabbit VN

Java Developer, Tester at Axon Active VN

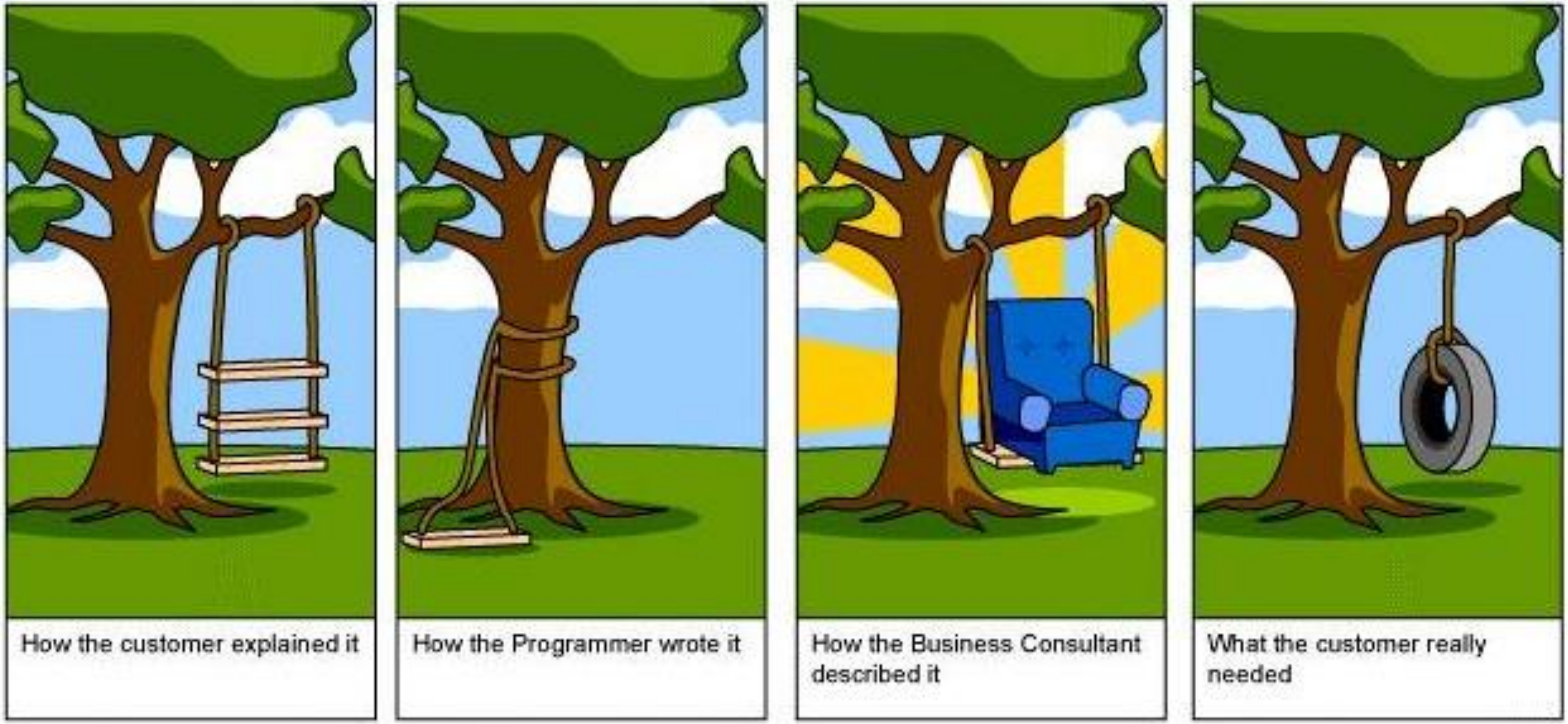
Email	thuy.nguyen@axonactive.vn

Agenda

- ➢ The Importance of Requirements
- ➢ Behavior Driven Developments (BDD)
  - Why born BDD?
  - What is BDD?
  - Why use BDD?
  - BDD Style & Tools
- ➢ How we have applied BDD in our projects
- ➢ Workshop
- ➢ Conclusion of BDD
- ➢ Q&A

The importance of requirements

The importance of requirements



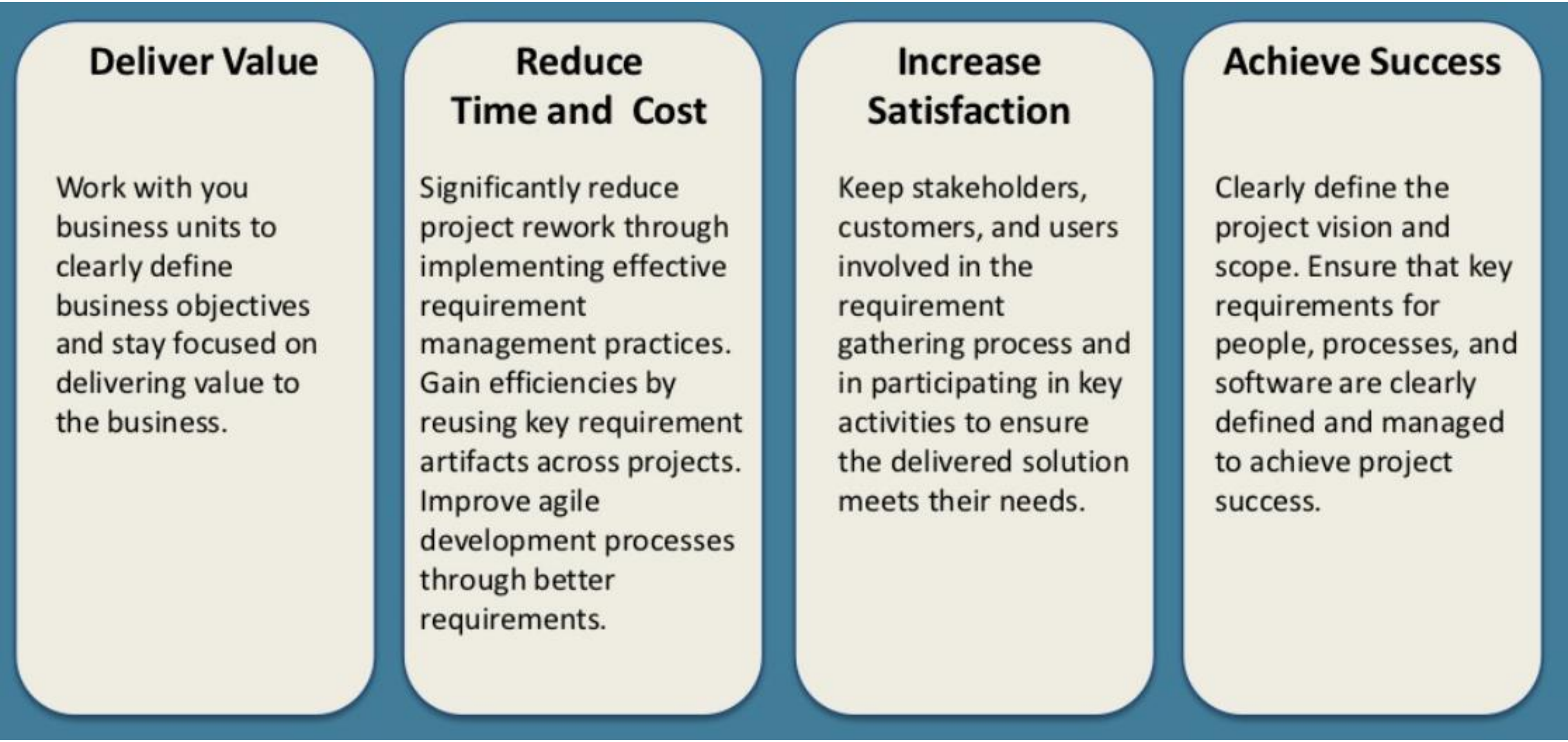
How the customer explained it

How the Programmer wrote it

How the Business Consultant described it

What the customer really needed

The importance of requirements



Deliver Value

Work with you business units to clearly define business objectives and stay focused on delivering value to the business.

Reduce Time and Cost

Significantly reduce project rework through implementing effective requirement management practices. Gain efficiencies by reusing key requirement artifacts across projects. Improve agile development processes through better requirements.

Increase Satisfaction

Keep stakeholders, customers, and users involved in the requirement gathering process and in participating in key activities to ensure the delivered solution meets their needs.

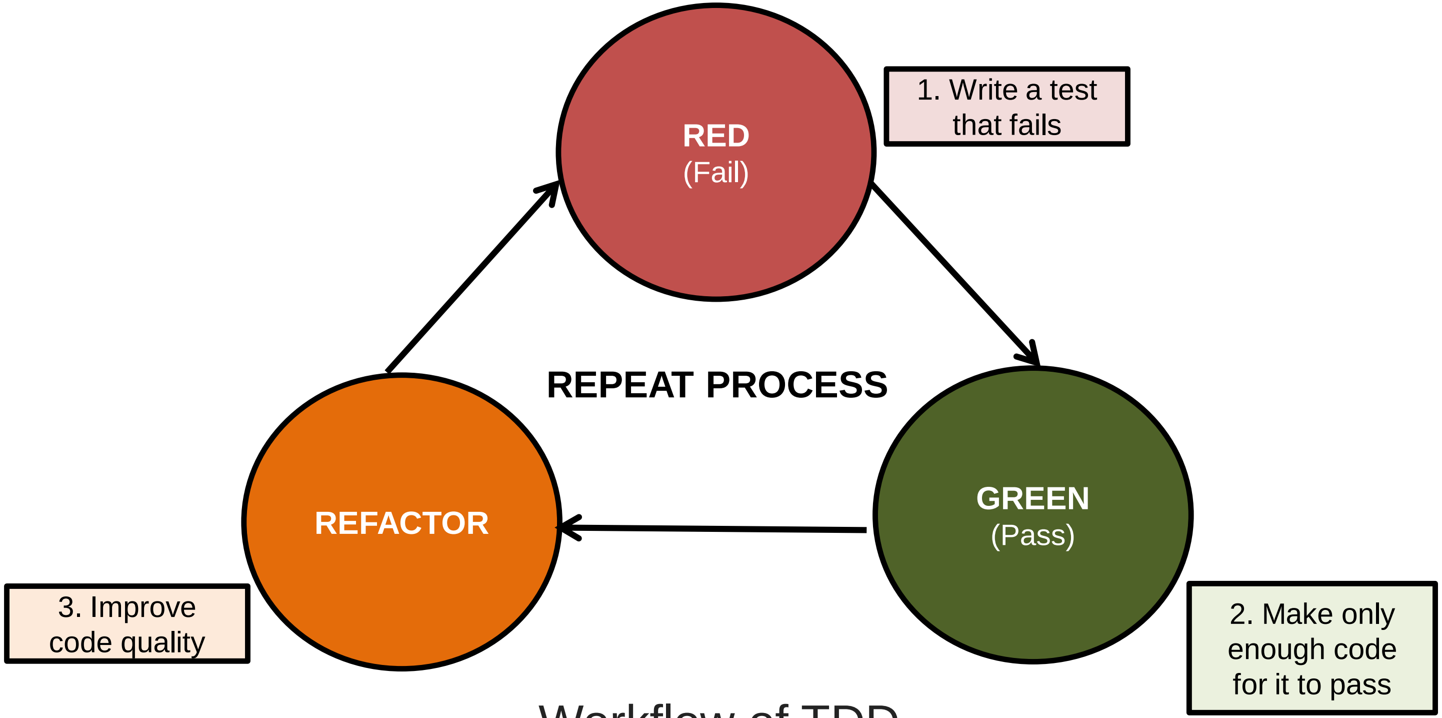
Achieve Success

Clearly define the project vision and scope. Ensure that key requirements for people, processes, and software are clearly defined and managed to achieve project success.

Behavior Driven Developments

TDD

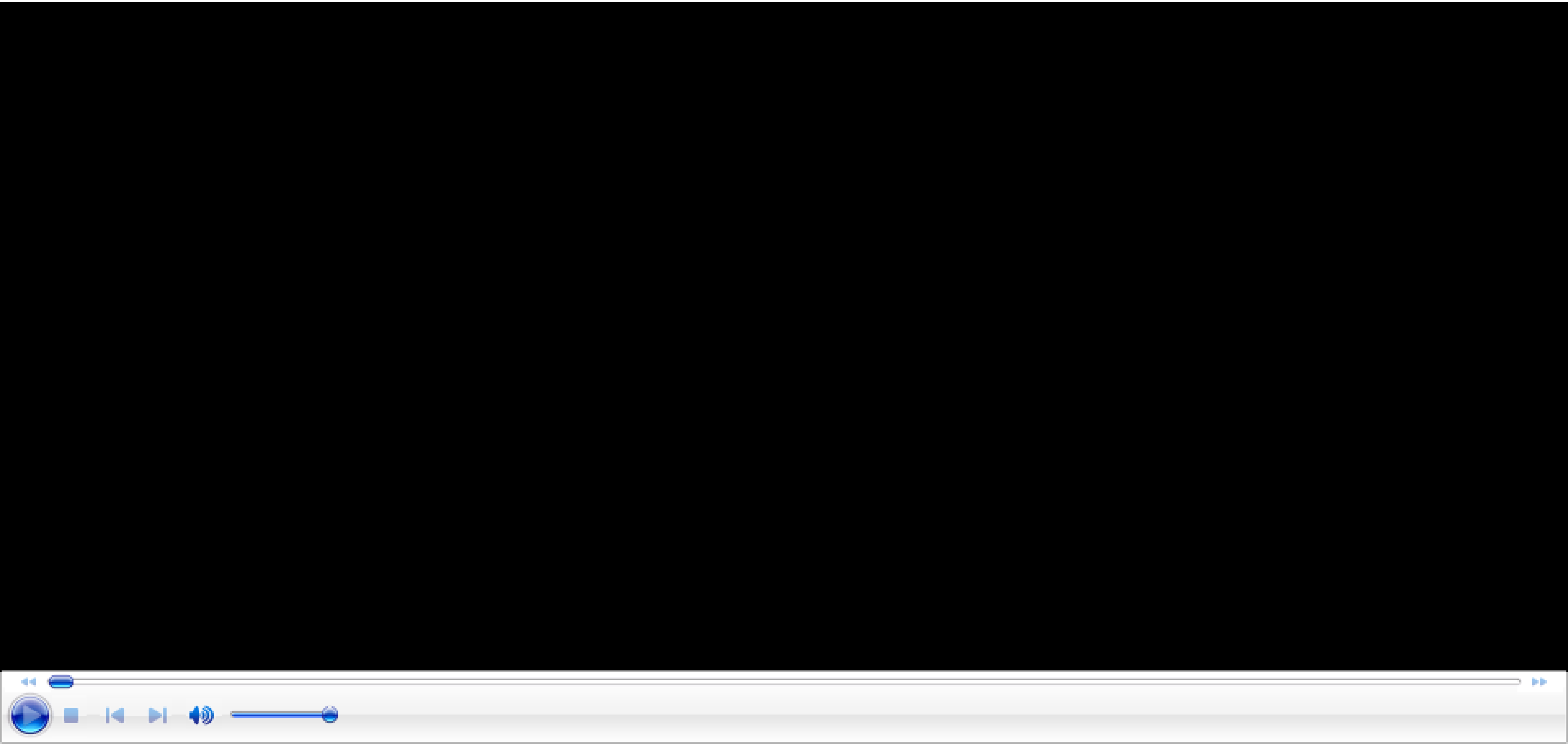
Test-driven development is a method of **software** development in which **unit testing** is repeatedly done on **source code**


RED
(Fail)
1. Write a test that fails
REPEAT PROCESS
GREEN
(Pass)
2. Make only enough code for it to pass
REFACTOR
3. Improve code quality

Workflow of TDD

Why born BDD?

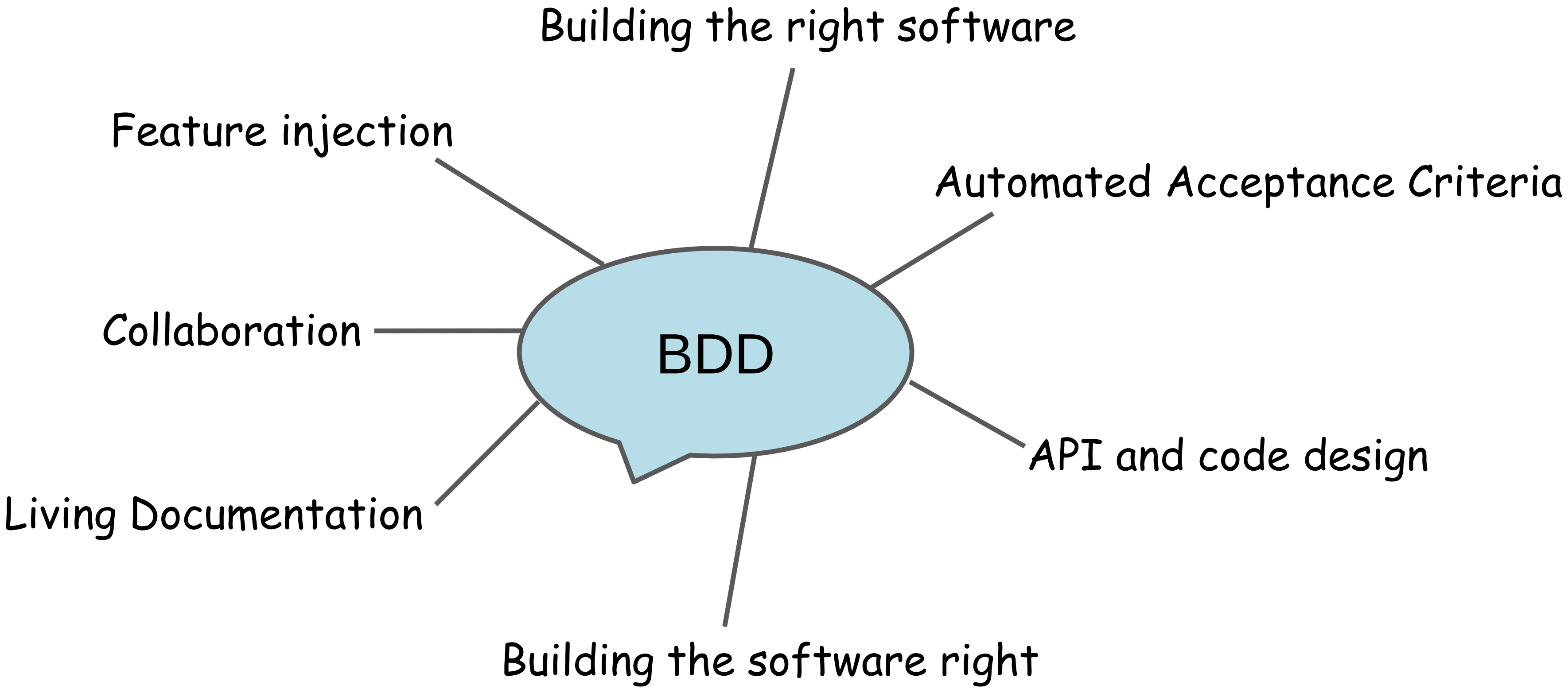
Why born BDD?



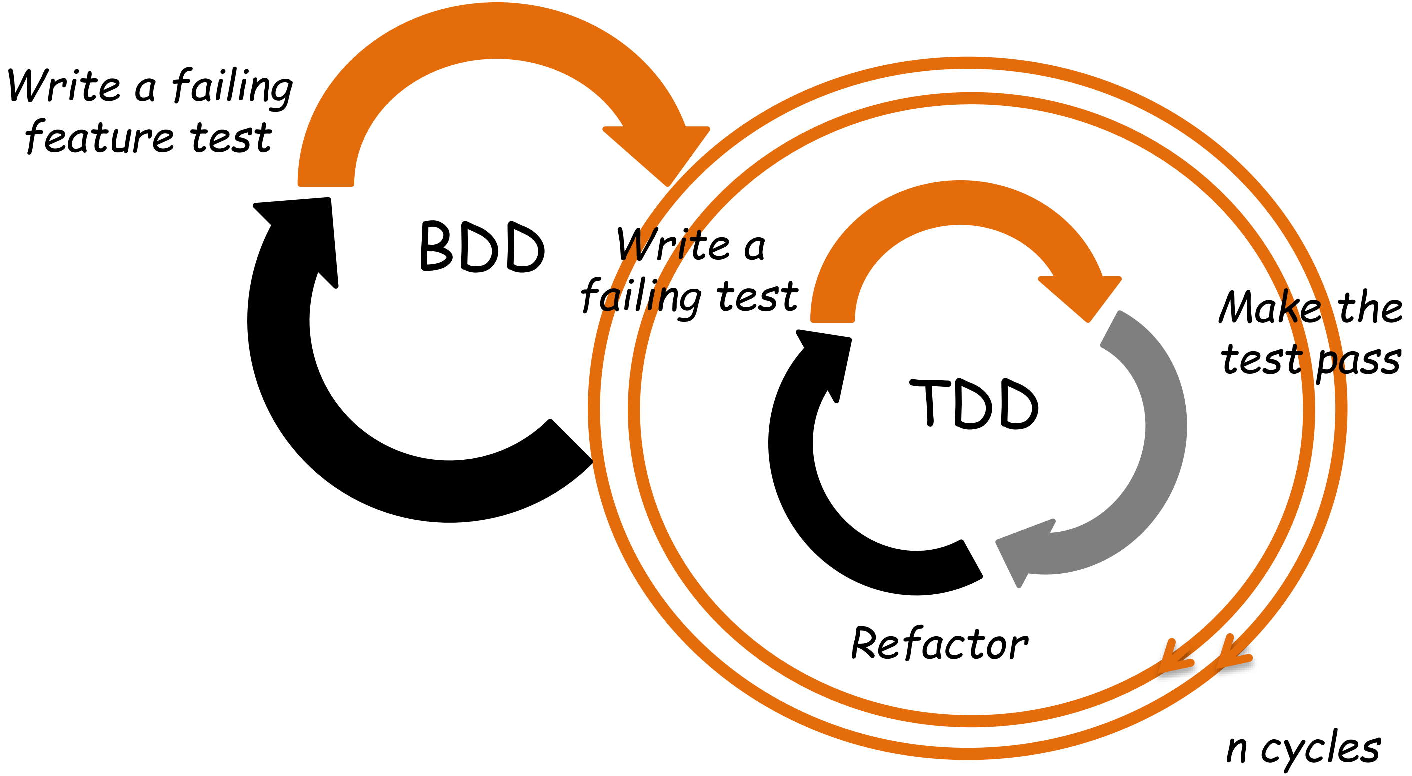
What is BDD?

Behavior-Driven Development (BDD) is a set of software engineering practices designed to help teams build and deliver more valuable, higher quality software faster.

What is BDD?

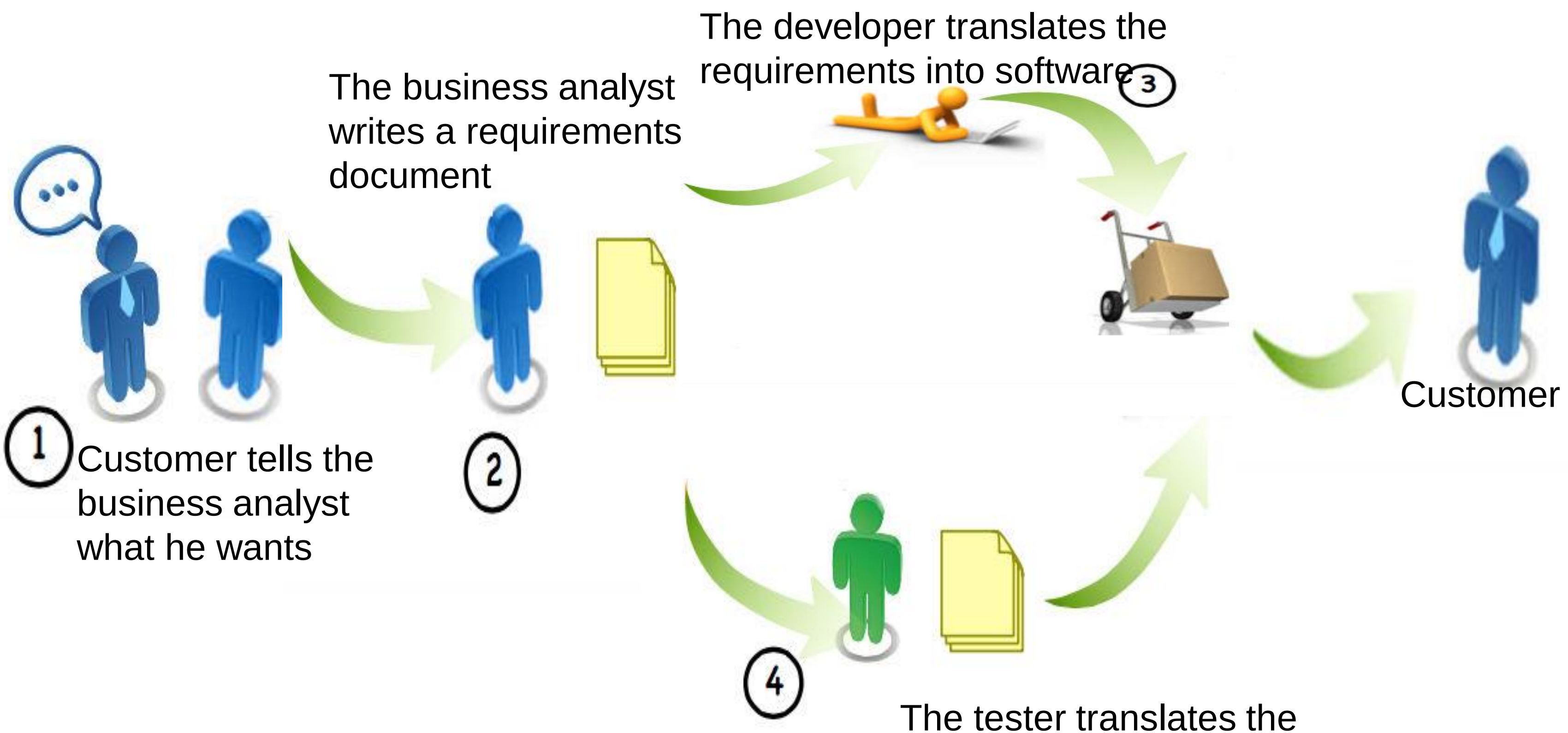

Building the right software
Feature injection
Automated Acceptance Criteria
Collaboration
BDD
API and code design
Living Documentation
Building the software right

Workflow of TDD/BDD



BDD was originally designed as an improved version of TDD

Why use BDD?



Customer tells the business analyst what he wants

The business analyst writes a requirements document

The developer translates the requirements into software

The tester translates the requirements into test cases

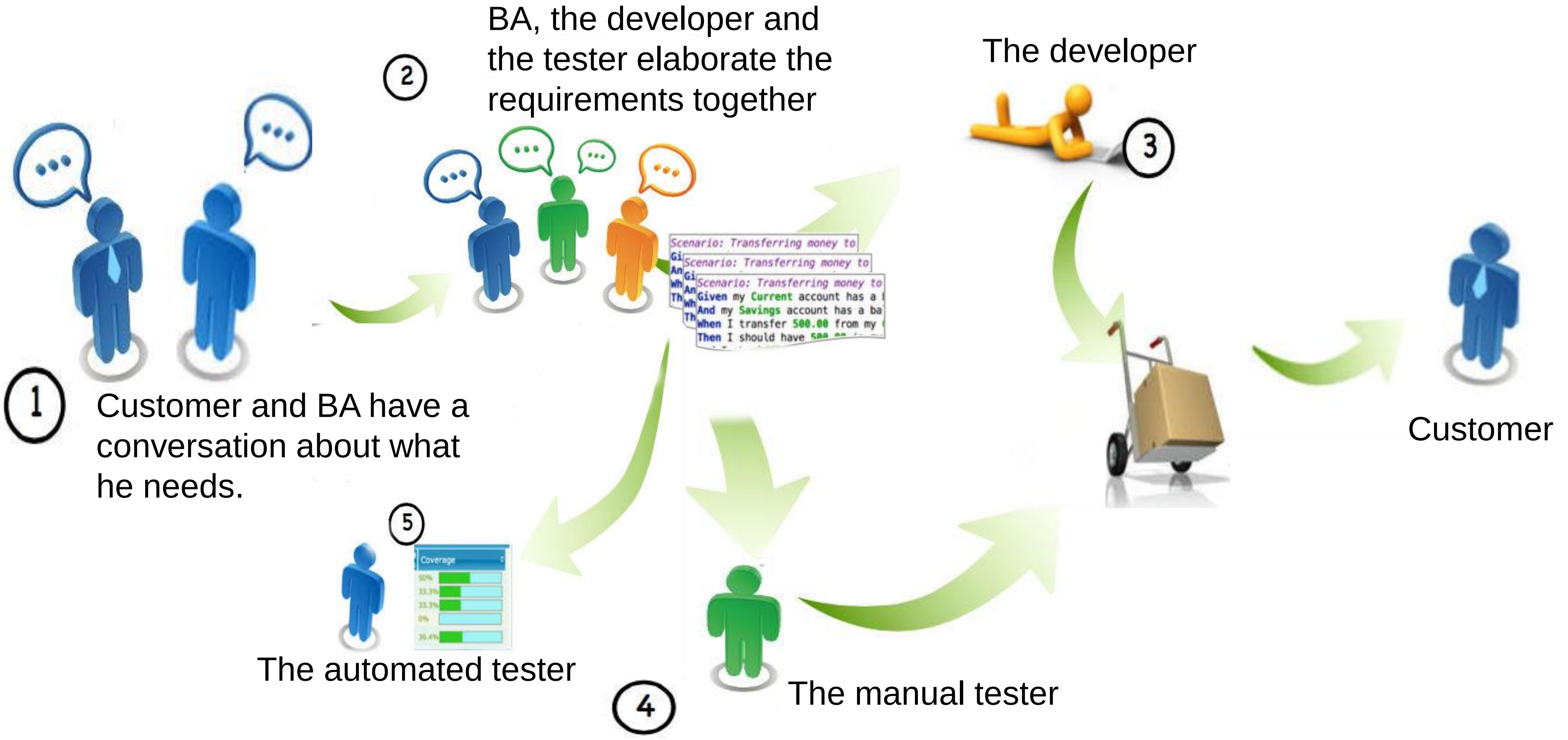
Customer

The traditional development process

Problems

- There are many opportunities for information to get lost in translation, be misunderstood, or just be ignored
- Chances are that the new module itself may not do exactly what was required and that the documentation won’t reflect the initial requirements

Why use BDD?



Customer and BA have a conversation about what he needs.

BA, the developer and the tester elaborate the requirements together

```
Scenario: Transferring money to
Given my Current account has a
And my Savings account has a ba
When I transfer 500.00 from my
Then I should have 500.00
```

The developer

Customer

The automated tester

The manual tester

The development process is applying BDD

BDD Style – Feature file example

Feature

Meta:
Narrative:
In order to login ZingPoll successfully
As a user
I want to have single choice poll
So that I can create polls, share it to my friends & collect the option about it

What business outcomes are you trying to achieve?

Who needs it ?

What must you do to help achieve this outcome?

Scenario

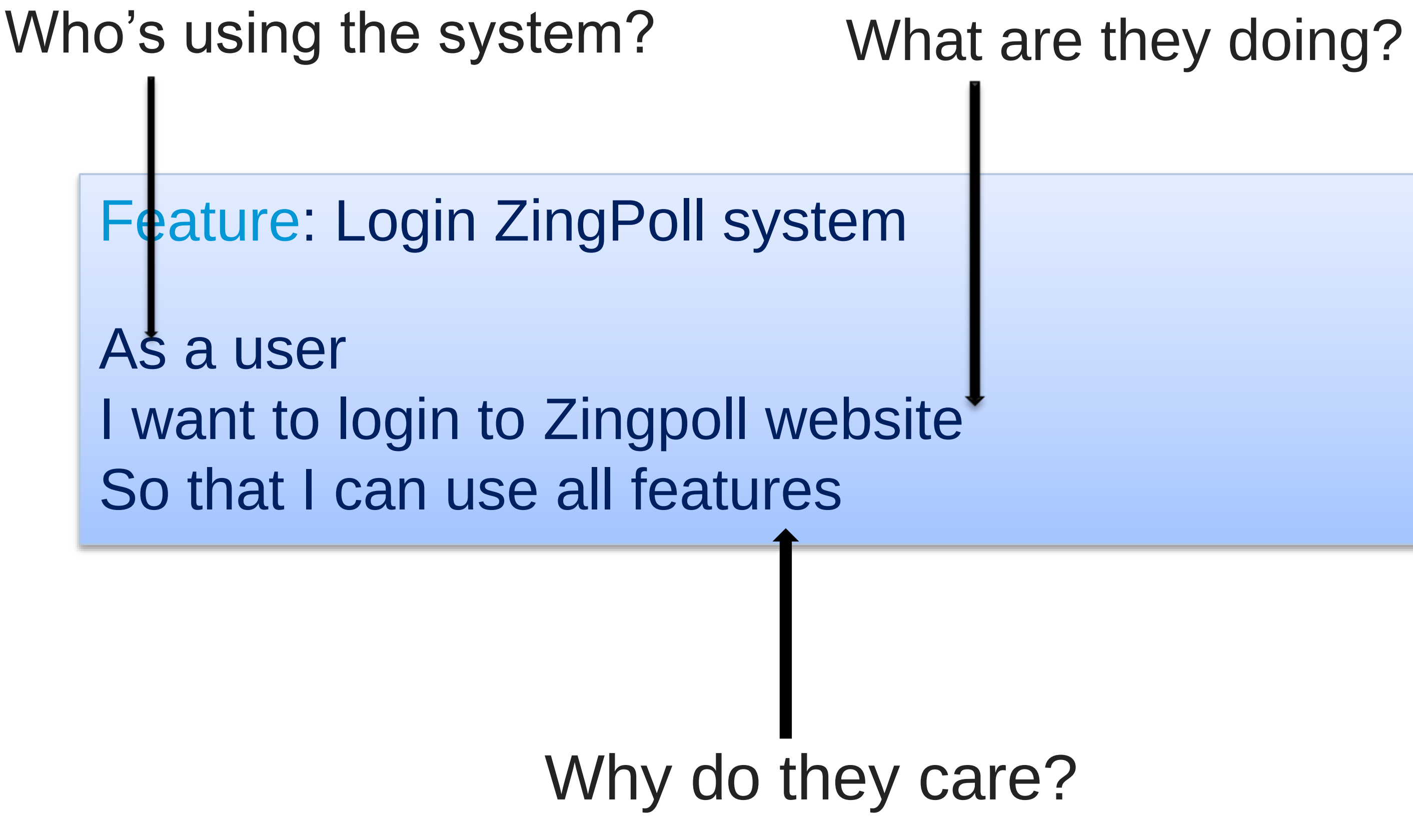
Scenario: Create a single choice poll successful
Given I am on ZingPoll website
When I click the Sign In button on the menu bar to register an new account
Then The Sign In form should be shown
When I enter email <email> and password <password>
And I click the Sign In button on the form
Then I log in into website successful
When I enter <question> into the question field
And I enter the <first_anwser> and <second_answer> into the answer fields
And I click the Create Poll button
Then The poll is created successfully

Each row represents separate set of test data

Examples:

email	password	question	first_anwser	second_answer
bddteam1@gmail.com	zingpoll	Have you ever applied BDD in your project?	Yes	No

BDD Style – Feature file



Who’s using the system?

What are they doing?

```
Feature: Login ZingPoll system

As a user
I want to login to Zingpoll website
So that I can use all features
```

Why do they care?

BDD Style - Scenarios

- Given - Sets up preconditions, or context, for the scenario
- When - The action, or behavior, that we’re focused on
- Then - Checks post-conditions and verifies that the right thing happened in the When stage

Scenario: Login ZingPoll system successful

Given I am on ZingPoll website

When I click the Sign In button on the menu bar to register an new account

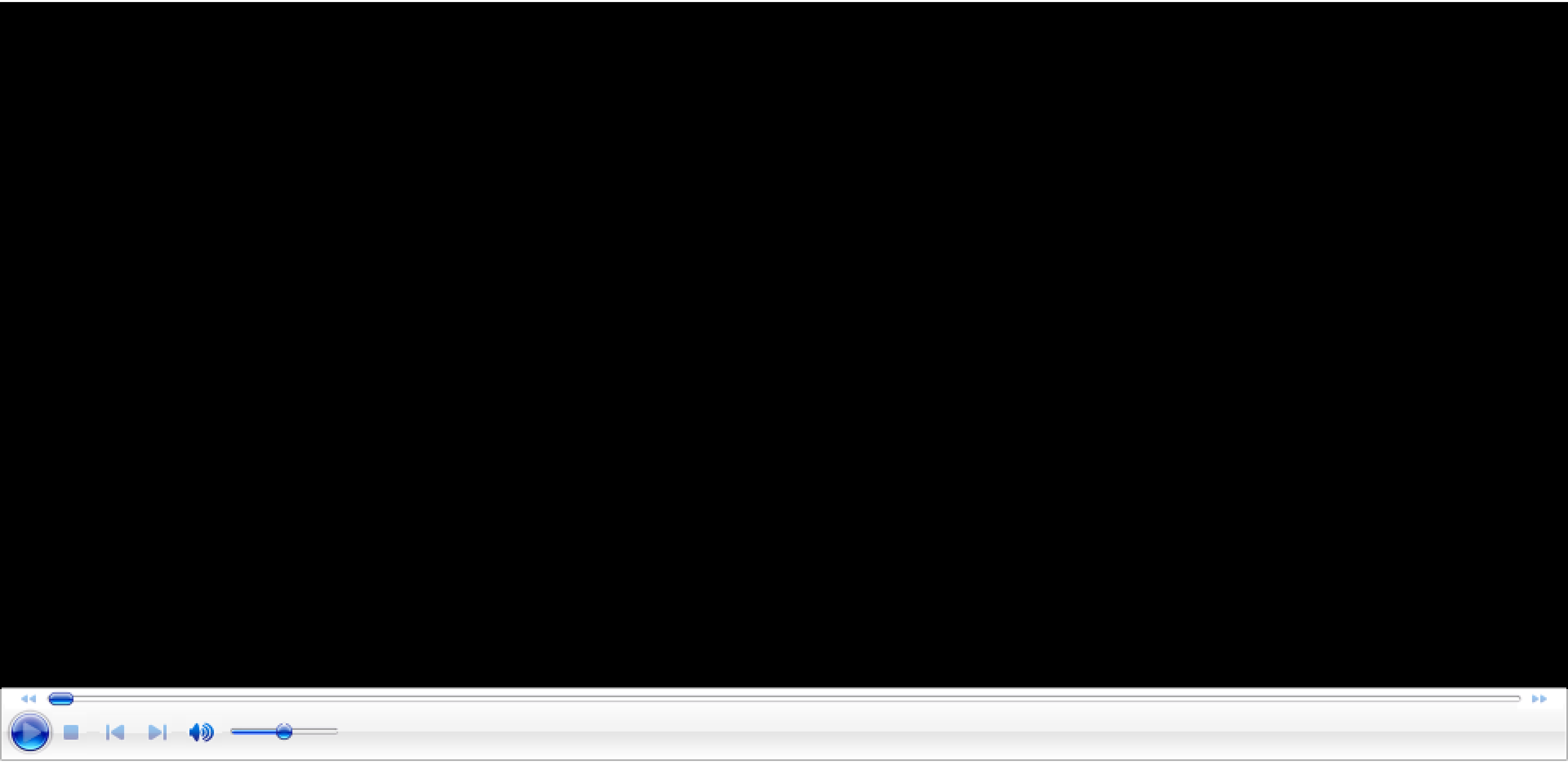
Then The Sign In form should be shown

When I enter email <email> and password <password>

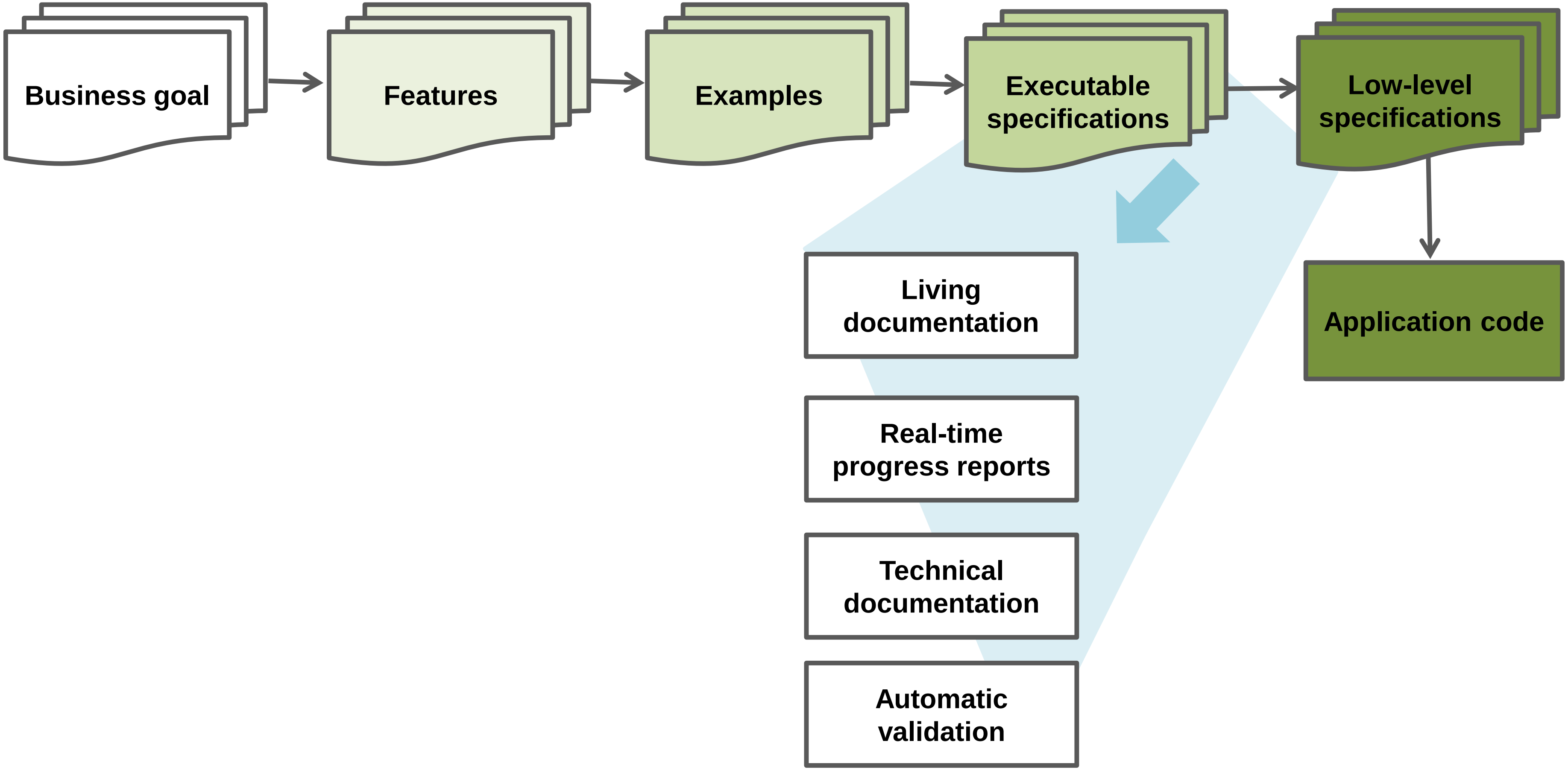
And I click the Sign In button on the form

Then I log in into website successful

Why use BDD?



The principal activities and outcomes of BDD



Business goal

Features

Examples

Executable specifications

Low-level specifications

Living documentation

Real-time progress reports

Technical documentation

Automatic validation

Application code

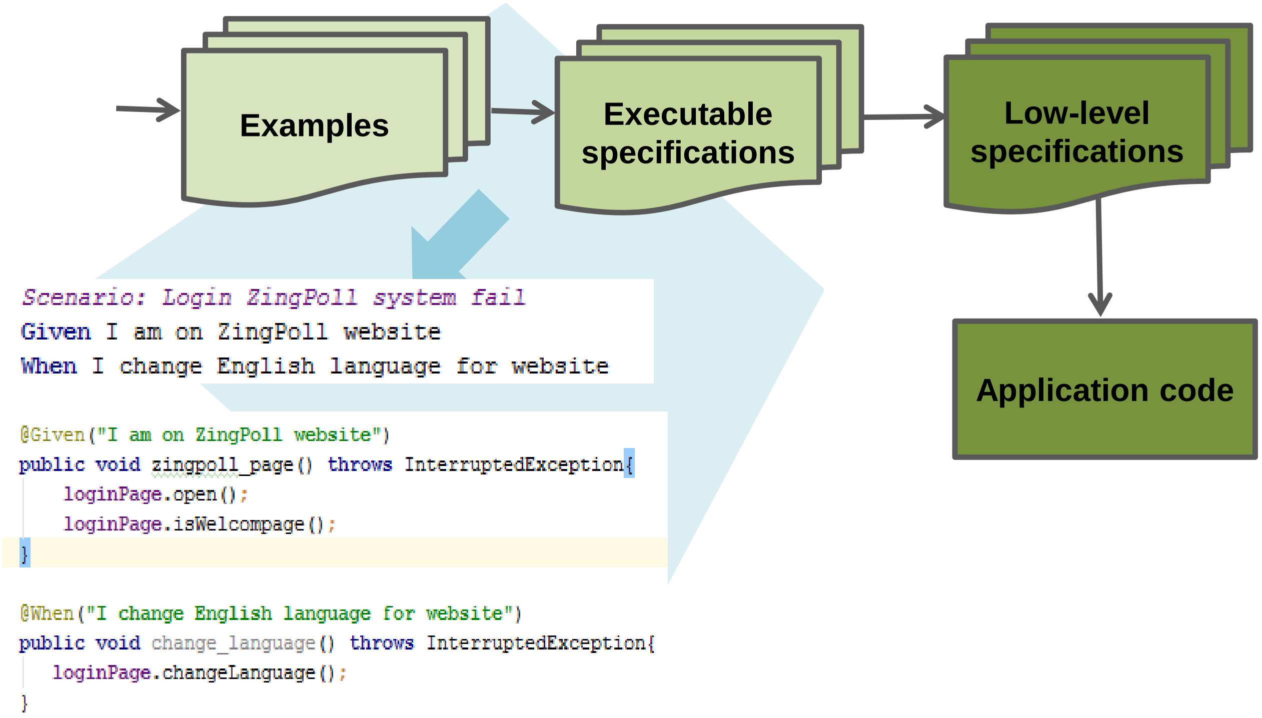
The principal activities and outcomes of BDD

jbehave

Cucumber

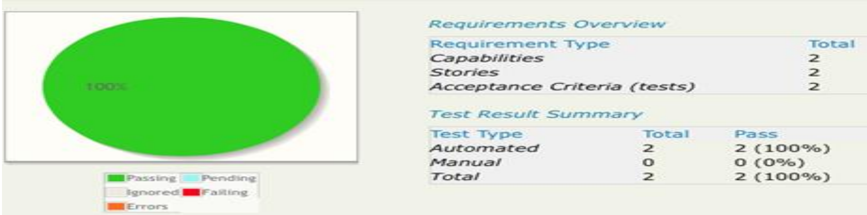
specflow
PRAGMATIC BDD FOR .NET

Serenity BDD



```
Scenario: Login ZingPoll system fail
Given I am on ZingPoll website
When I change English language for website
```

```
@Given("I am on ZingPoll website")
public void zingpoll_page() throws InterruptedException{
    loginPage.open();
    loginPage.isWelcompage();
}

@When("I change English language for website")
public void change_language() throws InterruptedException{
   loginPage.changeLanguage();
}
```



Requirements Overview

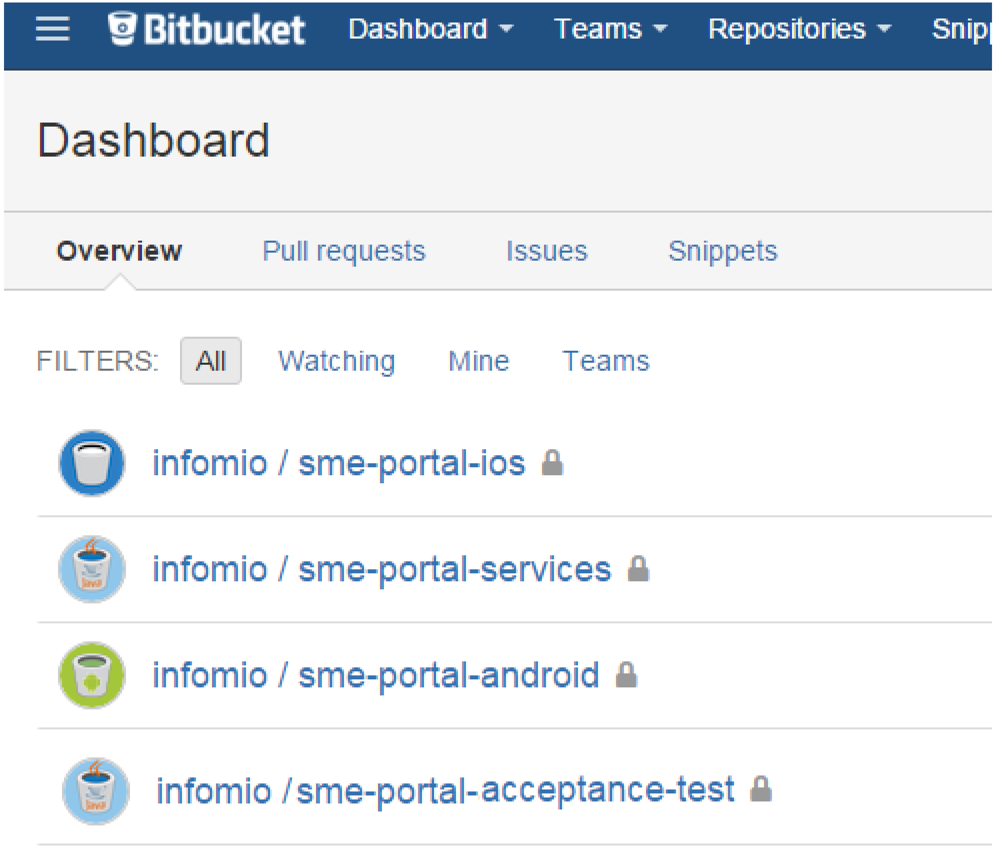
Requirement Type	Total
Capabilities	2
Stories	2
Acceptance Criteria (tests)	2

Test Result Summary

Test Type	Total	Pass
Automated	2	2 (100%)
Manual	0	0 (0%)
Total	2	2 (100%)

How we have applied BDD in our current projects

Repositories



Dashboard

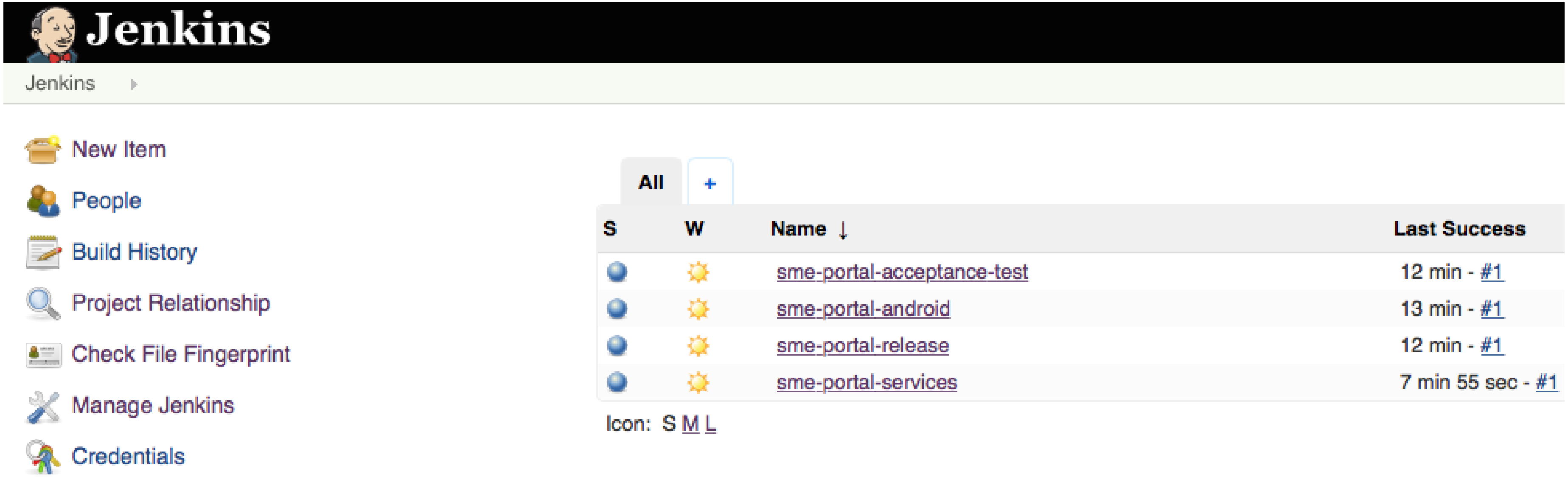
infomio / sme-portal-ios 🔒

infomio / sme-portal-services 🔒

infomio / sme-portal-android 🔒

infomio /sme-portal-acceptance-test 🔒

Build Jenkins



Jenkins

Jenkins ▸

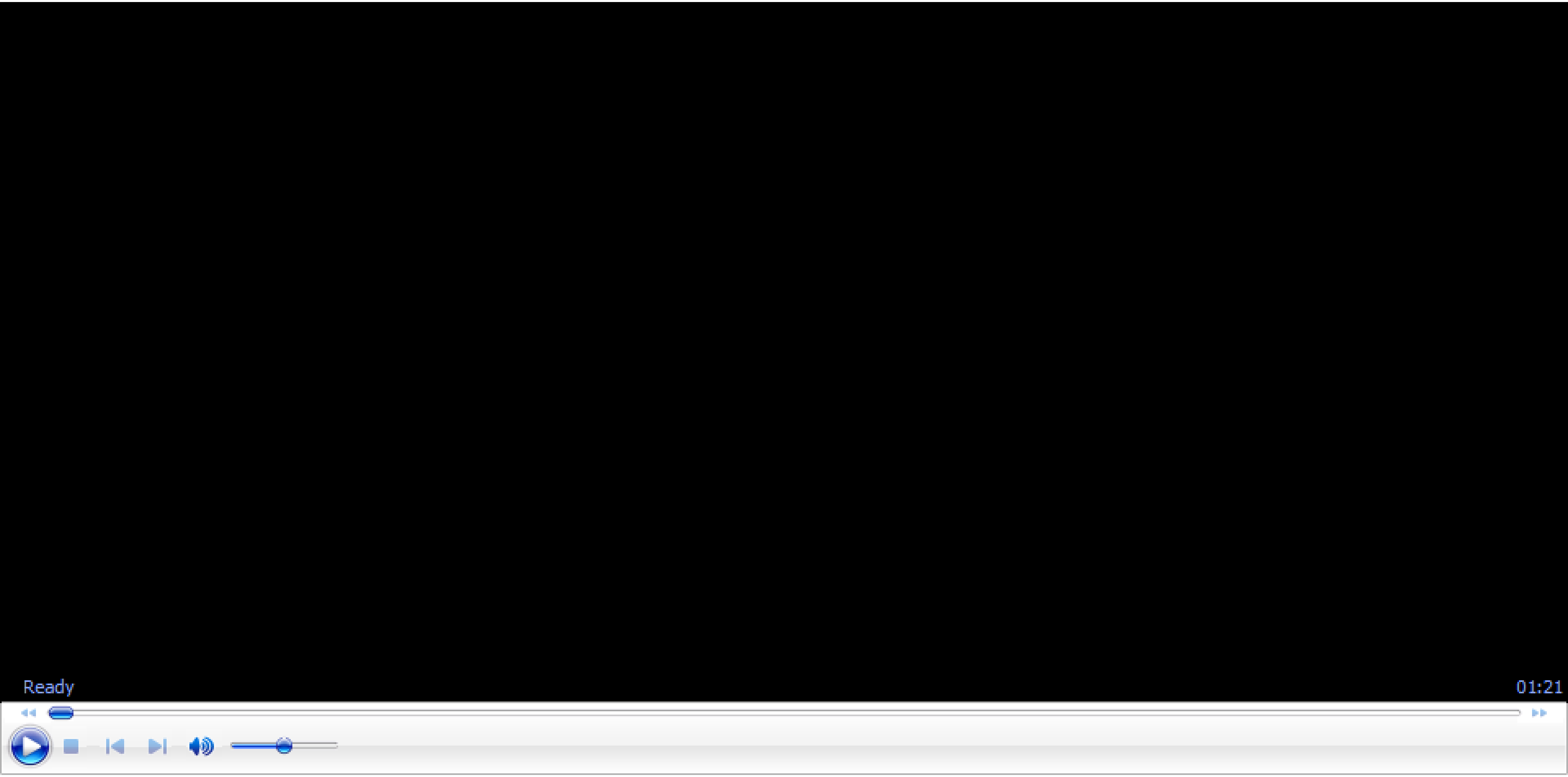
- New Item
- People
- Build History
- Project Relationship
- Check File Fingerprint
- Manage Jenkins
- Credentials

All | +

S	W	Name ↓	Last Success
●	☀	sme-portal-acceptance-test	12 min - #1
●	☀	sme-portal-android	13 min - #1
●	☀	sme-portal-release	12 min - #1
●	☀	sme-portal-services	7 min 55 sec - #1

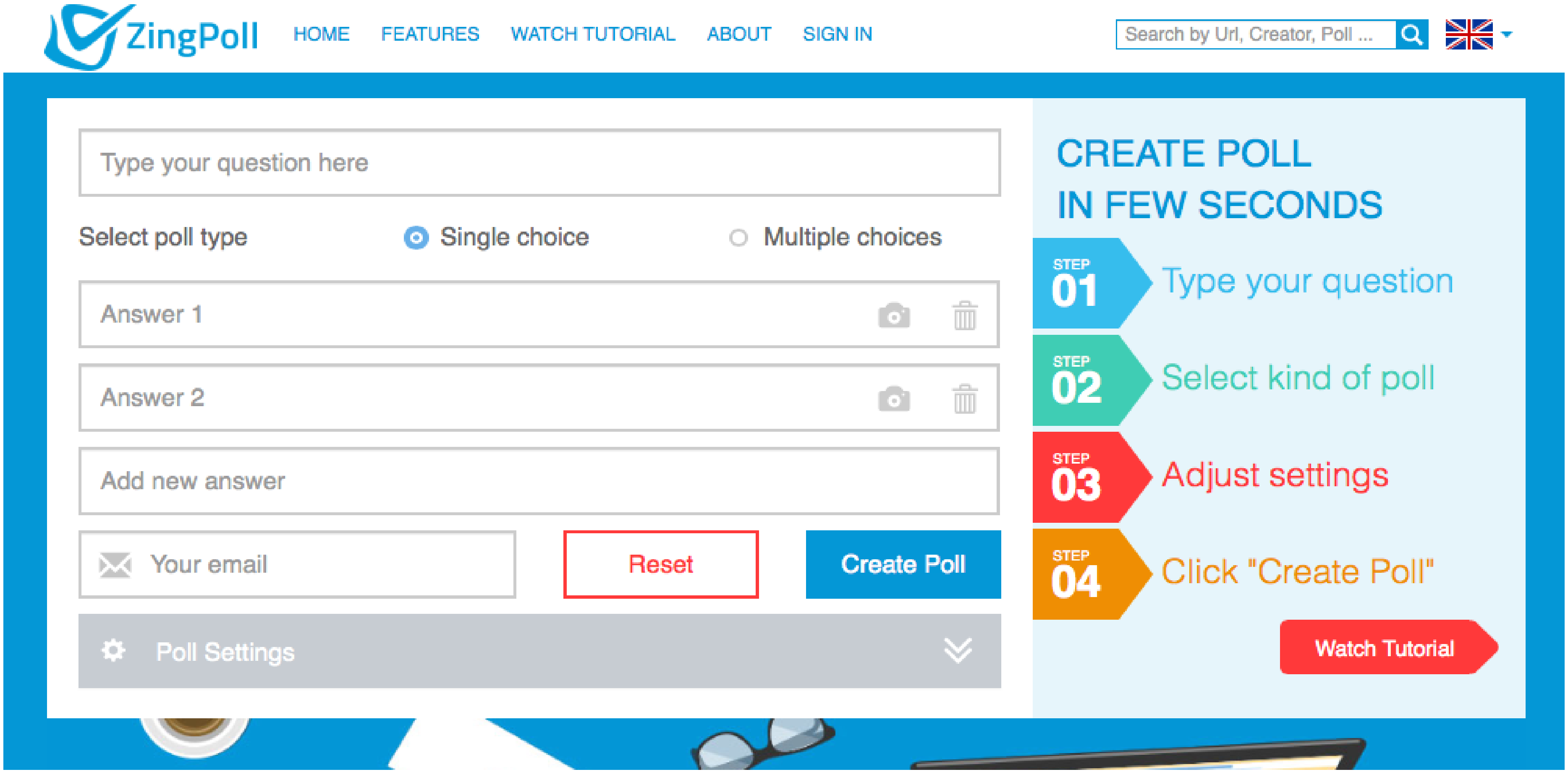
Icon: S M L

Pipeline



Workshop

Introduce ZingPoll Website



Select poll type ● Single choice ○ Multiple choices

CREATE POLL
IN FEW SECONDS

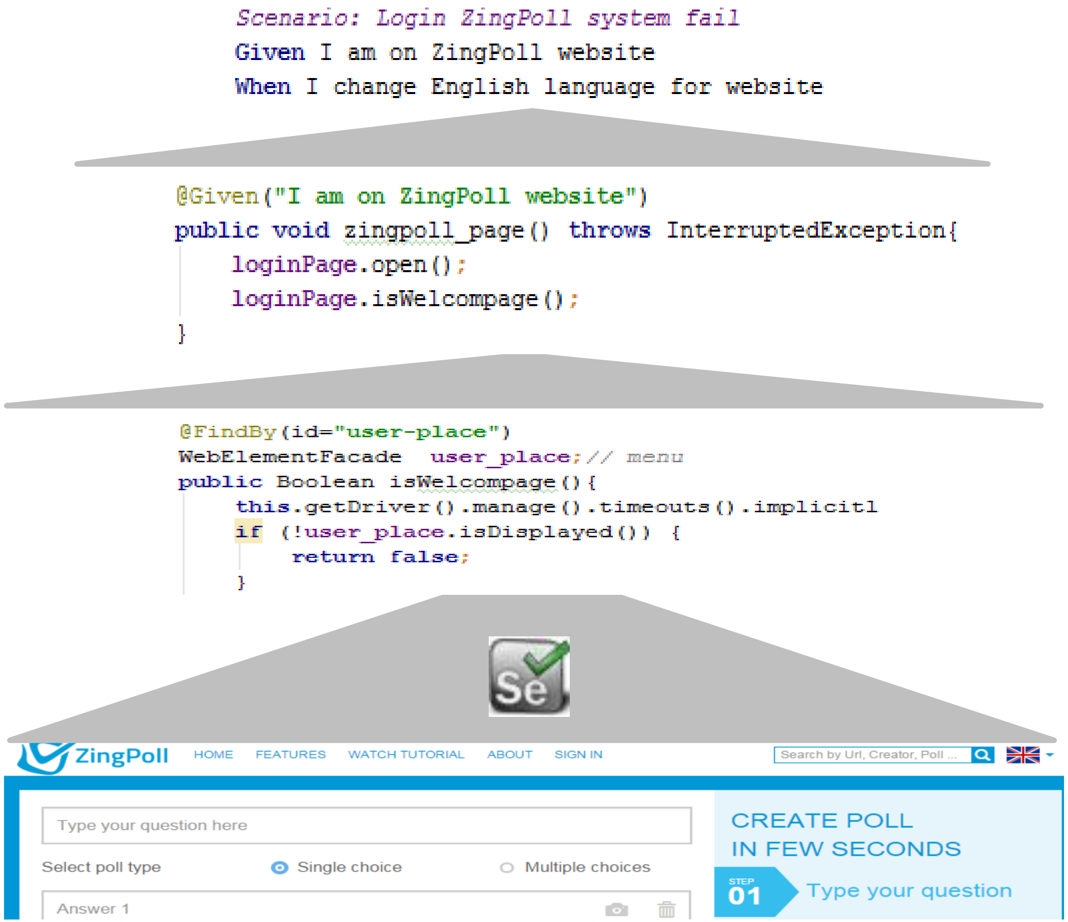
STEP 01 Type your question

STEP 02 Select kind of poll

STEP 03 Adjust settings

STEP 04 Click "Create Poll"

Well-written automated acceptance criteria



```
Scenario: Login ZingPoll system fail
Given I am on ZingPoll website
When I change English language for website
```

The Business Rules layer

```
@Given("I am on ZingPoll website")
public void zingpoll_page() throws InterruptedException{
    loginPage.open();
    loginPage.isWelcompage();
}
```

The Business Flow layer

```
@FindBy(id="user-place")
WebElementFacade  user_place;// menu
public Boolean isWelcompage(){
    this.getDriver().manage().timeouts().implicitl
    if (!user_place.isDisplayed()) {
        return false;
    }
```

The Technical layer

Type your question here

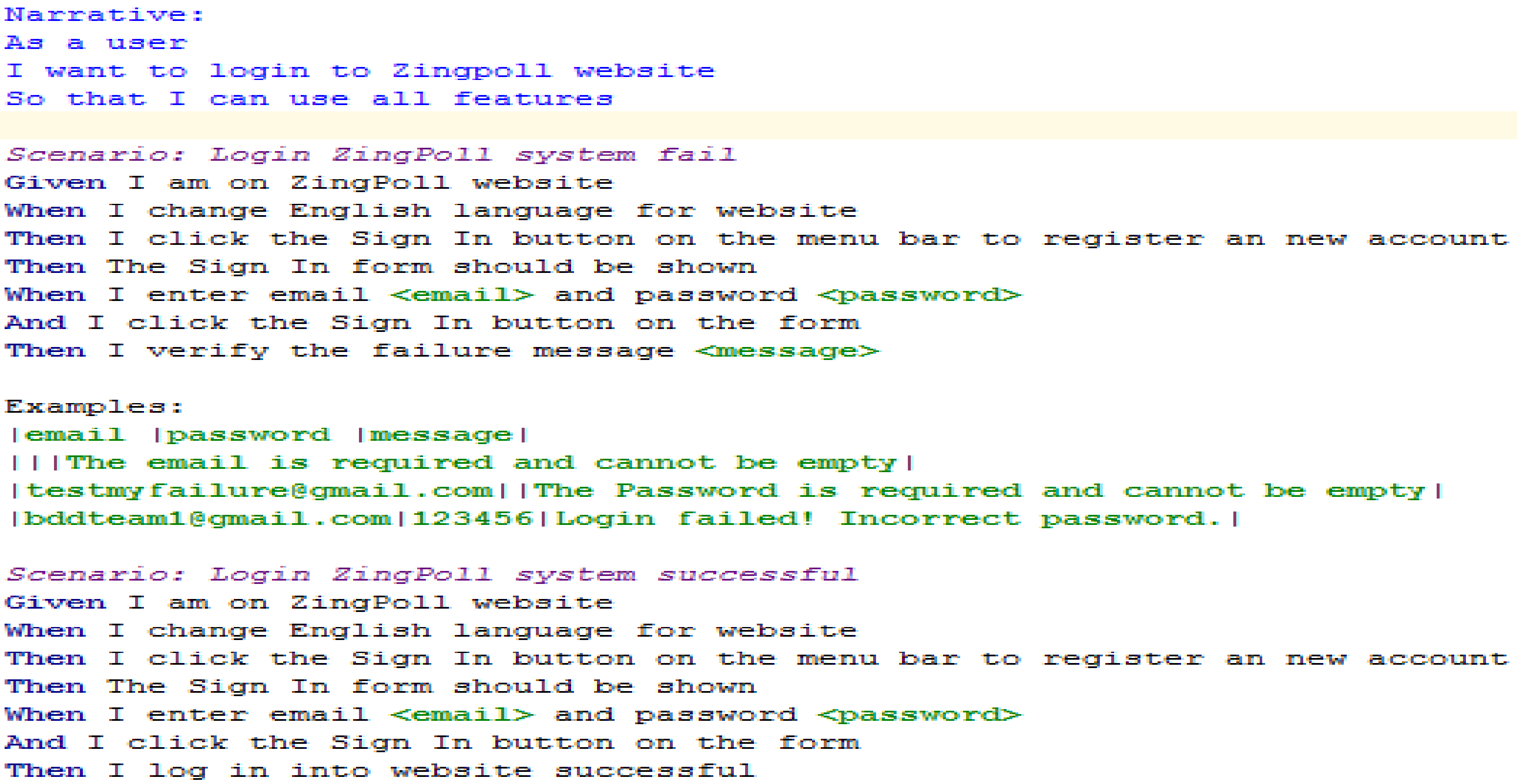
Select poll type ● Single choice ○ Multiple choices

Answer 1

CREATE POLL
IN FEW SECONDS

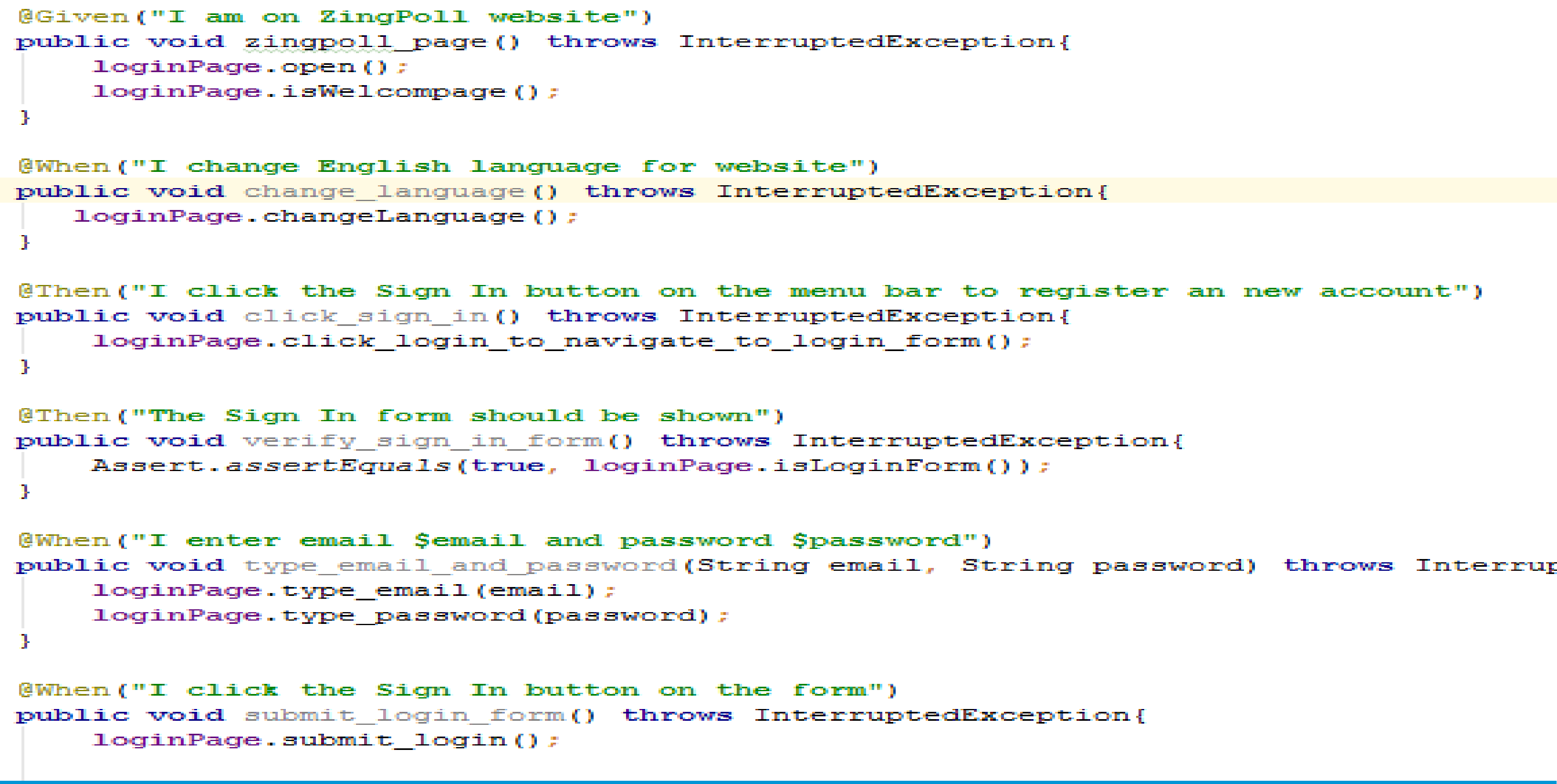
STEP 01 Type your question

The Business Rules layer



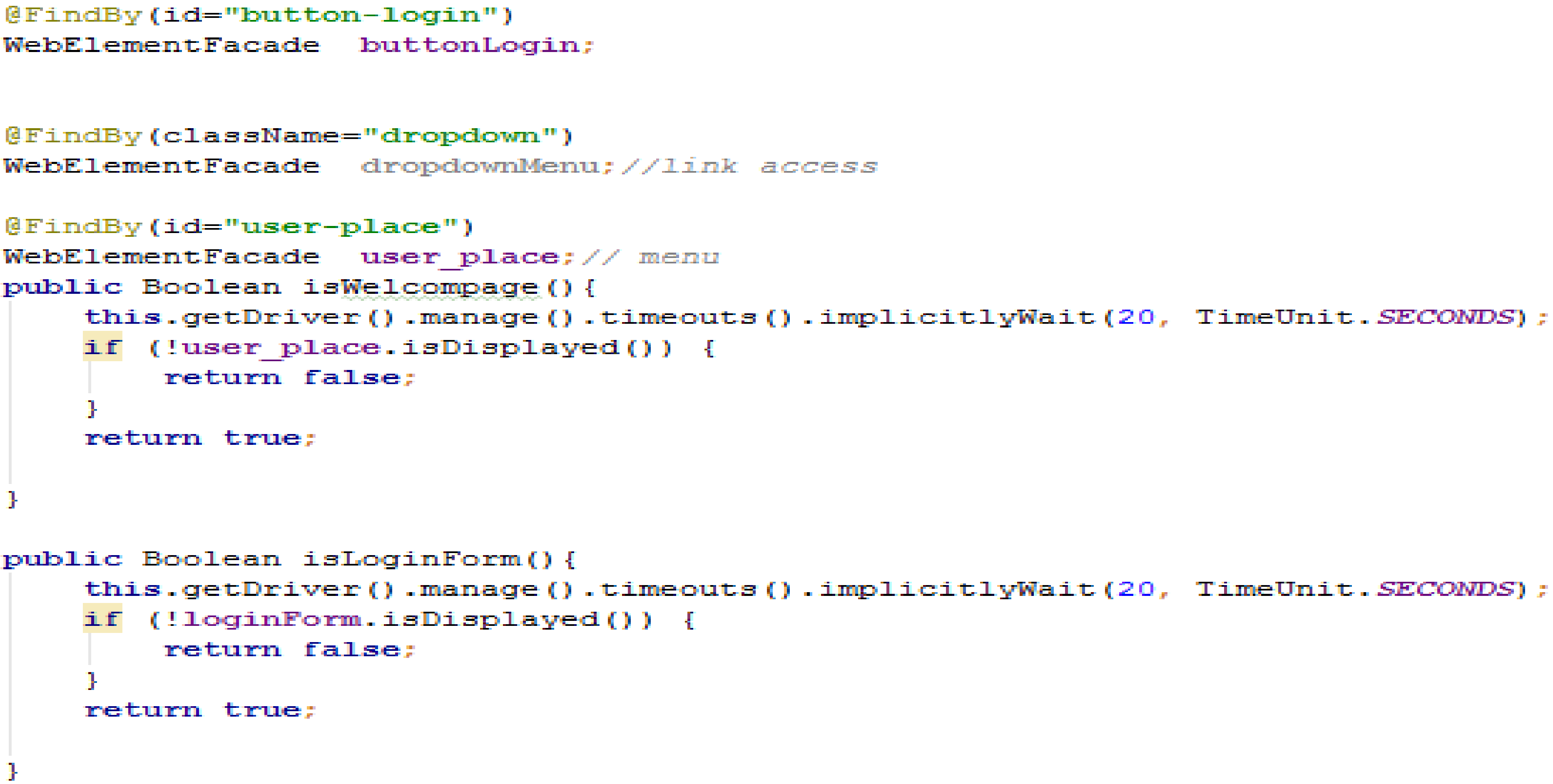
```
Narrative:
As a user
I want to login to Zingpoll website
So that I can use all features

Scenario: Login ZingPoll system fail
Given I am on ZingPoll website
When I change English language for website
Then I click the Sign In button on the menu bar to register an new account
Then The Sign In form should be shown
When I enter email <email> and password <password>
And I click the Sign In button on the form
Then I verify the failure message <message>

Examples:
|email |password |message|
|||The email is required and cannot be empty|
|testmyfailure@gmail.com||The Password is required and cannot be empty|
|bddteam1@gmail.com|123456|Login failed! Incorrect password.|

Scenario: Login ZingPoll system successful
Given I am on ZingPoll website
When I change English language for website
Then I click the Sign In button on the menu bar to register an new account
Then The Sign In form should be shown
When I enter email <email> and password <password>
And I click the Sign In button on the form
Then I log in into website successful
```

The Business Flow layer



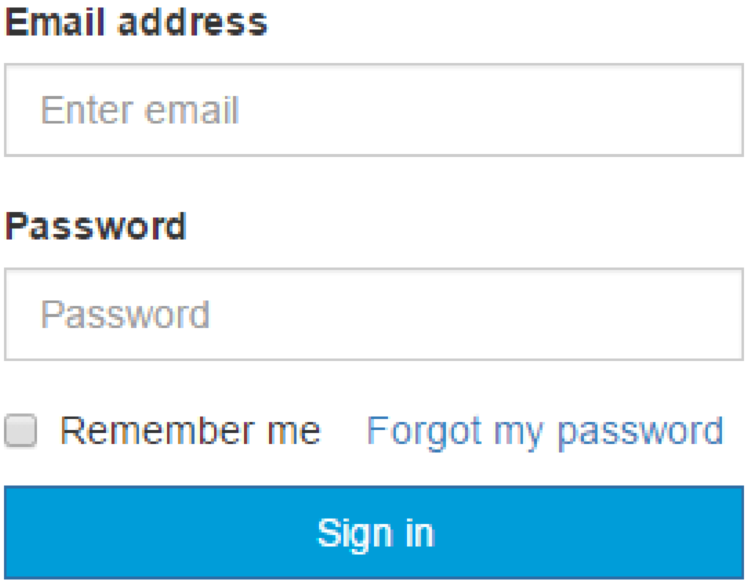
```
@Given("I am on ZingPoll website")
public void zingpoll_page() throws InterruptedException{
        loginPage.open();
        loginPage.isWelcompage();
}

@When("I change English language for website")
public void change_language() throws InterruptedException{
      loginPage.changeLanguage();
}

@Then("I click the Sign In button on the menu bar to register an new account")
public void click_sign_in() throws InterruptedException{
        loginPage.click_login_to_navigate_to_login_form();
}

@Then("The Sign In form should be shown")
public void verify_sign_in_form() throws InterruptedException{
        Assert.assertEquals(true, loginPage.isLoginForm());
}

@When("I enter email $email and password $password")
public void type_email_and_password(String email, String password) throws Interrup
        loginPage.type_email(email);
        loginPage.type_password(password);
}

@When("I click the Sign In button on the form")
public void submit_login_form() throws InterruptedException{
        loginPage.submit_login();
```

The Technical layer



```
@FindBy(id="button-login")
WebElementFacade  buttonLogin;


@FindBy(className="dropdown")
WebElementFacade  dropdownMenu;//link access

@FindBy(id="user-place")
WebElementFacade  user_place;// menu
public Boolean isWelcompage(){
    this.getDriver().manage().timeouts().implicitlyWait(20, TimeUnit.SECONDS);
    if (!user_place.isDisplayed()) {
        return false;
    }
    return true;

}

public Boolean isLoginForm(){
    this.getDriver().manage().timeouts().implicitlyWait(20, TimeUnit.SECONDS);
    if (!loginForm.isDisplayed()) {
        return false;
    }
    return true;

}
```

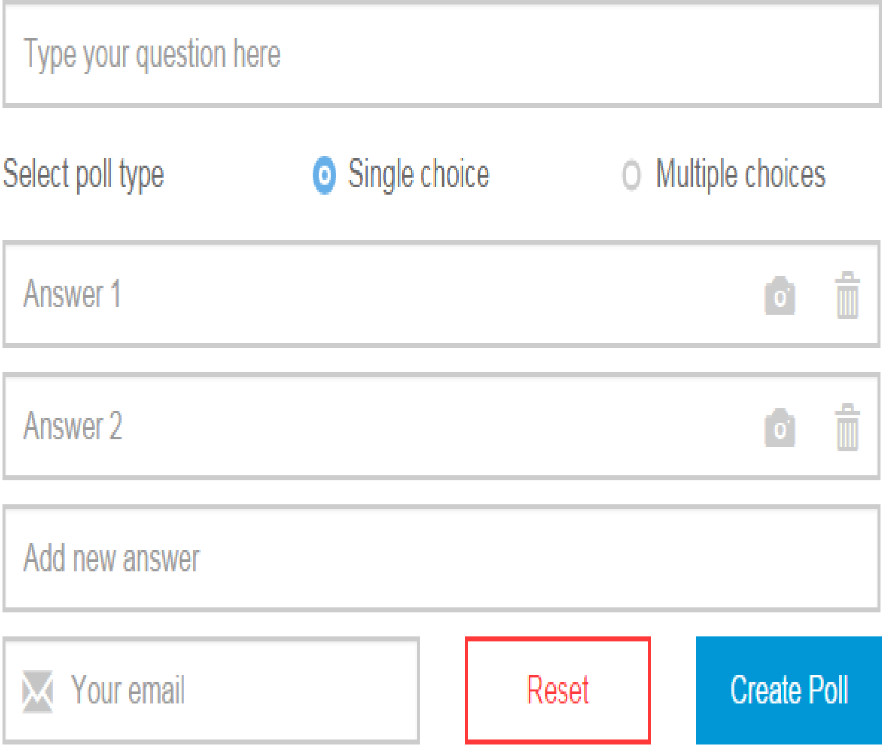
Workshop



Story 1:
As a ZingPoll user
I want to login to ZingPoll website
So that I can use all features

Steps :
-Open IntelliJ
-Write source codes in case of logging successfully in ZingPoll
-Open http://localhost:8080/jenkins/
-Click scrumbreakfast-acceptance-test/ project
-Click “Build Now”

Workshop



Type your question here

Select poll type ● Single choice ○ Multiple choices

Answer 1

Answer 2

Add new answer

Your email

Story 2:
As a ZingPoll user
I want to have single choice poll
So that I can create polls, share it to my friends & collect the option about it

Steps :
-Open IntelliJ
-Write source codes in case of create poll with single choice in ZingPoll
-Open http://localhost:8080/jenkins/
-Click scrumbreakfast-acceptance-test/ project
-Click "Build Now"

Conclusion of BDD

- Focus effort
- Reduce waste and misaligned requirement
- Deliver more valuable software
- Make changes safety
- Faster and more reliable releases
- Reduced maintenance costs

Potential challenges of BDD

- BDD requires high business engagement and collaboration
- BDD works best in an Agile or iterative context
- Poorly written tests can lead to higher test-maintenance costs

Q&A

Thanks for your attention