

Testing Easily with **Robot Framework**



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[https://github.com/up1/
course-advance-robotframework](https://github.com/up1/course-advance-robotframework)



Agenda



Day 1

Concept of Robot Framework

Installation and configuration

Architecture of Robot Framework

Create test case

Execute test case

How to write **better** test case ?



Day 2

Data Driven Testing

Test template

Working with command line

APIs testing

Scaling testing

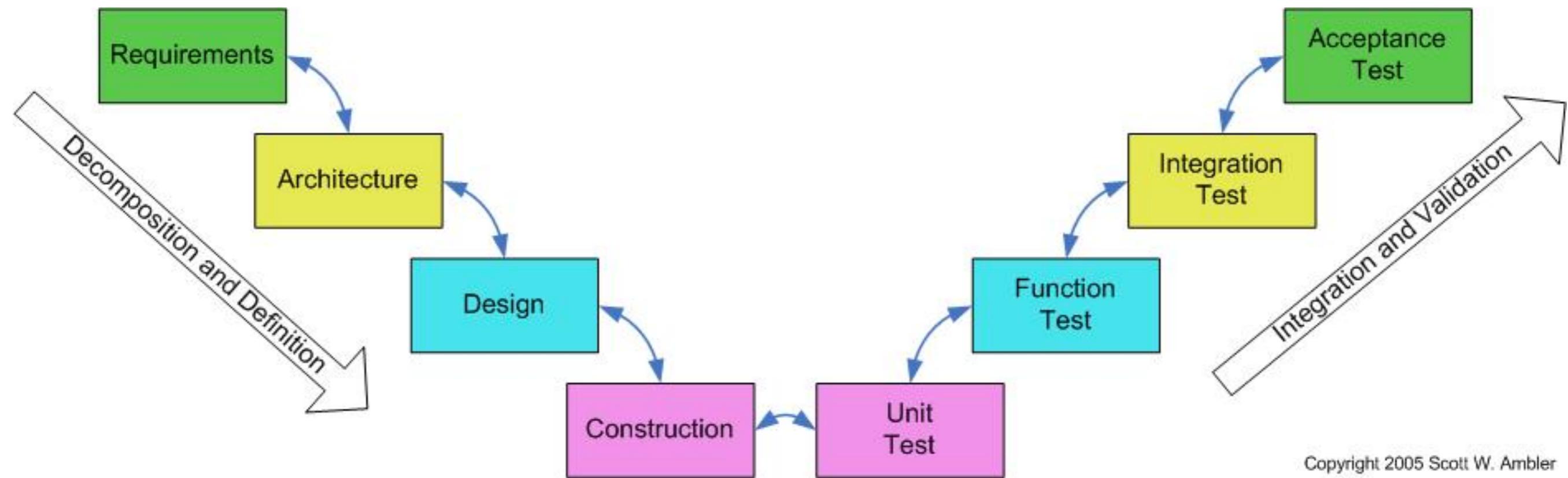
Integration with Continuous Integration



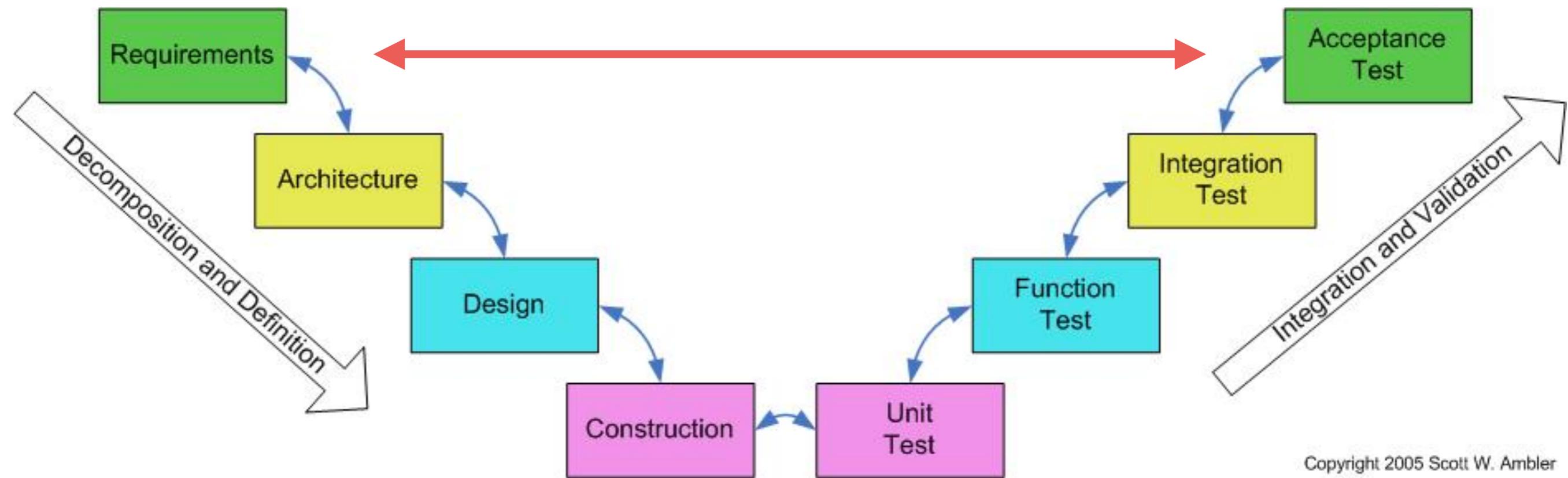
Let's start



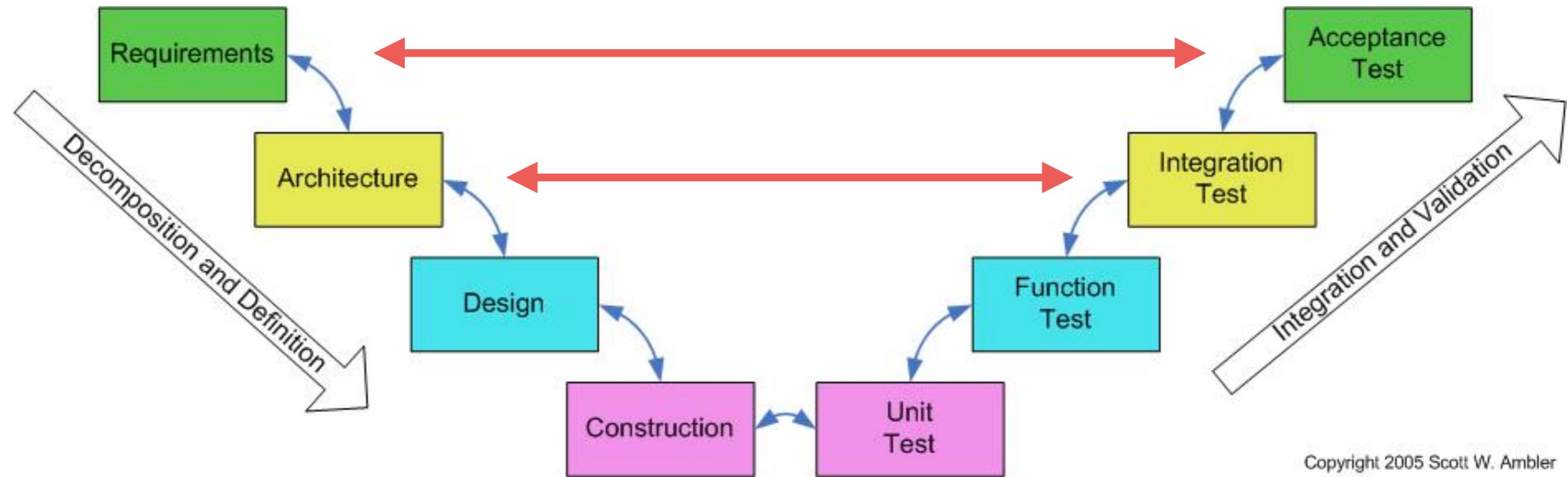
V-Model



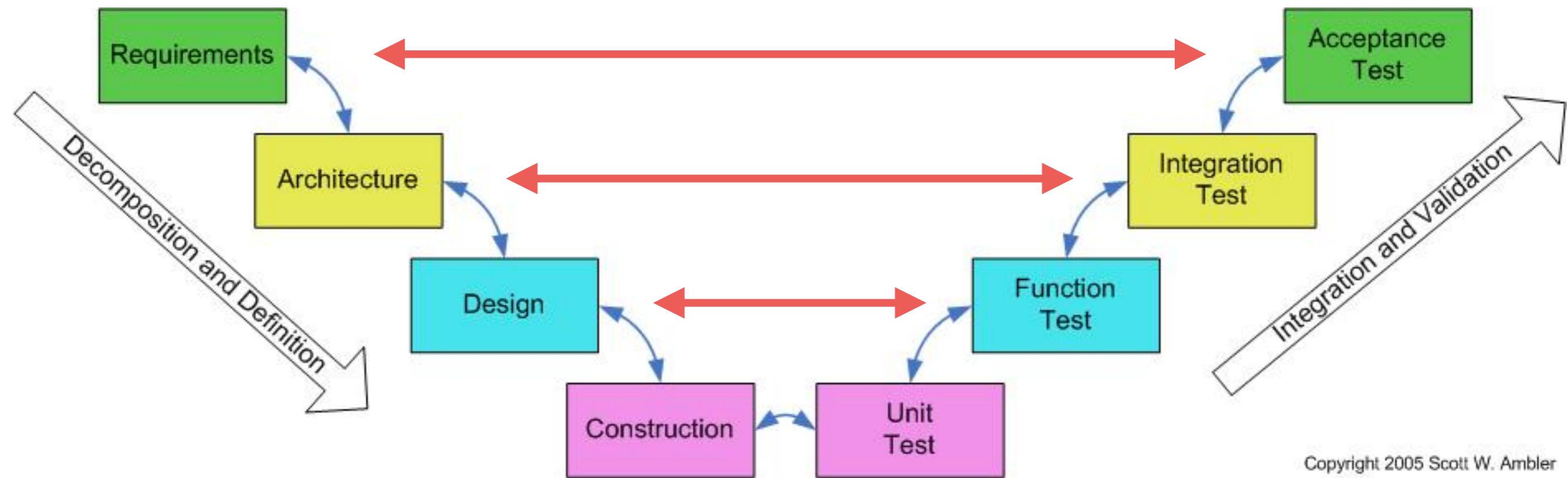
V-Model



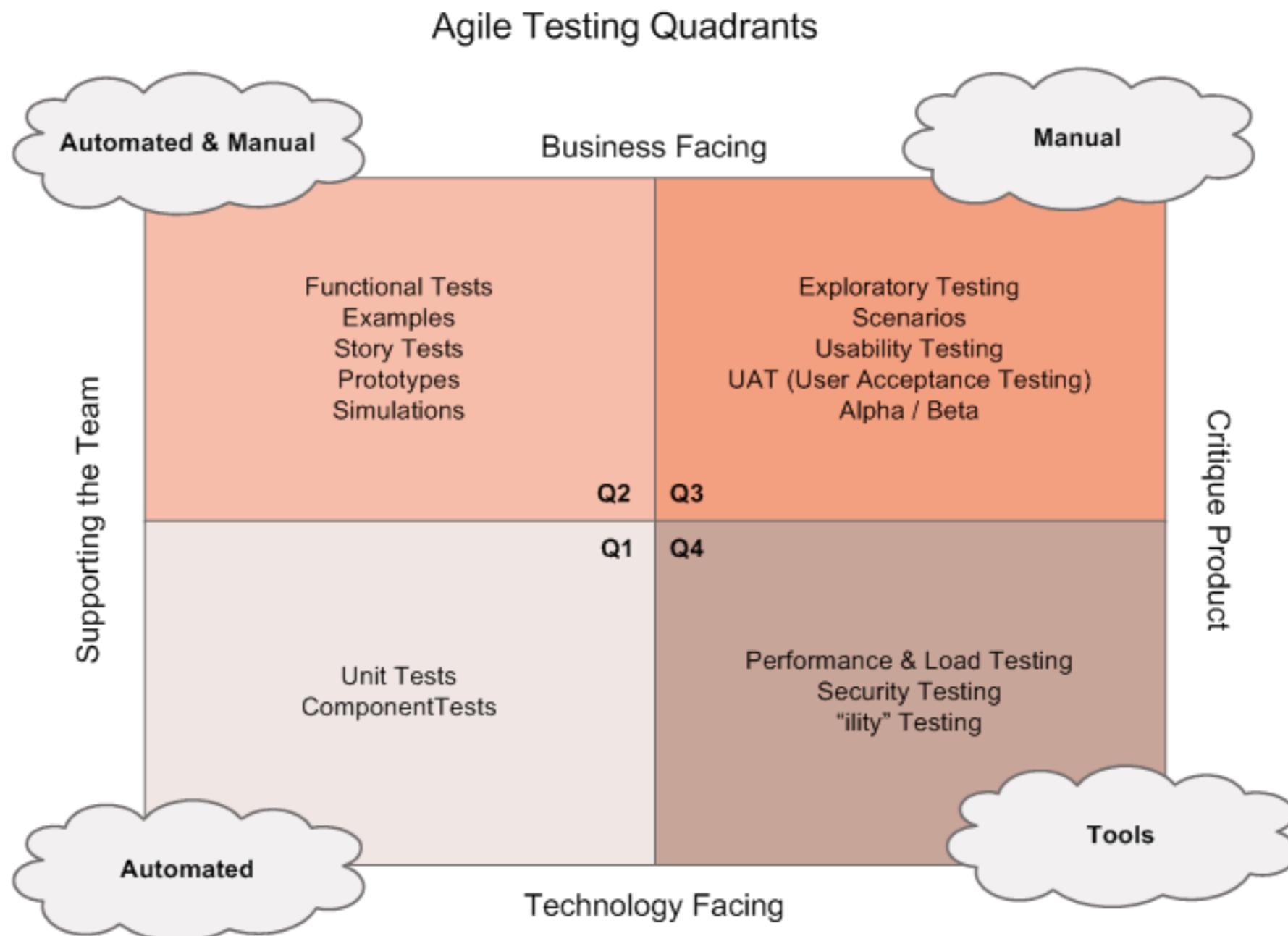
V-Model



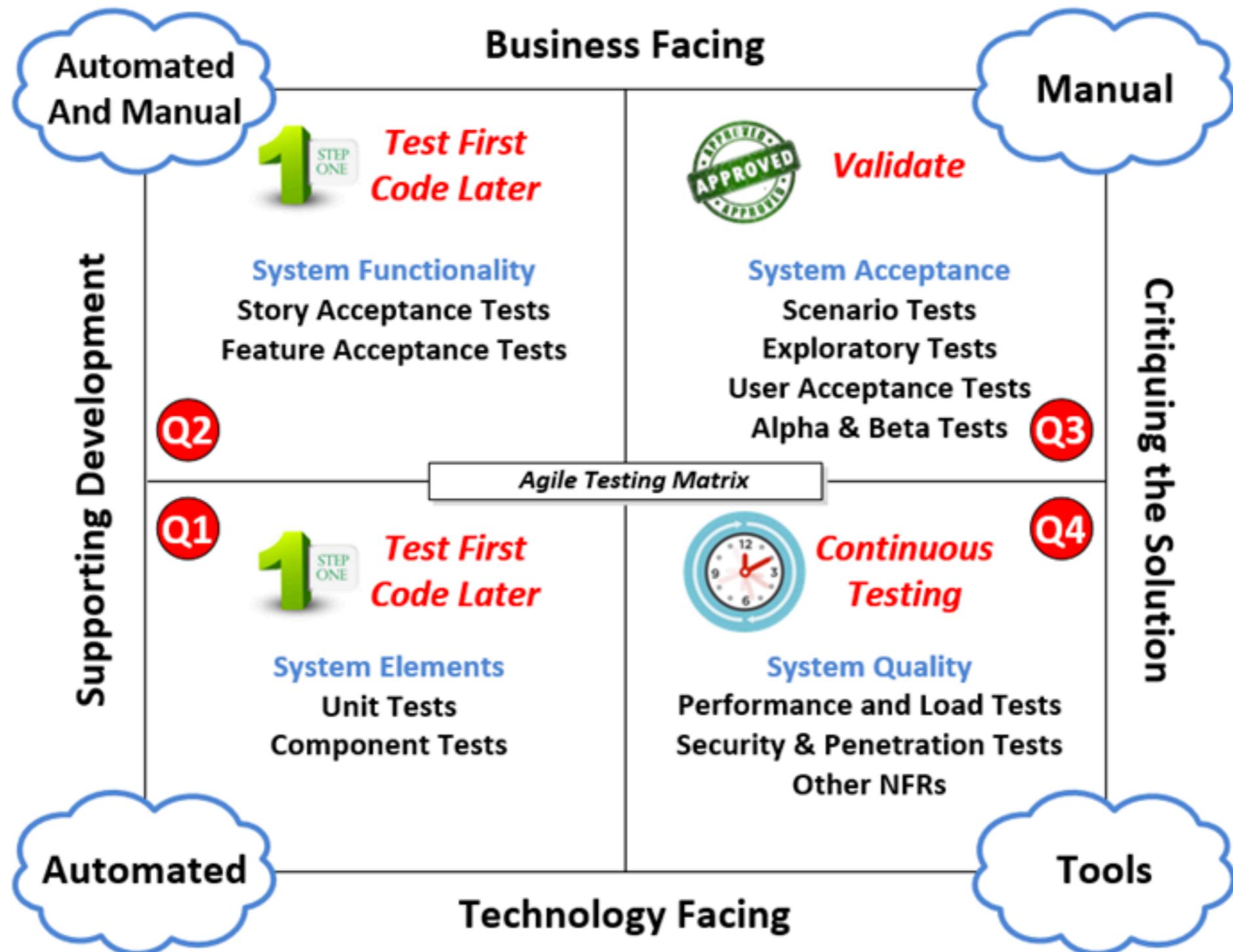
V-Model



Agile Testing



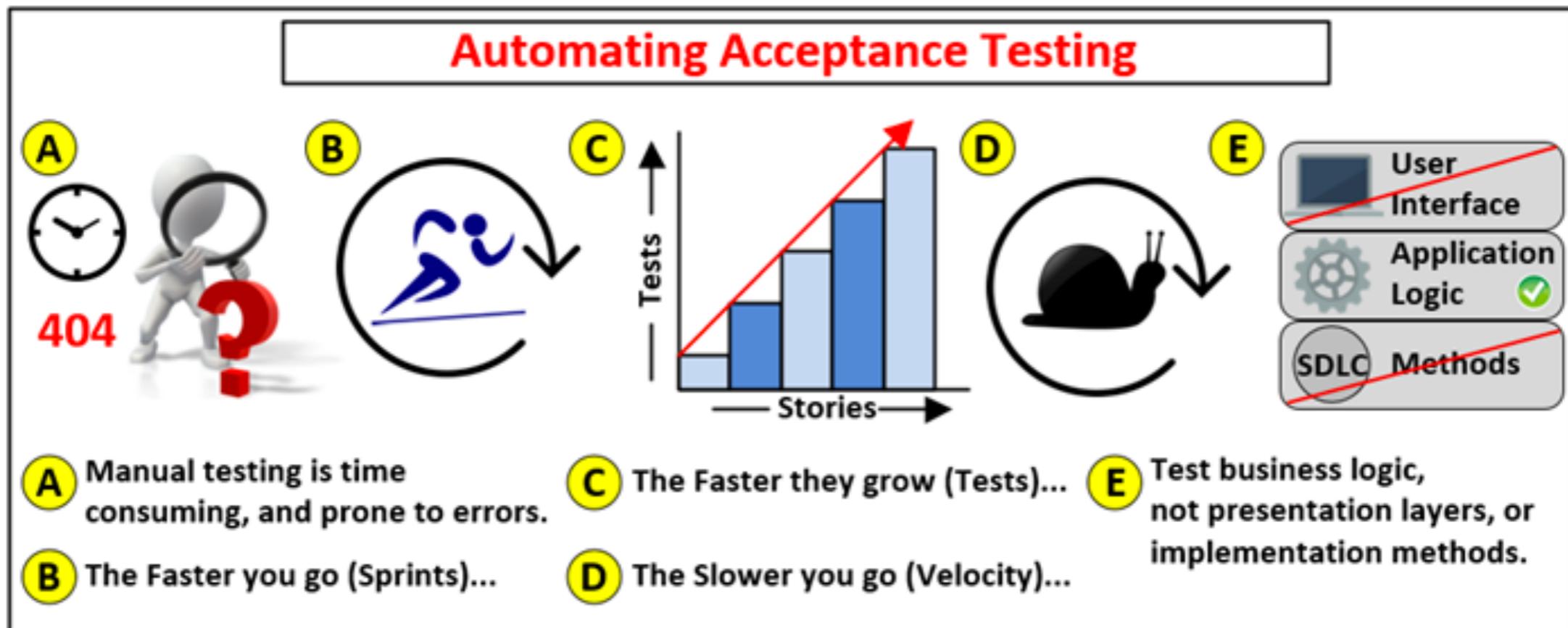
Agile Testing



<https://www.scrumalliance.org/community/articles/2015/september/a-visual-approach-to-test-driven-agile>



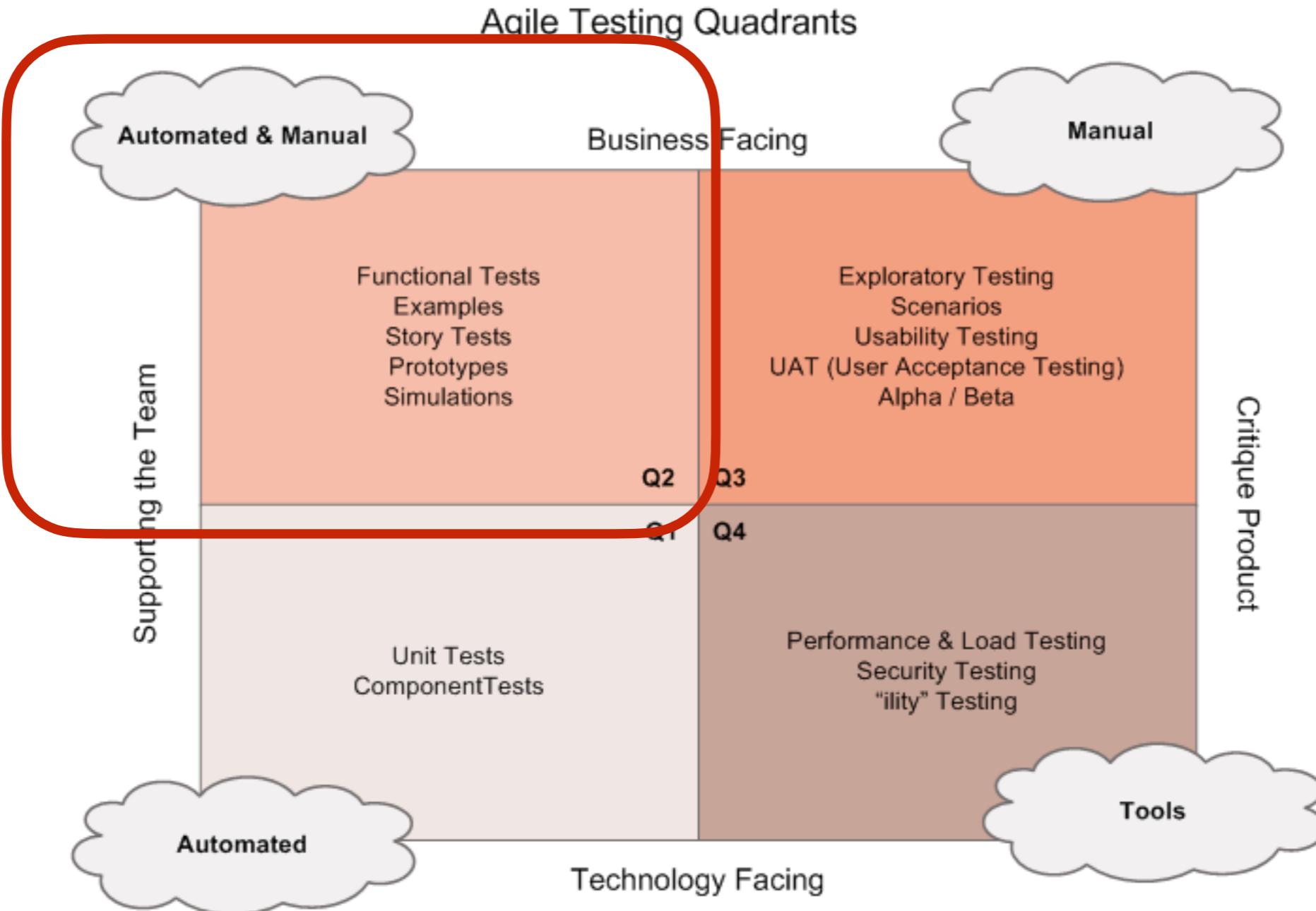
Test Automation is essential



Acceptance Test-Driven Development



Agile Testing



ATDD

Common understanding

Common language

Executable requirements or examples

Living documentation



Same goal !!

Story Driven Development

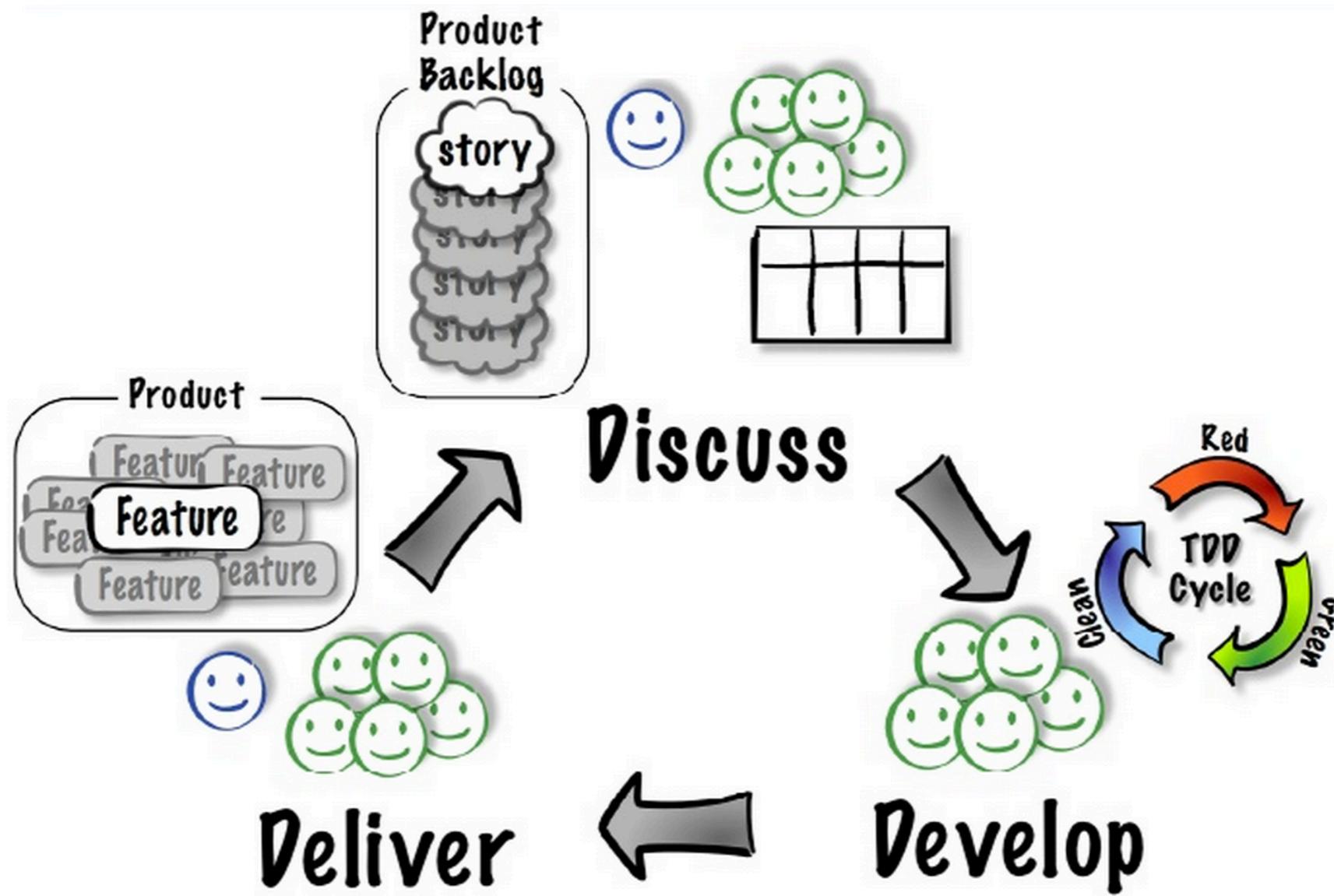
Behavior Driven Development

Specification by Example

Example Driven Development



ATDD cycle

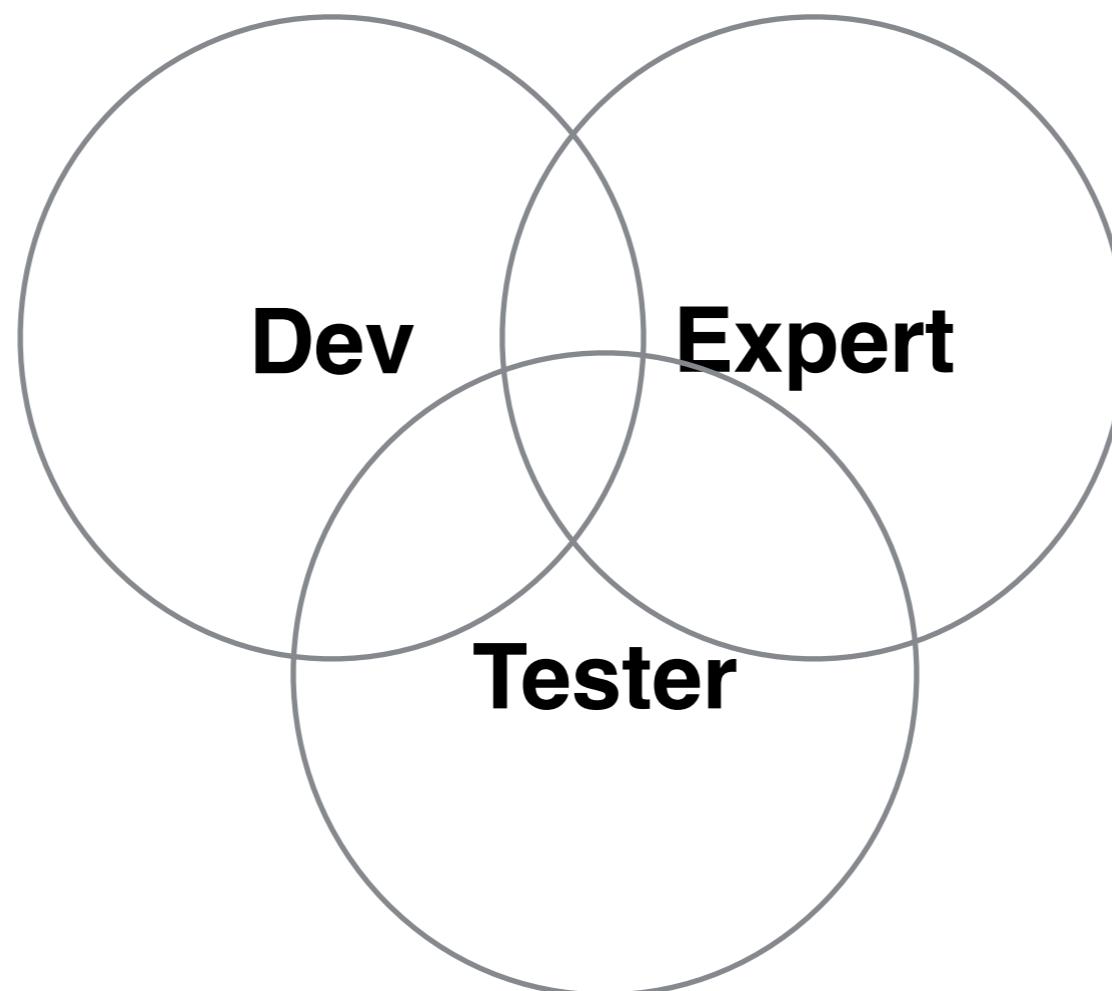


(Model developed with Pekka Klärck, Bas Vodde, and Craig Larman.)



1. Discuss

Whole team approach



1. Discuss

Whole team approach

Sharing understanding

Clarify the solution

Concrete examples

Examples can be used in automated !!



2. Develop

Implement work with specified examples

Automation of the examples

Whole team is responsible on automation

At the end, all automated examples pass



3. Deliver

Features are **demonstrated** to all stakeholders

All examples pass (new + existing)

Feedback as input to the next discuss



Acceptance Tests

=

Acceptance Criteria

+

Examples(data + scenarios)



Robot Framework



Introduction

Test automation framework

Designed for Acceptance testing(ATDD)

Developed with Python

Compatible with Java (Jython)



History

Started from **Pekka Klärck's** masters thesis

HELSINKI UNIVERSITY OF TECHNOLOGY	ABSTRACT OF THE MASTER'S THESIS	
Author:	Pekka Laukkanen	
Name of the thesis:	Data-Driven and Keyword-Driven Test Automation Frameworks	
Date:	February 24, 2006	Number of pages: 98 + 0
Department:	Department of Computer Science and Engineering	Professorship: T-76
Supervisor:	Prof. Reijo Sulonen	
Instructor:	Harri Töhönen, M.Sc.	



History

Initialed in 2005 by Nokia Siemens Network

Opensource in 2008

Created robotframework.org

Big communities at Github



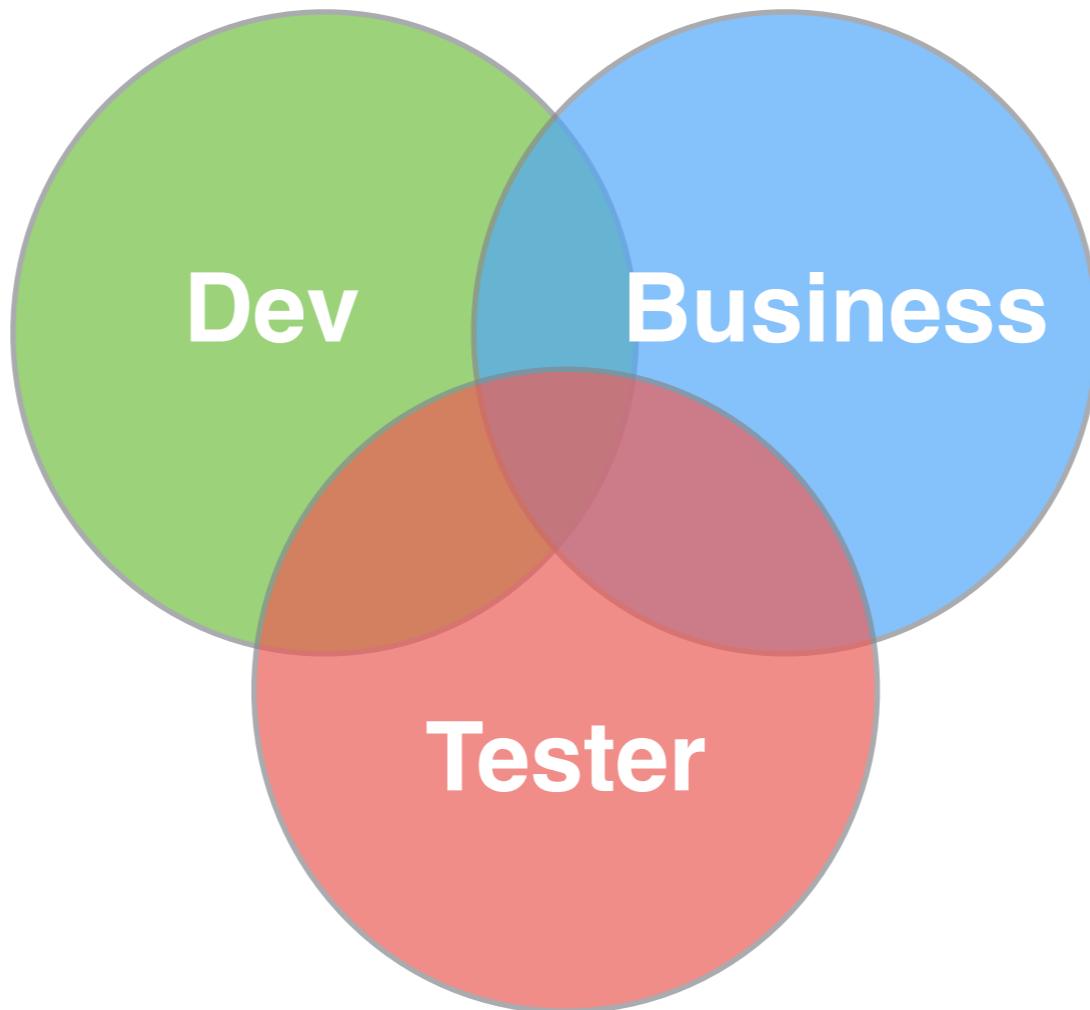
Concepts

Acceptance Testing

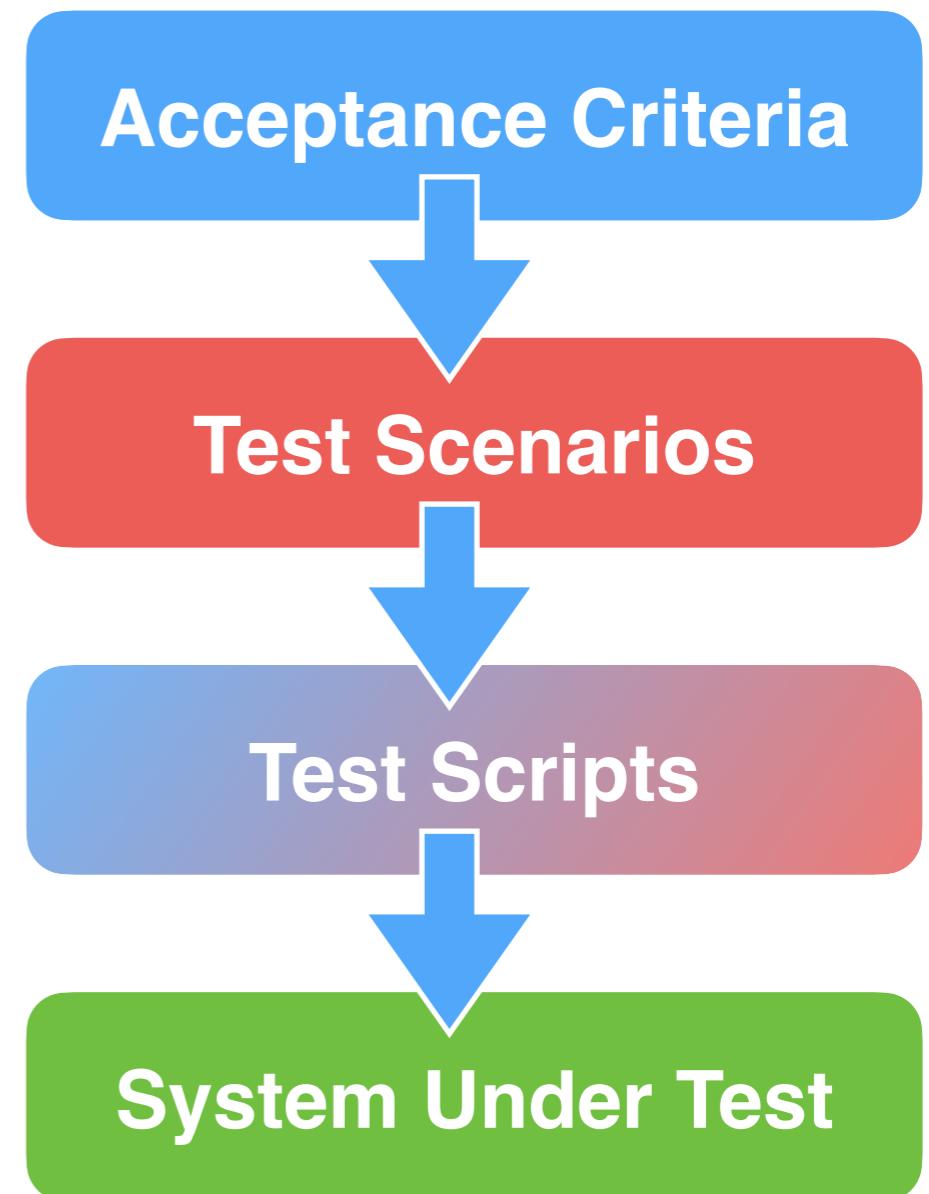
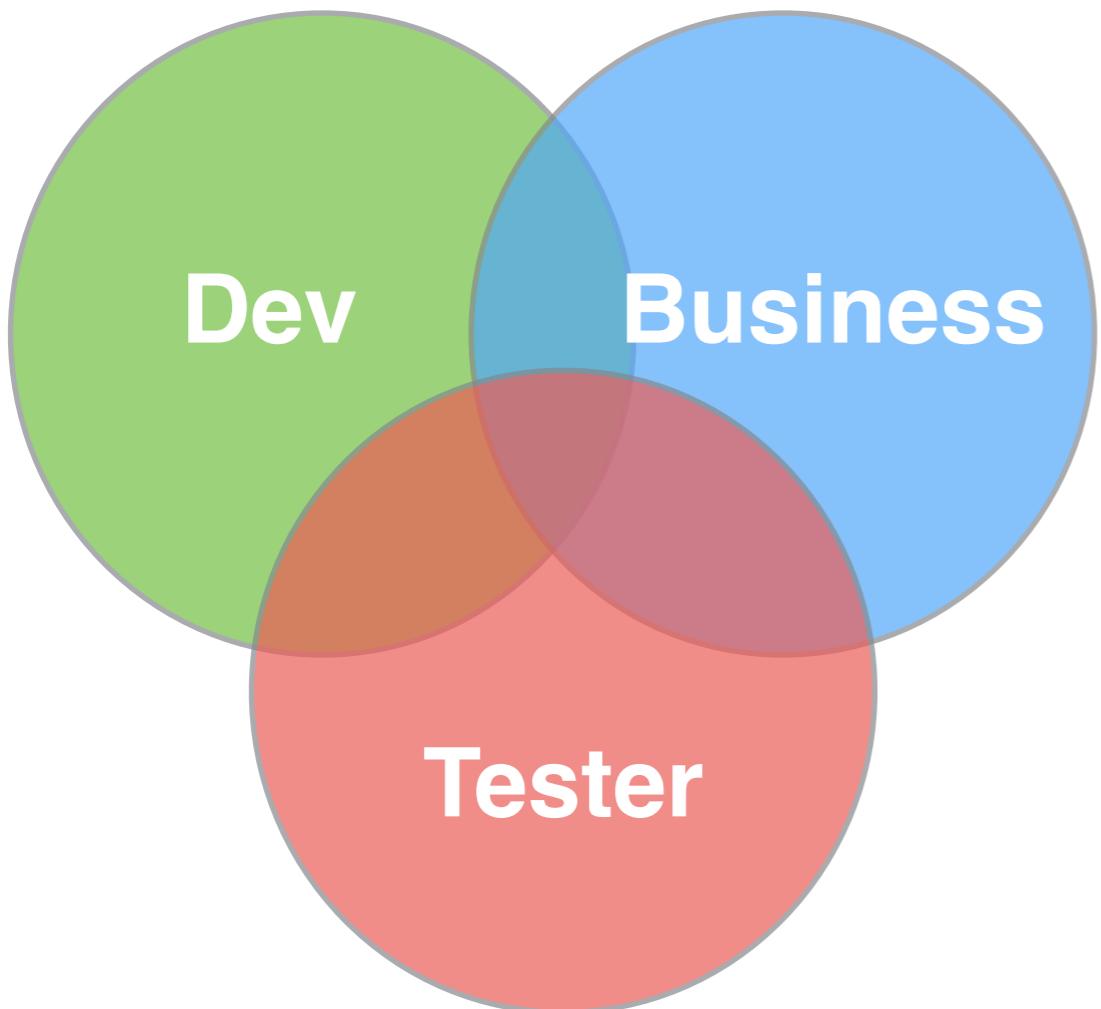
Keyword Driven Development



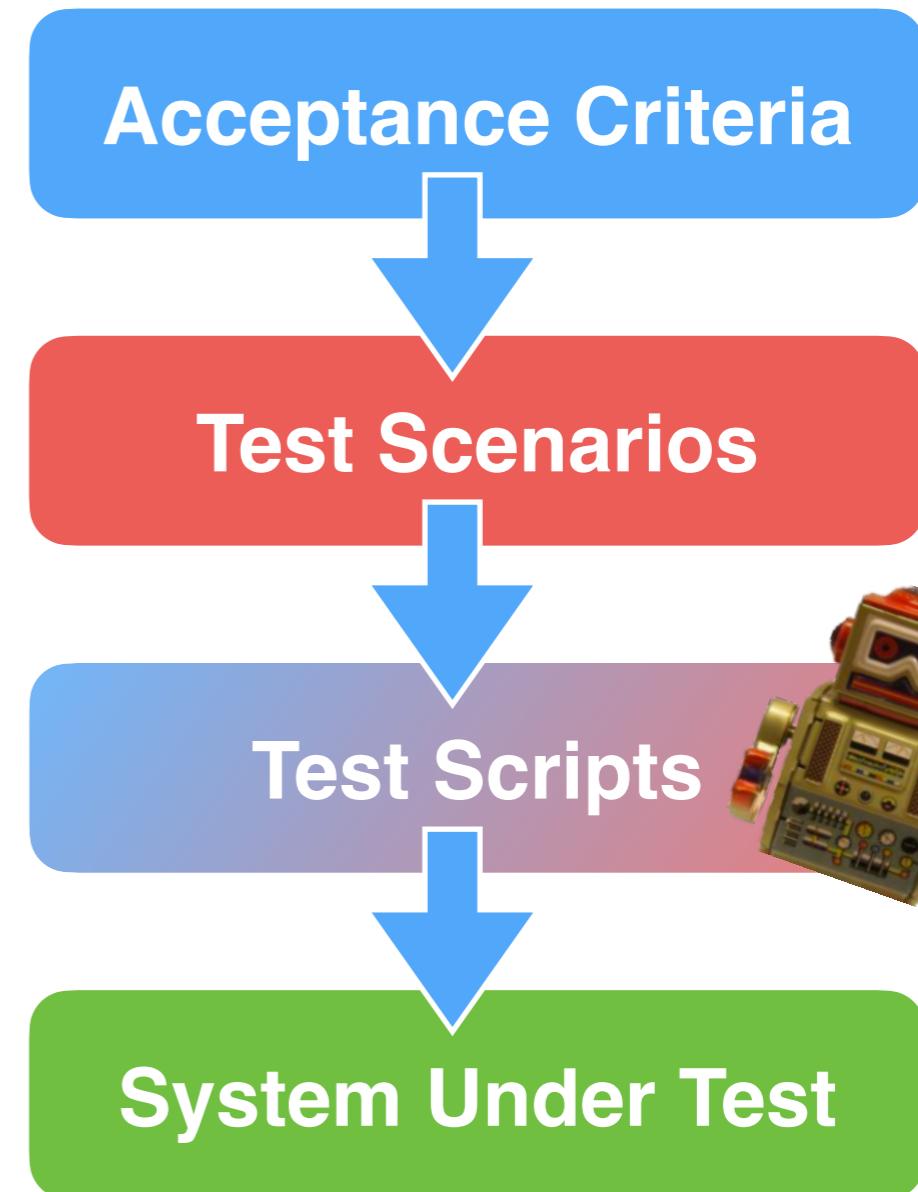
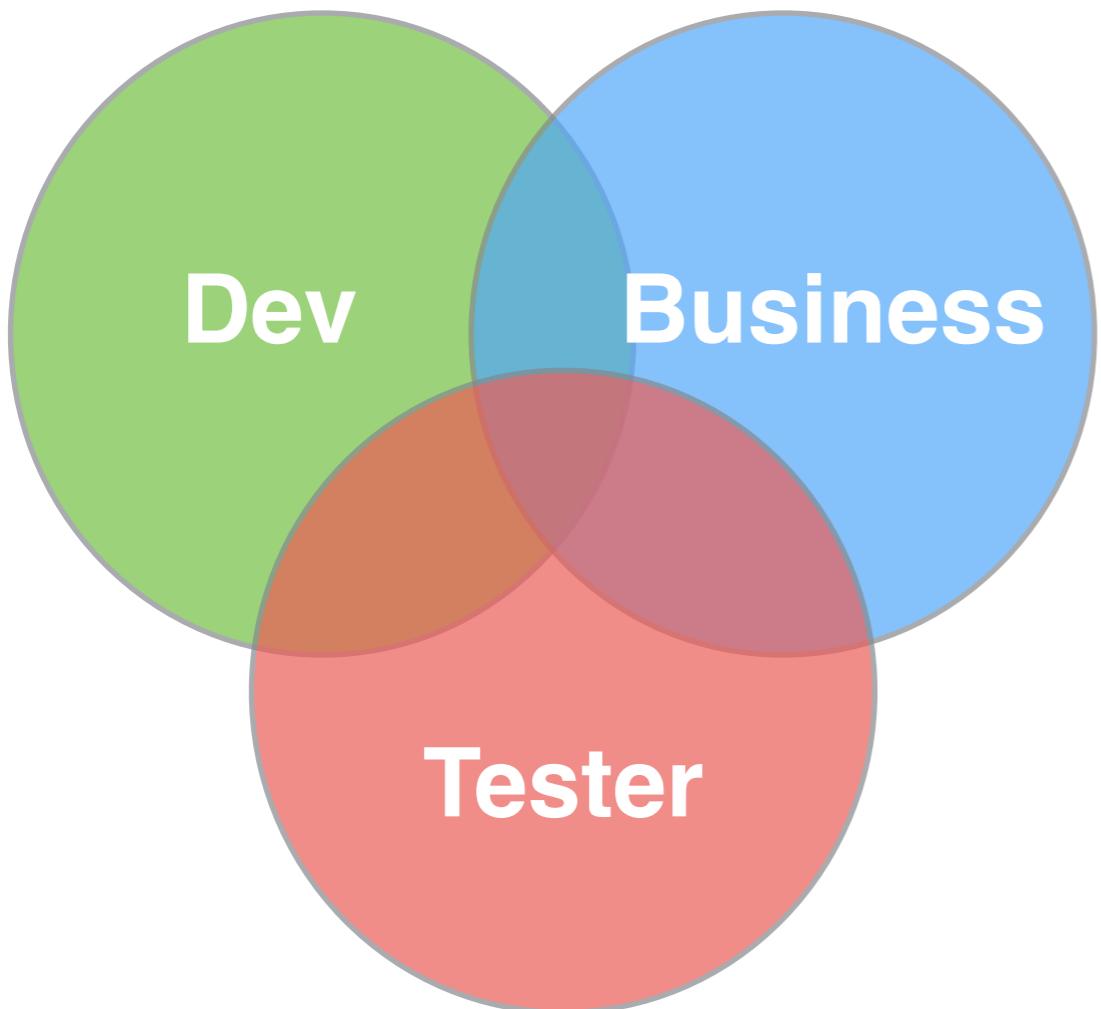
Acceptance Testing



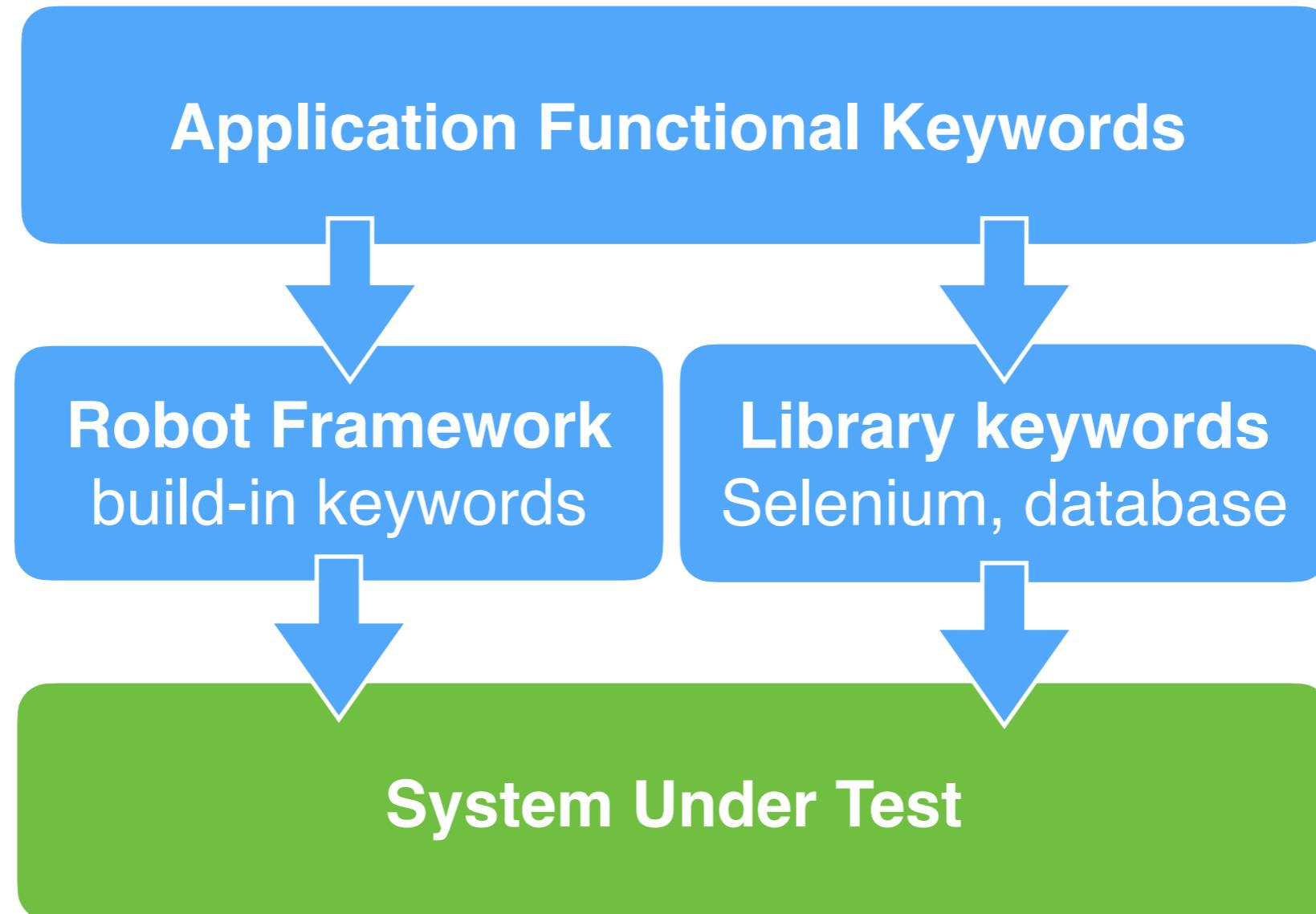
Acceptance Testing



Acceptance Testing



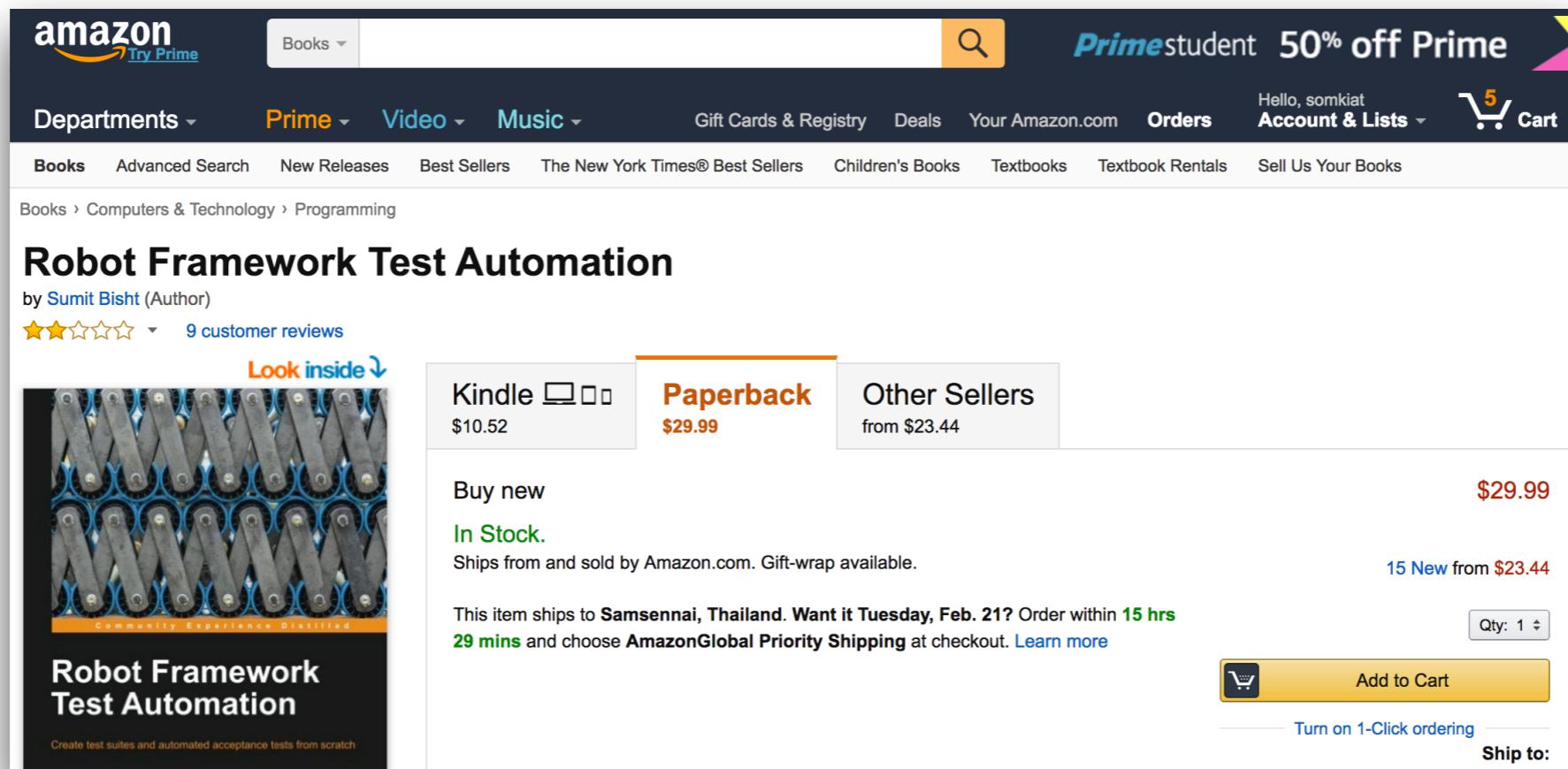
Keyword Driven Development



Keyword Driven Development

Example scenario

“Add product to cart”



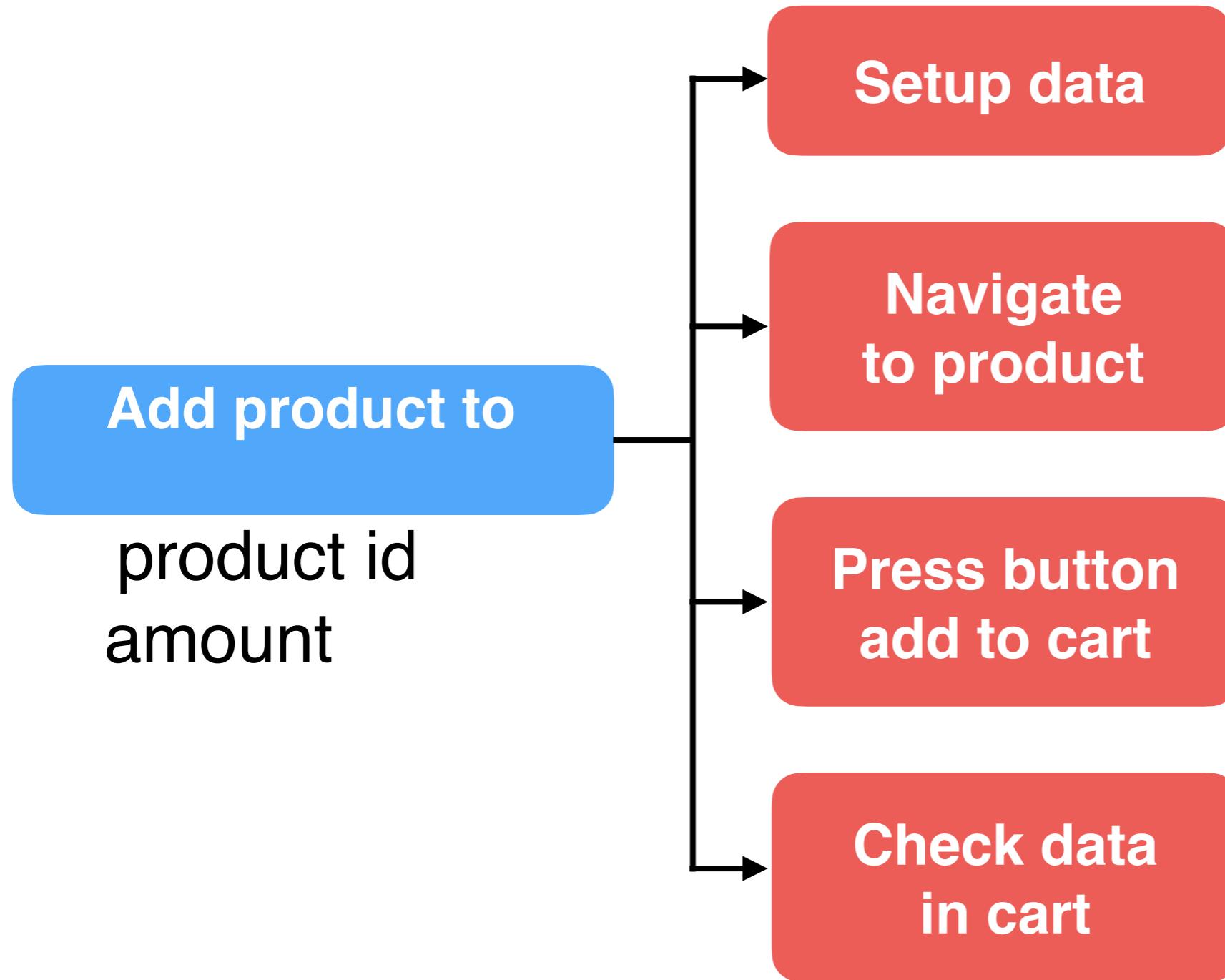
Add product to cart

Add product to

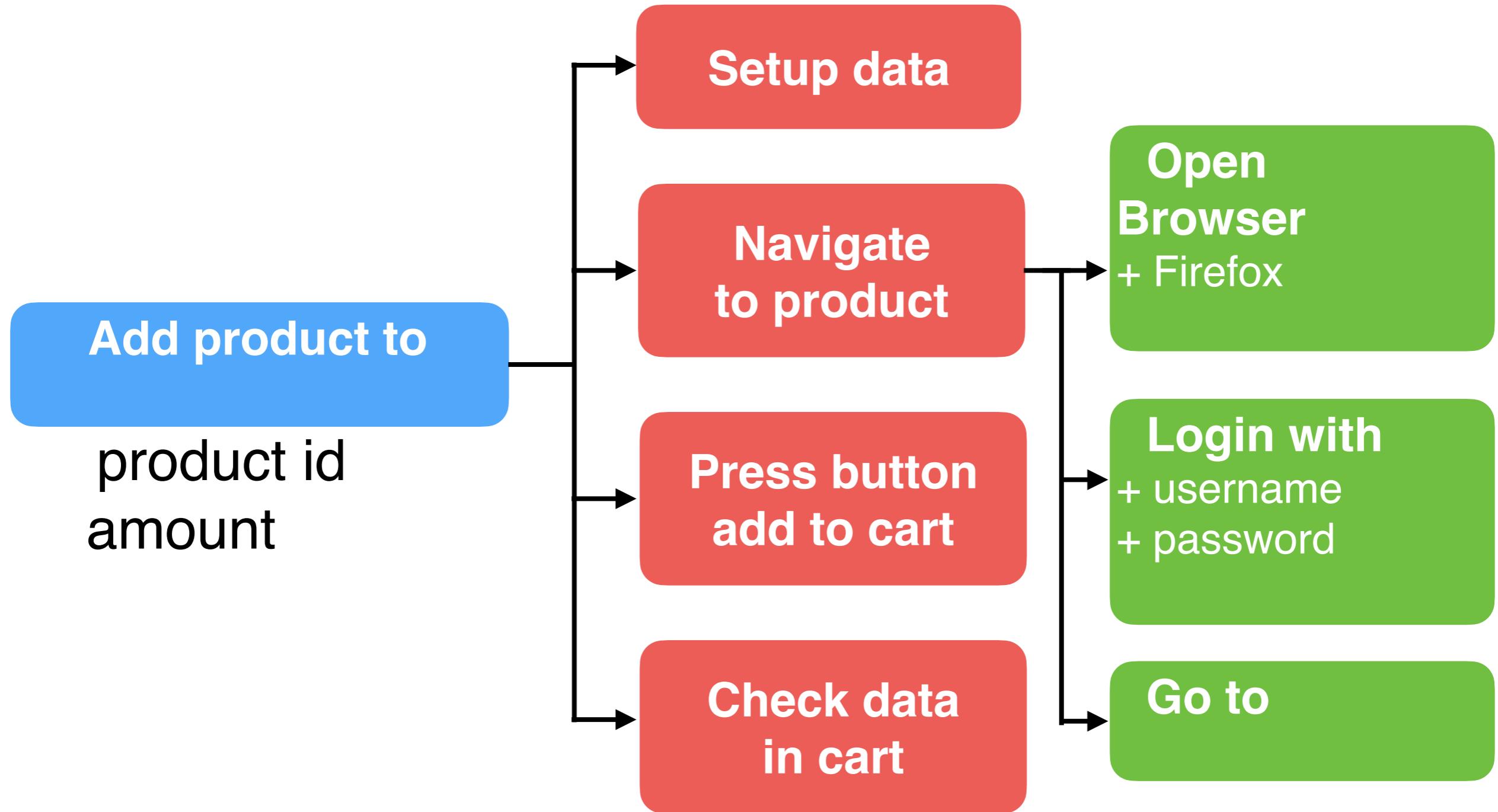
product id
amount



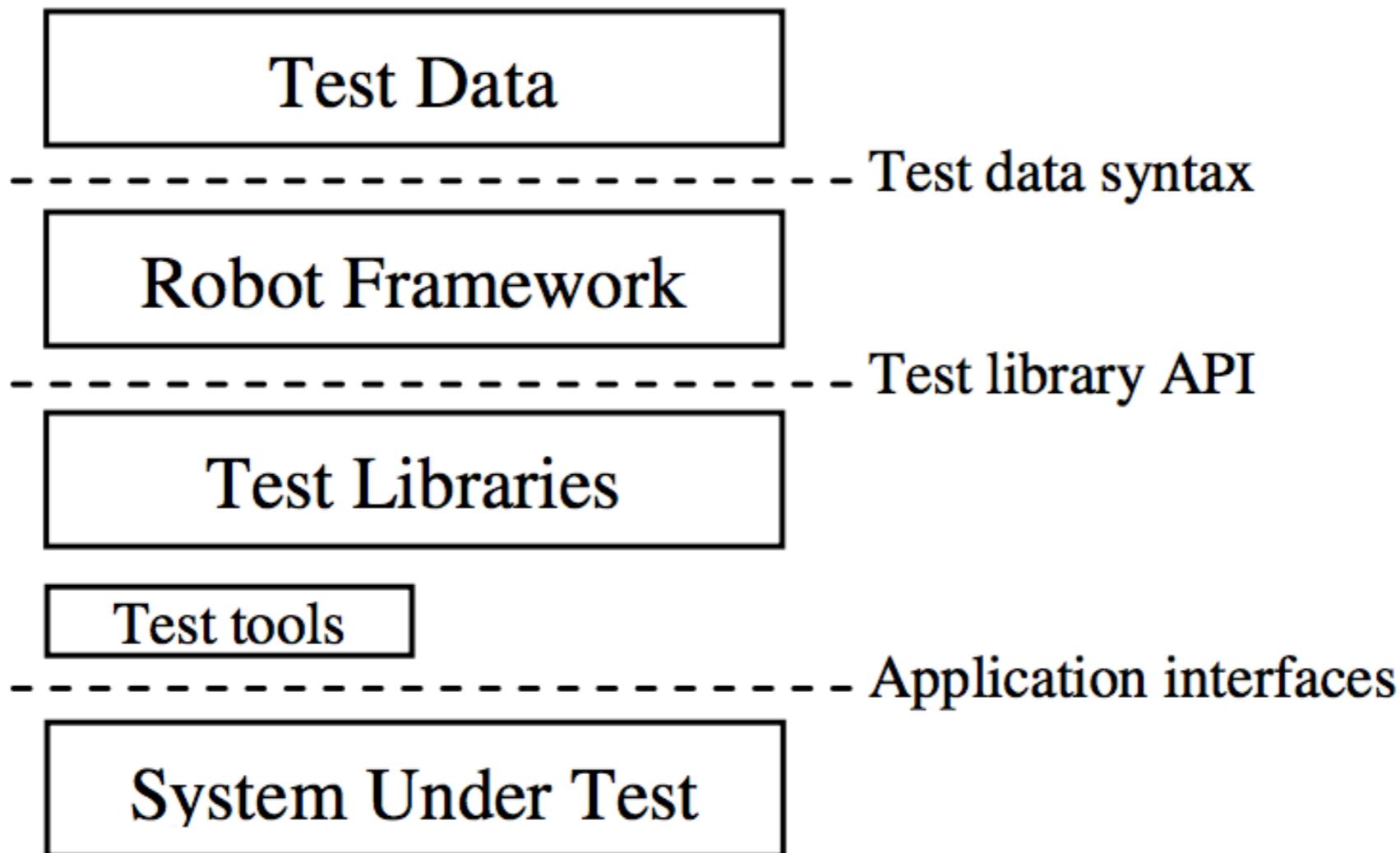
Add product to cart



Add product to cart



High level architecture



Official website



ROBOT FRAME WORK /

INTRODUCTION

Robot Framework is a generic test automation framework for acceptance testing and acceptance test-driven development (ATDD). It has easy-to-use tabular test data

<http://robotframework.org/>



Robot Framework Development



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Installation

1. Python 2.7.13
2. PIP (Package manager for python)
3. Robot Framework
4. Robot Framework Libraries
5. IDE and Editor



1. Install python and pip



For Windows



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Download Python 3

<https://www.python.org/>

The screenshot shows the Python.org homepage with a focus on the 'Downloads' section. The top navigation bar includes links for 'About', 'Downloads', 'Documentation', 'Community', 'Success Stories', 'News', and 'Events'. The 'Downloads' menu is expanded, showing options like 'All releases', 'Source code', 'Windows', 'macOS', 'Other Platforms', 'License', and 'Alternative Implementations'. A large callout box highlights the 'macOS' download, specifically 'Python 3.11.1'. Below this, text explains that Python can be used on many operating systems and provides a link to 'View the full list of downloads'. At the bottom of the page, a summary statement reads: 'Python is a programming language that lets you work quickly and integrate systems more effectively.' followed by a 'Learn More' link.



Run python in command line

\$python

```
C:\Users\SCK>python
Python 2.7.13 (v2.7.13:a06454b1afa1, Dec 17 2016, 20:42:59)
n win32
Type "help", "copyright", "credits" or "license" for more i
>>> exit()
```



Run pip in command line

\$pip

```
Command Prompt

C:\Users\SCK>pip

Usage:
    pip <command> [options]

Commands:
    install                         Install packages.
    download                        Download packages.
    uninstall                       Uninstall packages.
    freeze                          Output installed packages.
    list                            List installed packages.
    show                            Show information about packages.
    check                           Verify installed packages.
    search                          Search PyPI for packages.
```



Configuration in command line

```
$set PYTHON_HOME=c:\python3
```

```
$set PATH=.;%PYTHON_HOME%;%PYTHON_HOME%\Scripts;  
%PATH%
```



Permanent configuration



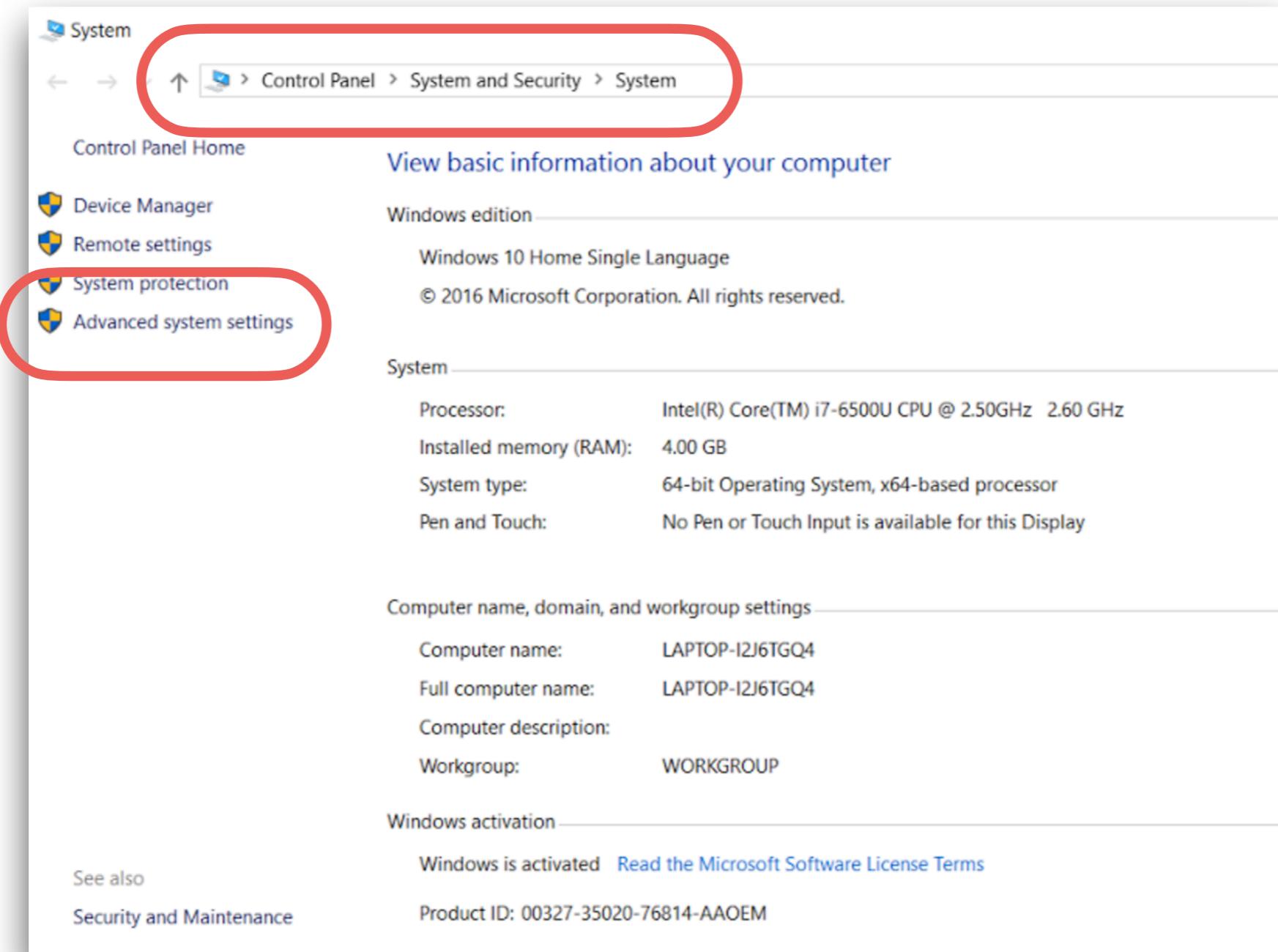
Configuration

Go to Control Panel -> System and Security -> System

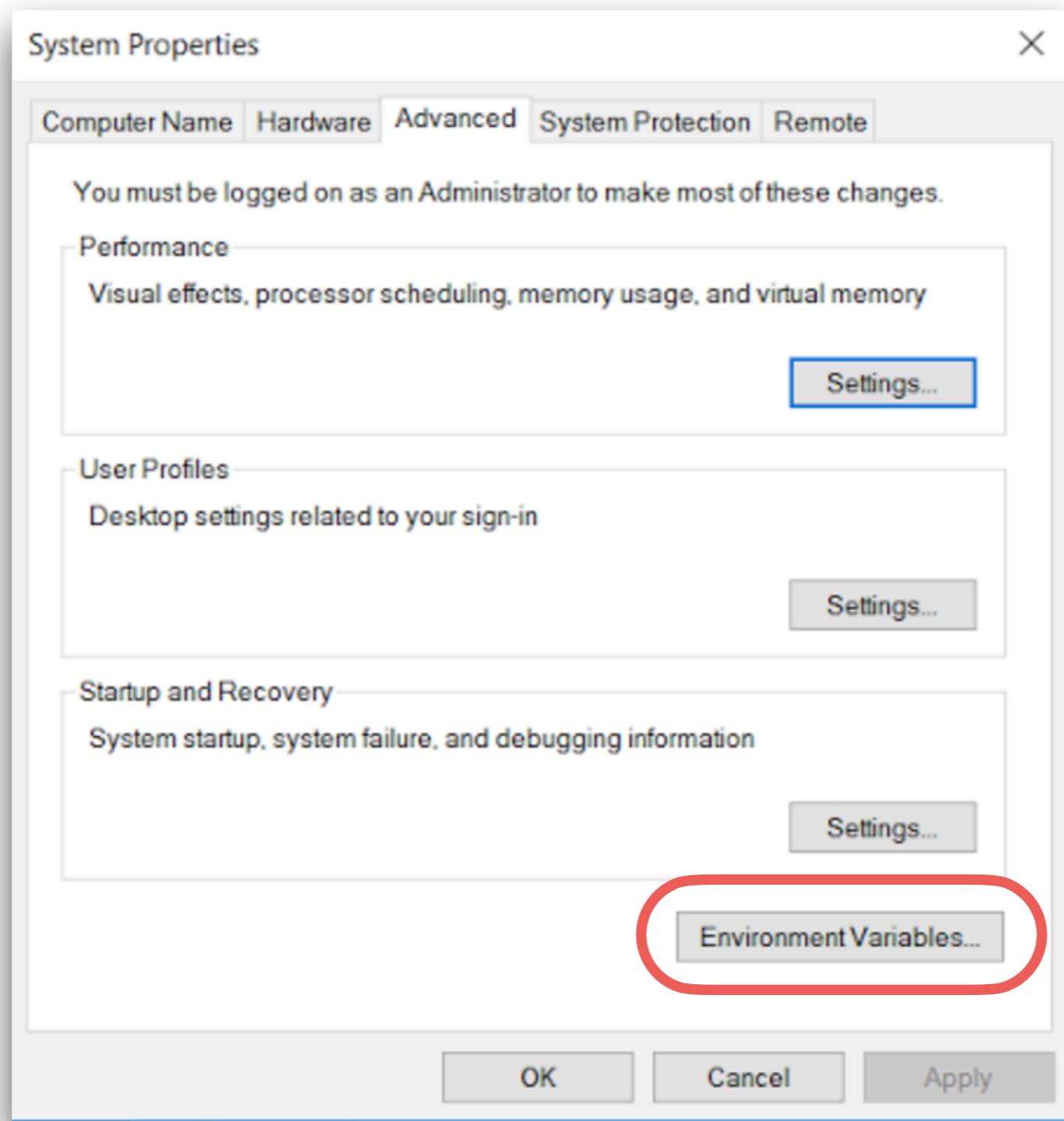
Go to Advanced system settings



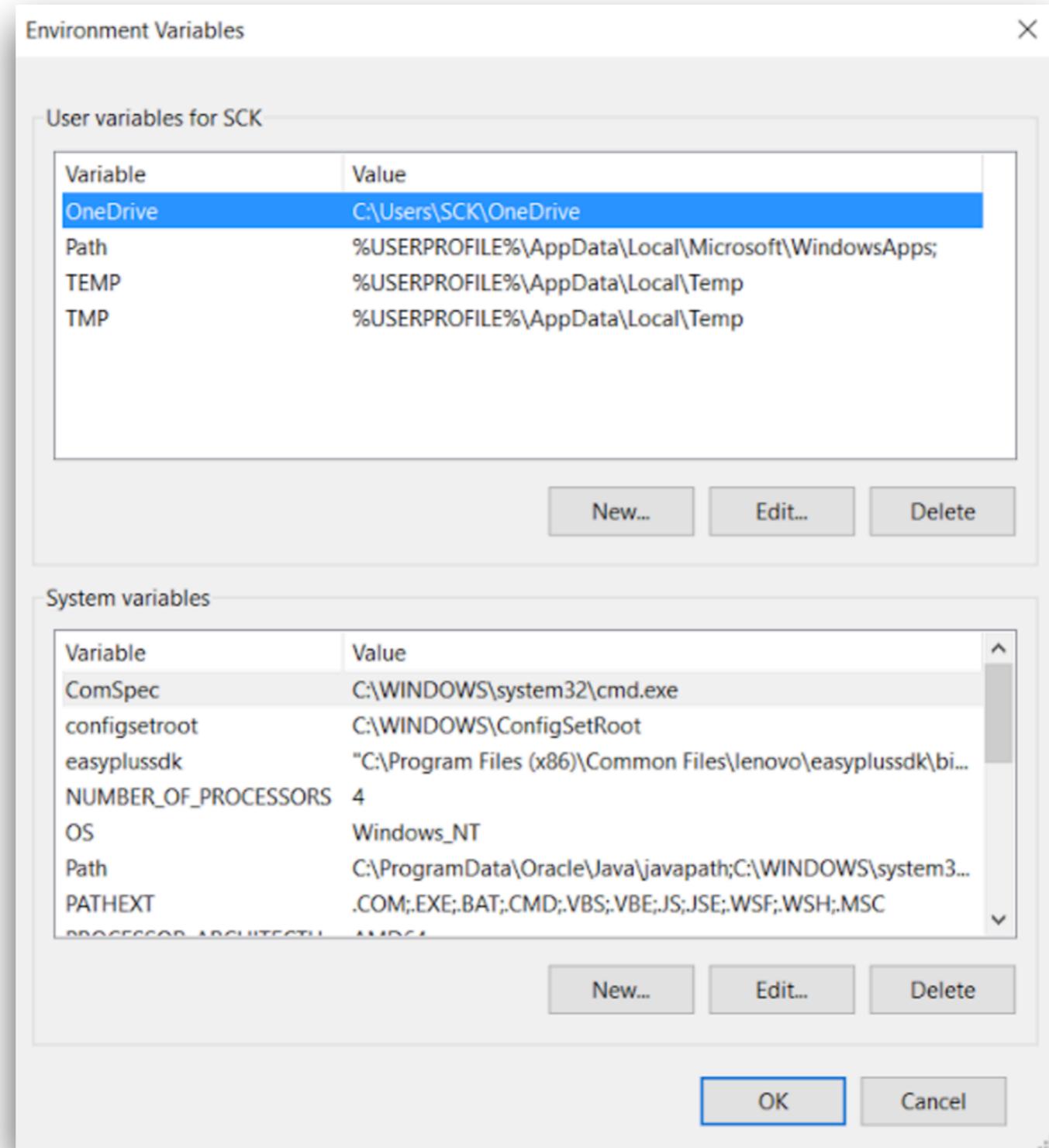
Configuration



Configuration



Configuration



Configuration

New User Variable X

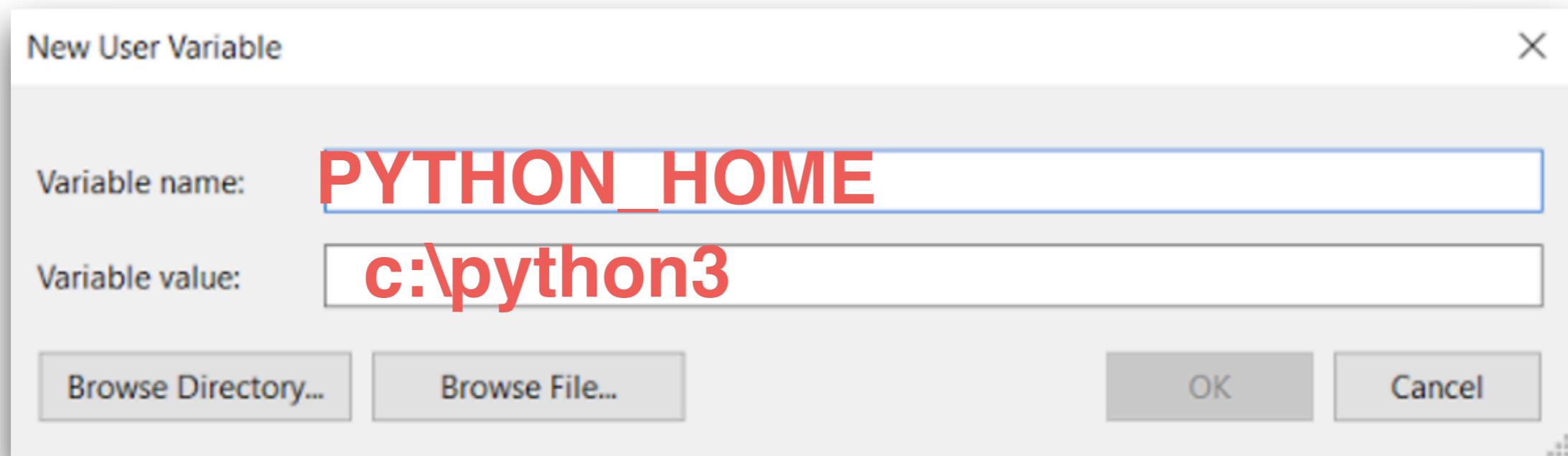
Variable name:

Variable value:

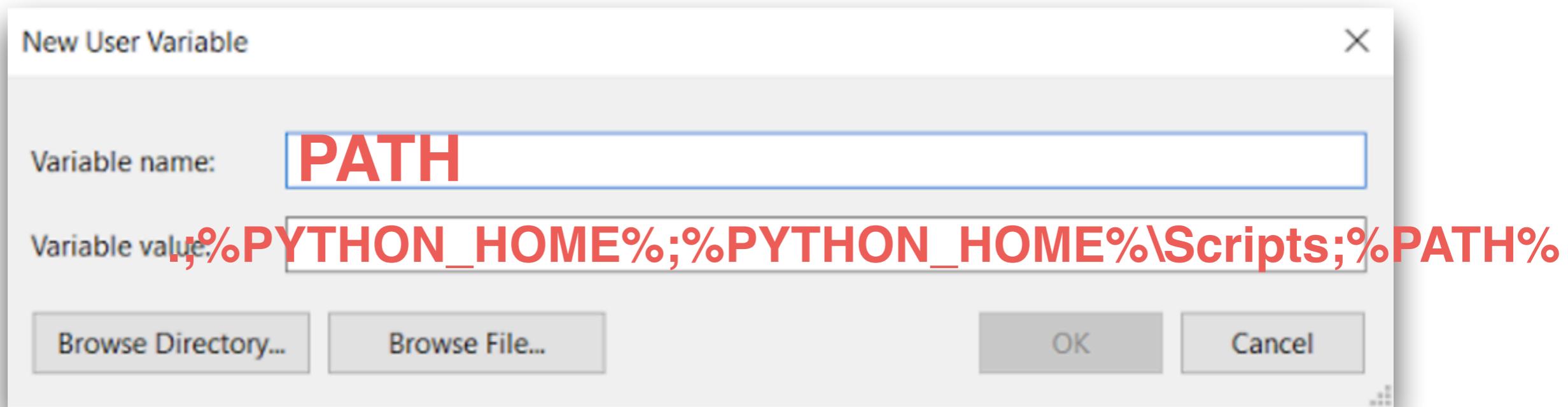
Browse Directory... Browse File... OK Cancel



Configuration PYTHON_HOME



Configuration PATH



2. Install Robot Framework



Install Robot Framework

\$pip install robotframework

```
Command Prompt  
C:\Users\SCK>pip install robotframework  
Collecting robotframework  
  Downloading robotframework-3.0.2.tar.gz (440kB)  
    100% |#####|####|####|####|####|####|####|####|####| 450kB 656kB/s  
Installing collected packages: robotframework  
  Running setup.py install for robotframework ... done  
Successfully installed robotframework-3.0.2
```



Check Robot Framework

\$robot

```
Command Prompt  
C:\Users\SCK>pybot  
[ ERROR ] Expected at least 1 argument, got 0.  
Try --help for usage information.
```



Install Robot Framework Library

\$pip install robotframework-seleniumlibrary

```
C:\Users\SCK>pip install robotframework-seleniumlibrary
Collecting robotframework-seleniumlibrary
  Downloading robotframework-seleniumlibrary-1.8.0.tar.gz
    100% |#####| ###### ###### ###### ###### | 122kB 547kB/s
Collecting decorator>=3.3.2 (from robotframework-seleniumlibrary)
  Downloading decorator-4.0.11-py2.py3-none-any.whl
Collecting selenium>=2.32.0 (from robotframework-seleniumlibrary)
  Downloading selenium-3.0.2-py2.py3-none-any.whl (915kB)
    100% |#####| ###### ###### ###### ###### | 921kB 437kB/s
Requirement already satisfied: robotframework>=2.6.0 in c:\python\robotframework-seleniumlibrary
Installing collected packages: decorator, selenium, robotframework-seleniumlibrary
  Running setup.py install for robotframework-seleniumlibrary
Successfully installed decorator-4.0.11 robotframework-seleniumlibrary-1.8.0.2
```

<https://github.com/robotframework/SeleniumLibrary/>



Check libraries

\$pip list

robotframework==3.0.3

robotframework-seleniumlibrary==3.1.1

selenium==3.11.0



3. Install IDE and Editor



Text Editor



Sublime Text



Let's start to coding



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Test structure

```
test_000.txt *  
1 *** Settings ***  
2  
3  
4 *** Variables ***  
5  
6  
7 *** Testcases ***  
8  
9  
10 *** Keyword ***
```



Settings

**Alias Name => Setting, Settings,
Metadata**

Define metadata for test suites and test cases

Import test libraries

Resource files



Variables

Alias Name => Variable, Variables



Test cases

Alias Name => Testcases, Test Case, Test Cases

Create test cases from keywords



Keywords

Alias Name => Keyword, Keywords, User Keyword,
User Keywords

Create user keywords from existing low-level
keyword



Web UI testing



SeleniumLibrary

<https://github.com/robotframework/SeleniumLibrary/>



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SeleniumLibrary Keywords

Add Cookie · Add Location Strategy · Alert Should Be Present · Alert Should Not Be Present · Assign Id To Element · Capture Page Screenshot · Checkbox Should Be Selected · Checkbox Should Not Be Selected · Choose Cancel On Next Confirmation · Choose File · Choose Ok On Next Confirmation · Clear Element Text · Click Button · Click Element · Click Element At Coordinates · Click Image · Click Link · Close All Browsers · Close Browser · Close Window · Confirm Action · Create Webdriver · Current Frame Contains · Current Frame Should Contain · Current Frame Should Not Contain · Delete All Cookies · Delete Cookie · Dismiss Alert · Double Click Element · Drag And Drop · Drag And Drop By Offset · Element Should Be Disabled · Element Should Be Enabled · Element Should Be Focused · Element Should Be Visible · Element Should Contain · Element Should Not Be Visible · Element Should Not Contain · Element Text Should Be · Element Text Should Not Be · Execute Async Javascript · Execute Javascript · Focus · Frame Should Contain · Get Alert Message · Get All Links · Get Cookie · Get Cookie Value · Get Cookies · Get Element Attribute · Get Element Count · Get Element Size · Get Horizontal Position · Get List Items · Get Location · Get Locations · Get Matching Xpath Count · Get Selected List Label · Get Selected List Labels · Get Selected List Value · Get Selected List Values · Get Selenium Implicit Wait · Get Selenium Speed · Get Selenium Timeout · Get Source · Get Table Cell · Get Text · Get Title · Get Value · Get Vertical Position · Get WebElement · Get WebElements · Get Window Handles · Get Window Identifiers · Get Window Names · Get Window Position · Get Window Size · Get Window Titles · Go Back · Go To · Handle Alert · Input Password · Input Text · Input Text Into Alert · Input Text Into Prompt · List Selection Should Be · List Should Have No Selections · List Windows · Location Should Be · Location Should Contain · Locator Should Match X Times · Log Location · Log Source · Log Title · Maximize Browser Window · Mouse Down · Mouse Down On Image · Mouse Down On Link · Mouse Out · Mouse Over · Mouse Up · Open Browser · Open Context Menu · Page Should Contain · Page Should Contain Button · Page Should Contain Checkbox · Page Should Contain Element · Page Should Contain Image · Page Should Contain Link · Page Should Contain List · Page Should Contain Radio Button · Page Should Contain Textfield · Page Should Not Contain · Page Should Not Contain Button · Page Should Not Contain Checkbox · Page Should Not Contain Element · Page Should Not Contain Image · Page Should Not Contain Link · Page Should Not Contain List · Page Should Not Contain Radio Button · Page Should Not Contain Textfield · Press Key · Radio Button Should Be Set To · Radio Button Should Not Be Selected · Register Keyword To Run On Failure · Reload Page · Remove Location Strategy · Select All From List · Select Checkbox · Select Frame · Select From List · Select From List By Index · Select From List By Label · Select From List By Value · Select Radio Button · Select Window · Set Browser Implicit Wait · Set Focus To Element · Set Screenshot Directory · Set Selenium Implicit Wait · Set Selenium Speed · Set Selenium Timeout · Set Window Position · Set Window Size · Simulate · Simulate Event · Submit Form · Switch Browser · Table Cell Should Contain · Table Column Should Contain · Table Footer Should Contain · Table Header Should Contain · Table Row Should Contain · Table Should Contain · Textarea Should Contain · Textarea Value Should Be · Textfield Should Contain · Textfield Value Should Be · Title Should Be · Unselect All From List · Unselect Checkbox · Unselect Frame · Unselect From List · Unselect From List By Index · Unselect From List By Label · Unselect From List By Value · Wait For Condition · Wait Until Element Contains · Wait Until Element Does Not Contain · Wait Until Element Is Enabled · Wait Until Element Is Not Visible · Wait Until Element Is Visible · Wait Until Page Contains · Wait Until Page Contains Element · Wait Until Page Does Not Contain · Wait Until Page Does Not Contain Element · Xpath Should Match X Times

<http://robotframework.org/SeleniumLibrary/SeleniumLibrary.html>

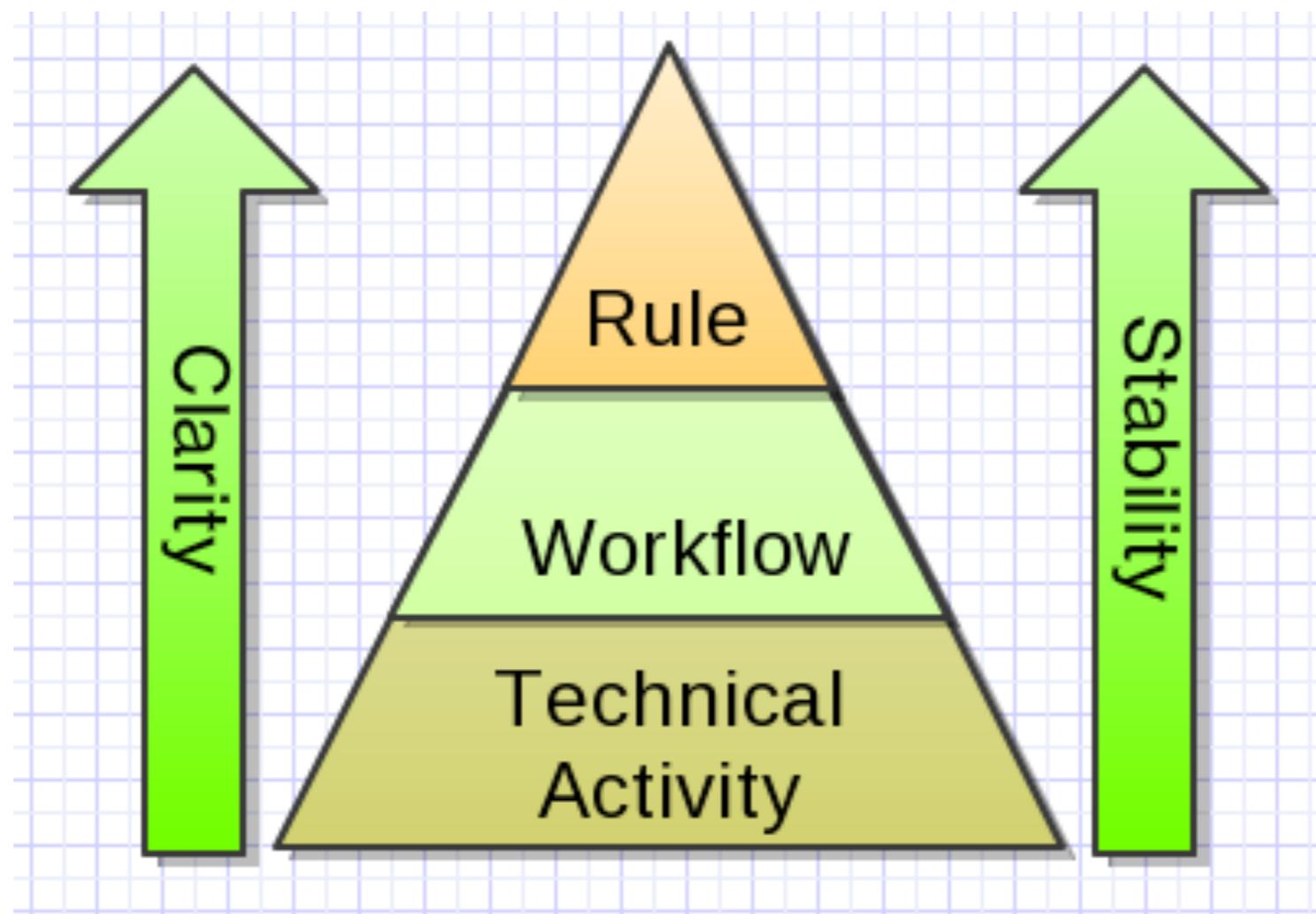


Hello with google

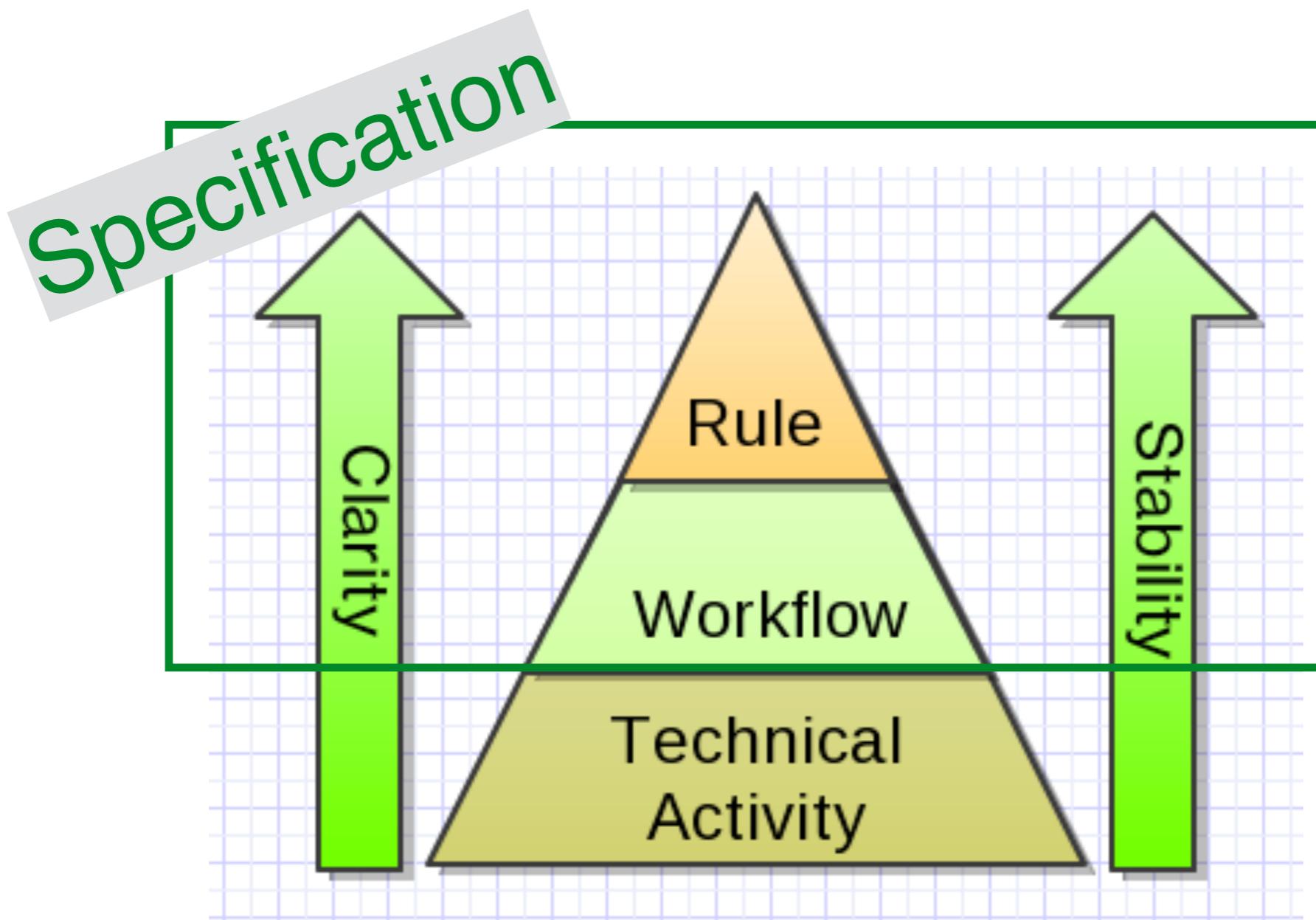


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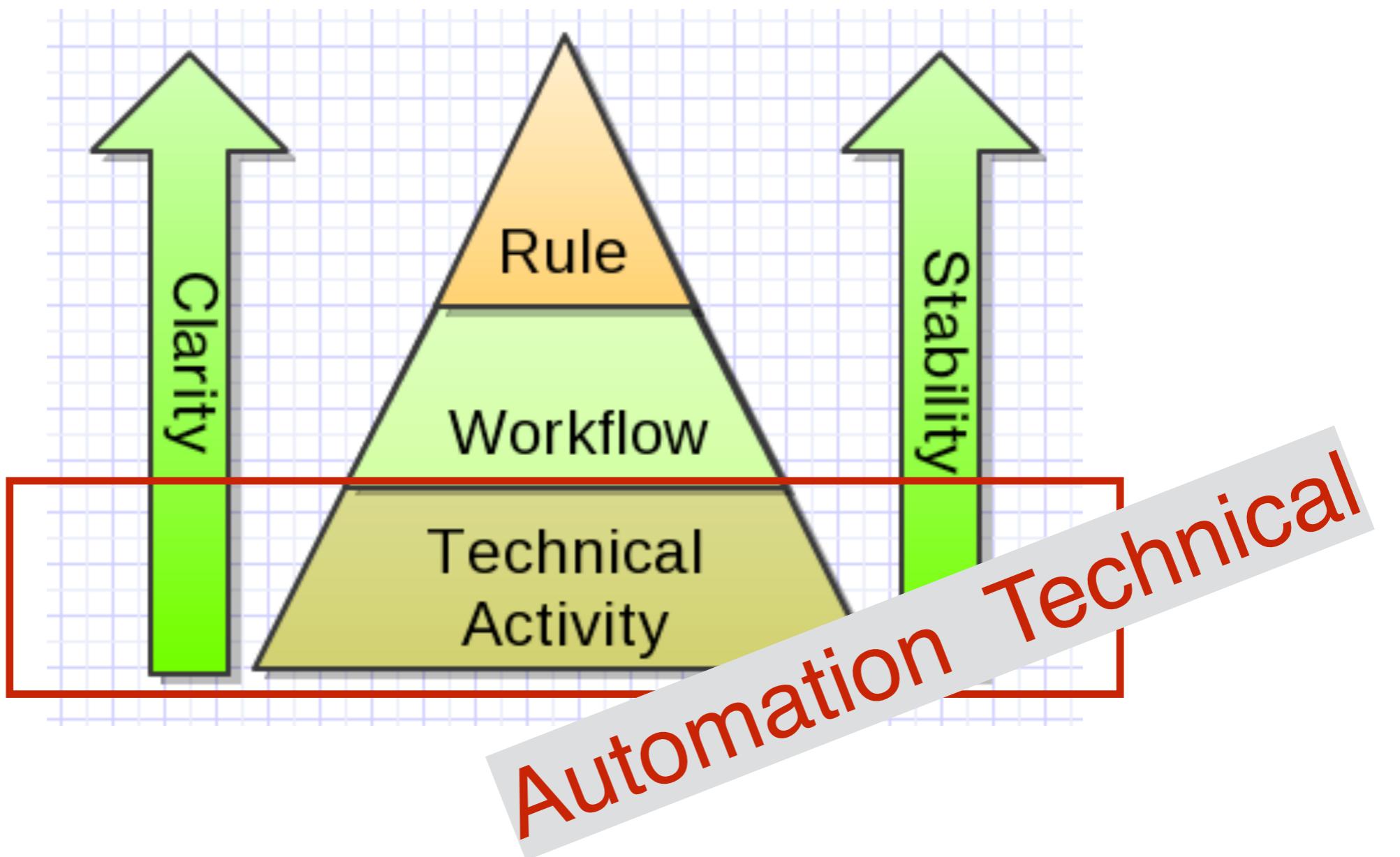
Good to start



Good to start



Good to start



Start with first test case

Human language

Easy to read and understand



Start with first test case

Search BNK

[Tags] testing

เปิด browser chrome ไปที่ google

ค้นหาคำว่า BNK

ต้องเจอ web BNK48 Official Website



Write your keyword



Keywords

```
*** Keywords ***
```

```
เปิด browser chrome ไปที่ google
```

```
Open Browser    ${URL}    browser=chrome
```

```
Capture Page Screenshot
```

```
ค้นหาคำว่า
```

```
[Arguments]  ${keyword}
```

```
Input Text    name:q    ${keyword}
```

```
Capture Page Screenshot
```

```
Press Key    name:q    \\13
```

```
Capture Page Screenshot
```



Open Browser

Browser	Name(s)
Firefox	firefox, ff
Google Chrome	googlechrome, chrome, gc
Headless Firefox	headlessfirefox
Headless Chrome	headlesschrome
Internet Explorer	internetexplorer, ie
Edge	edge
Safari	safari
Opera	opera
Android	android
Iphone	iphone
PhantomJS	phantomjs
HTMLUnit	htmlunit
HTMLUnit with Javascript	htmlunitwithjs

<http://robotframework.org/SeleniumLibrary/SeleniumLibrary.html>



Chrome Driver

ChromeDriver - WebDriver for Chrome

 Search this site[CHROMEDRIVER](#)[CAPABILITIES & CHROMEOPTIONS](#)[CHROME EXTENSIONS](#)[CHROMEDRIVER CANARY](#)[CONTRIBUTING](#)[DOWNLOADS](#)

GETTING STARTED

[ANDROID](#)[CHROMEOS](#)

LOGGING

[PERFORMANCE LOG](#)[MOBILE EMULATION](#)

NEED HELP?

[CHROME DOESN'T START OR CRASHES IMMEDIATELY](#)[CHROMEDRIVER CRASHES](#)[CLICKING ISSUES](#)

Downloads

Latest Release: [ChromeDriver 2.41](#)

Supports Chrome v67-69

Changes include:

- Fixed issue when ChromeDriver runs with "whitelisted-ips" option
- Remote Debugging Port is returned in capabilities
- Implemented getting window size on Android
- Desktop Chrome launch error messages are improved
- ChromeDriver fails fast when unable to start Chrome binaries
- Close Window return value conforms with spec

[ChromeDriver 2.40](#)

Supports Chrome v66-68

<http://chromedriver.chromium.org/downloads>



Google Chrome Headless

Problem with size of window !!

Set Window Size width height

<http://www.somkiat.cc/robotframework-problem-with-chrome-headless/>



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Variables

```
*** Variables ***
${URL}    http://www.google.com
${FIRST_RESULT}  xpath://*[@id="rso"]
```



Keyword Arguments

Search BNK

[Tags] testing

เปิด browser chrome ไปที่ google

ค้นหาคำว่า BNK

ต้องเจอ web BNK48 Official Website

*** Keywords ***

ค้นหาคำว่า

[Arguments] \${keyword}

Input Text name:q \${keyword}

Capture Page Screenshot

Press Key name:q \\13

Capture Page Screenshot



Embedding arguments in keywords

<http://robotframework.org/robotframework/latest/RobotFrameworkUserGuide.html#embedding-arguments-into-keyword-name>



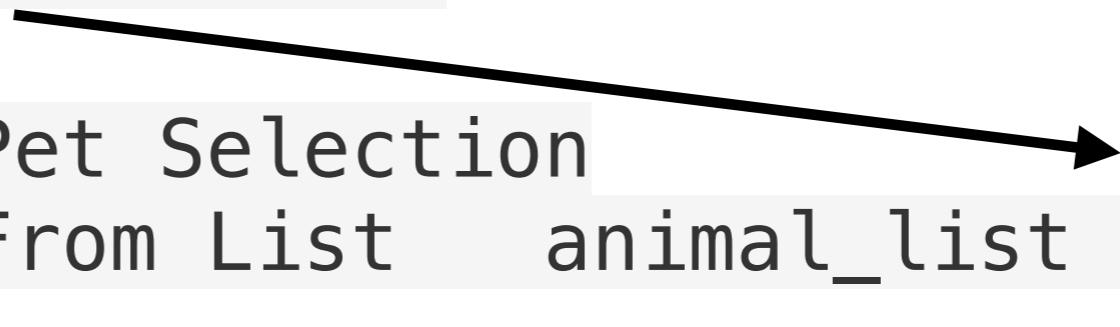
Embedding arguments

Easier to read and clear sentences

*** Keywords ***

Select \${animal} from list

Open Page Pet Selection
Select Item From List animal_list

\${animal}



Return value from keyword

```
Search BNK
[Tags] testing
เปิด browser chrome ไปที่ google
${result}= ค้นหาคำว่า BNK
ต้องเจอ web BNK48 Official Website
```

```
*** Keywords ***
ค้นหาคำว่า
[Arguments] ${keyword}
Input Text name:q ${keyword}
Capture Page Screenshot
Press Key name:q \\13
[Return] 200
```



Build-in variables

<http://robotframework.org/robotframework/latest/RobotFrameworkUserGuide.html#built-in-variables>



Build-in variables

Operating system variables

Number variables

Boolean and None/Null variables

Space and Empty variables

Automatic variables



Space and Empty

Usage	Description
<code> \${SPACE}</code>	<code>\ \</code>
<code>"\${SPACE}"</code>	<code>" "</code>
<code> \${SPACE * 5}</code>	<code>\ \ \ \ \</code>
<code>"\${SPACE * 5}"</code>	<code>" \ \ \ \ "</code>
<code> \${EMPTY}</code>	<code>\</code>

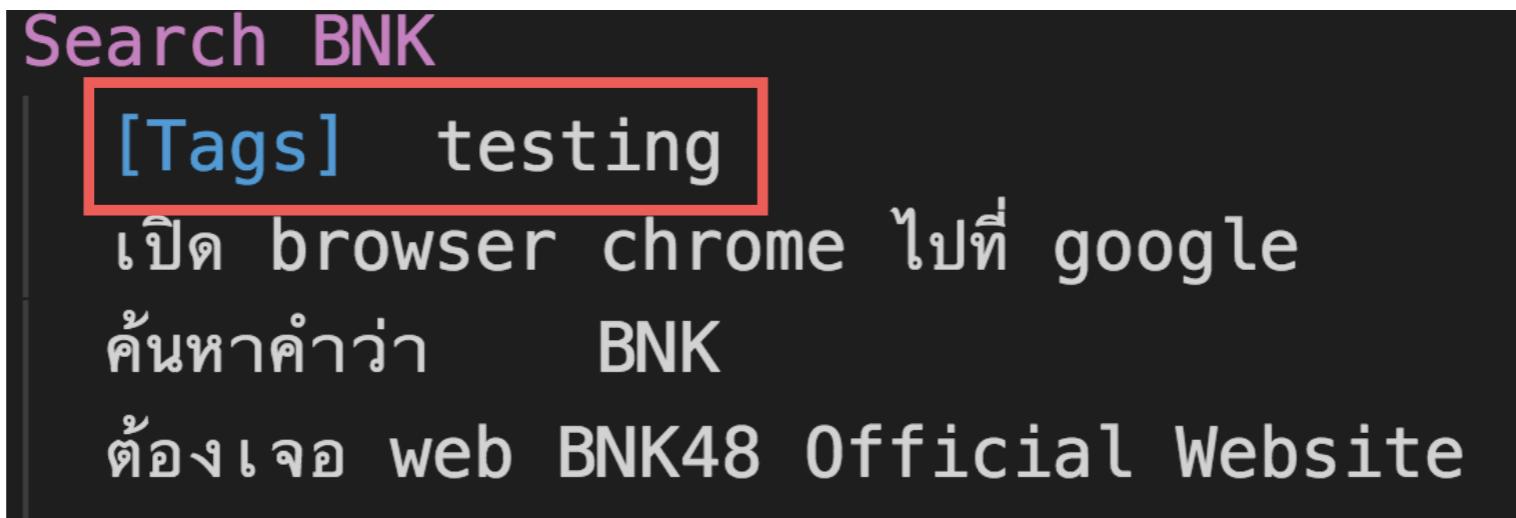


Escaping special characters

<http://robotframework.org/robotframework/latest/RobotFrameworkUserGuide.html#escaping>



Working with Tags



\$pybot -i testing file.robot



Set variable value from command line



Working with variables

```
*** Variables ***
${URL}  http://www.google.com
${FIRST_RESULT}  xpath://*[@id="rso"]
```

\$pybot -v URL:value file.robot



Report of Robotframework

\$pybot -d v1 login.robot

\$pybot -T login.robot



Workshop upload file

<https://goo.gl/YE27iy>



Select files

Base drop zone

Another drop zone with its own settings

Multiple

Choose Files No file chosen

Single

Choose File No file chosen

Upload queue

Queue length: 0

Name	Size	Progress	Status	Actions
------	------	----------	--------	---------

Queue progress:

Upload all Cancel all Remove all



Google chrome vs Firefox



Test Life Cycle



Suite



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Suite

Test case 1

Test case 2

Test case 3



Suite

Suite Setup

Test case 1

Test case 2

Test case 3

Suite Teardown



Suite

Suite Setup

Test Setup
Test case 1
Test Teardown

Test case 2

Test case 3

Suite Teardown



Suite

Suite Setup

Test Setup
Test case 1
Test Teardown

Test Setup
Test case 2
Test Teardown

Test case 3

Suite Teardown



Suite

Suite Setup

Test Setup
Test case 1
Test Teardown

Test Setup
Test case 2
Test Teardown

Test Setup
Test case 3
Test Teardown

Suite Teardown



Test life cycle

*** Settings ***

Library

SeleniumLibrary

Suite Setup

เปิด browser chrome ไปที่ google

Suite Teardown

Close Browser

Test Setup

Back to search page

Test Teardown

Do somthing



Test Template (1)



Test Template for all test

*** Settings ***

Resource resources/sample.robot
Suite Setup เปิด browser chrome ไปที่ google
Suite Teardown Close Browser
Test Setup Back to search page
Test Template Search Template

*** Testcases ***

#	Test case name	Keyword	Expected result
#	Search robotframework	robotframework	Robot Framework
#	Search BNK	BNK	BNK48 Official Website

*** Keywords ***

Search Template

[Arguments] \${keyword} \${result}
ค้นหาคำว่า \${keyword}
ต้องเจอ web \${result}



Test Template (2)



Use Template in each test

*** Settings ***

Resource resources/sample.robot
Suite Setup เปิด browser chrome ไปที่ google
Suite Teardown Close Browser

*** Testcases ***

Search

[Template] Search Template
robotframework Robot Framework
BNK BNK48 Official Website

*** Keywords ***

Search Template

[Arguments] \${keyword} \${result}
ค้นหาคำว่า \${keyword}
ต้องเจอ web \${result}
[Teardown] Back to search page



Working with resources



Using resource

*** Settings ***

Resource resources/sample.robot

Suite Setup เปิด browser chrome ไปที่ google

Suite Teardown Close Browser



Page object pattern



<https://goo.gl/iCce7C>

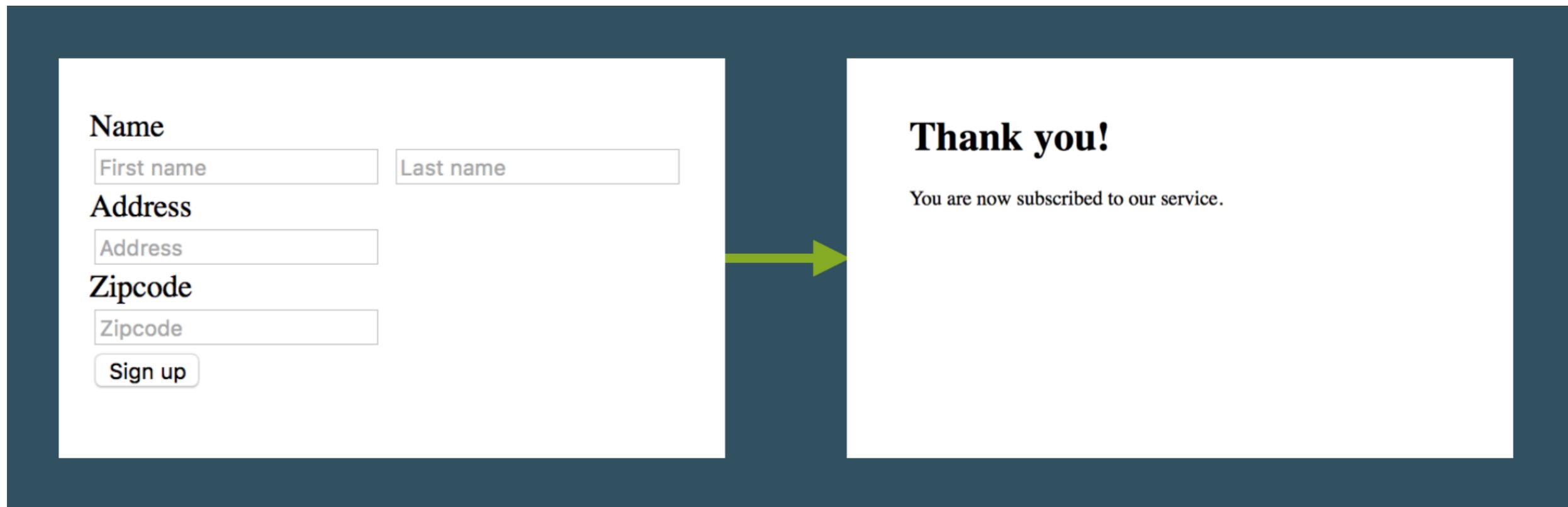
The diagram illustrates a user interaction flow. On the left, a white rectangular area represents a sign-up form. It contains fields for 'Name' (with 'First name' and 'Last name' inputs), 'Address' (with an 'Address' input), 'Zipcode' (with a 'Zipcode' input), and a 'Sign up' button. A large green arrow points from the right side of the sign-up form towards a white rectangular area on the right, which represents a confirmation page. This confirmation page features the heading 'Thank you!' and the message 'You are now subscribed to our service.'



Create page object

SignUpPage

ThankyouPage



Add behaviors

SignUpPage

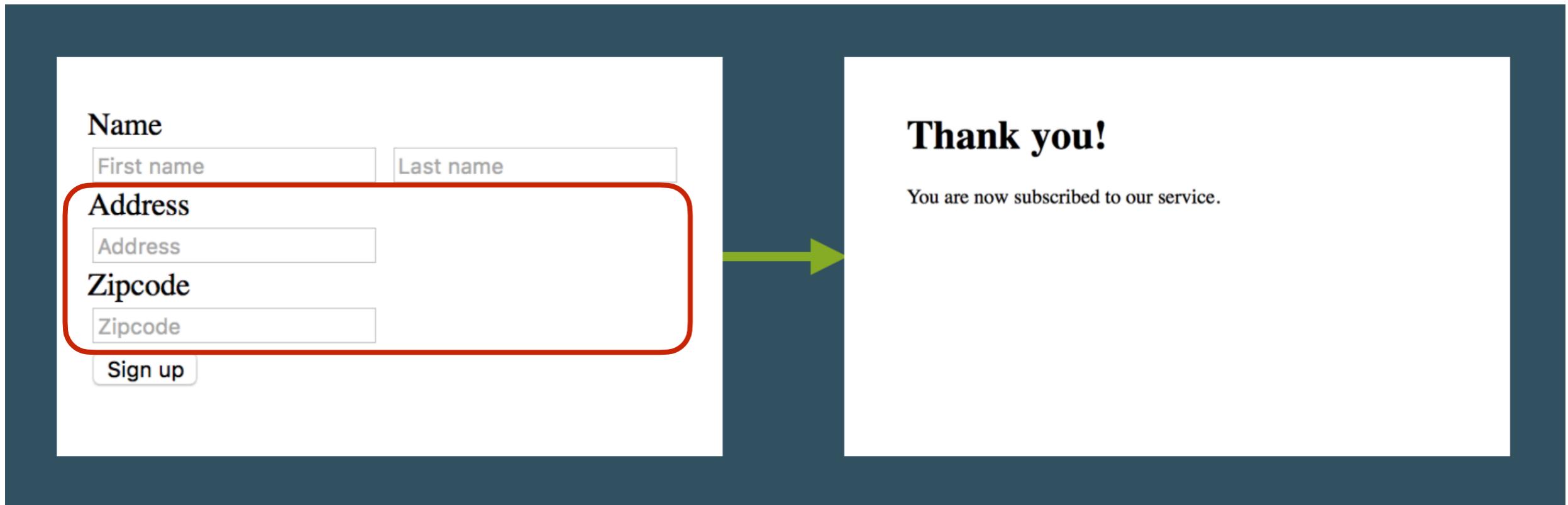
ThankyouPage



Add behaviors

SignUpPage

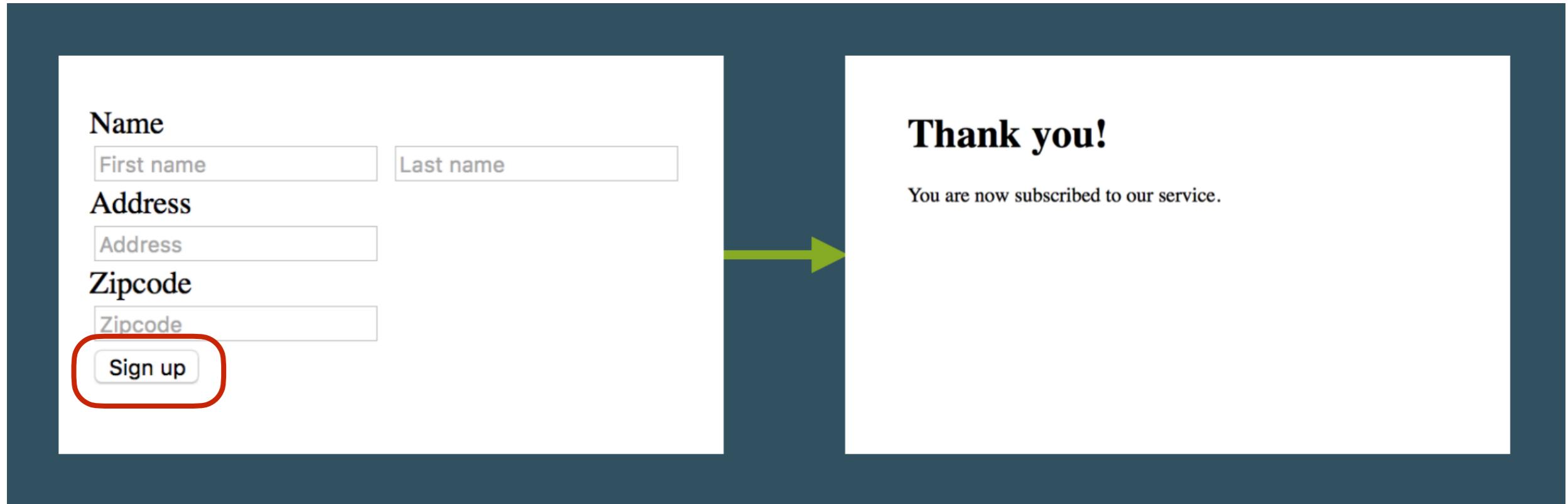
ThankyouPage



Add behaviors

SignUpPage

ThankyouPage



Add behaviors

SignUpPage

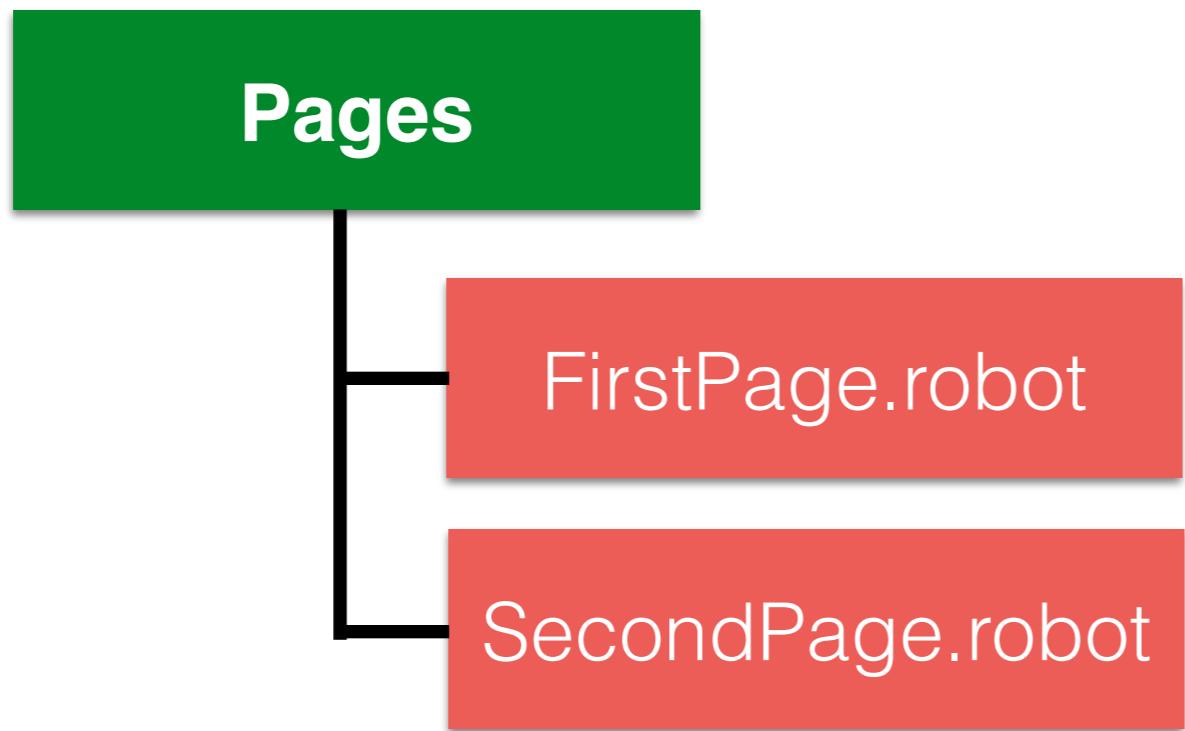
ThankyouPage



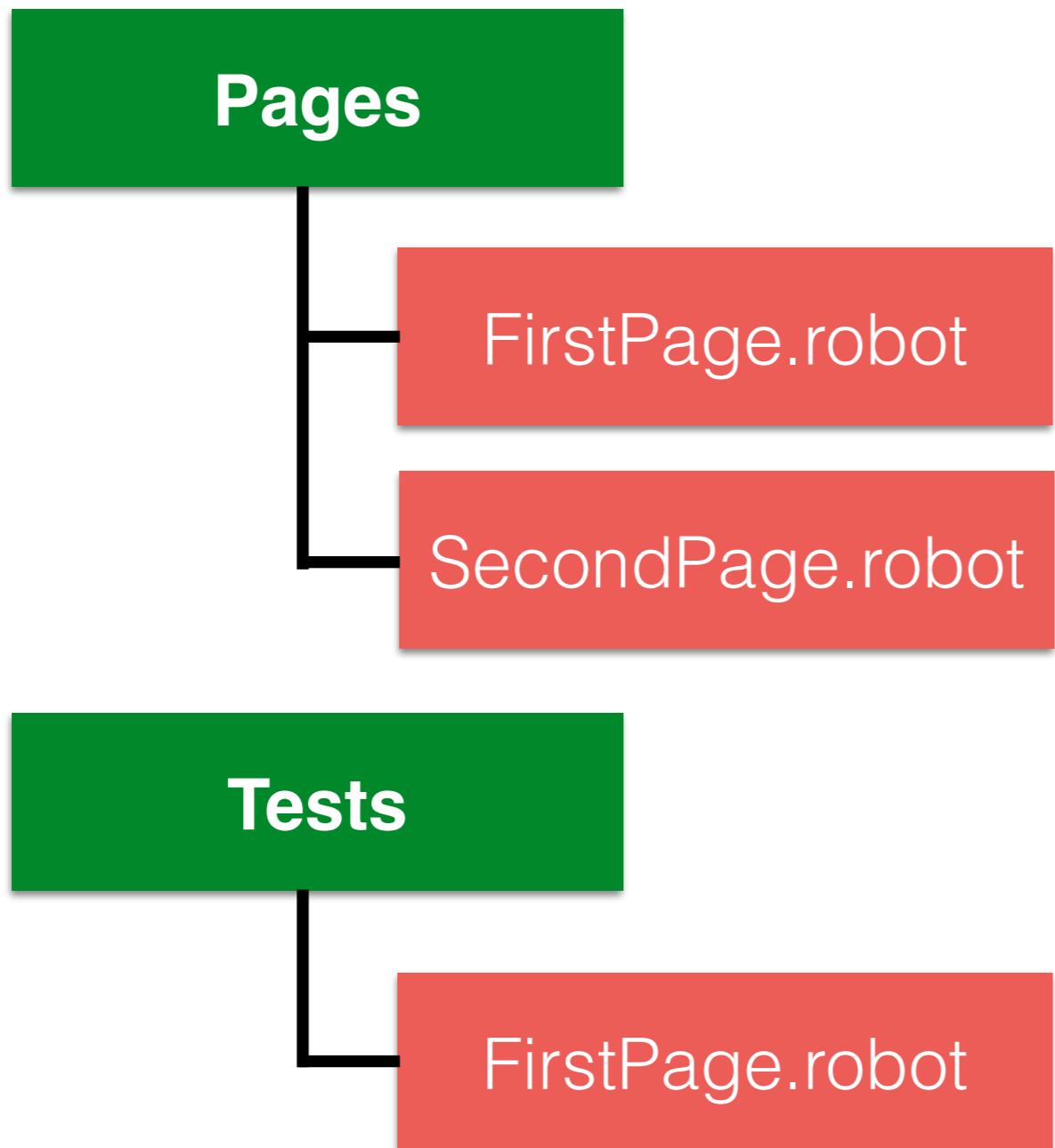
Workshop with Page Object



Project structure



Project structure



API Testing



Requests Library

\$pip install requests

\$pip install robotframework-requests

<https://github.com/bulkan/robotframework-requests/>



Request Library

Introduction

`RequestsLibrary` is a [Robot Framework](#) test library that uses the [Requests](#) HTTP client.

Here is an example testcase

*** Settings ***				
Library	Collections			
Library	RequestsLibrary			
*** Test Cases ***				
Get Requests				
	Create Session	github	http://api.github.com	
	Create Session	google	http://www.google.com	
	\${resp}=	Get Request	google	/
	Should Be Equal As Strings	\${resp.status_code}	200	
	\${resp}=	Get Request	github	/users/bulkan
	Should Be Equal As Strings	\${resp.status_code}	200	
	Dictionary Should Contain Value	\${resp.json()}	Bulkan Savun Evcimen	

Shortcuts

[Create Digest Session](#) · [Create Ntlm Session](#) · [Create Session](#) · [Delete](#) · [Delete All Sessions](#) · [Delete Request](#) · [Get](#) · [Get Request](#) · [Head](#) · [Head Request](#) · [Options](#) · [Options Request](#) · [Patch](#) · [Patch Request](#) · [Post](#) · [Post Request](#) · [Put](#) · [Put Request](#) · [To Json](#)

<http://bulkan.github.io/robotframework-requests/>



Workshop with API Testing



HTTP GET

*** Keywords ***

Search product by keyword adidas

```
Create Session    search    http://localhost:8882
${response}=  Get Request  search  /search?q#adidas
Should Be Equal  ${response.status_code}  ${200}
Should Be Equal  ${response.json()['header']['code']}  ${200}
${size_of_product}=  Get length  ${response.json()['body']}
Should Be Equal  ${size_of_product}  ${2}
Should Be Equal  ${response.json()['body'][0]['product_id']}  ${1000}
```



HTTP POST

Add product id=1000 to empty basket

```
Create Session      baskets      http://localhost:8882
&{headers}= Create Dictionary Content-Type=application/json
&{data}= Create Dictionary
...   product_id=${1000}
...   product_name=Adidas
...   product_price=${1500}
...   product_image=http://xxx.jpg
...   quantity=${1}
${response}= Post Request  baskets  /baskets
...   data=${data}  headers=${headers}
Should Be Equal As Strings  ${response.status_code}  200
```



<http://httpbin.org/>

<https://jsonplaceholder.typicode.com/>



API Testing with Postman



Mock/Stub RESTful APIs



Using Stubby4j



<https://github.com/azagniotov/stubby4j>



Create YAML

example => api.yaml

```
- request:  
    method: GET  
    url: /user/1  
  
  response:  
    status: 200  
    headers:  
      content-type: application/json  
    file: user1.json
```



Create JSON for result

example => user1.json

```
{  
    "id": 1,  
    "name": "somkiat"  
}
```



Parallel testing with pabot



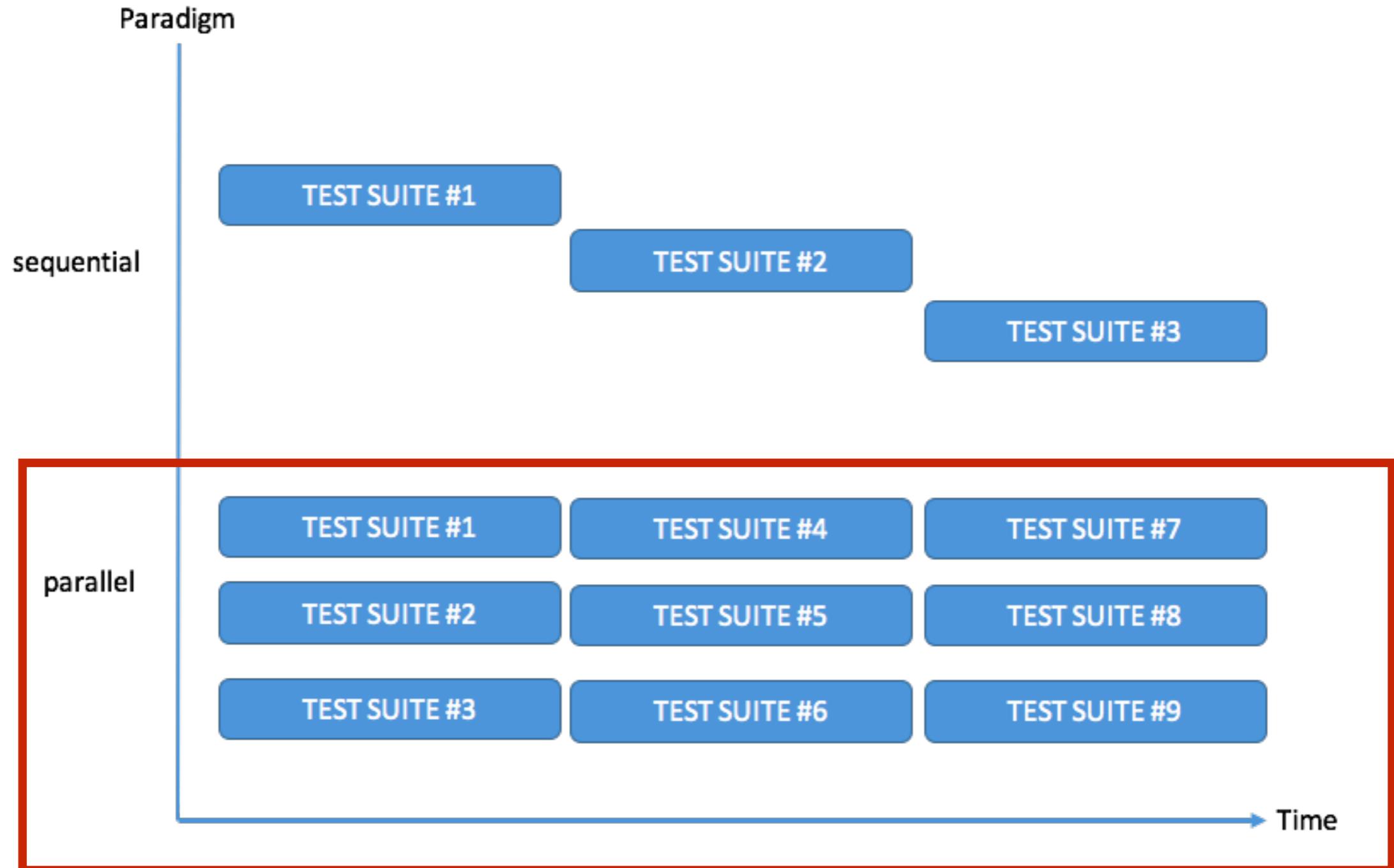
Problems

More test cases **more problems**

More test cases **more testing time**



Parallel Testing



Pabot

\$pip install robotframework-pabot

\$pabot

<https://github.com/mkorpela/pabot>

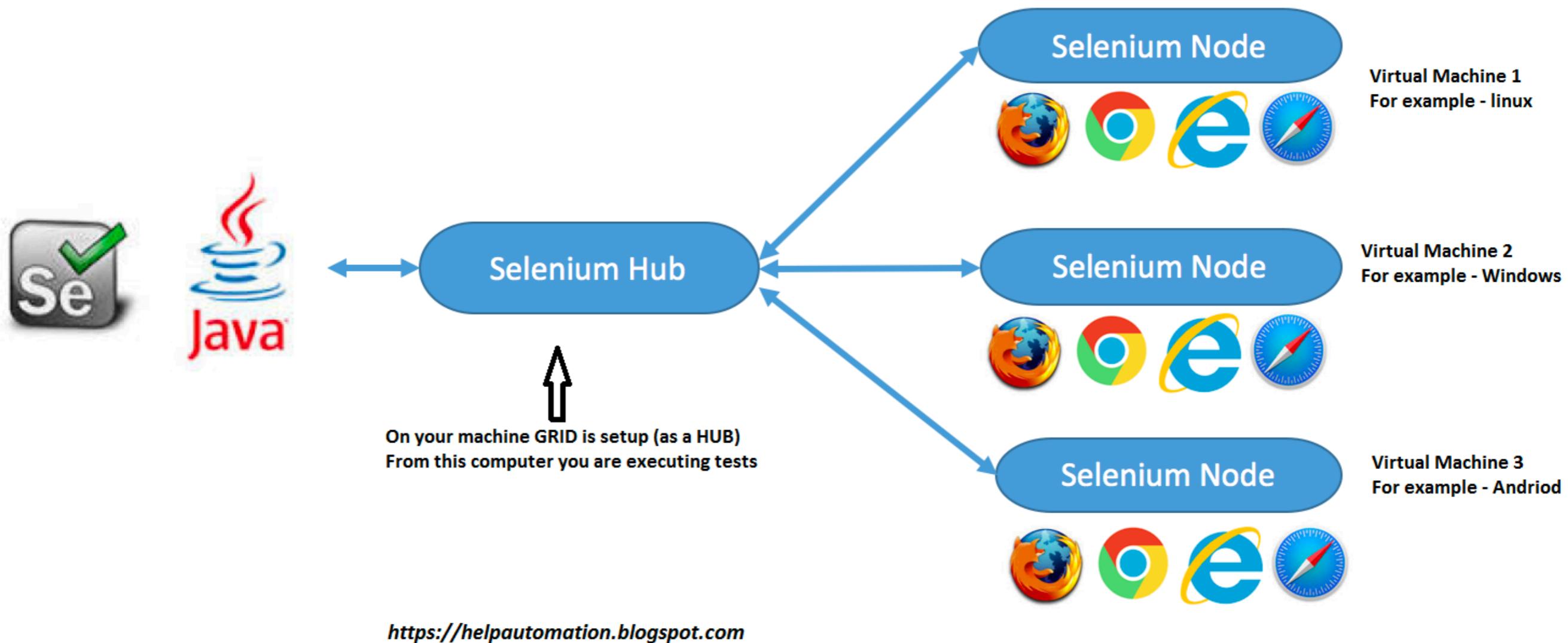


Scaling UI testing with Selenium Grid

<https://www.seleniumhq.org/projects/grid/>



Selenium Grid



Selenium Grid

Hub
Node



Working with Robotframework

```
Open Browser  http://localhost:8080/demo/
...  browser=chrome
...  remote_url=http://localhost:4444/wd/hub
...  desired_capabilities=browserName:chrome
```



How to write good test case ?

<https://github.com/robotframework/HowToWriteGoodTestCases/blob/master/HowToWriteGoodTestCases.rst>



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User guide

<http://robotframework.org/robotframework/#user-guide>



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Do and Don't

<https://www.slideshare.net/pekkaklarck/robot-framework-dos-and-donts>



Goals

Easy to understand

Easy to maintain

Fast to execute



Naming

Good name is explicit and easy to understand

Test suites, Test cases, Keywords, Variables

Namespaces

Name should tell “**what**” not “**how**”



Documentation

Test suites should have documentation

Well named tests not need extra documentation

Reuse keywords must be documented



Do :: appropriate abstraction level

*** Test cases ***

Valid login

Open login page

Input user name demo

Input password password

Submit credentials

Welcome page should be open



Don't :: too low abstraction level

*** Test cases ***

Valid login

Open Browser \${LOGIN URL} \${Browser}

Set Selenium Speed \${DELAY}

Maximize Browser Window

Title Should Be Login Page

Input Text id:username_field demo

Input Text id:password_field password

Click Button id:login_button

Title Should Be Welcome Page

Location Should Be \${WELCOME URL}



Don't :: comments instead of abstraction

```
*** Test cases ***
Valid login
# Open login page
Open Browser    ${LOGIN URL}    ${Browser}
Set Selenium Speed    ${DELAY}
Maximize Browser Window
Title Should Be    Login Page
# Input user name
Input Text    id:username_field    demo
# Input password
Input Text    id:password_field    password
# Submit credentials
Click Button    id:login_button
# Welcome page should be open
Title Should Be    Welcome Page
Location Should Be    ${WELCOME URL}
```



Don't :: tests without checks

*** Test cases ***

Valid login

Open login page

Input user name demo

Input password password

Submit credentials



Don't :: overuse variables

```
*** Variables ***
```

```
 ${USERNAME FIELD}    id:username_field
```

```
*** Keywords ***
```

```
Input user name
```

```
    [Arguments]  ${username}
```

```
    Input Text    ${USERNAME FIELD}    ${username}
```



Don't :: complex login in test

```
*** Keywords ***
Get MAX Line Length
[Arguments]    ${string}
${max}=  Set Variable  ${0}
@{lines}=  Split To Lines  ${string}
:: FOR  ${line}  IN  ${lines}
\\  ${length}=  Get Length  ${line}
\\  ${max}=  Set Variable If  ${length} >  ${max}
\\  ...  ${length}  ${max}
[Return]  ${max}
```



Avoid Dependencies between test case



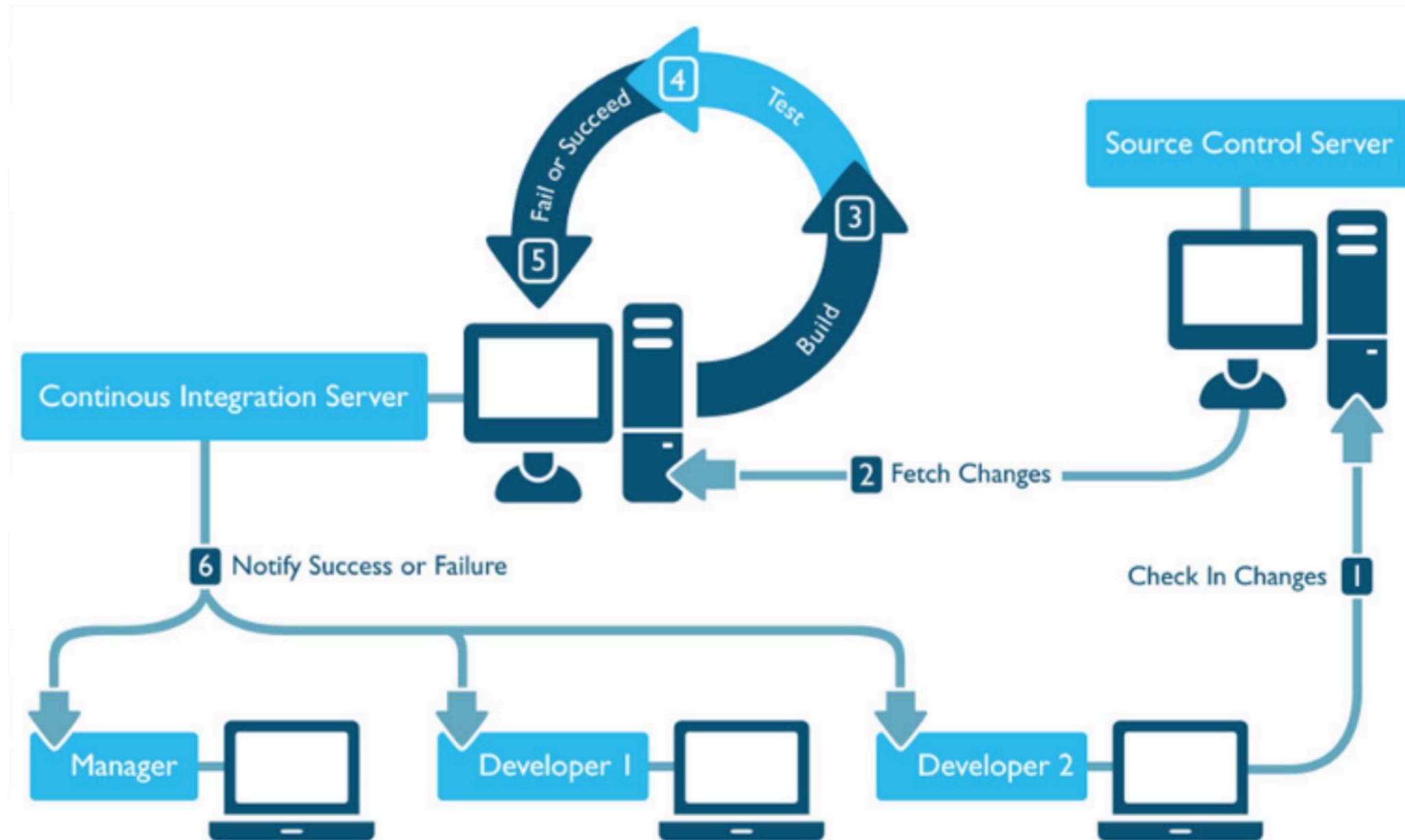
Continuous Integration



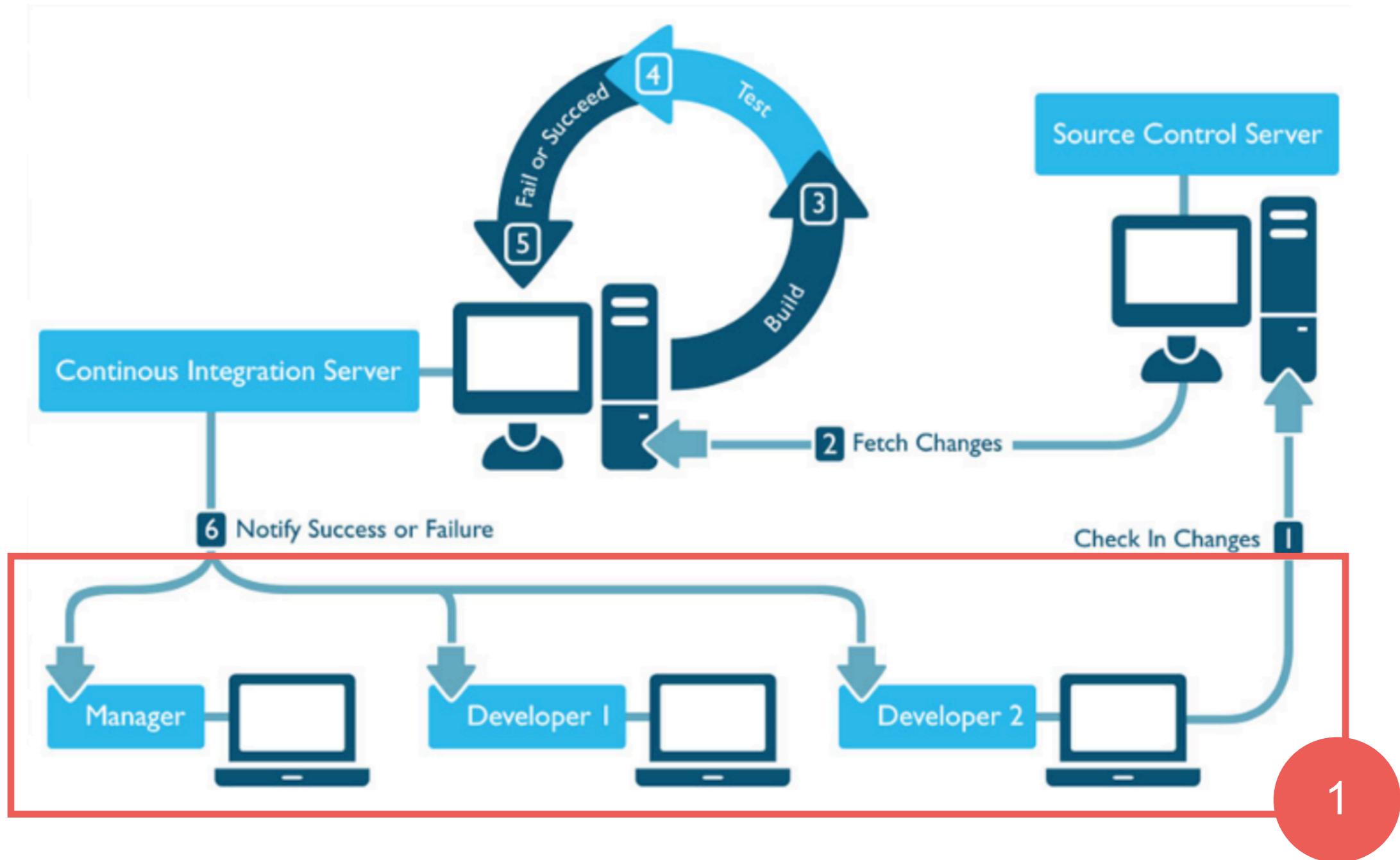
<https://jenkins.io/>



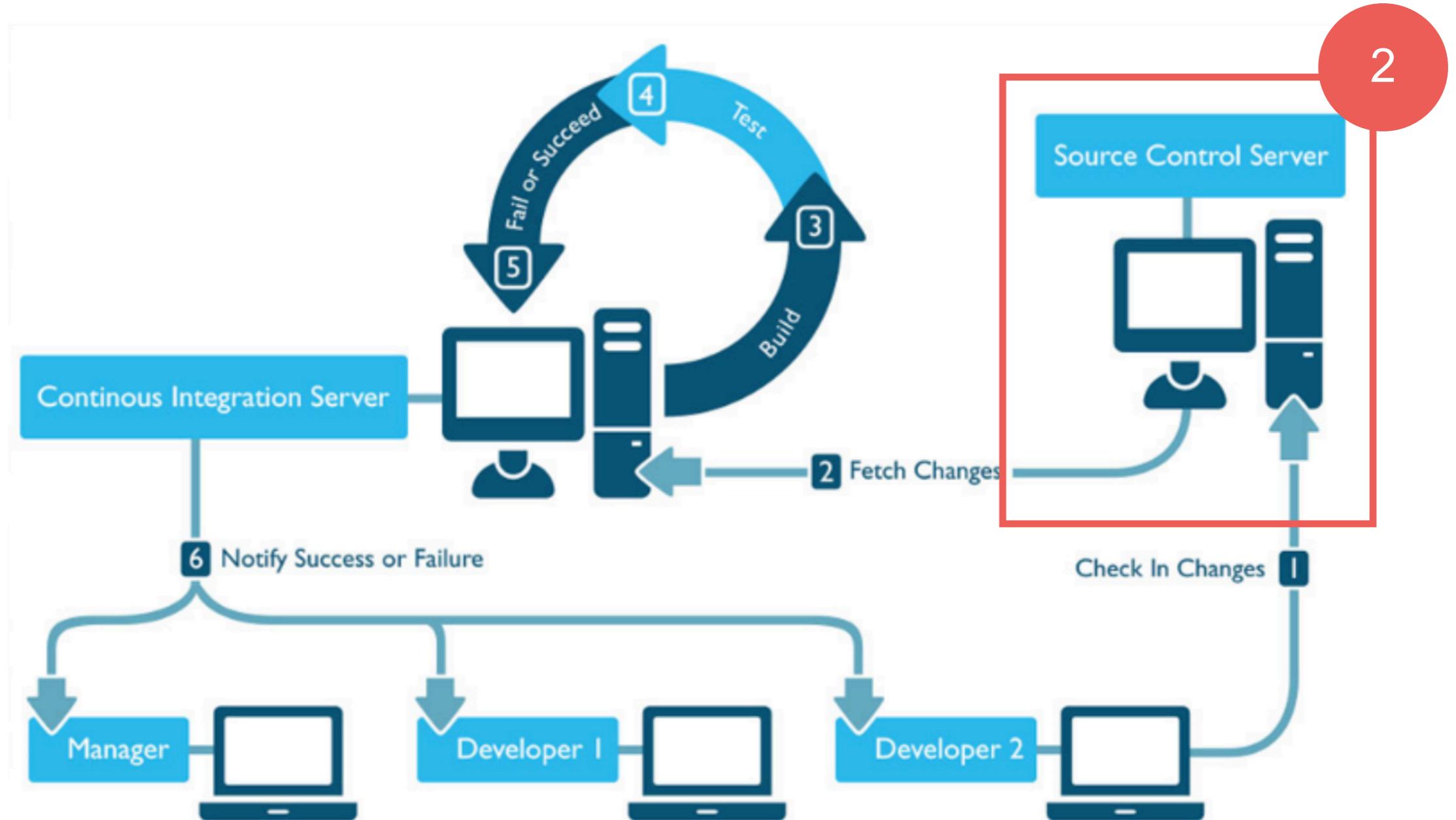
Continuous Integration



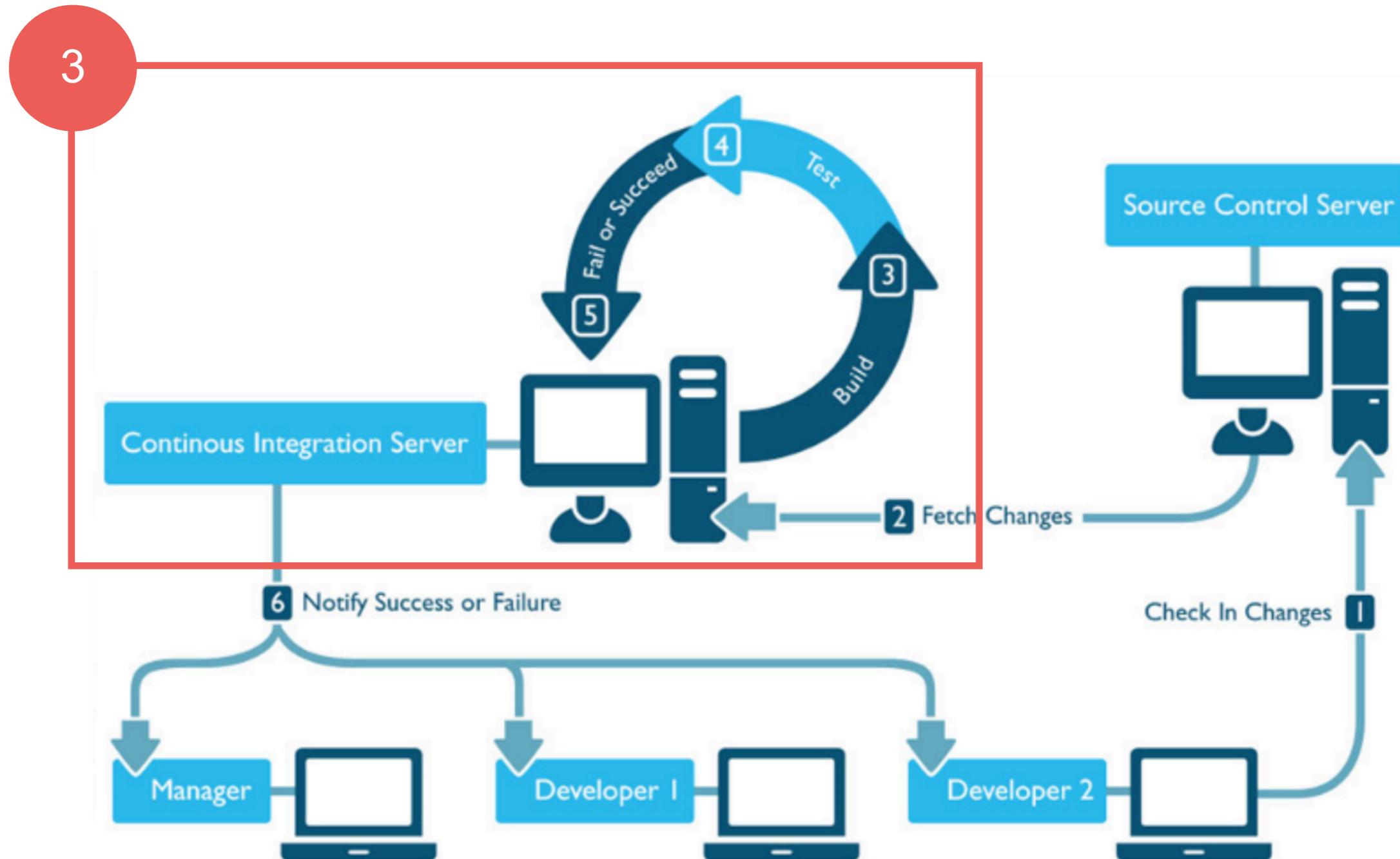
Continuous Integration



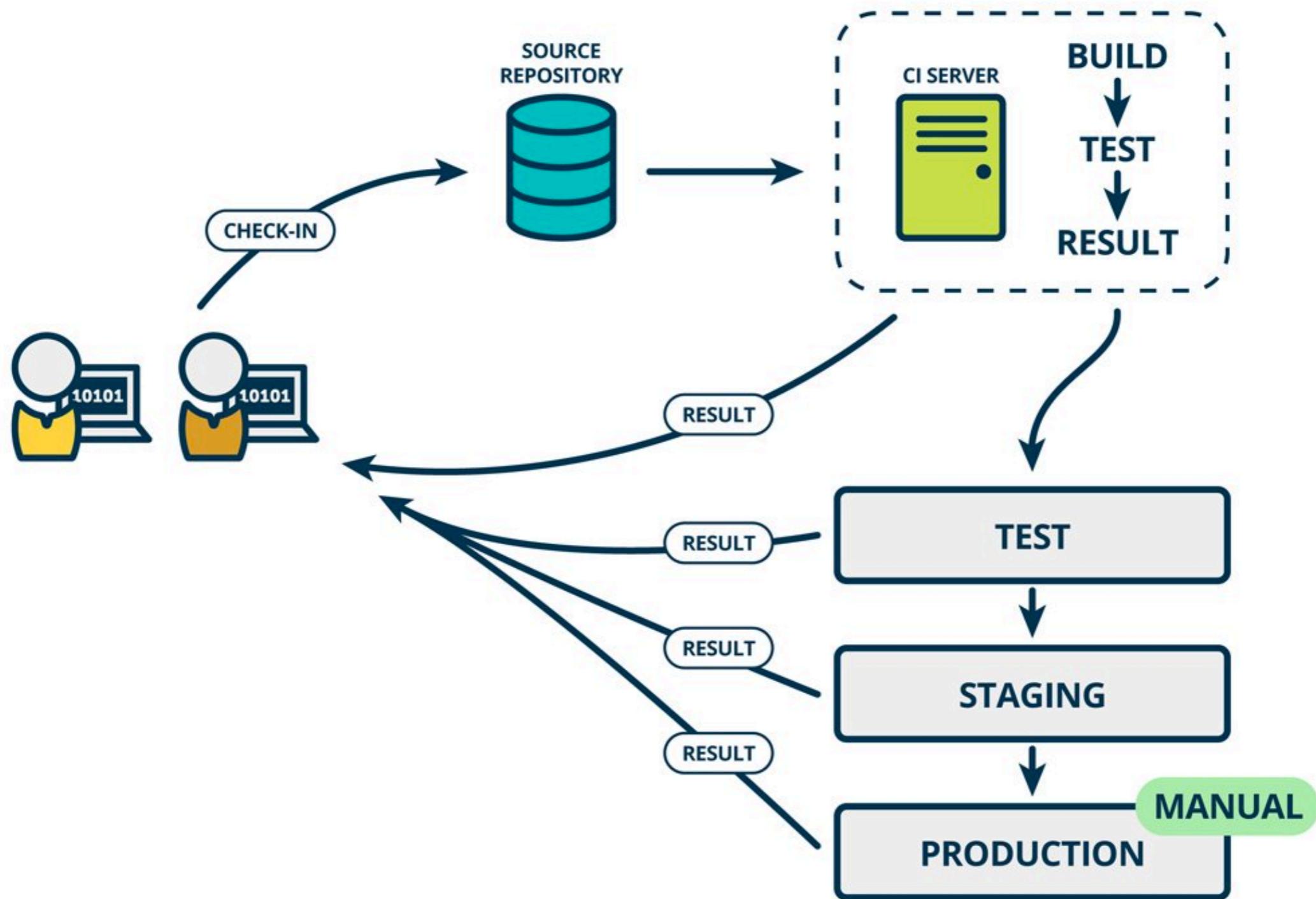
Continuous Integration



Continuous Integration



Continuous Delivery



Continuous Delivery

Use version control

Automated your deployment process

Implement continuous integration

Implement test automation

Support test data management

Focus on security and performance



Working with Jenkins



<https://jenkins.io/>



Start Jenkins

```
$java -jar jenkins.war
```

Jenkins initial setup is required. An admin user
been created and a password generated.
Please use the following password to proceed to :
llation:

```
07be76a843f54c3bae1d259ee38ed2d9
```

This may also be found at: /Users/somkiat/data/s
robot-framework/thaibev-20180806/ci/v2/secrets/ir
lAdminPassword



Open in browser

<http://localhost:8080>

Getting Started

Unlock Jenkins

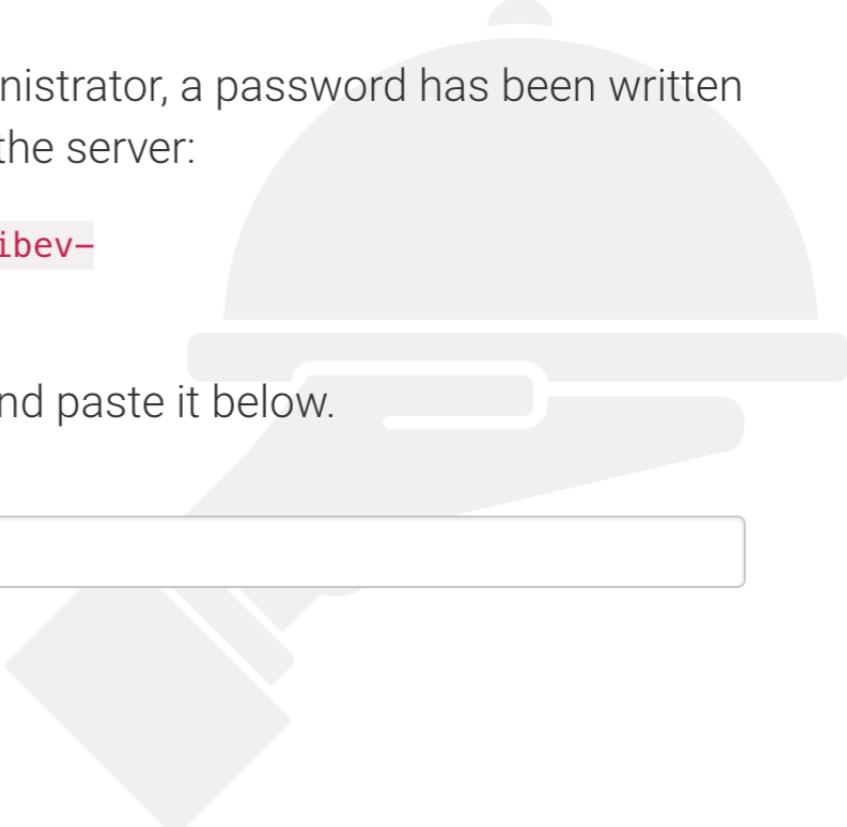
To ensure Jenkins is securely set up by the administrator, a password has been written to the log ([not sure where to find it?](#)) and this file on the server:

```
/Users/somkiat/data/slide/robot-framework/thaibev-  
20180806/ci/v2/secrets/initialAdminPassword
```

Please copy the password from either location and paste it below.

Administrator password

Continue





Install suggested plugins

Getting Started X

Customize Jenkins

Plugins extend Jenkins with additional features to support many different needs.

Install suggested plugins

Install plugins the Jenkins community finds most useful.

Select plugins to install

Select and install plugins most suitable for your needs.

Jenkins 2.121.3



Install suggested plugins

Getting Started

Robot Framework

Getting Started

Folders	OWASP Markup Formatter	Build Timeout	Credentials Binding	** JDK Tool ** Script Security
Timestamper	Workspace Cleanup	Ant	Gradle	
Pipeline	GitHub Branch Source	Pipeline: GitHub Groovy Libraries	Pipeline: Stage View	
Git	Subversion	SSH Slaves	Matrix Authorization Strategy	
PAM Authentication	LDAP	Email Extension	Mailer	

** - required dependency

Jenkins 2.121.3

Install suggested plugins

Getting Started

Robot Framework

Getting Started

Folders	OWASP Markup Formatter	Build Timeout	Credentials Binding	** JDK Tool ** Script Security
Timestamper	Workspace Cleanup	Ant	Gradle	
Pipeline	GitHub Branch Source	Pipeline: GitHub Groovy Libraries	Pipeline: Stage View	
Git	Subversion	SSH Slaves	Matrix Authorization Strategy	
PAM Authentication	LDAP	Email Extension	Mailer	

** - required dependency

Jenkins 2.121.3

Create admin user

Getting Started

Create First Admin User

Username:

Password:

Confirm password:

Full name:

E-mail address:

Jenkins 2.121.3

Continue as admin

Save and Continue



Instance configuration

Getting Started

Instance Configuration

Jenkins URL:

http://localhost:8080

The Jenkins URL is used to provide the root URL for absolute links to various Jenkins resources. That means this value is required for proper operation of many Jenkins features including email notifications, PR status updates, and the `BUILD_URL` environment variable provided to build steps.

The proposed default value shown is **not saved yet** and is generated from the current request, if possible. The best practice is to set this value to the URL that users are expected to use. This will avoid confusion when sharing or viewing links.

Jenkins 2.121.3

Not now

Save and Finish



Ready !!!

Getting Started

Jenkins is ready!

Your Jenkins setup is complete.

[Start using Jenkins](#)

Jenkins 2.121.3



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Hello Jenkins

The screenshot shows the Jenkins dashboard with a dark header featuring the Jenkins logo and the word "Jenkins". Below the header is a navigation bar with the text "Jenkins" and a right-pointing arrow. On the left side, there is a sidebar with the following links:

- New Item
- People
- Build History
- Manage Jenkins
- My Views
- Credentials
- New View

In the center, a large "Welcome to Jenkins!" message is displayed, followed by a teal box containing the text "Please [create new jobs](#) to get started." Below this are two collapsed sections: "Build Queue" (showing "No builds in the queue.") and "Build Executor Status" (showing "1 Idle" and "2 Idle").



Create new Job



1. Create new job

Enter an item name

» Required field

 **Freestyle project**
This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

 **Pipeline**
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

 **Multi-configuration project**
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.

 **Folder**
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.

 **GitHub Organization**
Scans a GitHub organization (or user account) for all repositories matching some defined markers.

 **Multibranch Pipeline**
Creates a set of Pipeline projects according to detected branches in one SCM repository.

OK



2. Job information

General Source Code Management Build Triggers Build Environment Build Post-build Actions

Description

[Plain text] [Preview](#)

Discard old builds [?](#)

GitHub project [?](#)

This project is parameterized [?](#)

Throttle builds [?](#)

Disable this project [?](#)

Execute concurrent builds if necessary [?](#)

[Advanced...](#)



2.1 Custom workspace

The screenshot shows the 'General' configuration page for a Jenkins job. At the top, there are tabs for General, Source Code Management, Build Triggers, Build Environment, Build, and Post-build Actions. The General tab is selected.

The 'Description' field is empty. Below it are links for [Plain text] and [Preview].

A vertical sidebar on the left contains several checkboxes:

- Discard old builds (with a help icon)
- GitHub project (with a help icon)
- This project is parameterized (with a help icon)
- Throttle builds (with a help icon)
- Disable this project (with a help icon)
- Execute concurrent builds if necessary (with a help icon)

In the bottom right corner, there is a red circle with the number '1' over a button labeled 'Advanced...'. A red rectangle highlights this area.



2.1 Custom workspace

Use custom workspace

Directory

 **Custom workspace is empty.**

Display Name

Keep the build logs of dependencies



3. Source code management

General **Source Code Management** Build Triggers Build Environment Build Post-build Actions

Source Code Management

None
 Git
 Subversion (?)

Build Triggers

Trigger builds remotely (e.g., from scripts) (?)
 Build after other projects are built (?)
 Build periodically (?)
 GitHub hook trigger for GITScm polling (?)
 Poll SCM (?)



4. Build triggers

General **Source Code Management** Build Triggers Build Environment Build Post-build Actions

Source Code Management

None
 Git
 Subversion (?)

Build Triggers

Trigger builds remotely (e.g., from scripts) (?)
 Build after other projects are built (?)
 Build periodically (?)
 GitHub hook trigger for GITScm polling (?)
 Poll SCM (?)



4.1 Poll SCM

Poll SCM ?

Schedule

***** ***** ***** ***** *****

No schedules so will only run due to SCM changes if triggered by a post-commit hook

This field follows the syntax of cron (with minor differences). Specifically, each line consists of 5 fields separated by TAB or whitespace:

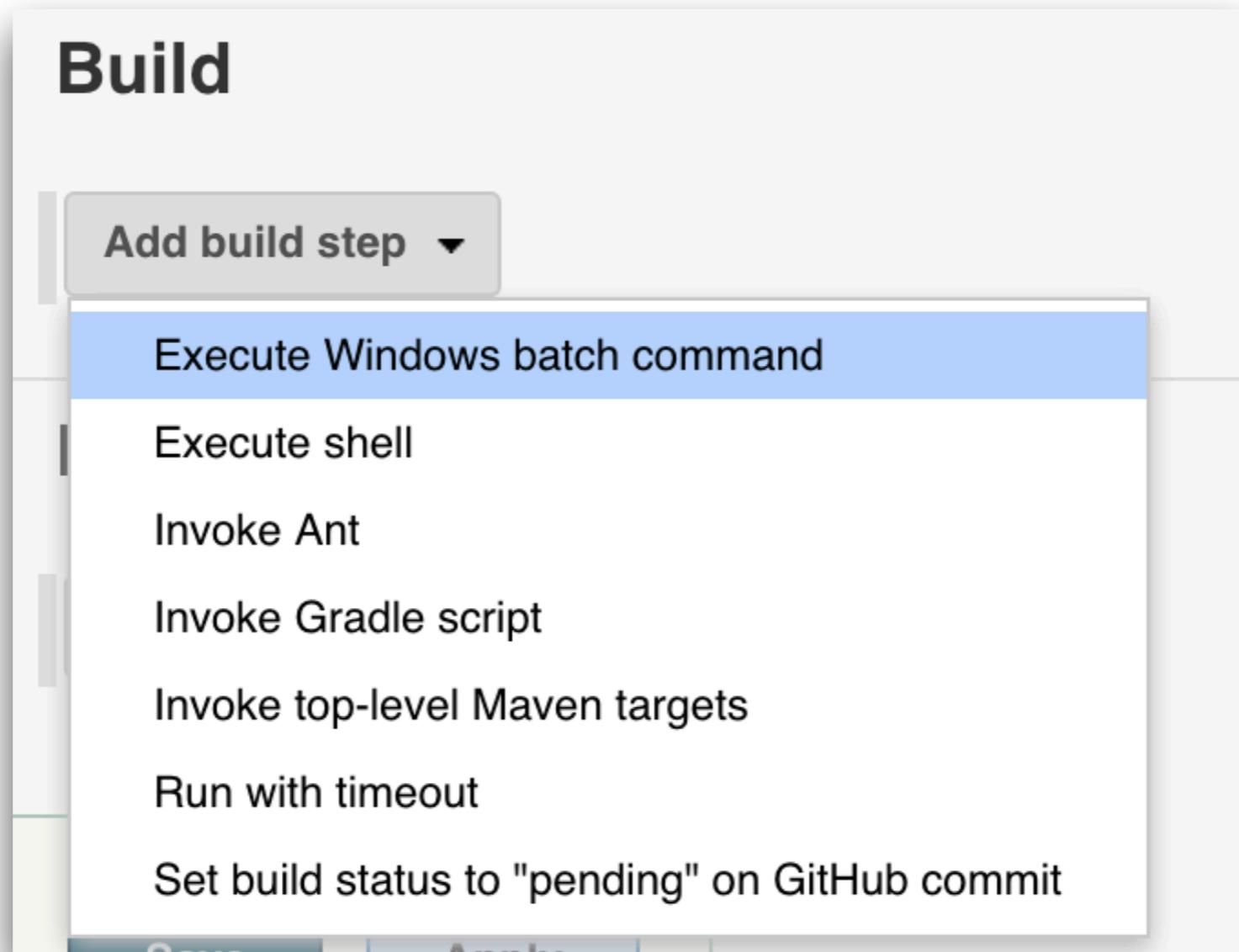
MINUTE HOUR DOM MONTH DOW
MINUTE Minutes within the hour (0–59)
HOUR The hour of the day (0–23)
DOM The day of the month (1–31)
MONTH The month (1–12)
DOW The day of the week (0–7) where 0 and 7 are Sunday.

To specify multiple values for one field, the following operators are available. In the order of precedence,

- * specifies all valid values
- M–N specifies a range of values
- M–N/X or */X steps by intervals of X through the specified range or whole valid range
- A, B, . . . , Z enumerates multiple values



5. Build



6. Post build

Post-build Actions

Add post-build action ▾

- Aggregate downstream test results
- Archive the artifacts
- Build other projects
- Publish JUnit test result report
- Publish Robot Framework test results**
- Record fingerprints of files to track usage
- Git Publisher
- E-mail Notification
- Editable Email Notification
- Set GitHub commit status (universal)
- Set build status on GitHub commit [deprecated]
- Delete workspace when build is done



6. Post build with robot framework

Post-build Actions

Publish Robot Framework test results

Directory of Robot output

Path to directory containing robot xml and html files (relative to build workspace) [Advanced...](#)

Thresholds for build result

Yellow % **Entry must be percentage value between 0-100**

Blue % **Entry must be percentage value between 0-100**

Use thresholds for critical tests only

[Add post-build action ▾](#)



Robotframework plugin



Install plugin

The screenshot shows the Jenkins 'Manage Jenkins' interface. On the left, there's a sidebar with links: People, Build History, Manage Jenkins (which is highlighted with a red box and has a red circle with '1' over it), My Views, Credentials, and New View. Below this are two collapsed sections: 'Build Queue' (No builds in the queue) and 'Build Executor Status' (1 Idle, 2 Idle). The main content area is titled 'Manage Jenkins' and contains several configuration links, each with an icon and a brief description. A red box surrounds the 'Manage Plugins' link, which has a red circle with '2' over it. The other links are: 'Configure System' (Configure global settings and paths), 'Configure Global Security' (Secure Jenkins; define who is allowed to access/use the system), 'Configure Credentials' (Configure the credential providers and types), 'Global Tool Configuration' (Configure tools, their locations and automatic installers), 'Reload Configuration from Disk' (Discard all the loaded data in memory and reload everything from file system. Useful when you modify disk), 'Manage Plugins' (Add, remove, disable or enable plugins that can extend the functionality of Jenkins), 'System Information' (Displays various environmental information to assist trouble-shooting), and 'System Log' (System log captures output from `java.util.logging` output related to Jenkins).

1

2

Manage Jenkins

- Configure System**
Configure global settings and paths.
- Configure Global Security**
Secure Jenkins; define who is allowed to access/use the system.
- Configure Credentials**
Configure the credential providers and types
- Global Tool Configuration**
Configure tools, their locations and automatic installers.
- Reload Configuration from Disk**
Discard all the loaded data in memory and reload everything from file system. Useful when you modify disk.
- Manage Plugins**
Add, remove, disable or enable plugins that can extend the functionality of Jenkins.
- System Information**
Displays various environmental information to assist trouble-shooting.
- System Log**
System log captures output from `java.util.logging` output related to Jenkins.

Install plugin

Filter:

Updates Available Installed Advanced

Install ↓	Name	Version
Robot Framework <input type="checkbox"/> This publisher stores Robot Framework test reports for builds and shows summaries of them in project and build views along with trend graph.		1.6.5

[Install without restart](#) [Download now and install after restart](#) Update information obtained: 3 hr 51 min ago [Check now](#)

