

# Acceptance Test-Driven Development with **Robot Framework**



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# Agenda



# Day 1

**Acceptance Test-Driven Development**

Concept of Robot Framework

Installation

Architecture of Robot Framework



# Day 1

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

Integration with **Continuous Integration**

Custom test report



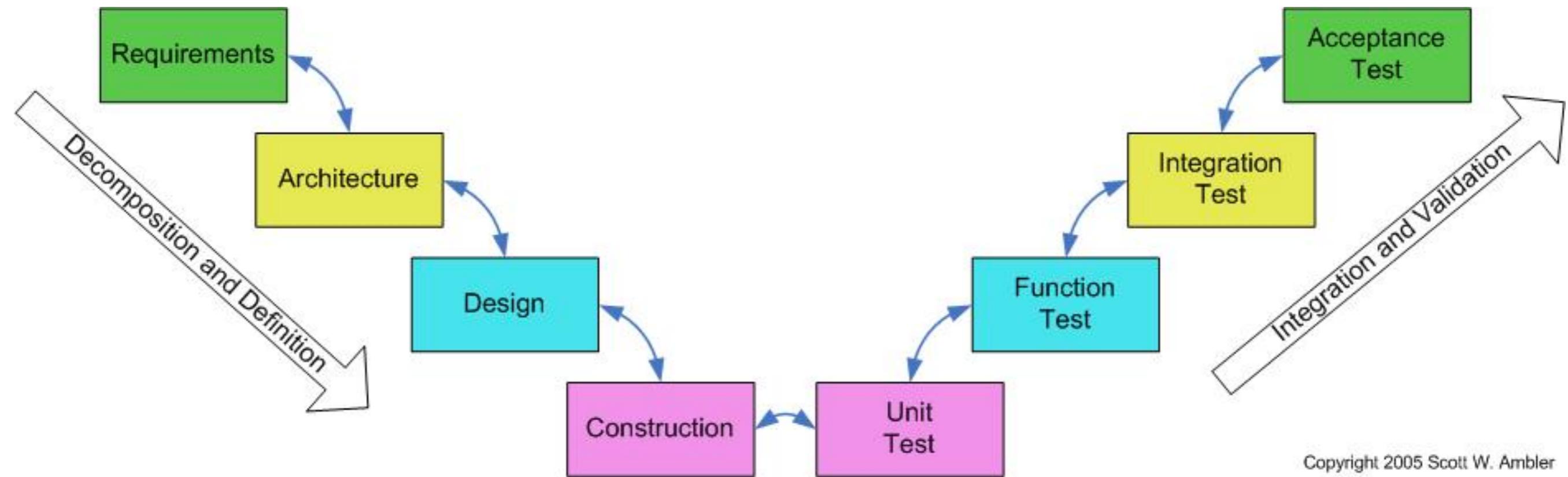
# Let's start



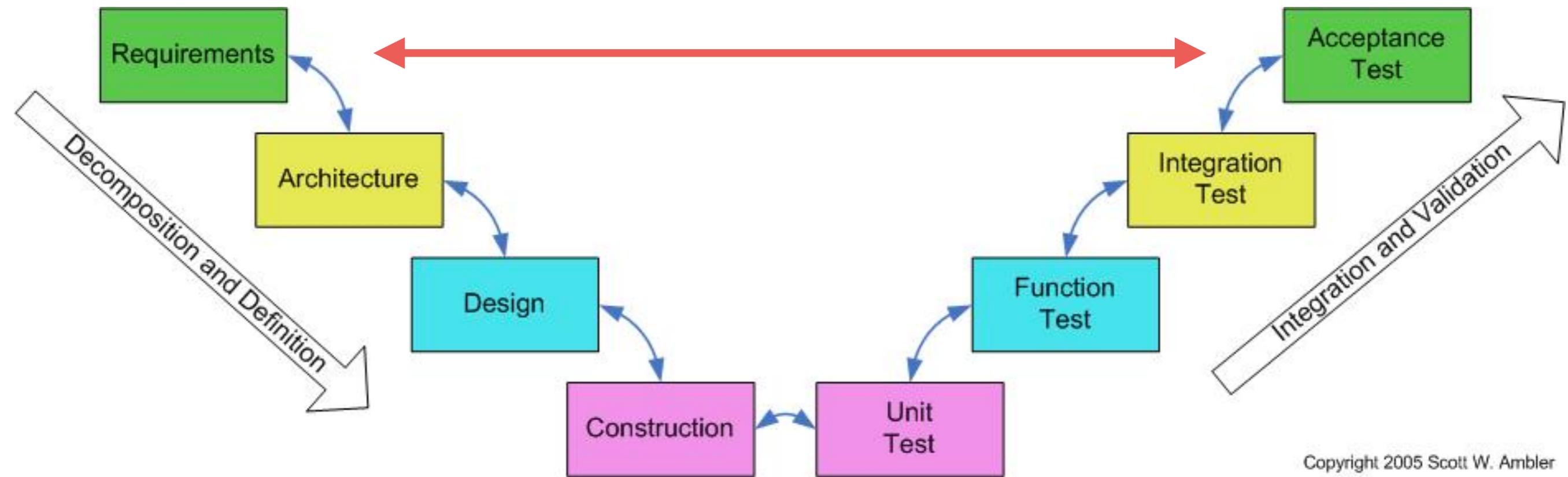
# Write your Goal(s) !!



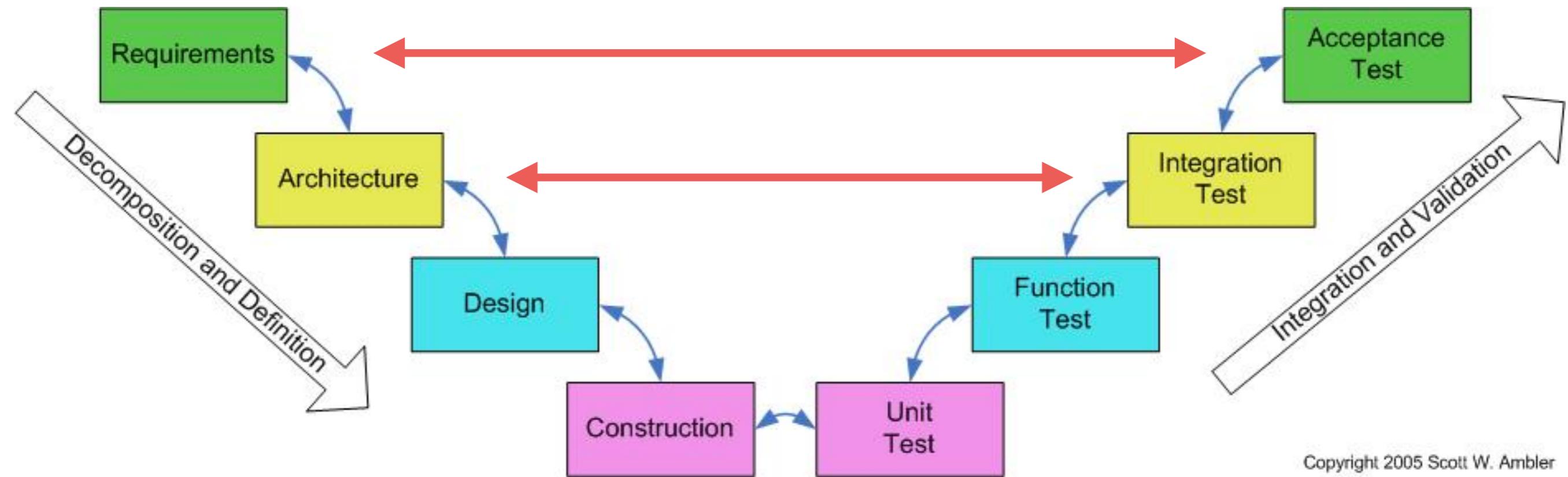
# V-Model



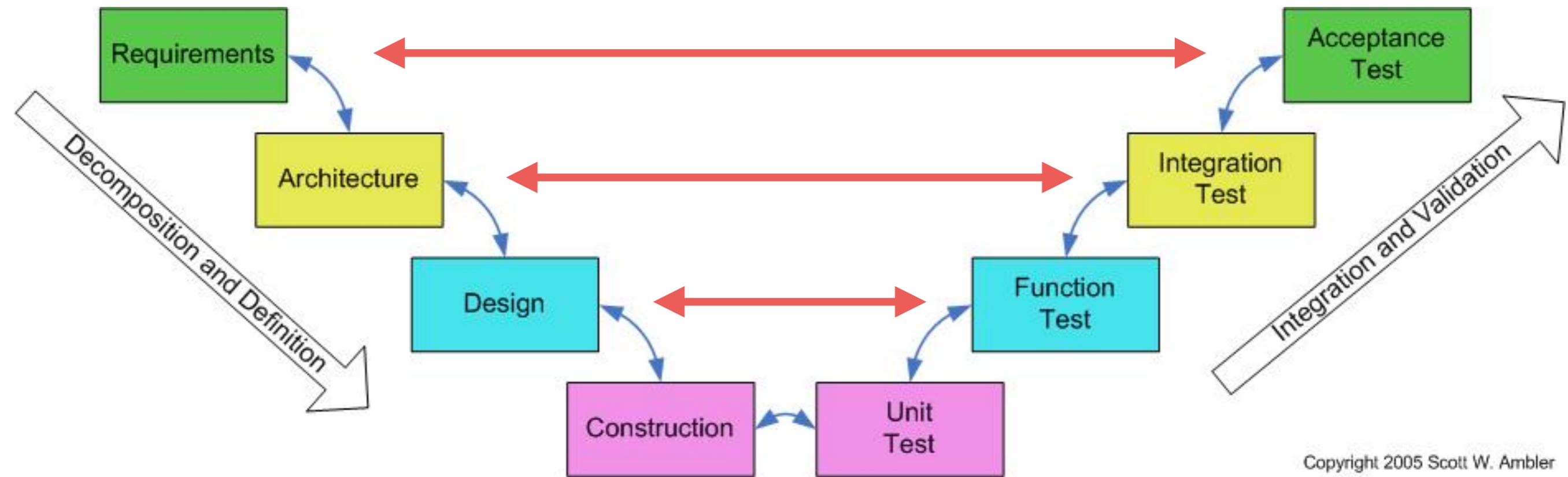
# V-Model



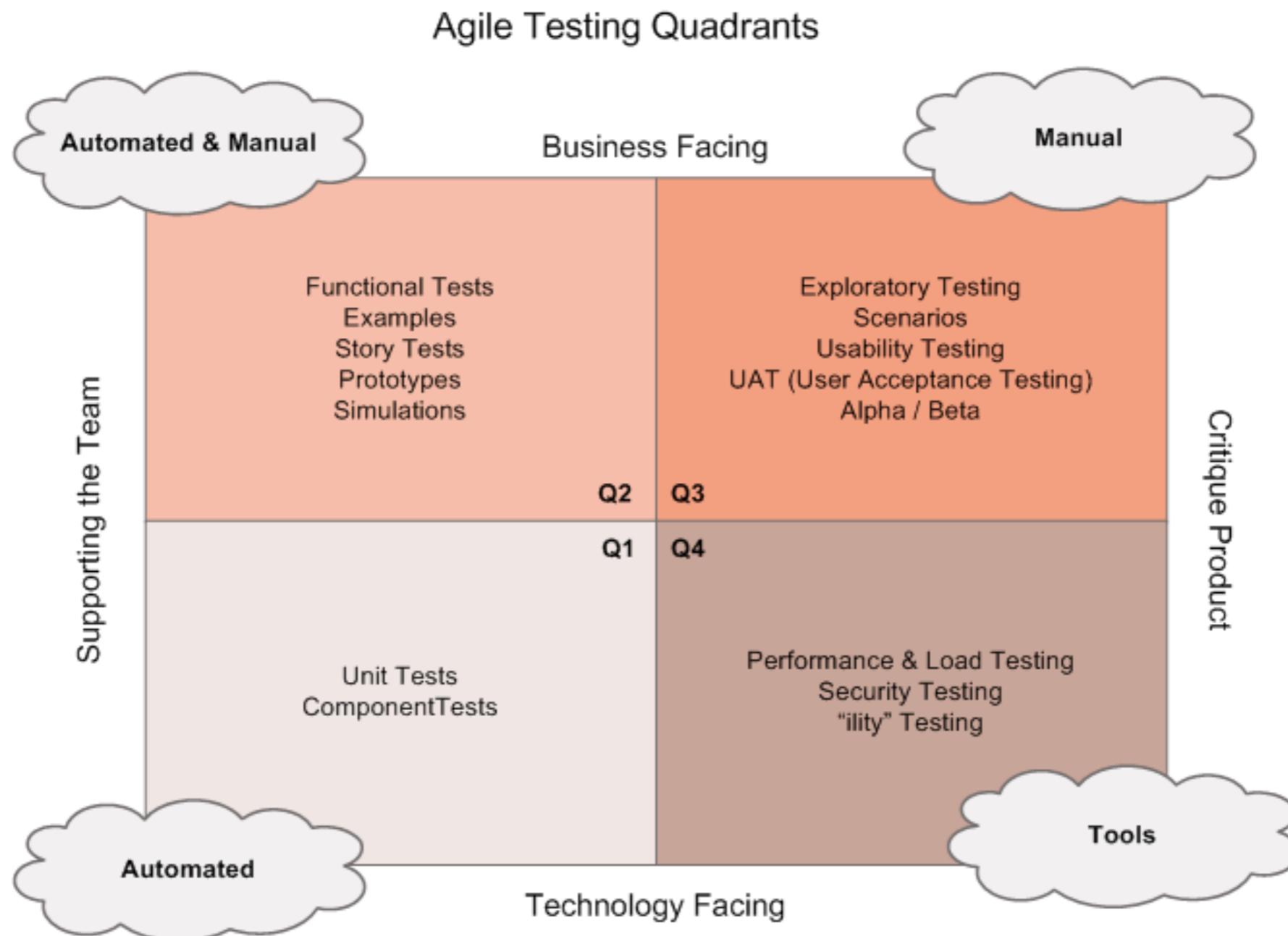
# V-Model



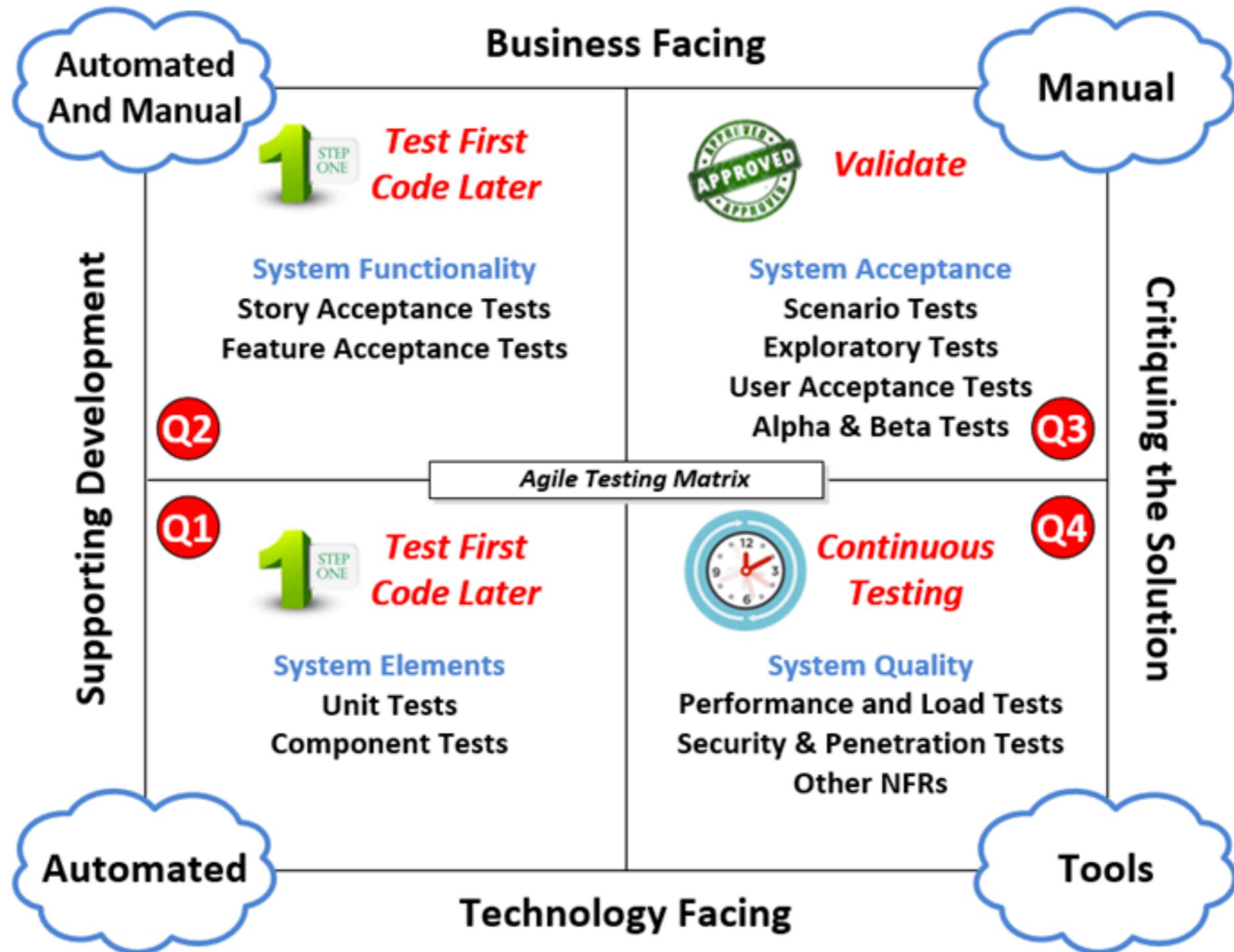
# V-Model



# Agile Testing



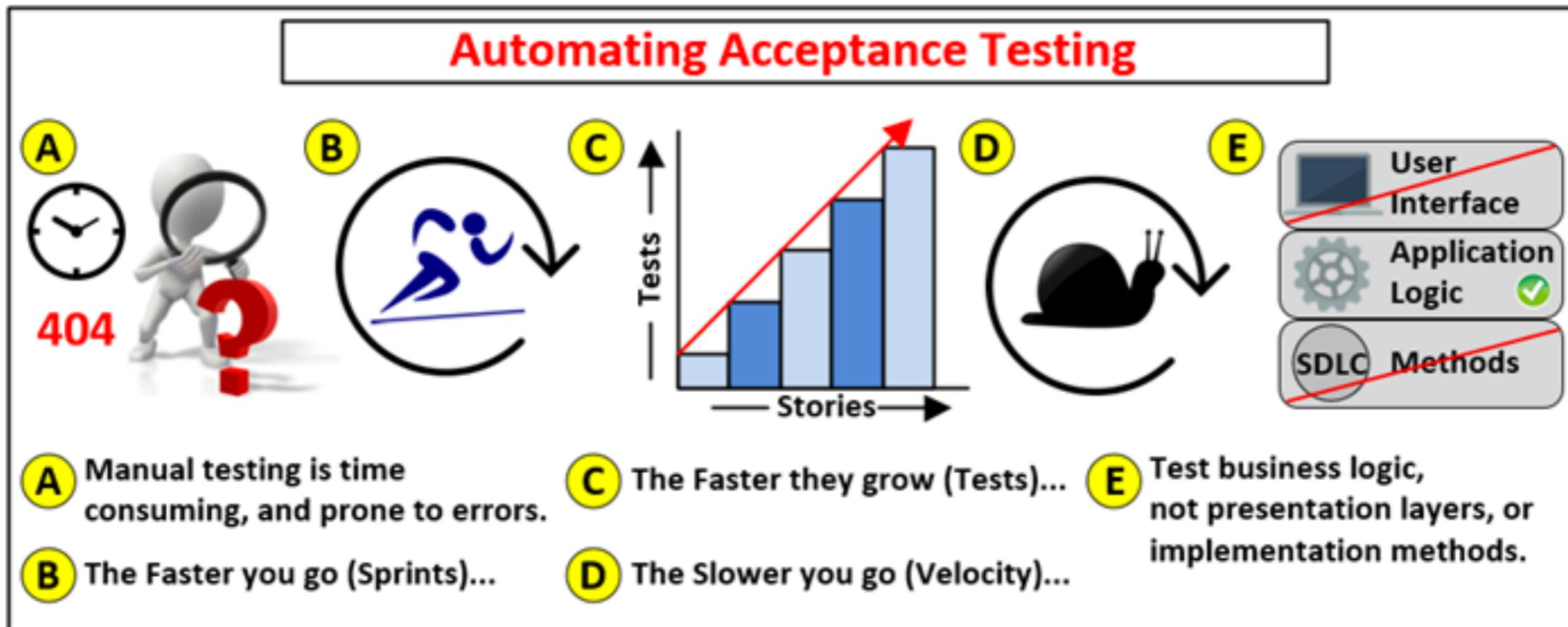
# Agile Testing



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



# Test Automation is essential

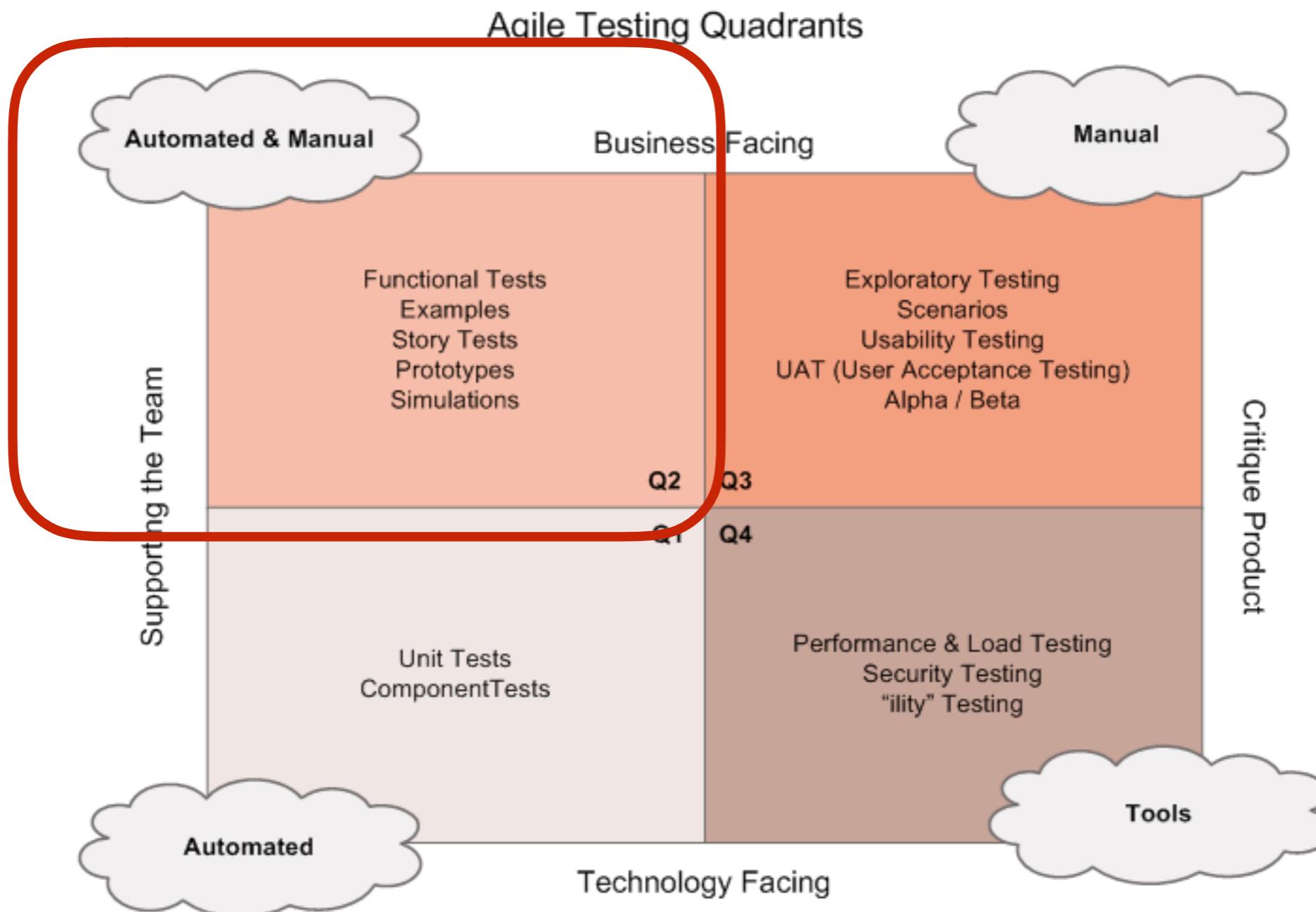


# Acceptance Test-Driven Development



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# Agile Testing



# ATDD

Common understanding

Common language

Executable requirements or examples

Living documentation



# Same goal !!

**S**tory Driven **D**evelopment

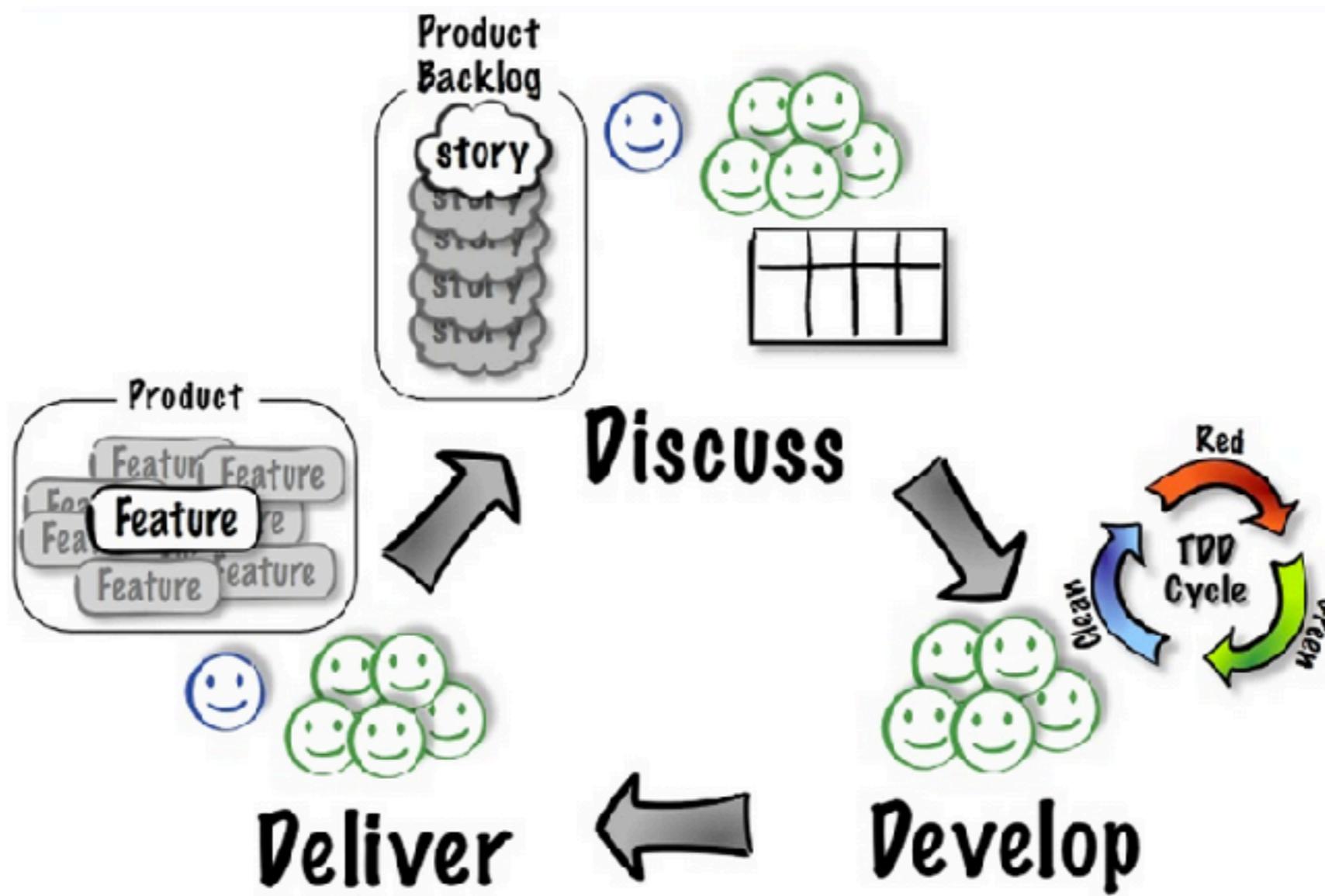
**B**ehavior Driven **D**evelopment

**S**pecification **by E**xample

**E**xample Driven **D**evelopment



# ATDD cycle

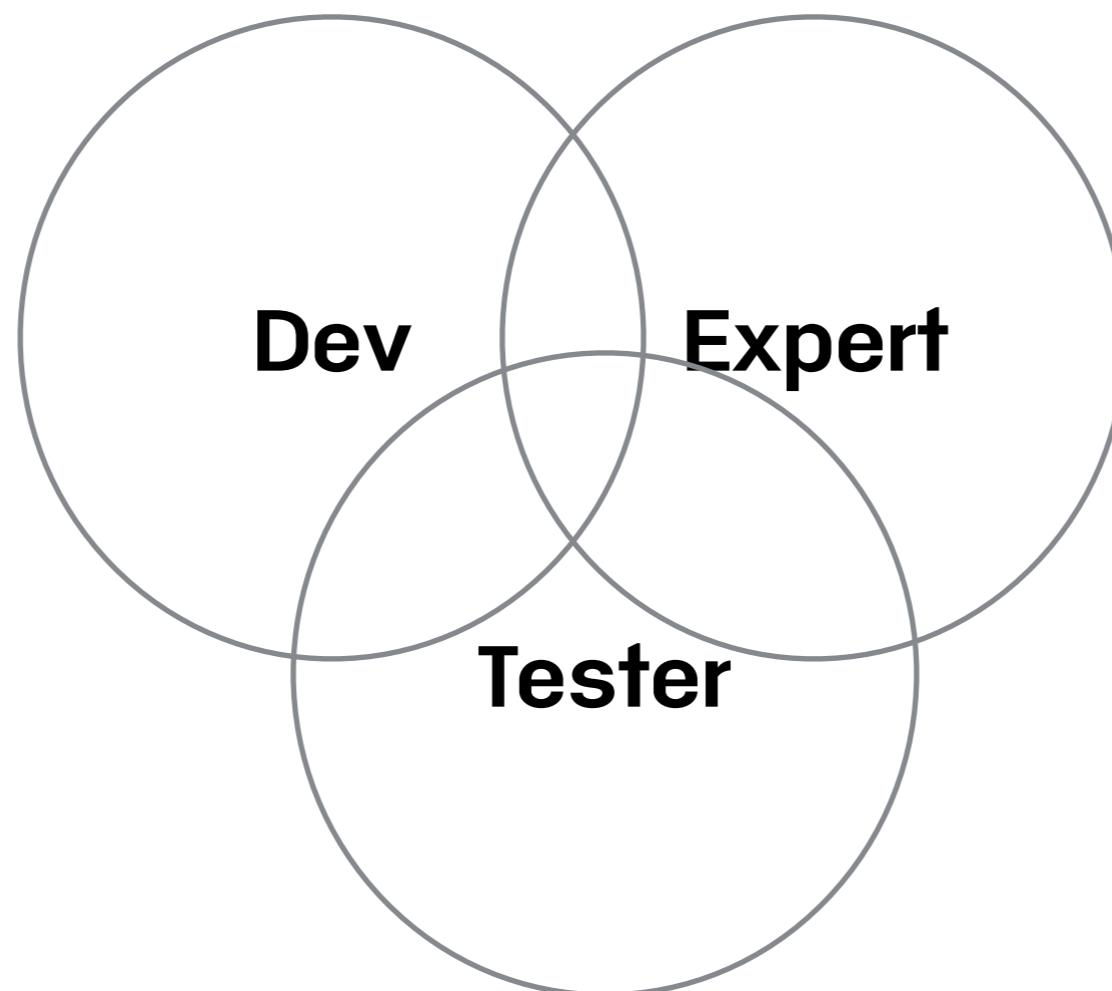


(Model developed with Pekka Klärck, Bas Vodde, and Craig Larman.)



# 1. Discuss

**Whole team** approach



# 1. Discuss

**Whole team** approach

**Sharing** understanding

**Clarify** the solution

**Concrete examples**

Examples can be use 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	
<b>Author:</b>	Pekka Laukkanen	
<b>Name of the thesis:</b>	Data-Driven and Keyword-Driven Test Automation Frameworks	
<b>Date:</b>	February 24, 2006	<b>Number of pages:</b> 98 + 0
<b>Department:</b>	Department of Computer Science and Engineering	<b>Professorship:</b> T-76
<b>Supervisor:</b>	Prof. Reijo Sulonen	
<b>Instructor:</b>	Harri Töhönen, M.Sc.	



# History

Initialed in 2005 by Nokia Siemens Network

Opensource in 2008

Created [robotframework.org](http://robotframework.org)

Big communities at [Github](https://github.com)



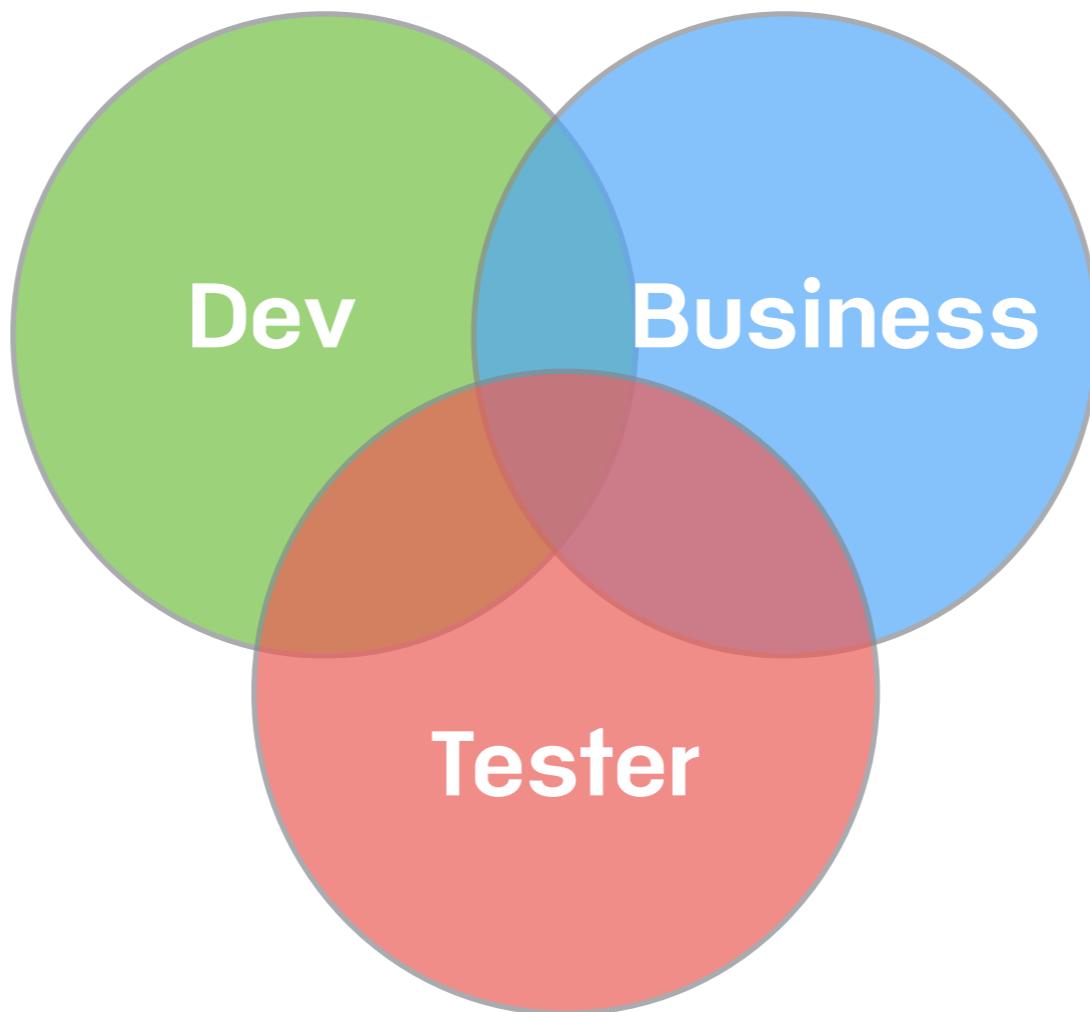
# Concepts

Acceptance Testing

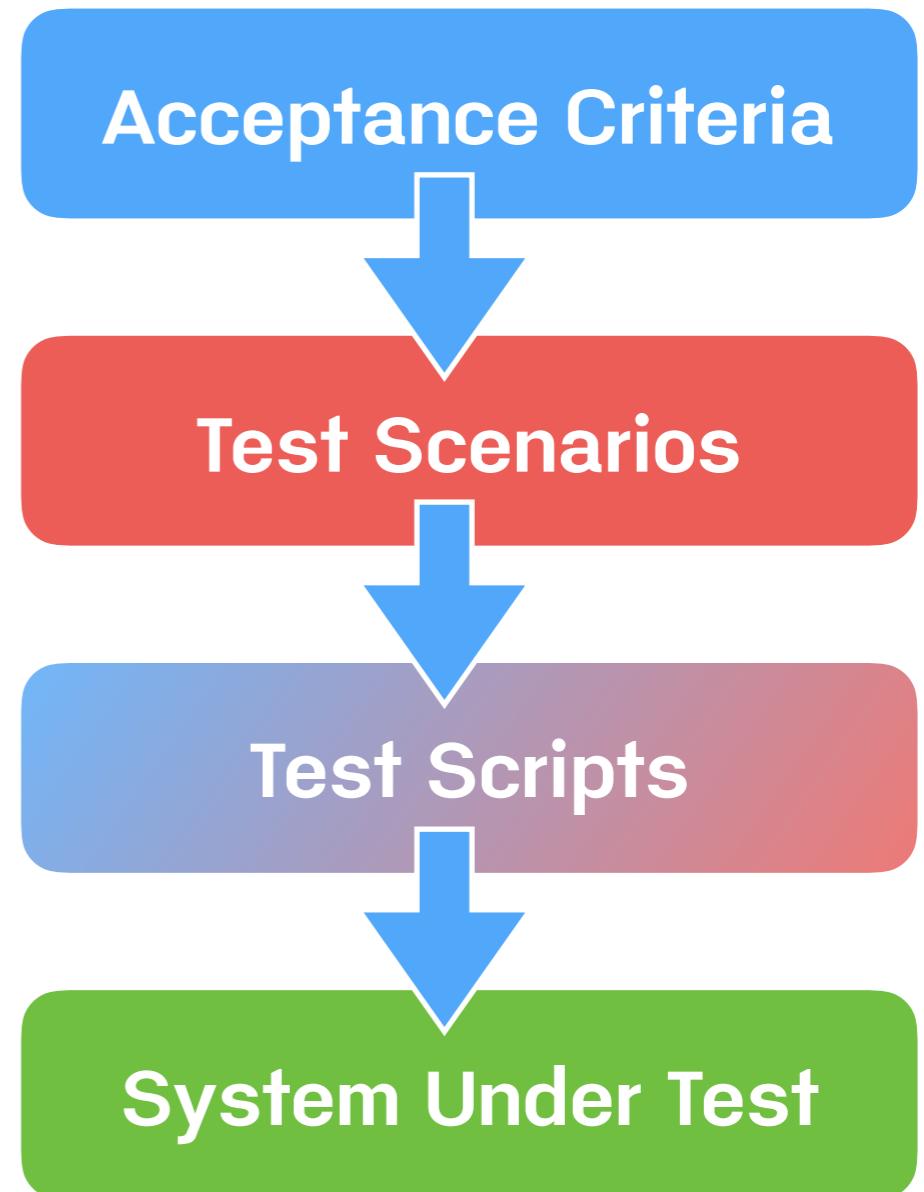
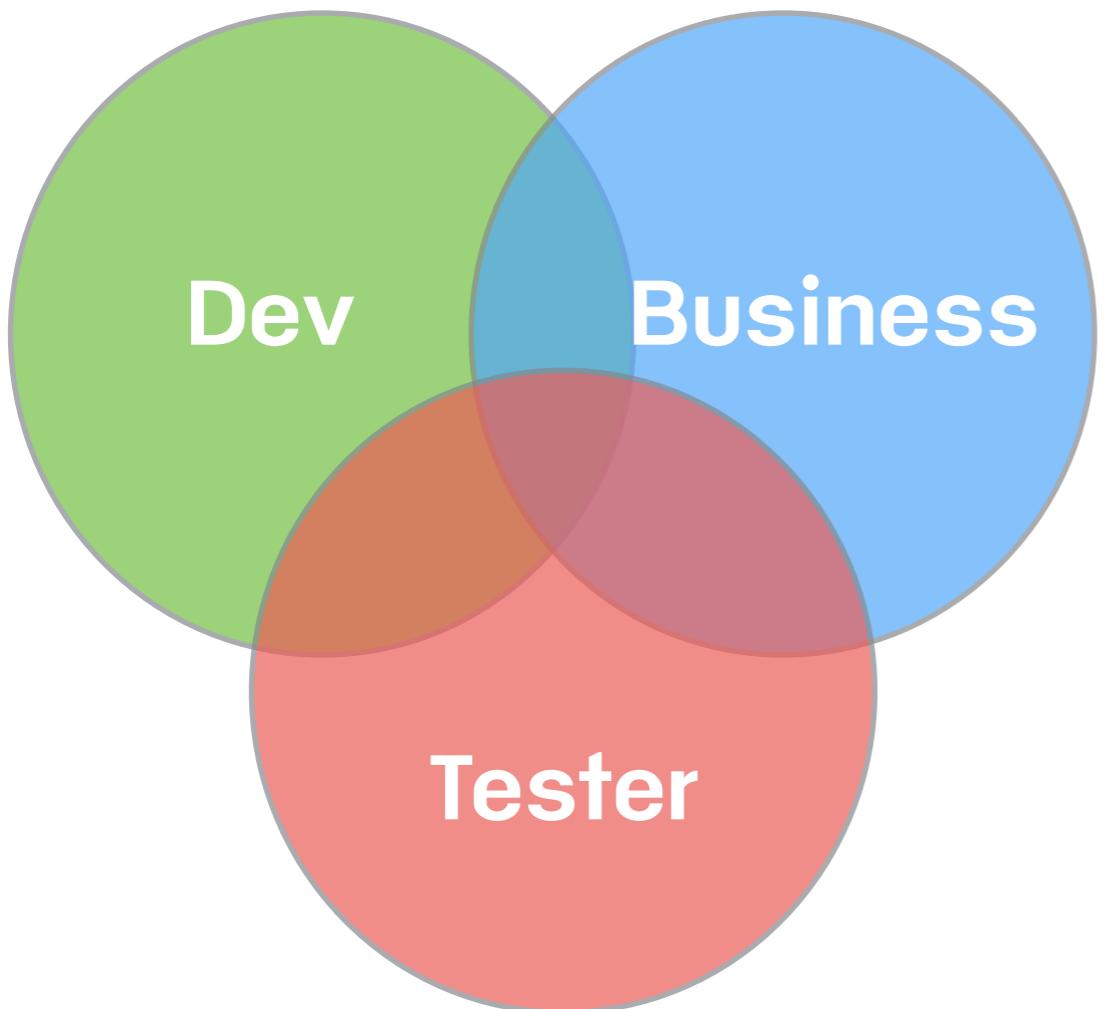
Keyword Driven Development



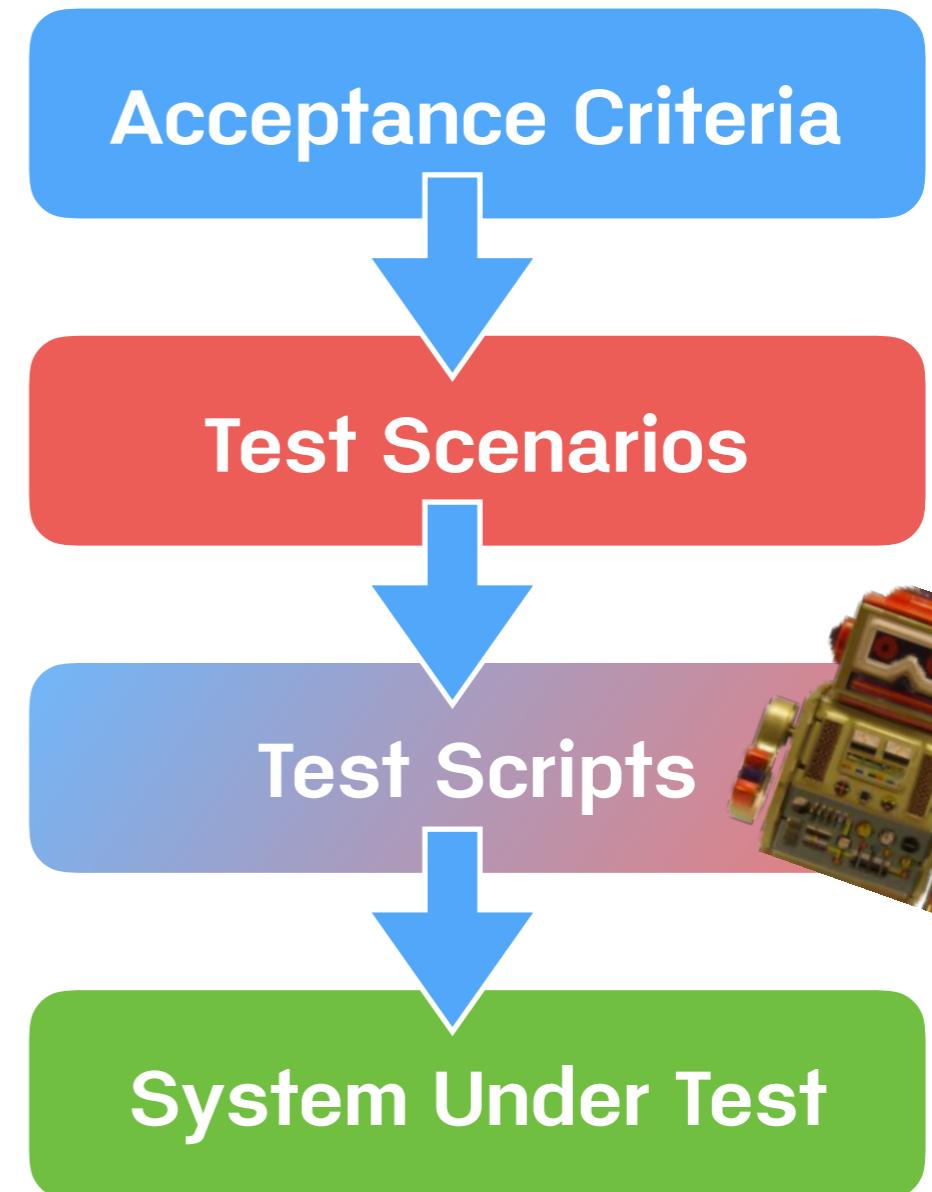
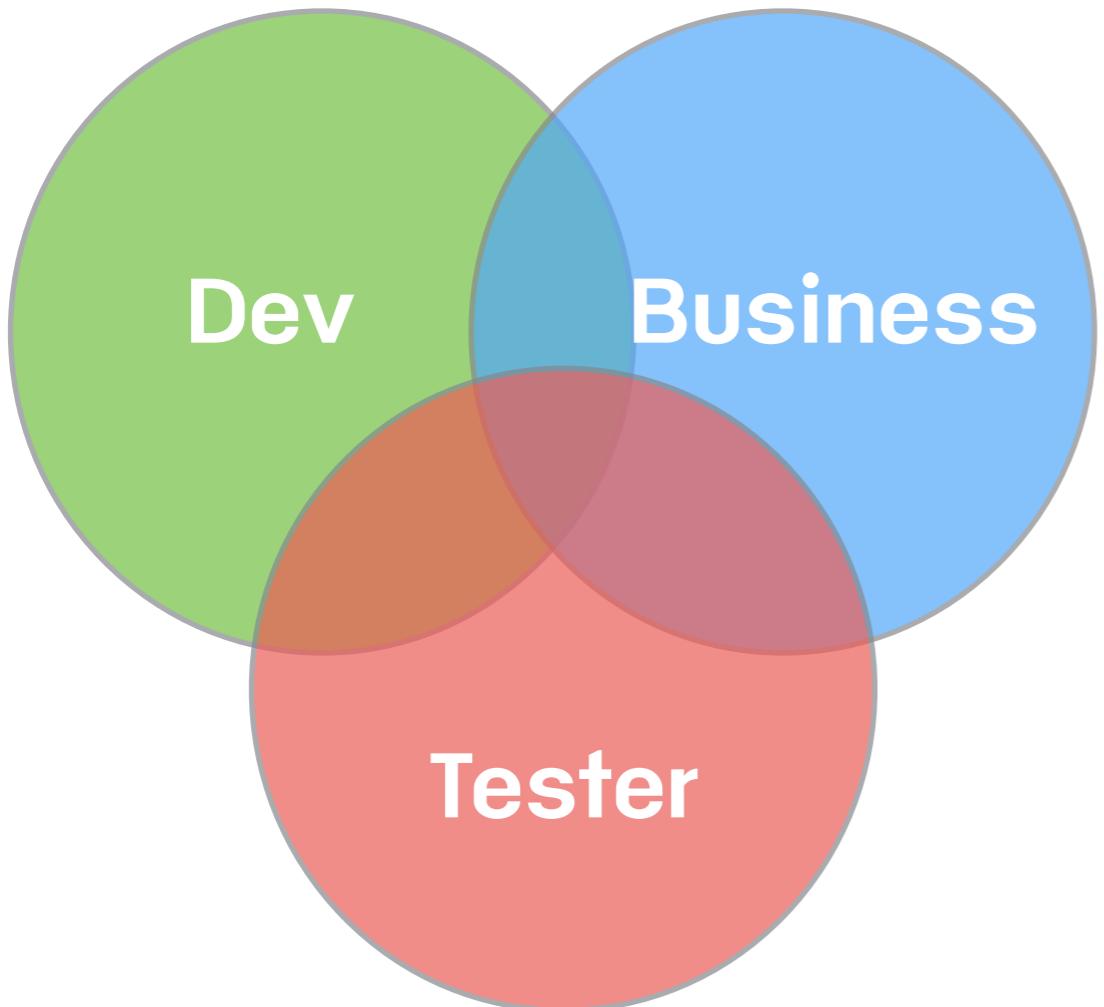
# Acceptance Testing



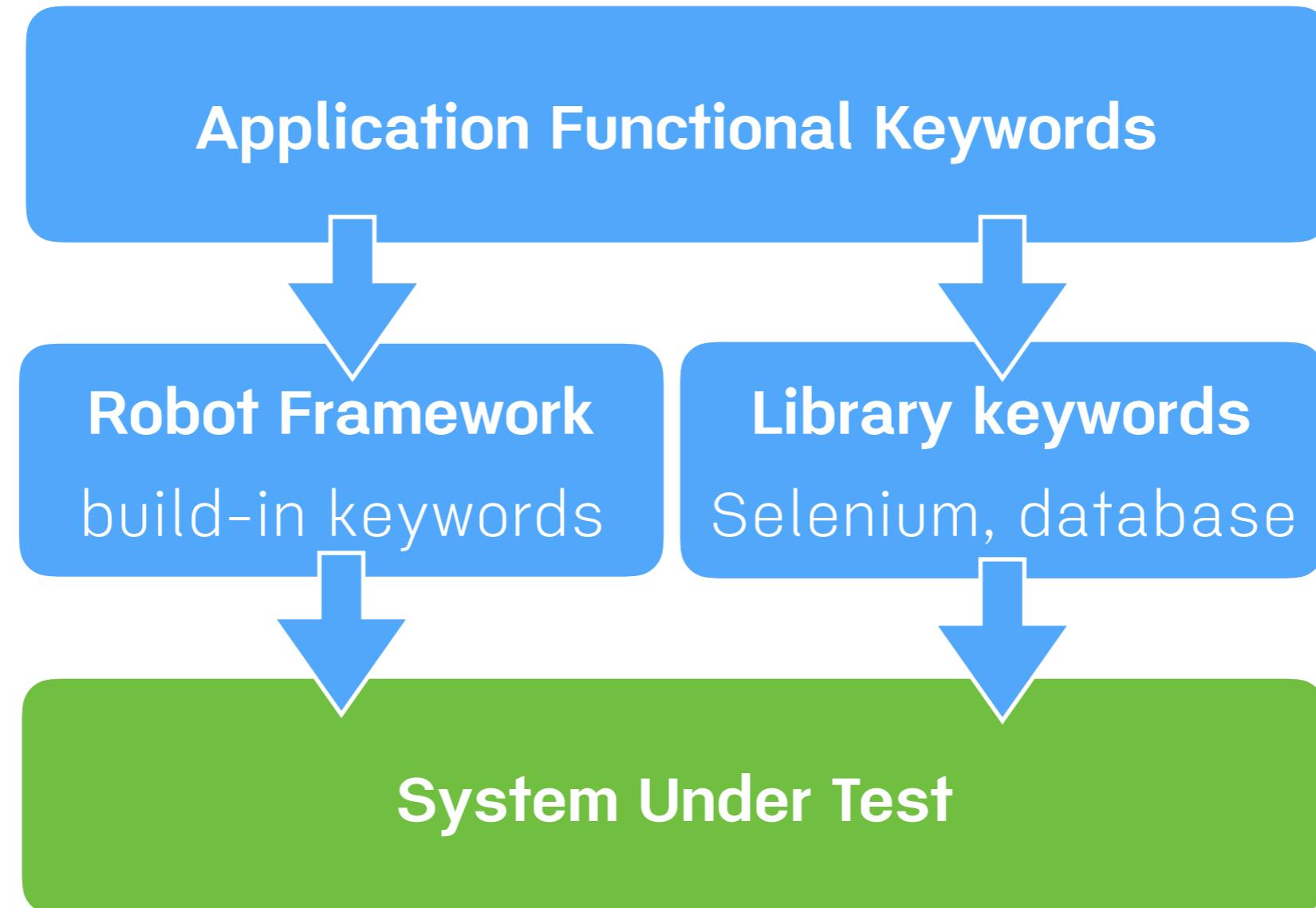
# Acceptance Testing



# Acceptance Testing



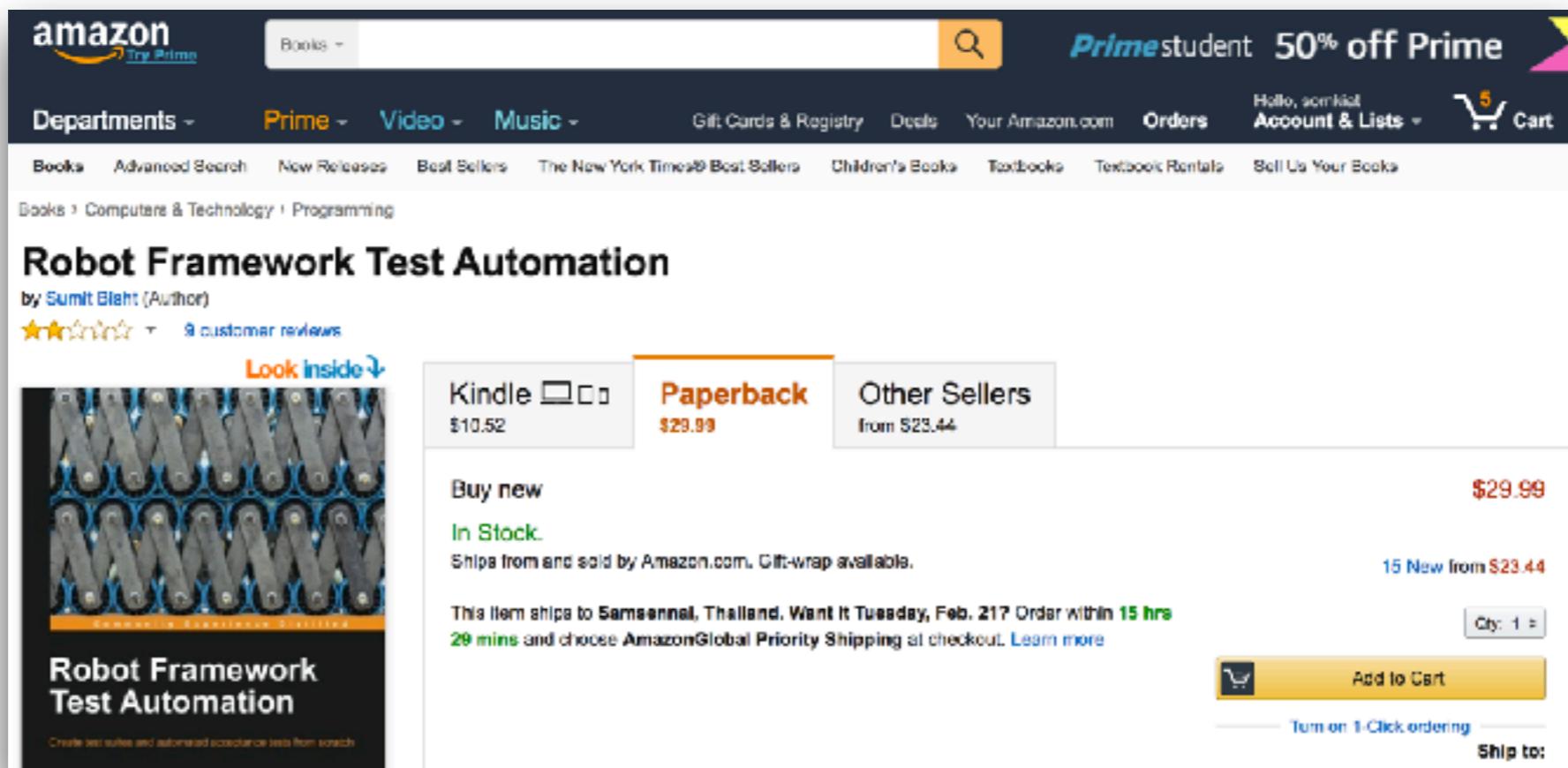
# Keyword Driven Development



# Keyword Driven Development

Example scenario

“Add product to cart”



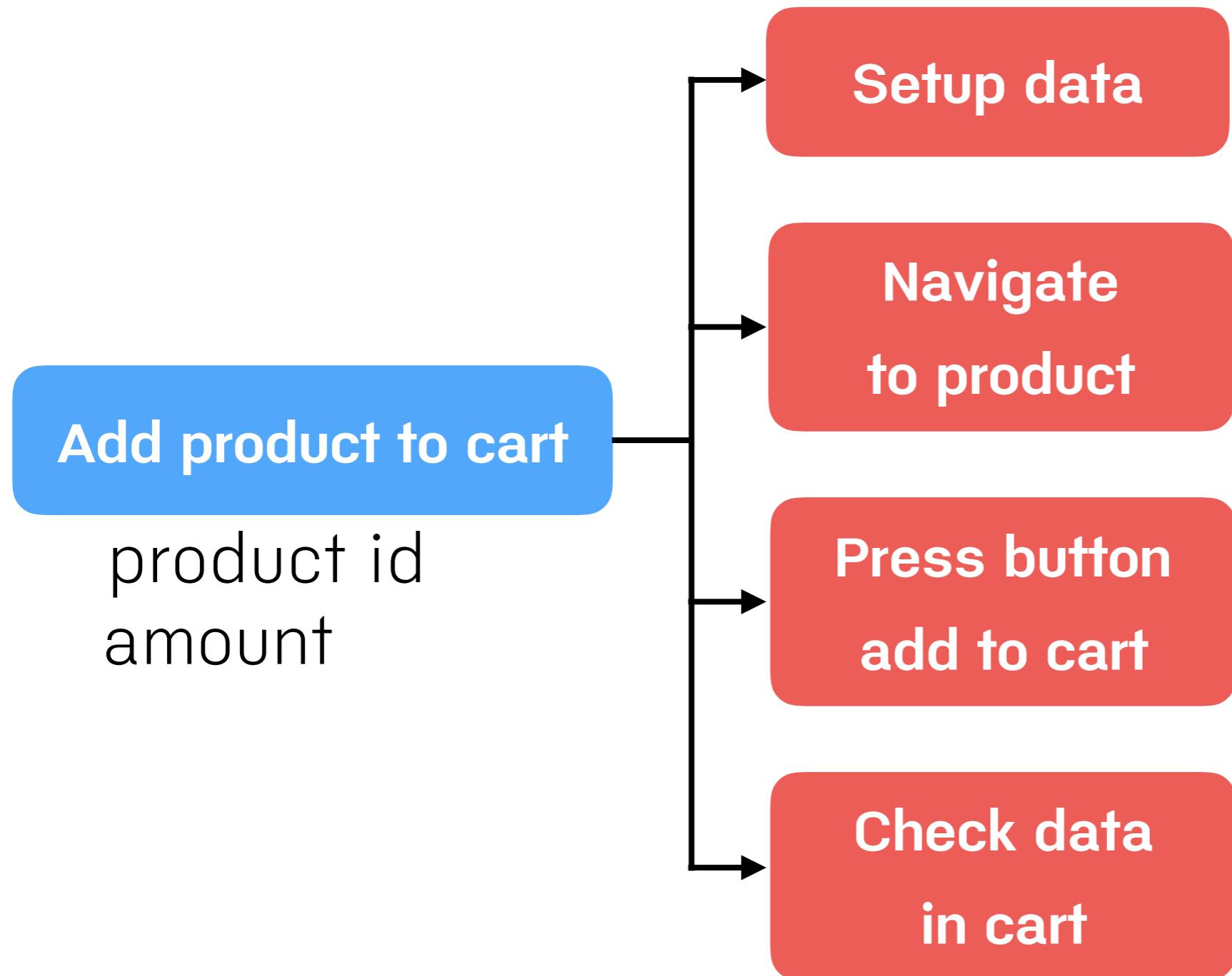
# Add product to cart

**Add product to cart**

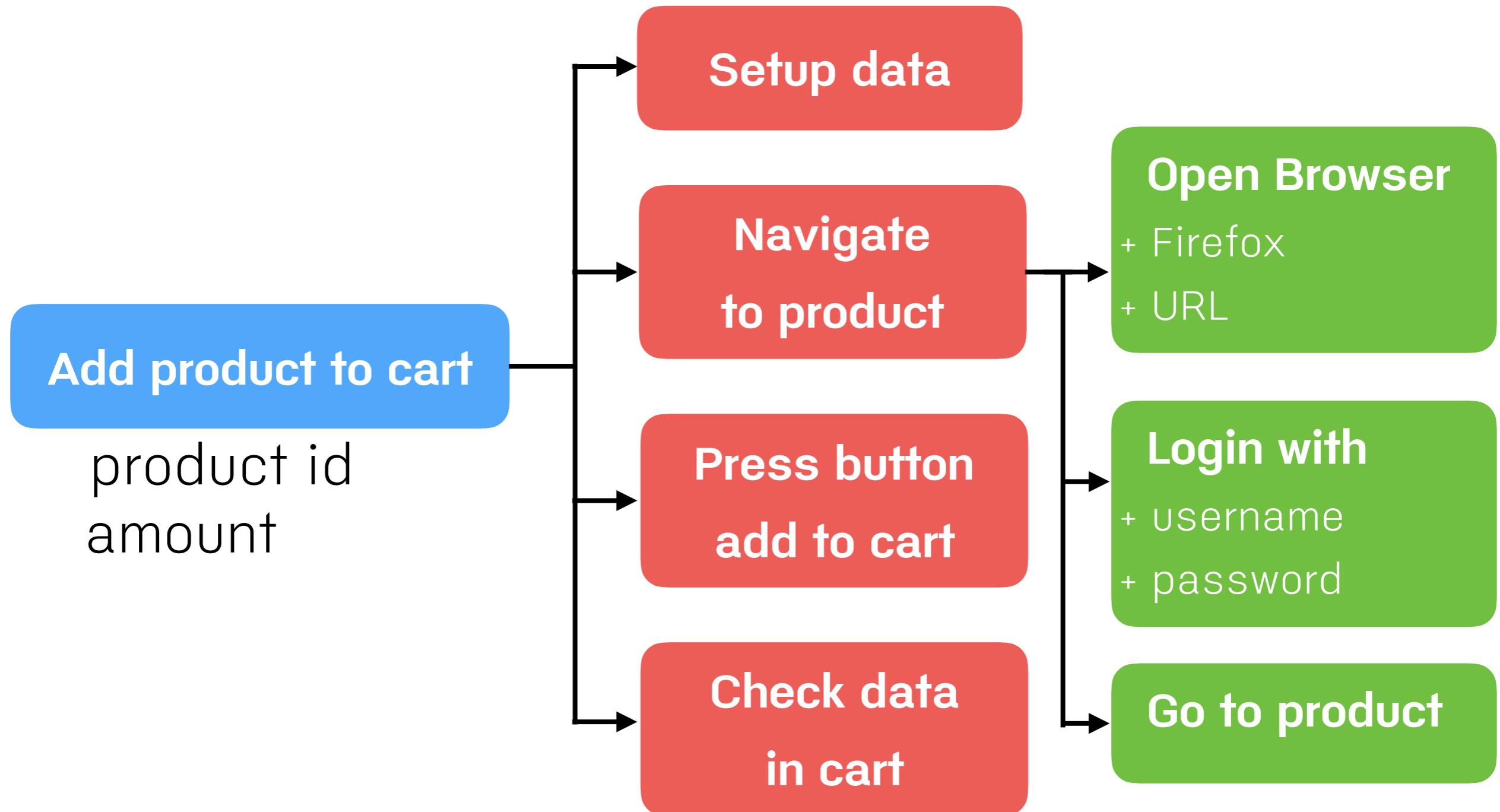
product id  
amount



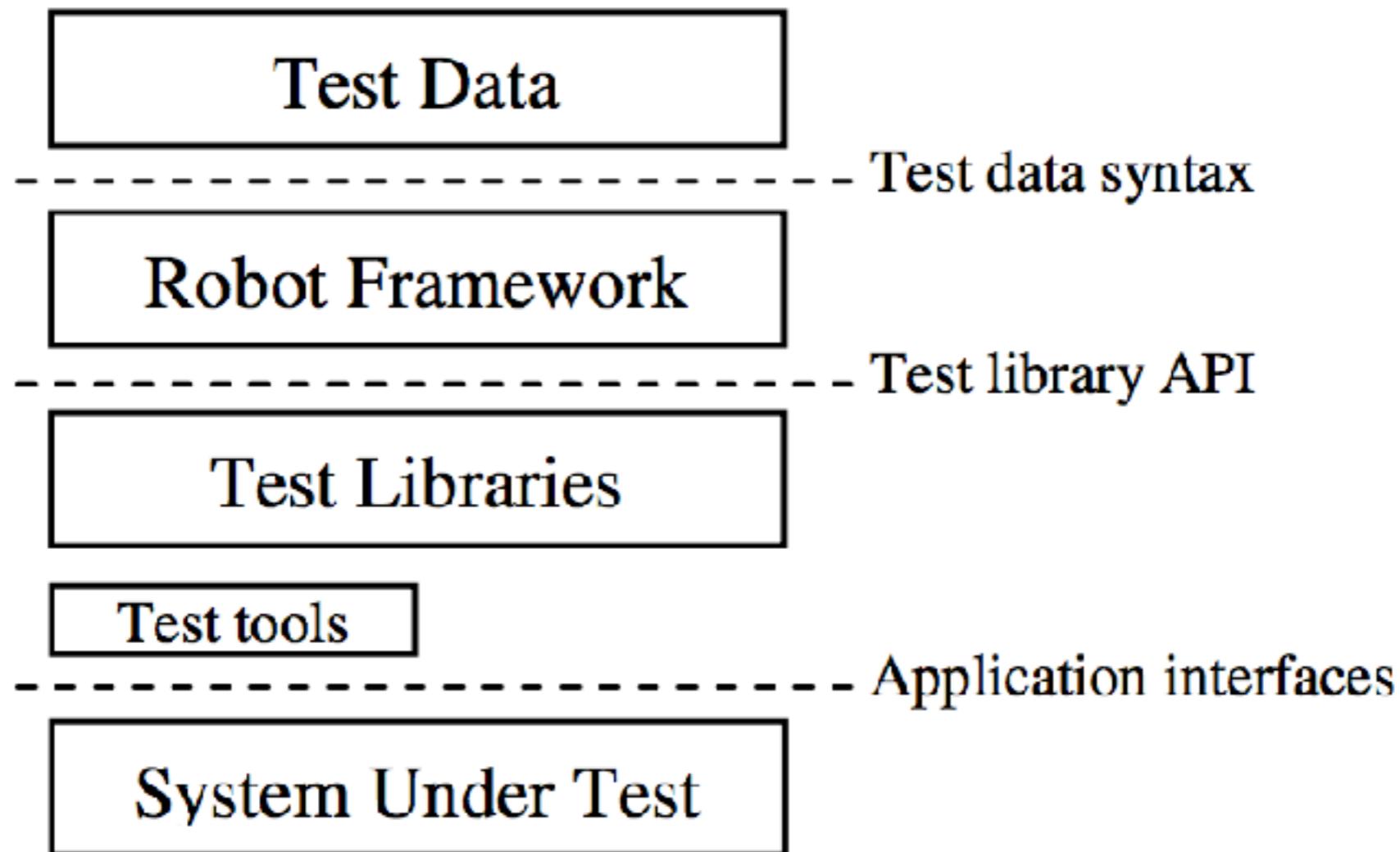
# Add product to cart



# Add product to cart



# High level architecture



# Official website



INTRODUCTION  
EXAMPLES  
LIBRARIES  
TOOLS  
DOCUMENTATION  
SUPPORT  
FOUNDATION  
SHOP  
ROBOCON

# ROBOT FRAME WORK/

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## 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



# Installation

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



# Install python and pip



# For Windows



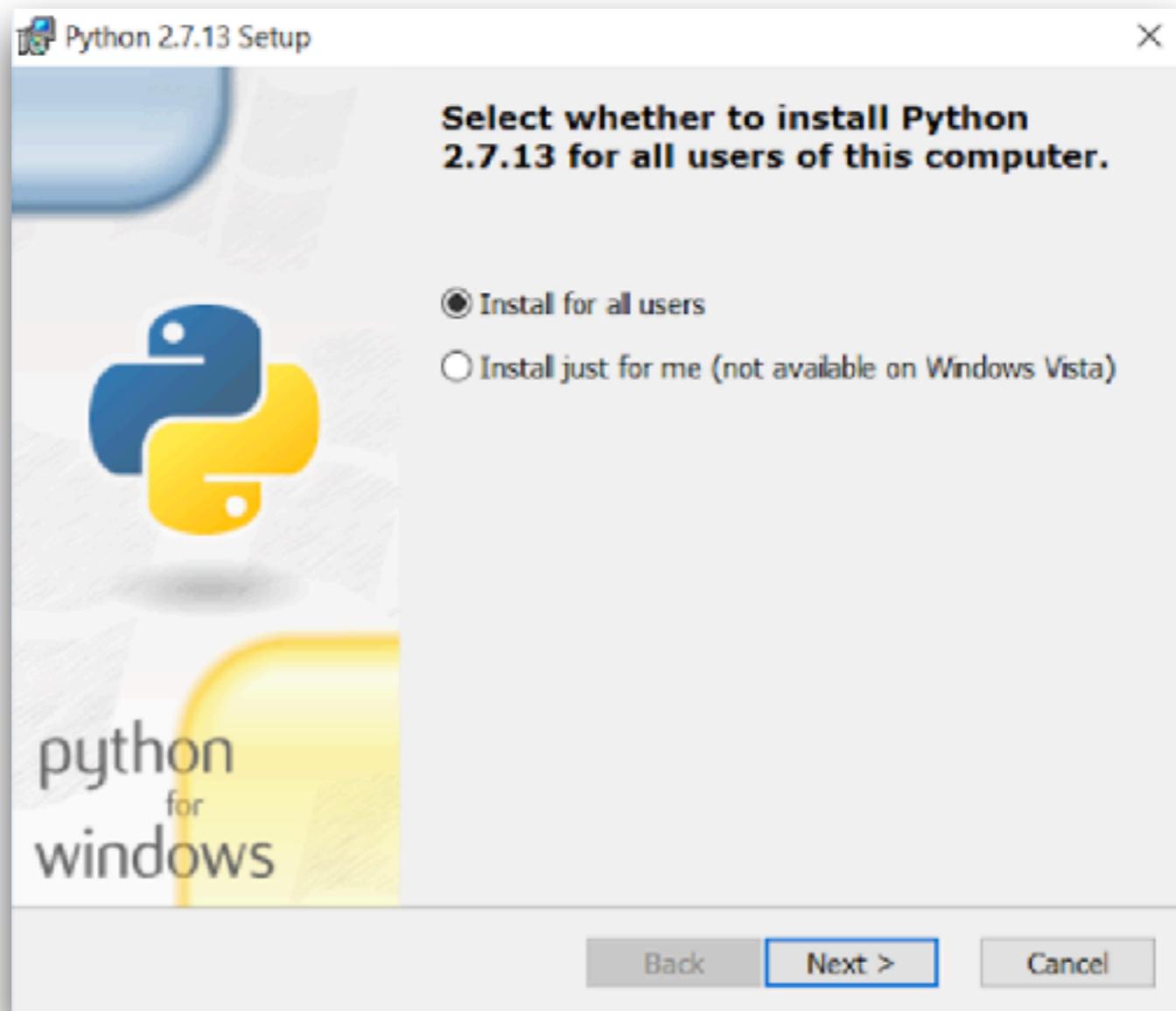
# Download Python 2.7.13

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

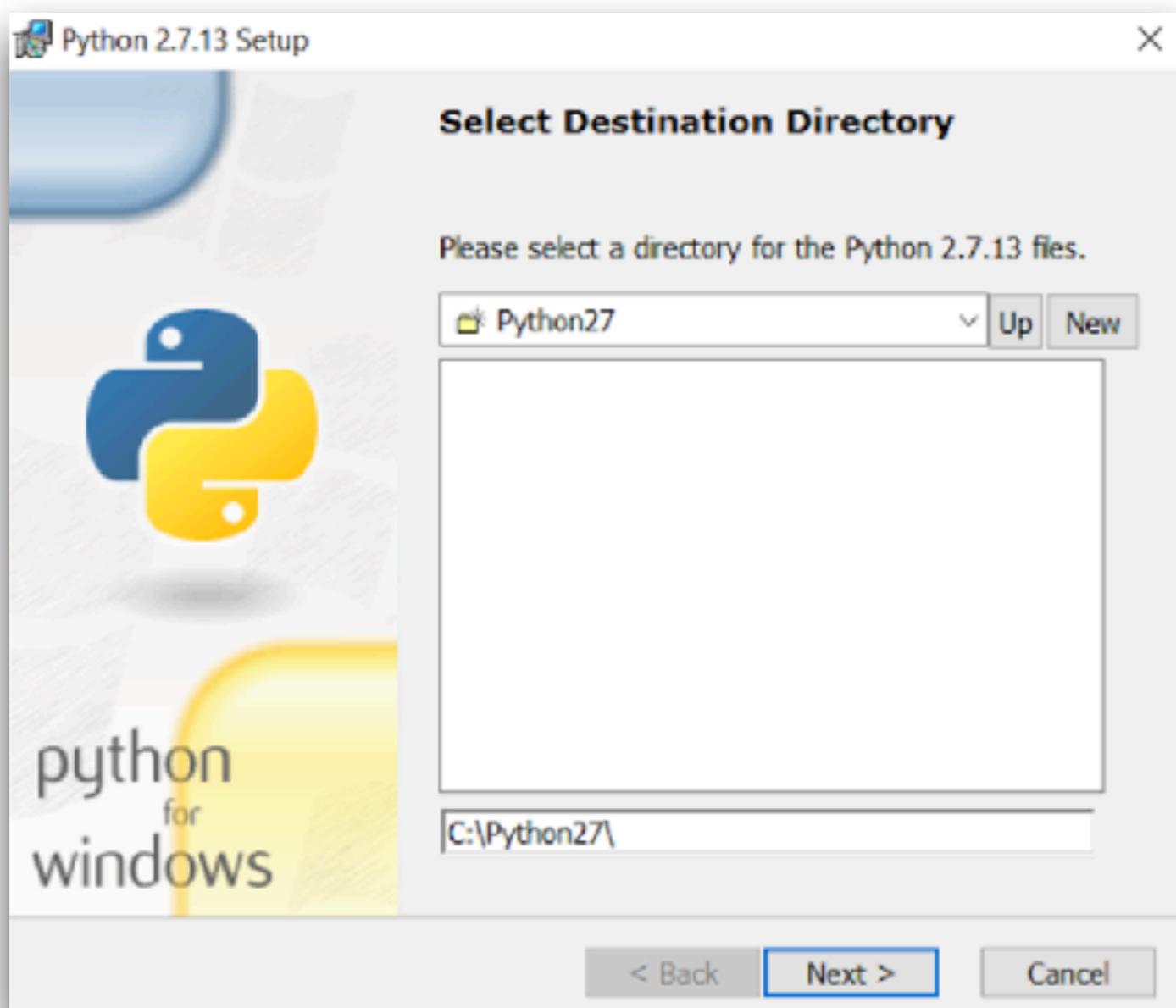
The screenshot shows the Python.org homepage. At the top, there is a navigation bar with links for About, Downloads, Documentation, Community, Success Stories, News, and Events. The 'Downloads' link is highlighted with a red circle. To its right is a search bar with a magnifying glass icon and a 'GO' button. Further to the right are 'Socialize' and 'Sign In' buttons. Below the navigation bar, there is a sidebar on the left with a code snippet and links for All releases, Source code, Windows, Mac OS X, Other Platforms, License, and Alternative Implementations. The main content area features a large red circle highlighting the 'Download for Mac OS X' section. This section contains two download buttons for Python 3.6.0 and Python 2.7.13. Below the buttons, text states: 'Not the OS you are looking for? Python can be used on many operating systems and environments.' and a link to 'View the full list of downloads'. At the bottom of the page, a banner states: 'Python is a programming language that lets you work quickly and integrate systems more effectively. [» Learn More](#)'.



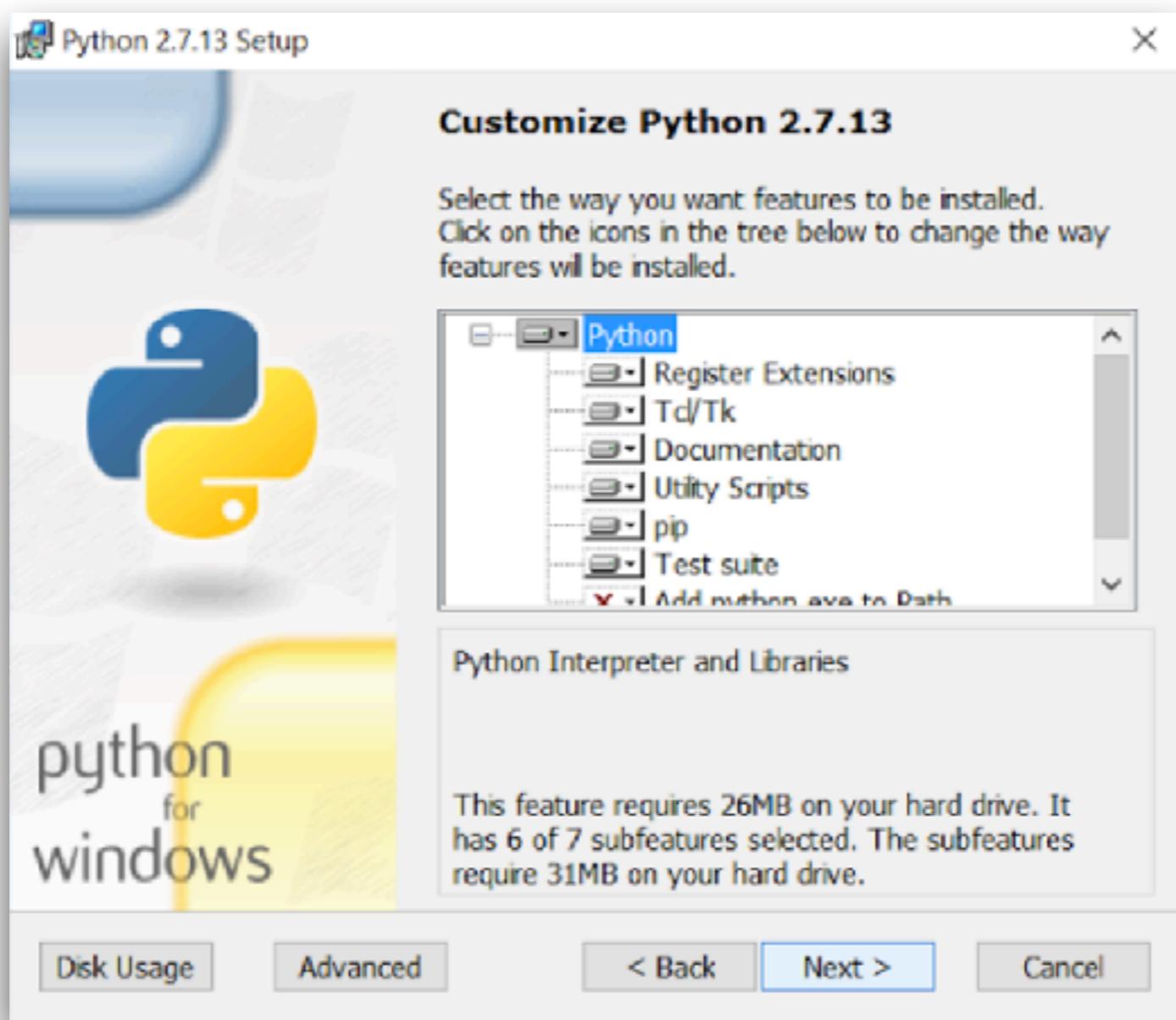
# Install Python 2.7.13



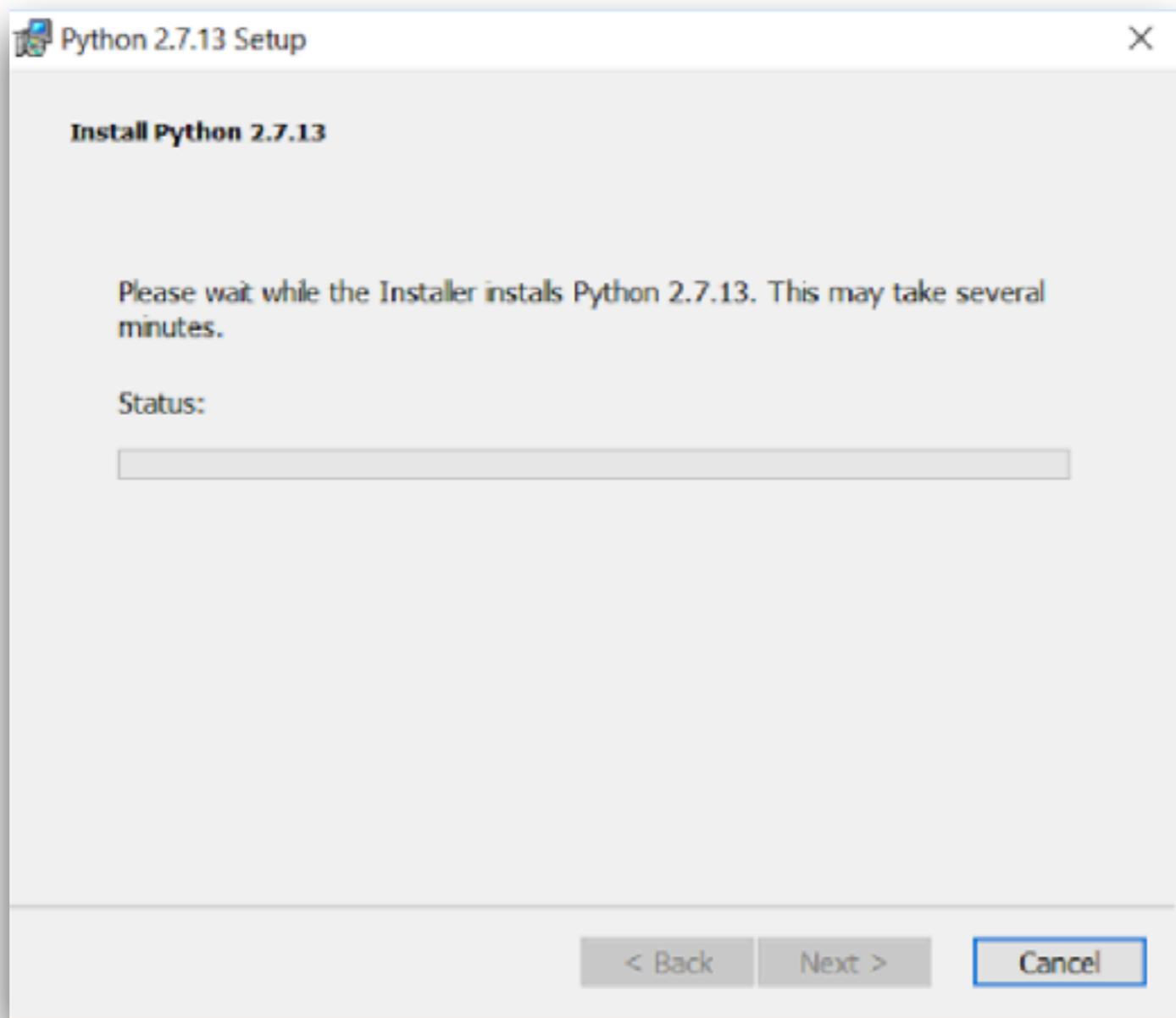
# Install Python 2.7.13



# Install Python 2.7.13



# Install Python 2.7.13



# Install Python 2.7.13



# Run python in command line

\$python

```
Command Prompt

C:\Users\SCK>python
'python' is not recognized as an internal or external command,
operable program or batch file.
```



# Run pip in command line

\$pip

```
Command Prompt  
C:\Users\SCK>pip  
'pip' is not recognized as an internal or external command,  
operable program or batch file.
```



# Configuration in command line

```
$set PYTHON_HOME=c:\python27
```

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



# Run python in command line

\$python

```
Command Prompt

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.
```



# Permanent configuration



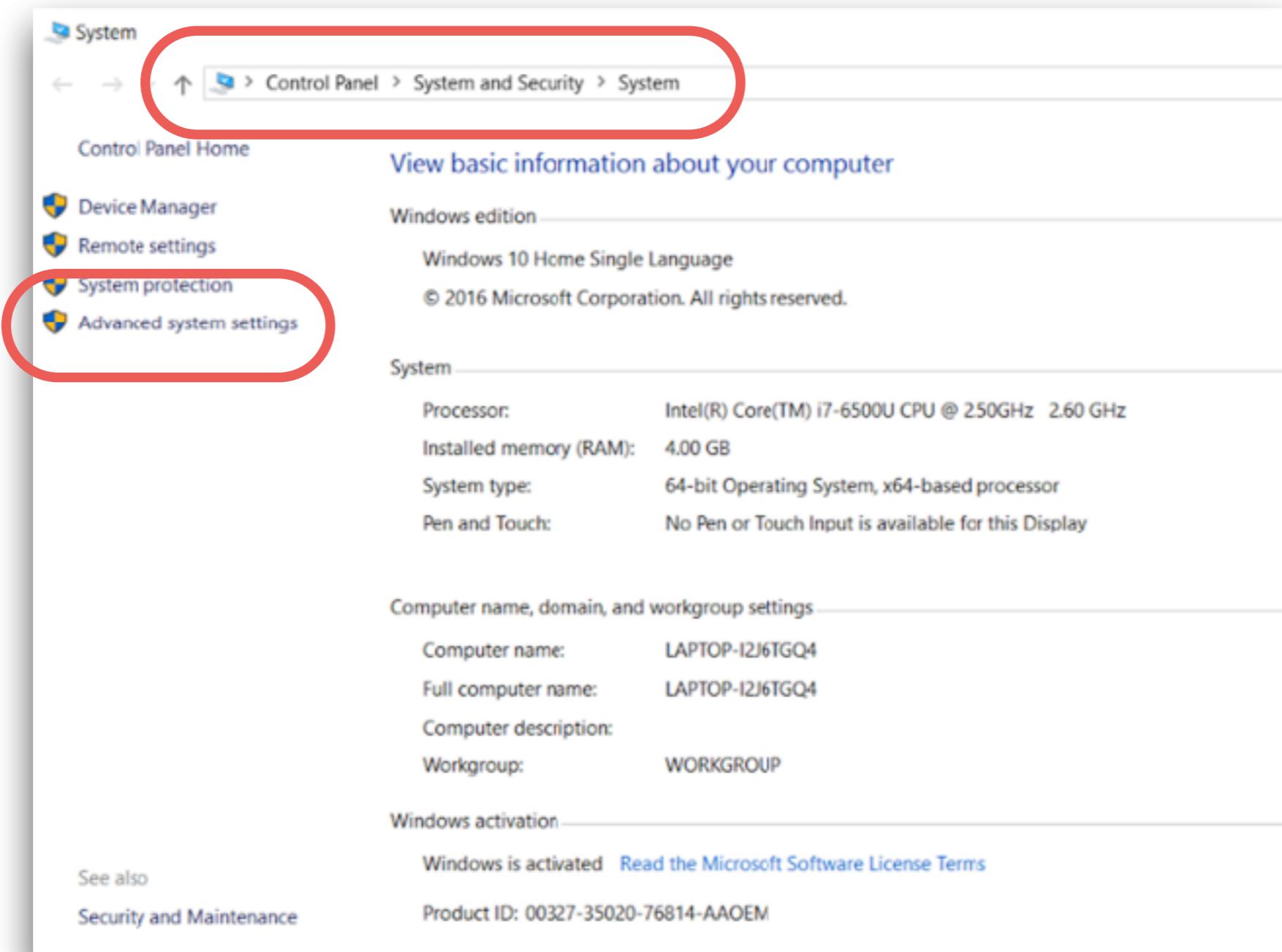
# Configuration

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

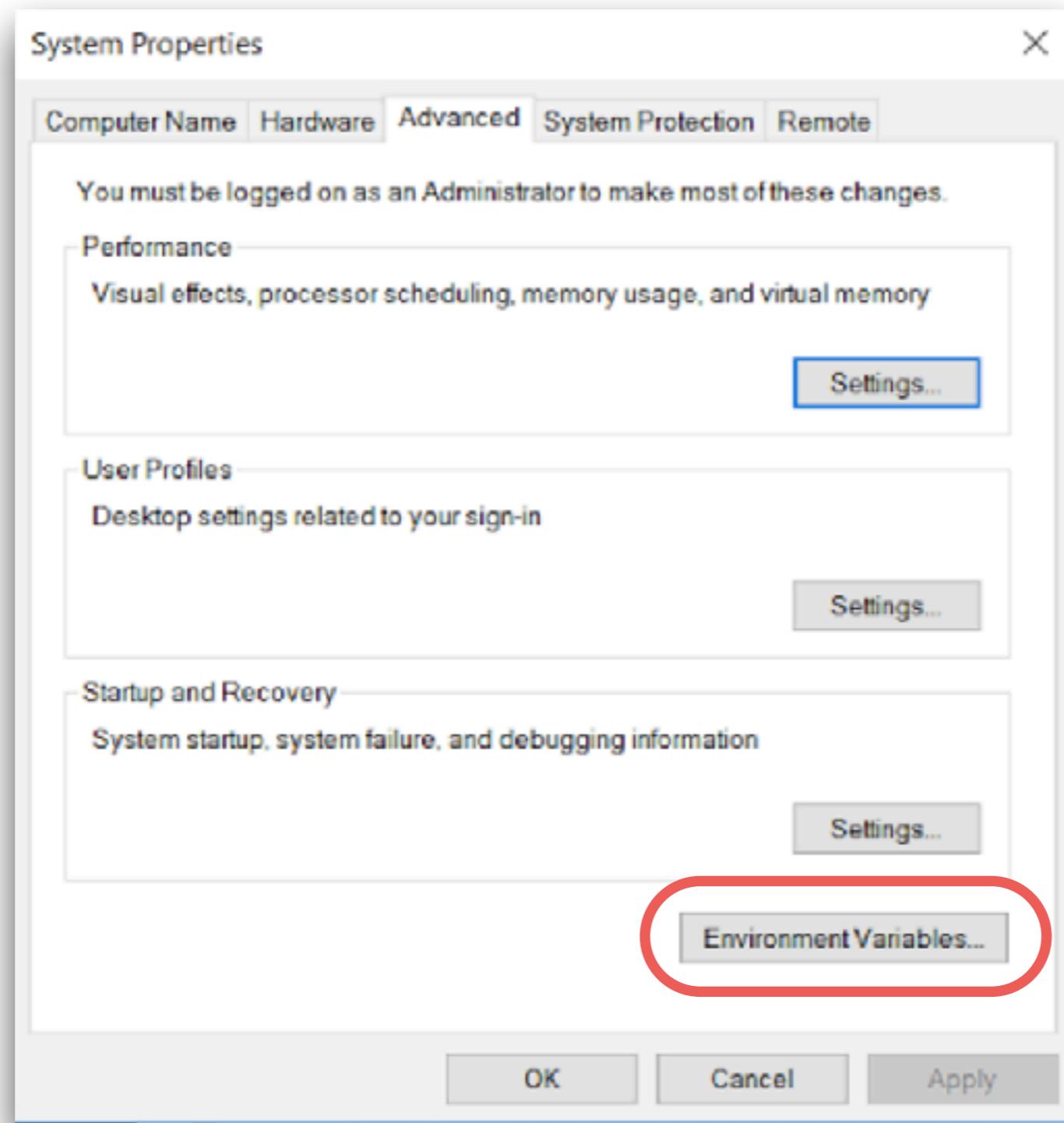
Go to Advanced system settings



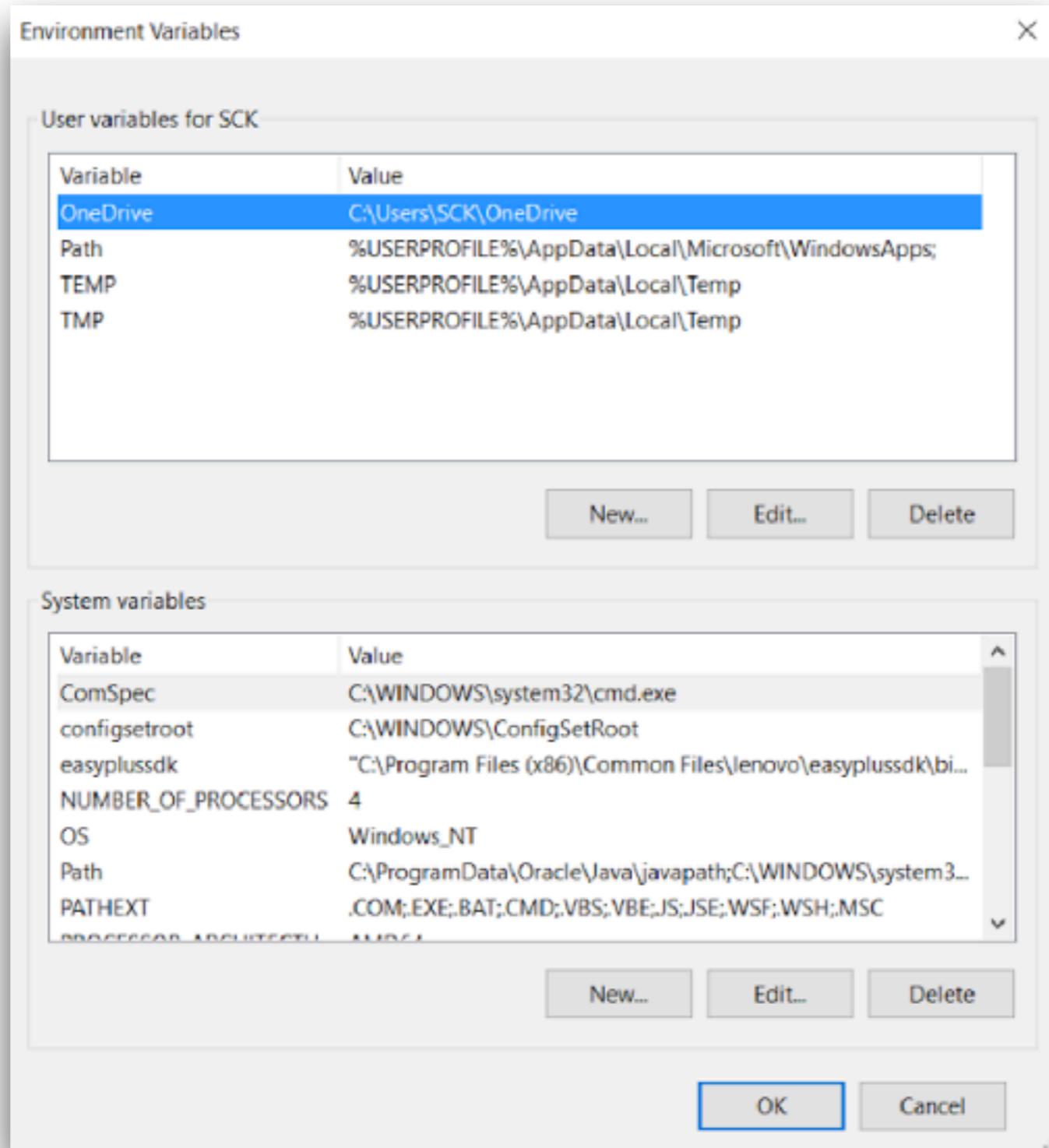
# Configuration



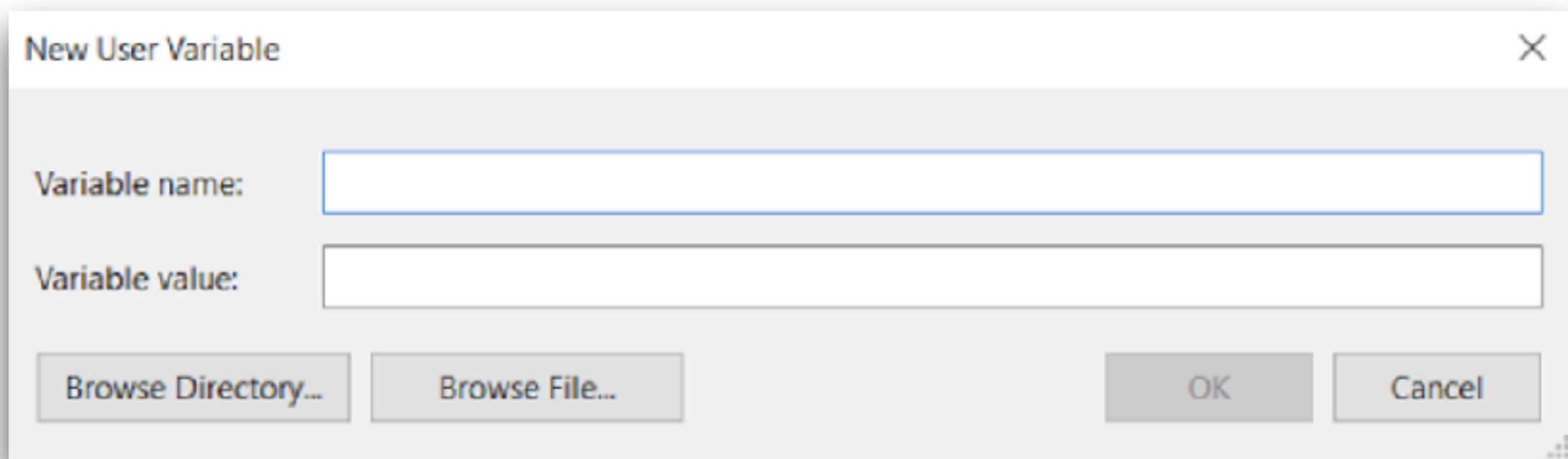
# Configuration



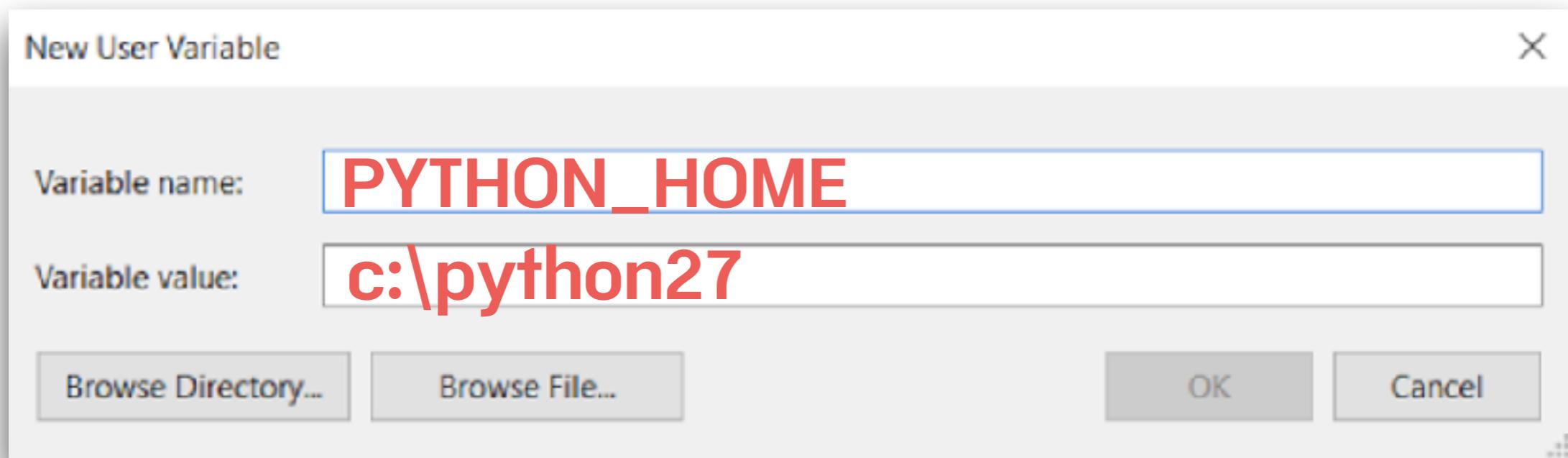
# Configuration



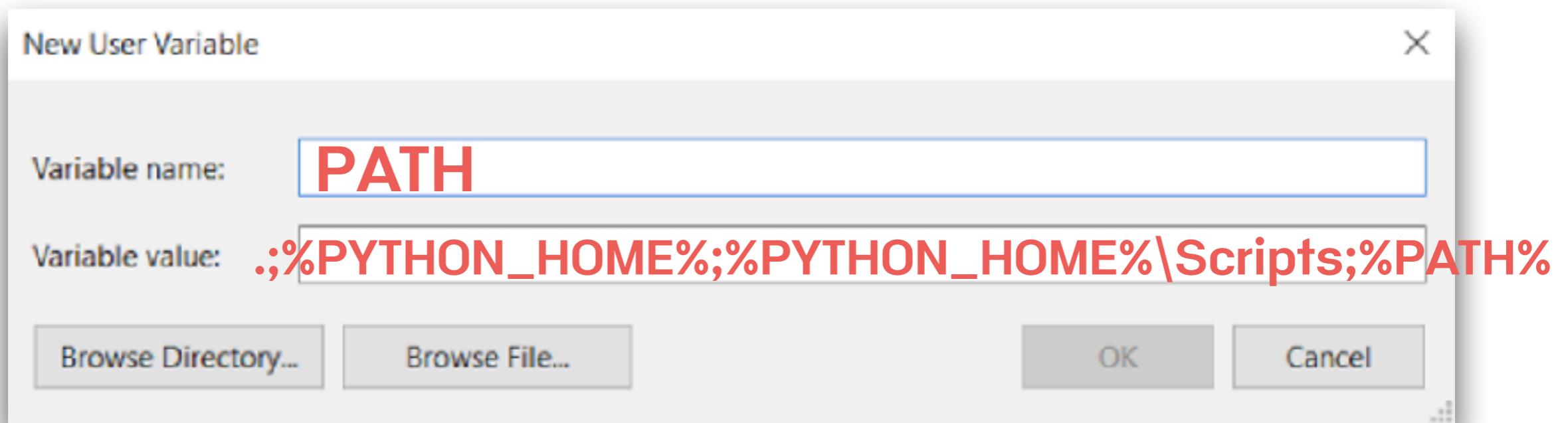
# Configuration



# Configuration PYTHON\_HOME



# Configuration PATH



# For MacOs



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# Install

```
$easy_install pip
```



# Install

\$brew install robot-framework



# Install Robot Framework



# Install Robot Framework

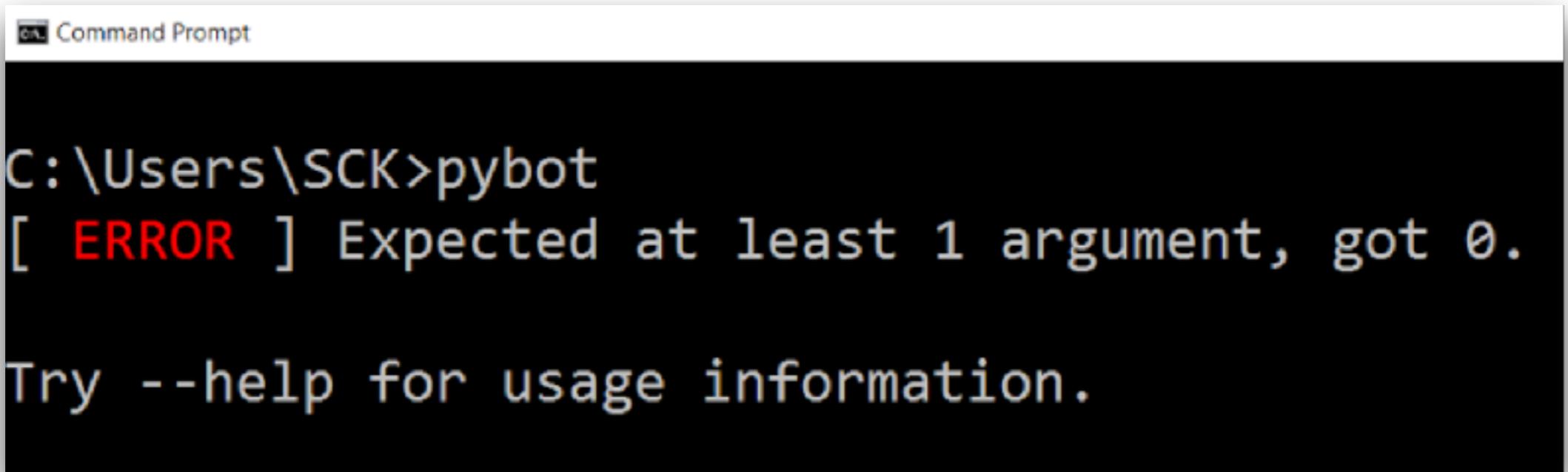
\$pip install robotframework

```
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

\$pybot



```
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:\users\sck\appdata\local\temp\pip-req-build-1qjwv\robotframework
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 freeze**

*robotframework==3.0.3*

*robotframework-seleniumlibrary==3.1.1*

*selenium==3.11.0*



# Install IDE and Editor



# Text Editor



**Sublime Text**



# Let's start to coding



# 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



# 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

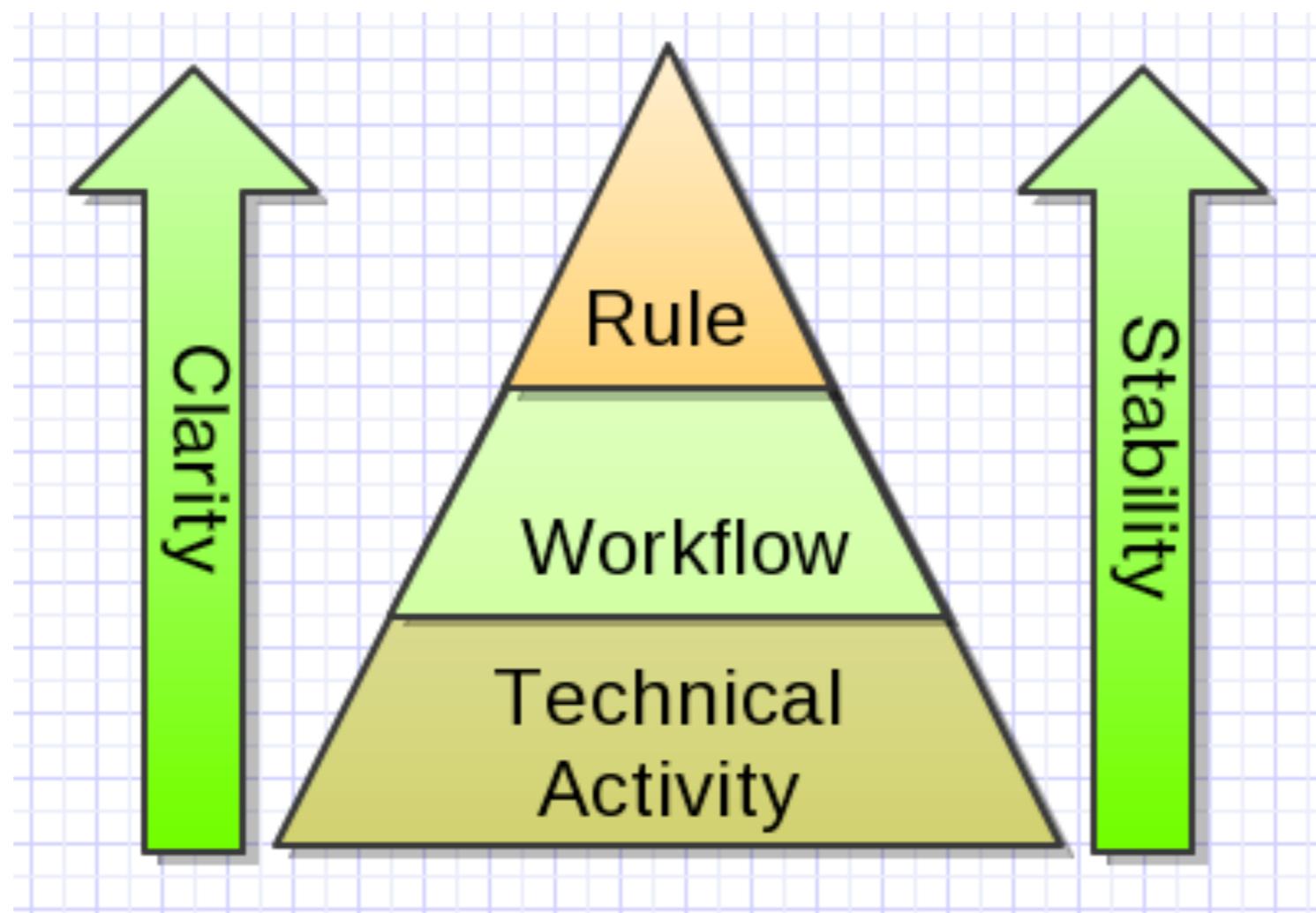
<http://robotframework.org/SeleniumLibrary/SeleniumLibrary.html>



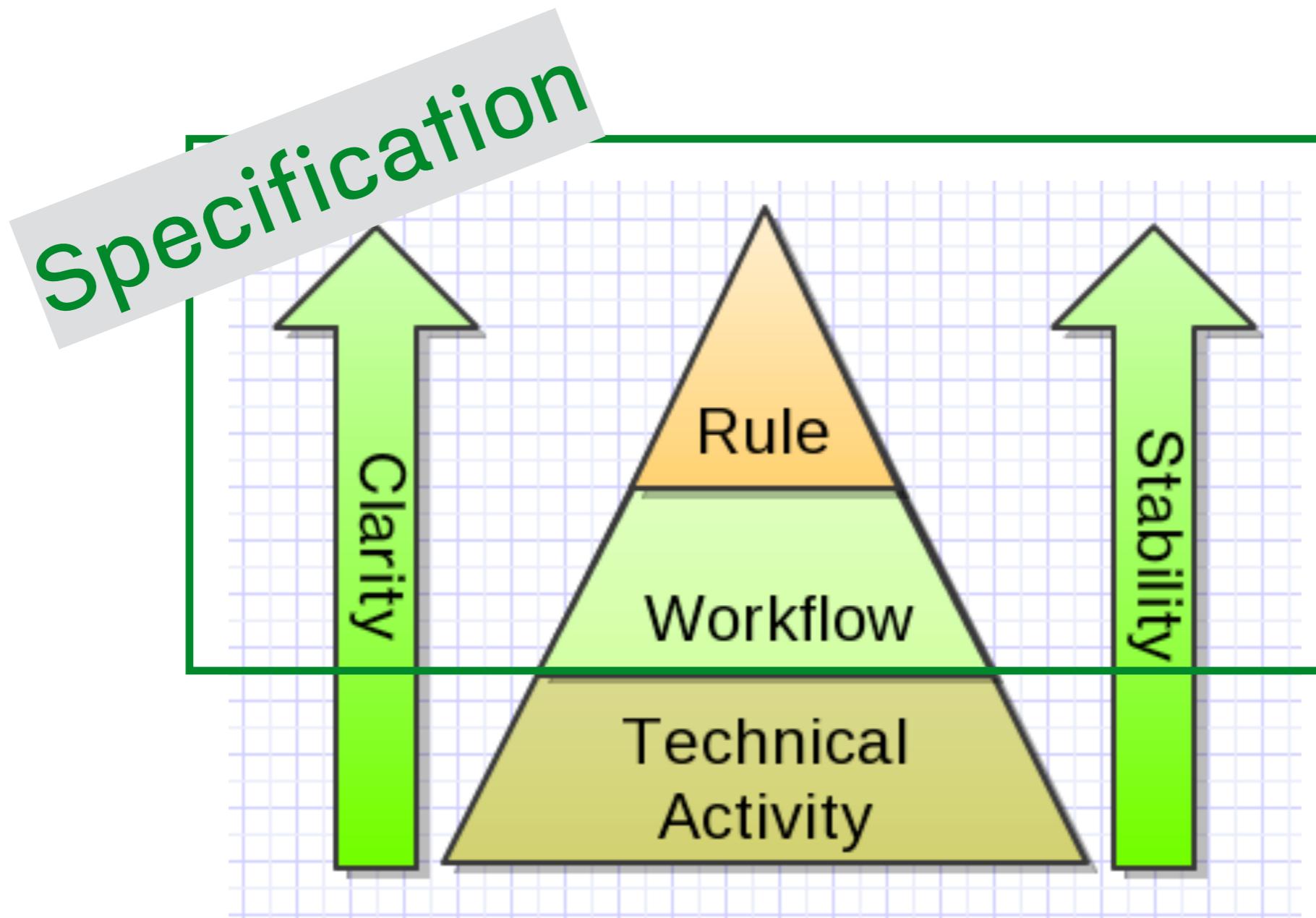
# Hello with google



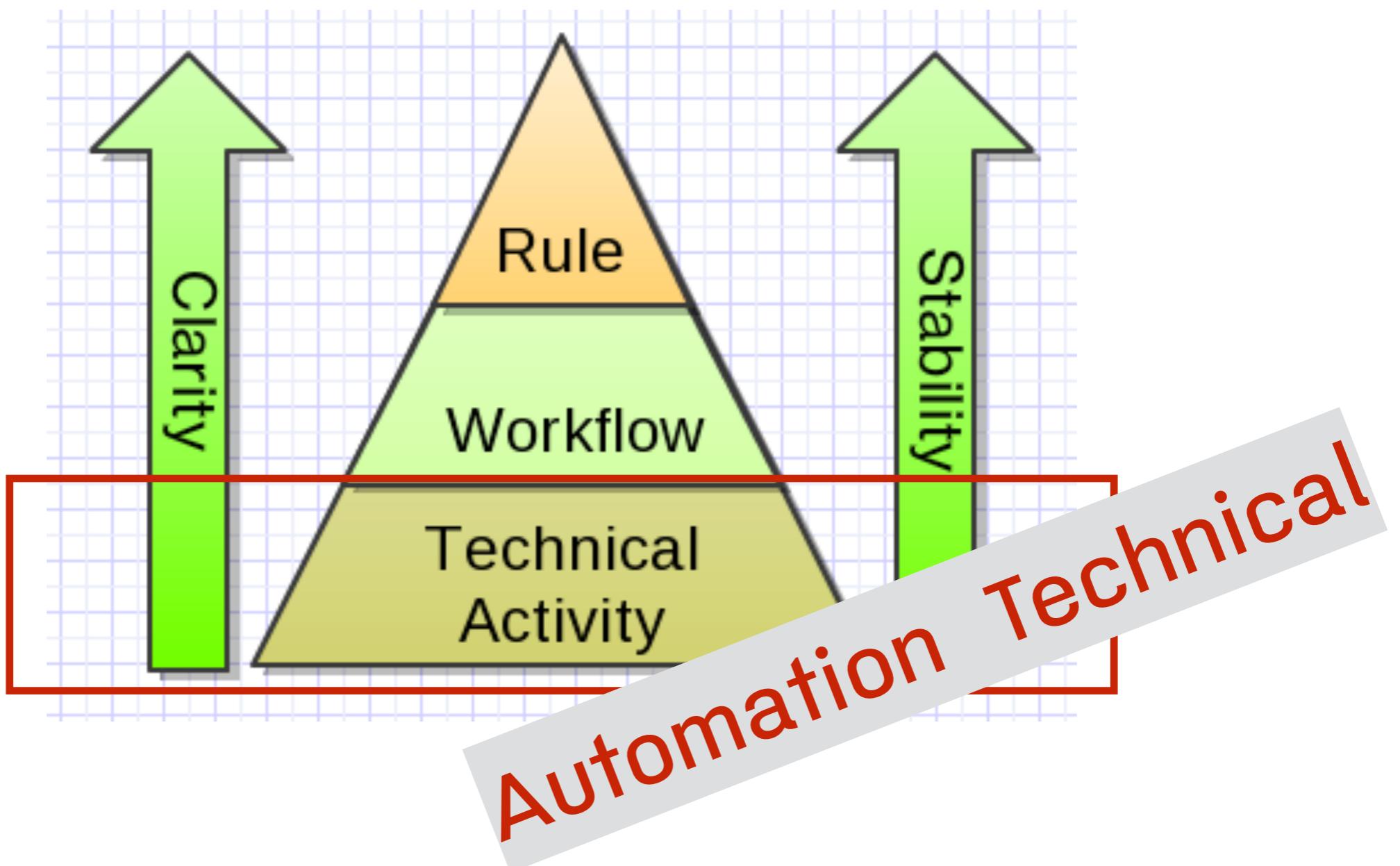
# Good to start



# Good to start



# Good to start



# 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>



# Structure



# Testcases



# Keywords



# Report



# Keyword Arguments



# Variables



# 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>



# Set variable value from command line



# 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



# Test Life Cycle



# Suite



# 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 Template



# Data-Driven Testing



# Working with resources



# Page object pattern



<https://goo.gl/iCce7C>

Name

First name

Last name

Address

Zipcode

Sign up

**Thank you!**

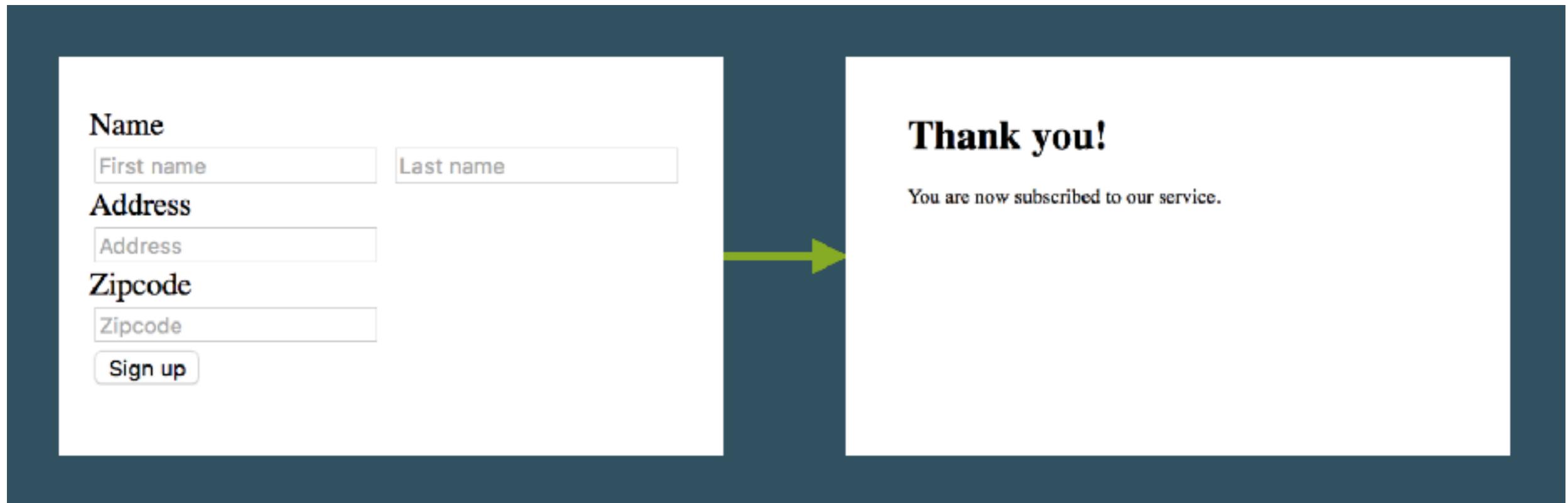
You are now subscribed to our service.



# Create page object

SignUpPage

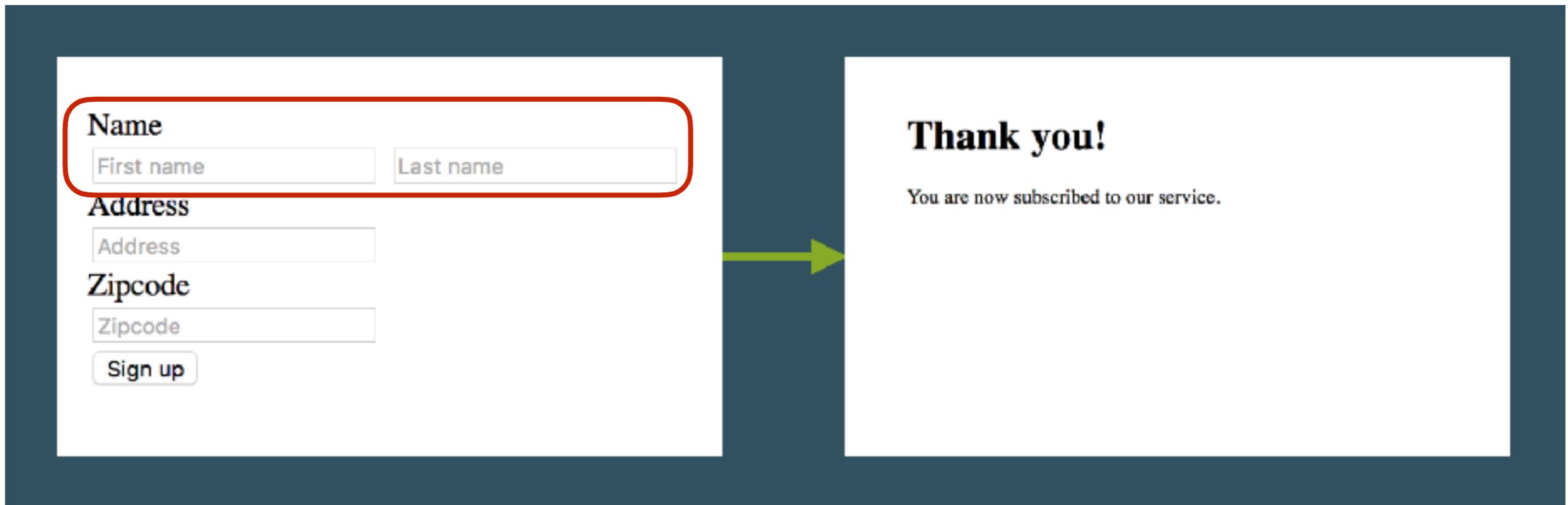
ReceiptPage



# Add behaviors

SignUpPage

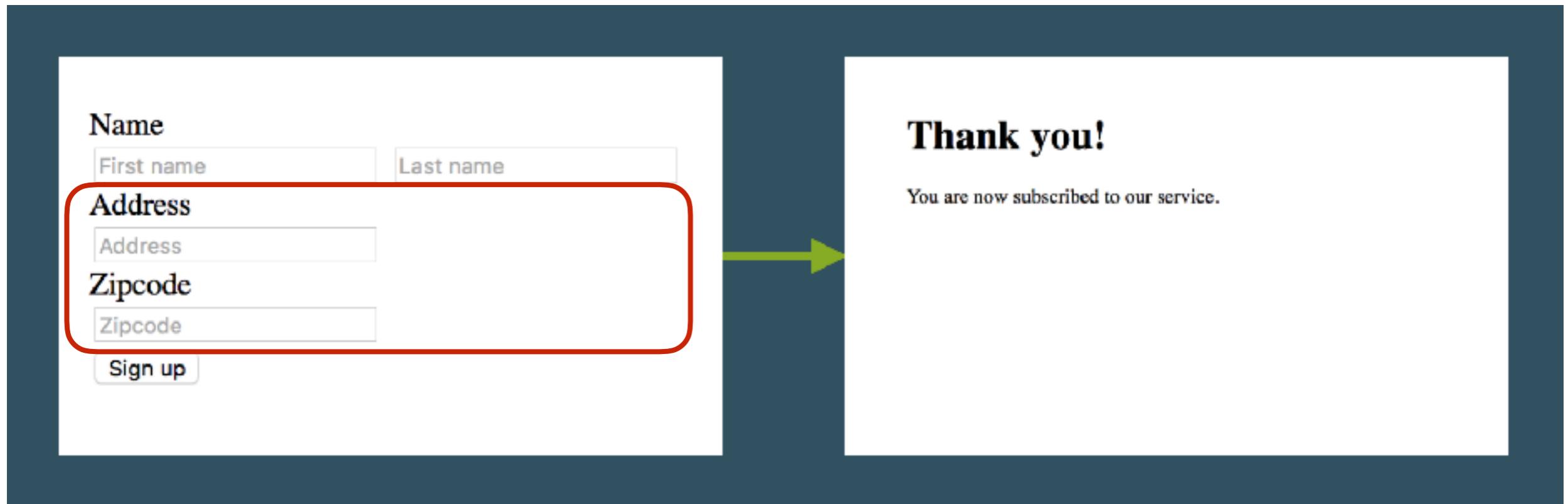
ReceiptPage



# Add behaviors

SignUpPage

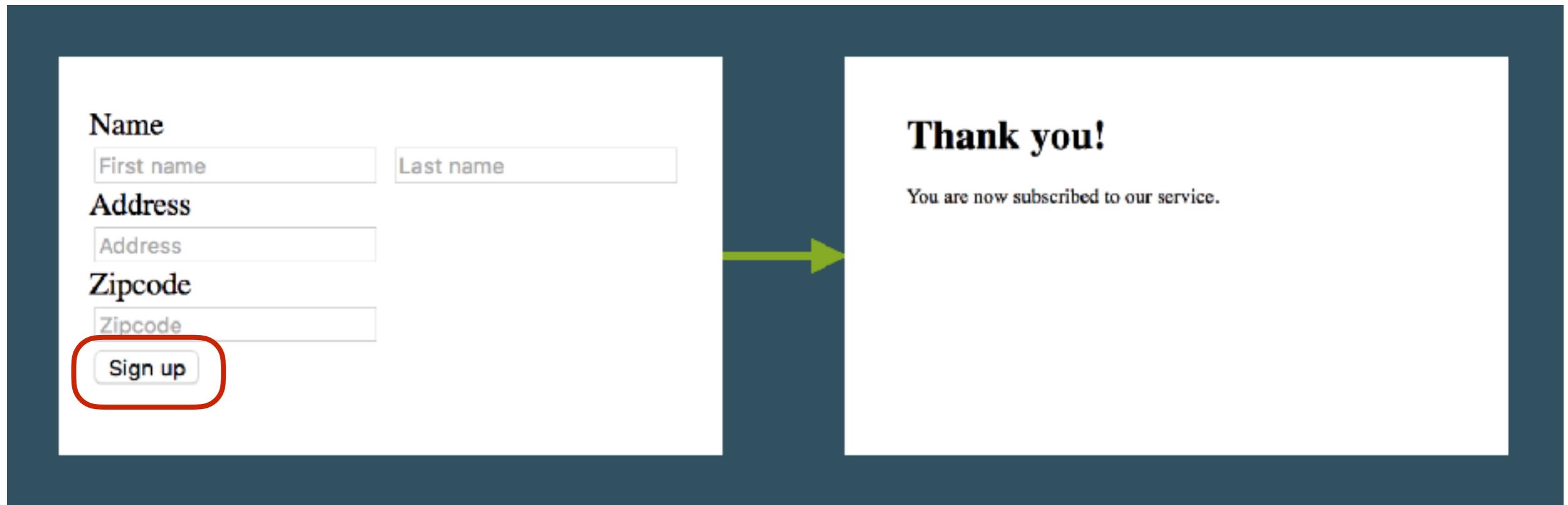
ReceiptPage



# Add behaviors

SignUpPage

ReceiptPage



# API Testing with Robot



httpbin.org



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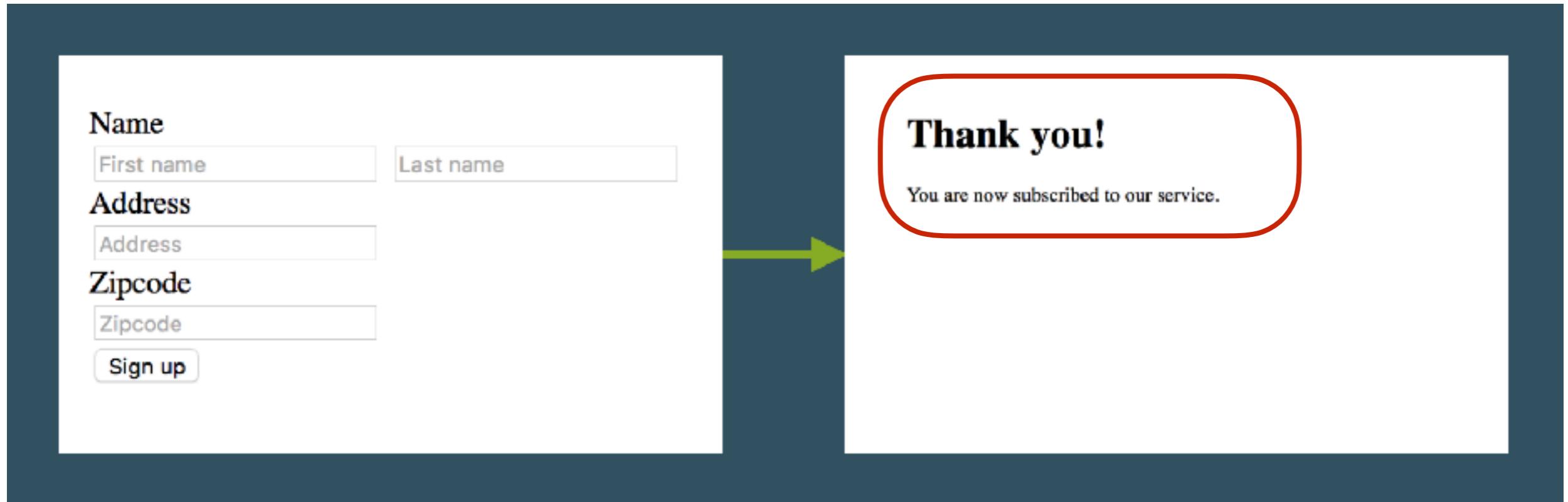
# Using Stubby4j



# Add behaviors

SignUpPage

ReceiptPage



# Parallel testing with pabot



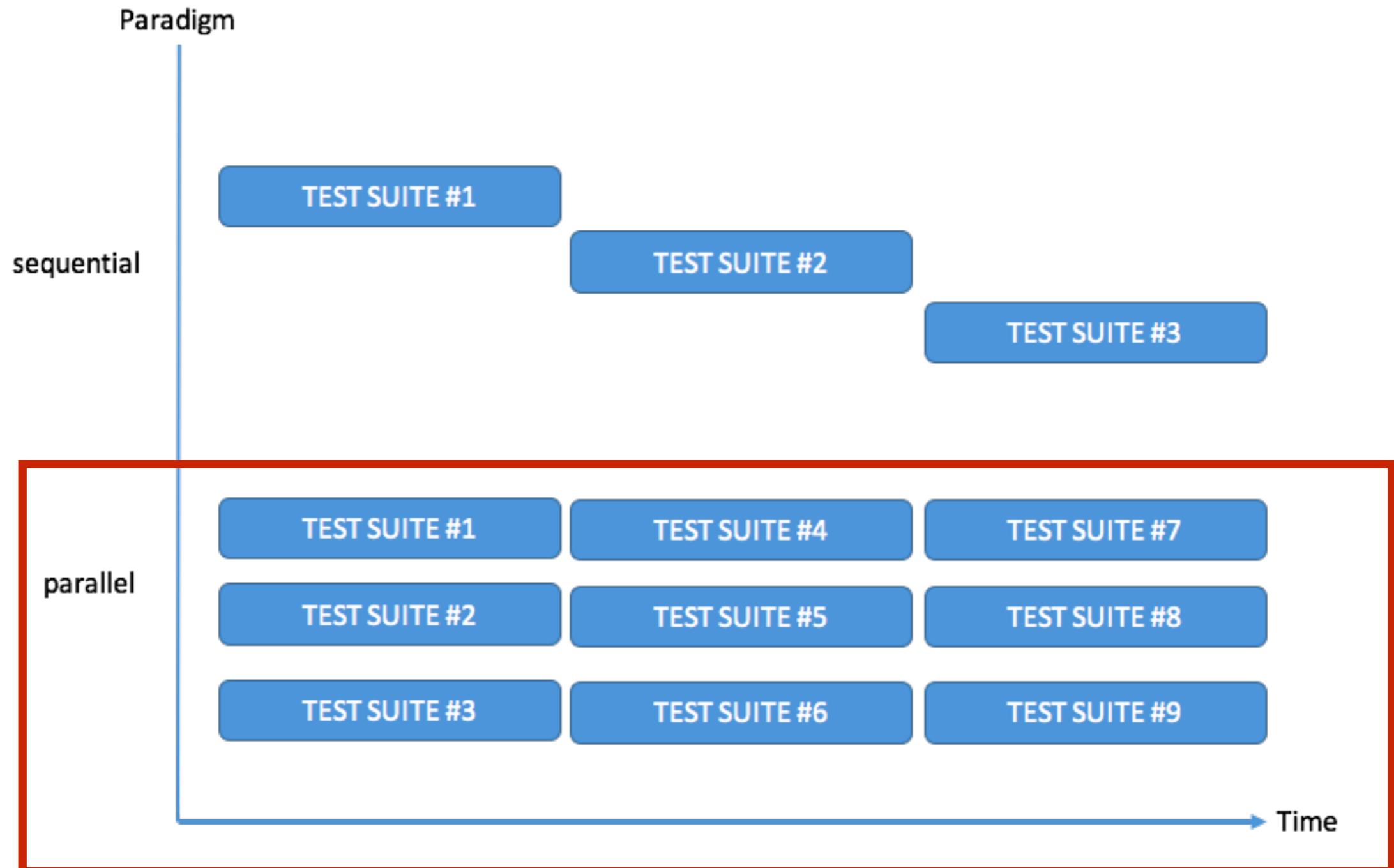
# Problems

More test cases **more problems**

More test cases **more testing time**



# Parallel Testing



# Pabot

\$pip install robotframework-pabot

\$pabot

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



# Do and Don't



# How to write good test case ?

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



# User guide

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



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