

# ***Why test automation projects are failing?***

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# About myself

- Igor Khrol
- More than 7 years in automated testing
- Consultant, trainer, manager, engineer, architect
- Selenium, HP QTP, TestCompete, Jmeter
- Speaker at different conferences



# Agenda

- What is wrong with test automation?
- Five typical mistakes in UI automated testing
- Possible solutions to make successful automated testing:
  - Technical
  - Organizational
- Q&A



# Successful test automation project: what's this?



# Test Automation Success

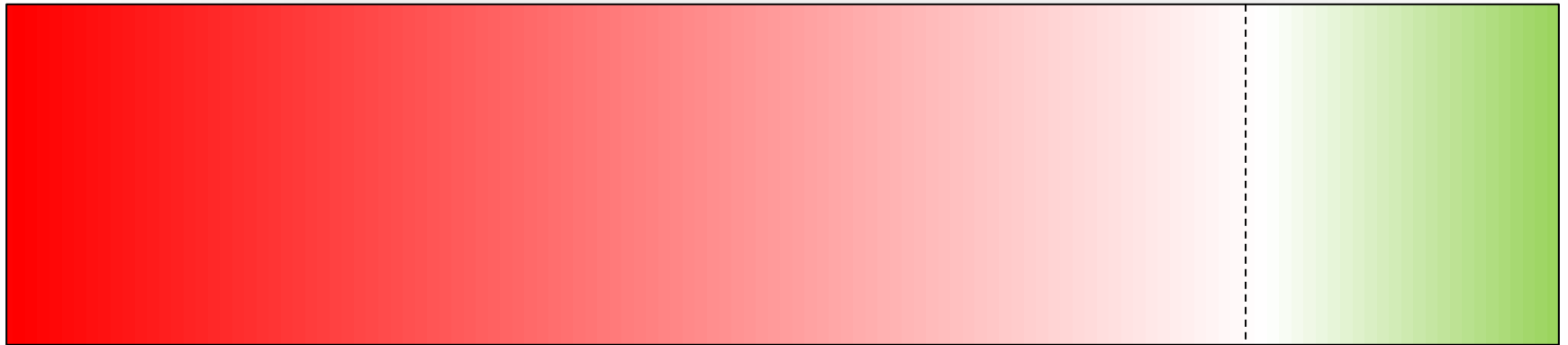
- What is “success” for test automation?
- The same as for any other project
  - Customer is happy
  - Outcome is more than investments
- Typical expectations from test automation
  - Amount of manual testing is reduced
  - Regression testing takes less time than previously
  - More defects are found



# What is the change to get “success”?



# What is the change to get “success”?



No result

Beneficial

80%



20%

# Typical Reasons





# **Reason #1**

## **Recording**



# Reasons: Recording

- The first feature from commercial tools
- Looks promising in marketing demos



# Reasons: Recording

- Why failure?
  - Recorded scripts don't work for a bit more complex apps than demo
  - Impossible to maintain



# Recording: how to fix



# Recording: how to fix

- Don't use recoding
- Write the code manually



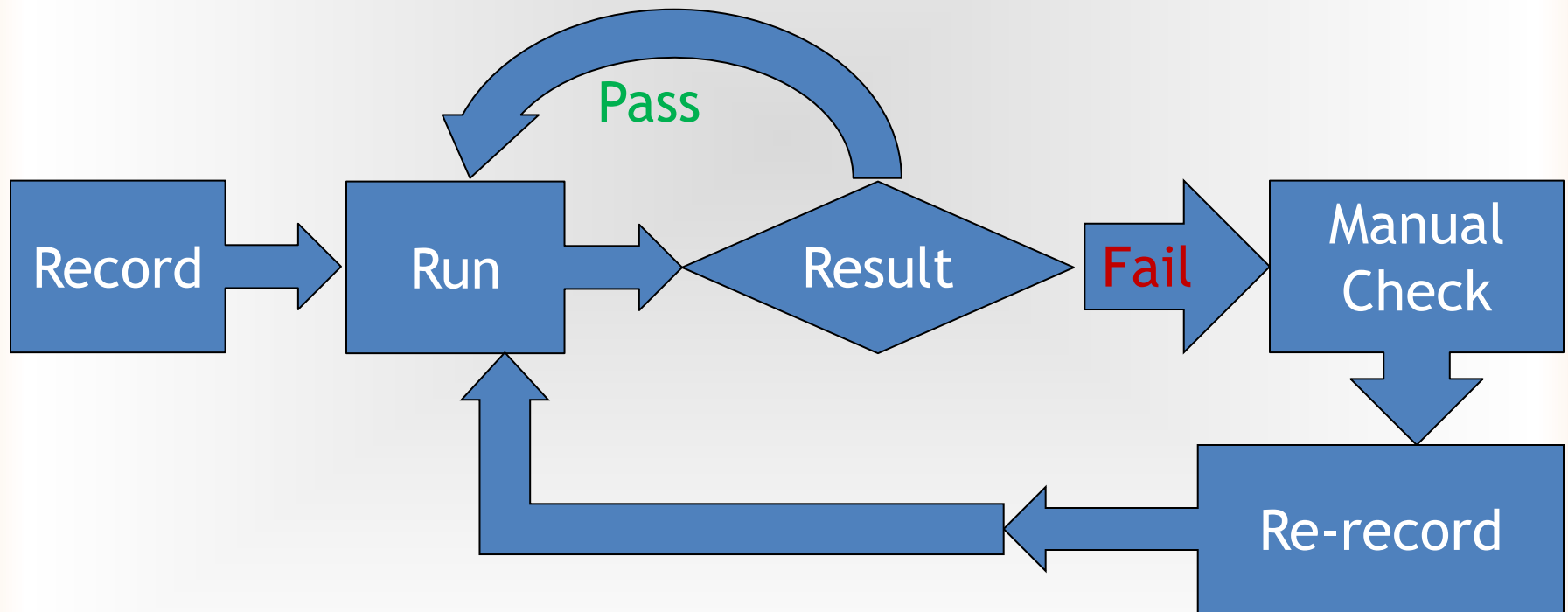
# Recording: how to fix

- Ensure that recoding is working for your application
  - Tune the application
  - Tune the tool
- Don't try to maintain the scripts
  - In case of failure re-record the script



# Recording: how to fix

- In case of failure re-record the script



# **Reason #2**

## **UI Automation is slow**





# Reasons: UI Automation is slow

- UI Automation includes the full end-to-end solution
  - Browser (or client app)
  - Network
  - Application server (or server app)
  - Database
- UI automation works with browser: not with your code

# UI Automation is slow: how to fix



# UI Automation is slow: how to fix

- Don't use "Sleeps" for synchronization



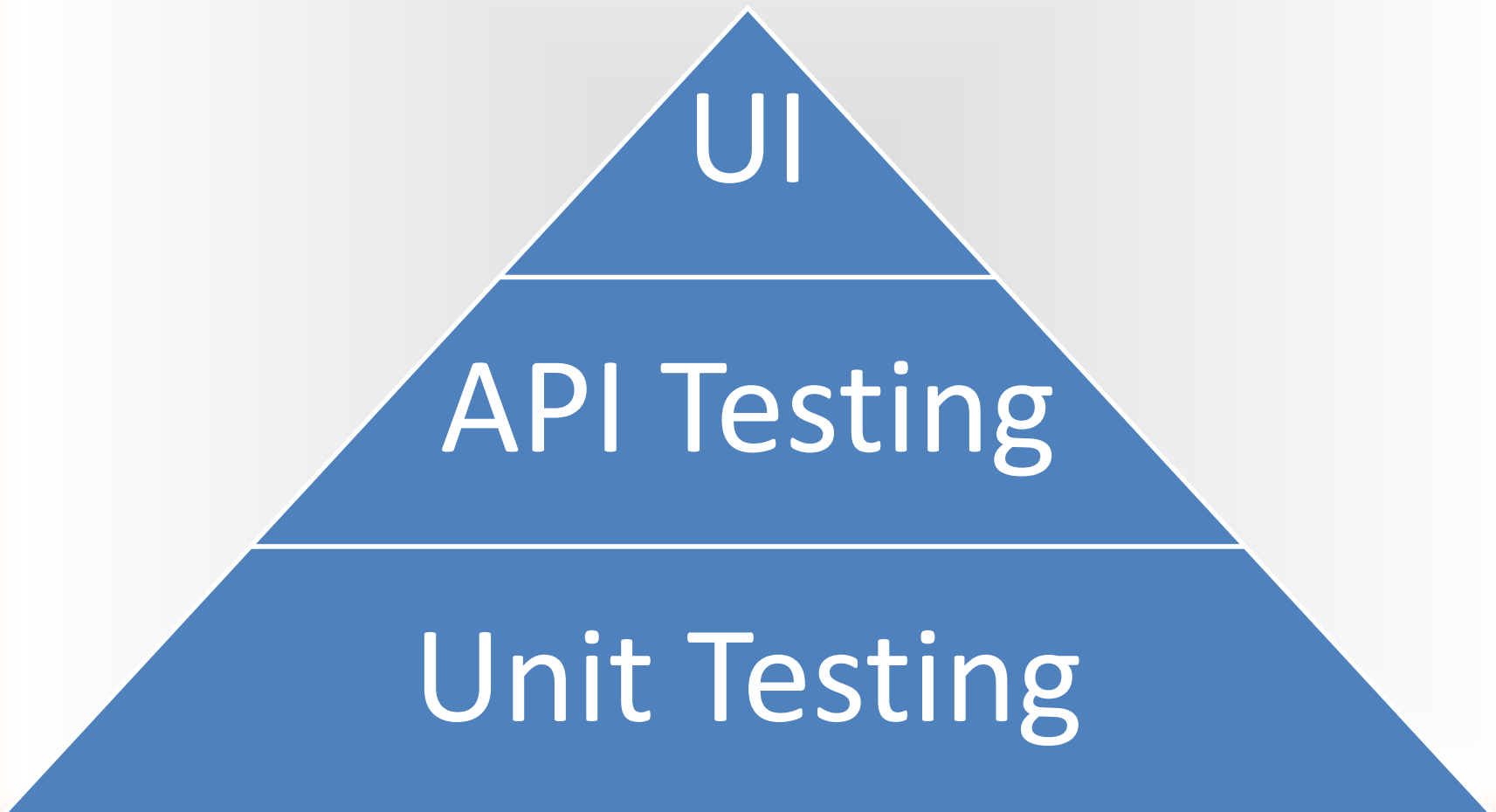
# UI Automation is slow: how to fix

- Run test scripts in parallel
  - Design test architecture for parallelization
  - Design your test scenarios and test data for parallelization
  - Use Clouds to run test scripts



# UI Automation is slow: how to fix

- Focus on other Test Automation possibilities



# **Reason #3**

## **UI Automation is unstable**



# Reasons: UI Automation is unstable

- The nature of UI Automation
- 2-3% of failed test scripts in average

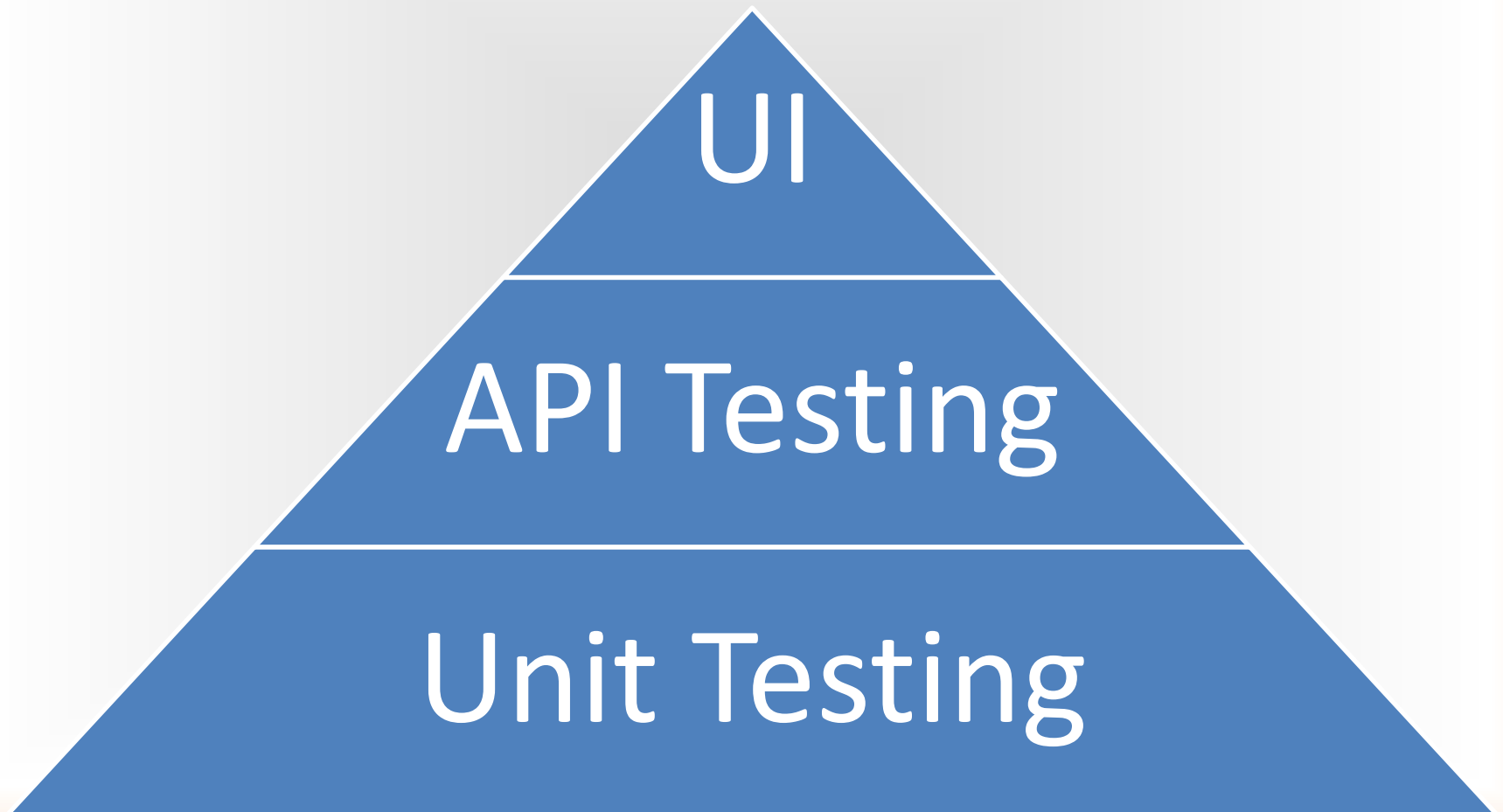


# **UI Automation is unstable: how to fix**



# UI Automation is unstable: how to fix

- Focus on other Test Automation possibilities



# UI Automation is unstable: how to fix

- Re-run failed test scripts before result analysis
- Analyze tests that failed twice

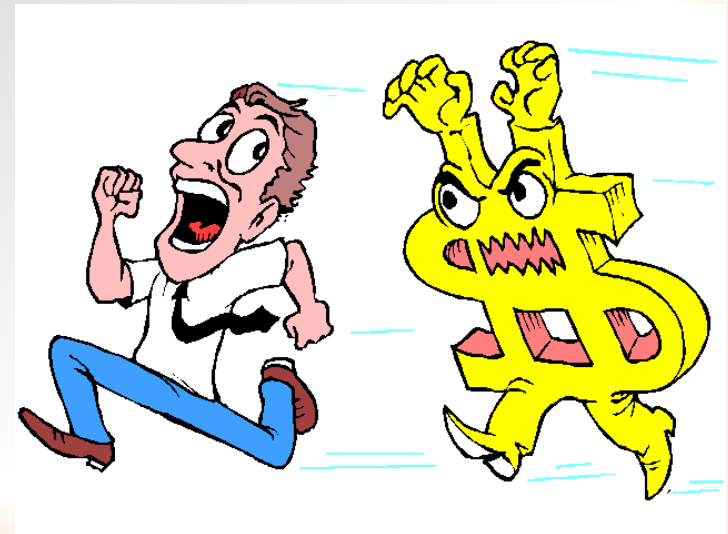
- Total – 1000
- Defects – 5
- Failure percentage – 3%
- 1 min to execute 1 test
- 10 min to analyze 1 failure

| 1 run  |
|--|
| Failed cases<br>$(1000 - 5) * 3\% + 5 = 35$              |
| Execution time<br>1000 min = 16.7 h                      |
| Time to analyze<br>$35 * 10 \text{ min} = 5.8 \text{ h}$ |

| 1 run + 1 re-run  |
|---|
| Failed cases<br>$(1000 - 5) * 3\% + 5 = 35$<br>$(35 - 5) * 3\% + 5 = 6$ |
| Execution time<br>1000 min + 35 min = 17.3 h                            |
| Time to analyze<br>$6 * 10 \text{ min} = 1 \text{ h}$                   |

## Reason #4

**Too costly to develop and  
maintain**



# Reasons: too costly to develop and maintain

- Too slow
  - Test script should be run 10-15 times in order to be developed
  - 2-5 times to update due to changes



# Reasons: too costly to develop and maintain

- Wrong tool selection

```
2: variable = true
3: If isPresent() Then
4:     variable = false
5: End If
```

Code with mistake

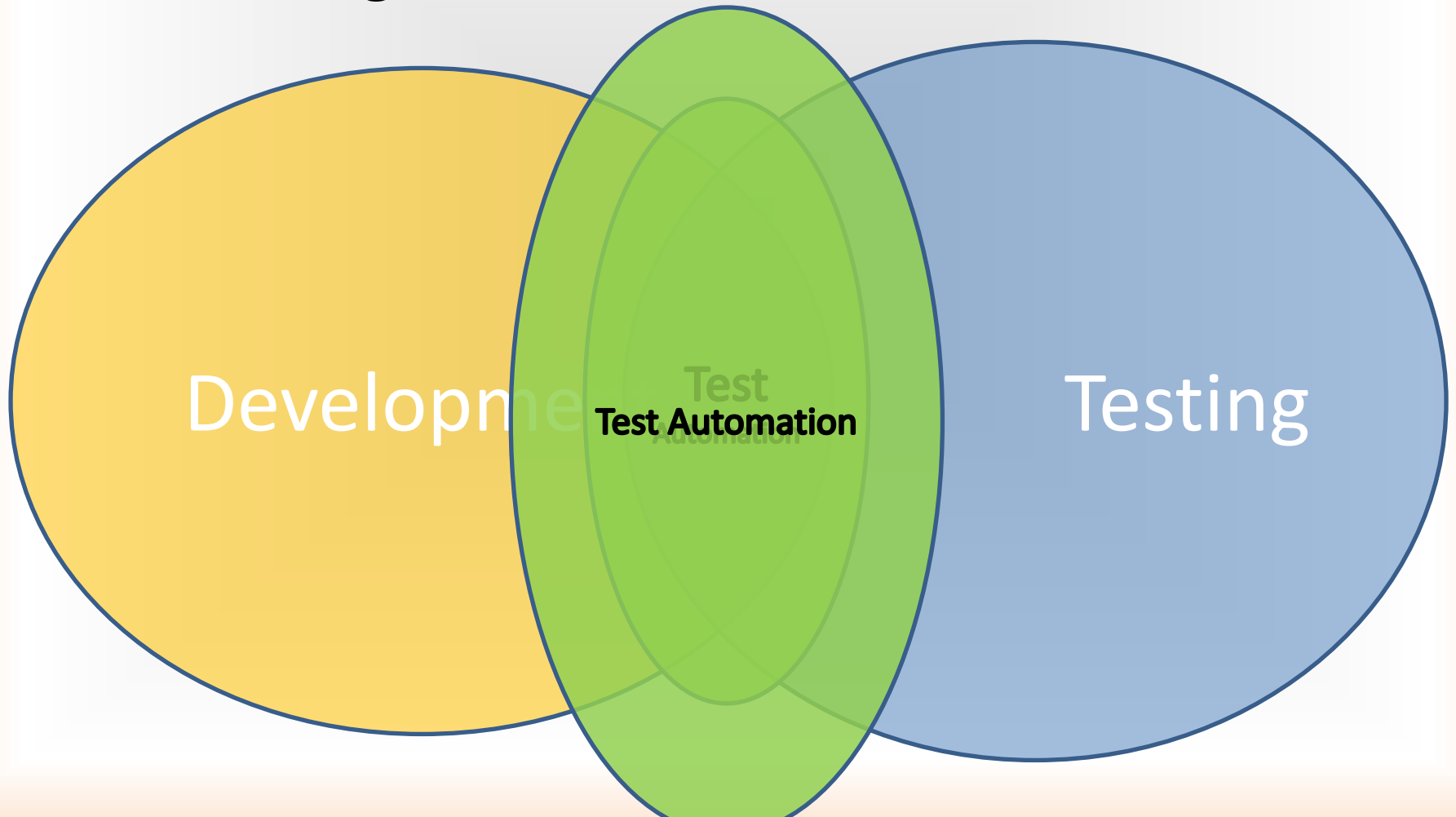
```
9: variable = true
10: tmpResult = isPresent()
11: If tmpResult Then
12:     variable = false
13: End If
```

Fixed code

*Why???*

# Reasons: too costly to develop and maintain

- Not enough skills in the team



**Too costly to develop and  
maintain: how to fix**



# Too costly to develop and maintain: how to fix

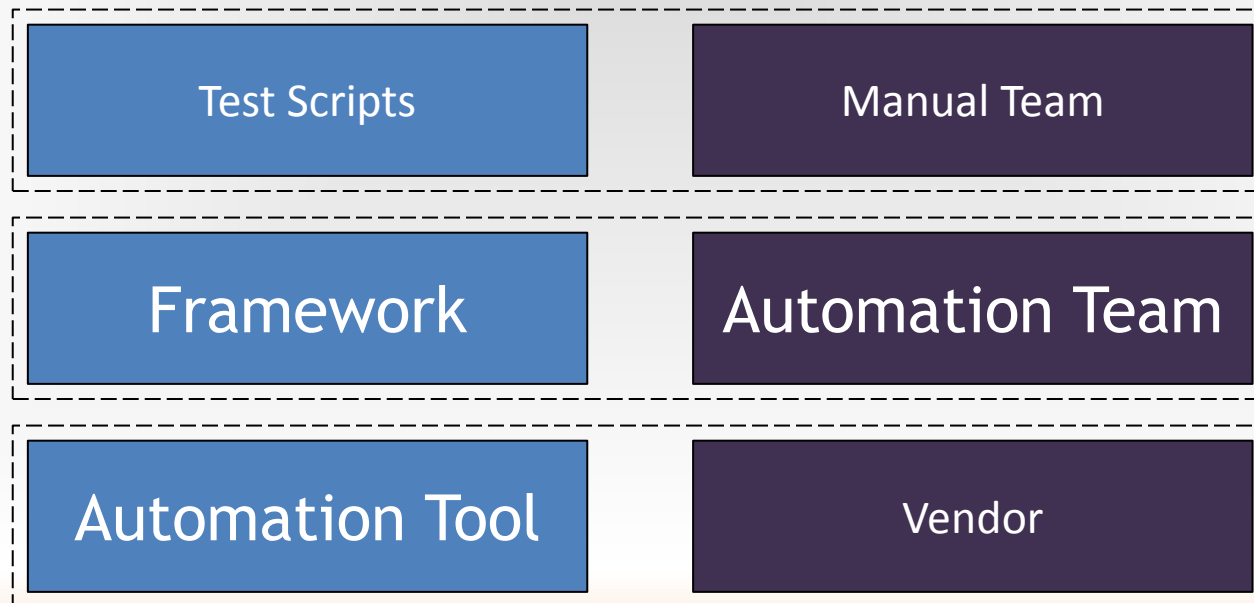
- Work closely with development team to made application UI automatable
  - Provide static Id's for controls
  - Implement strict procedure for synchronization





# Too costly to develop and maintain: how to fix

- “Not enough skills to create the code by manual testing team” – how to handle?
- Separate test automation framework from test scripts creation



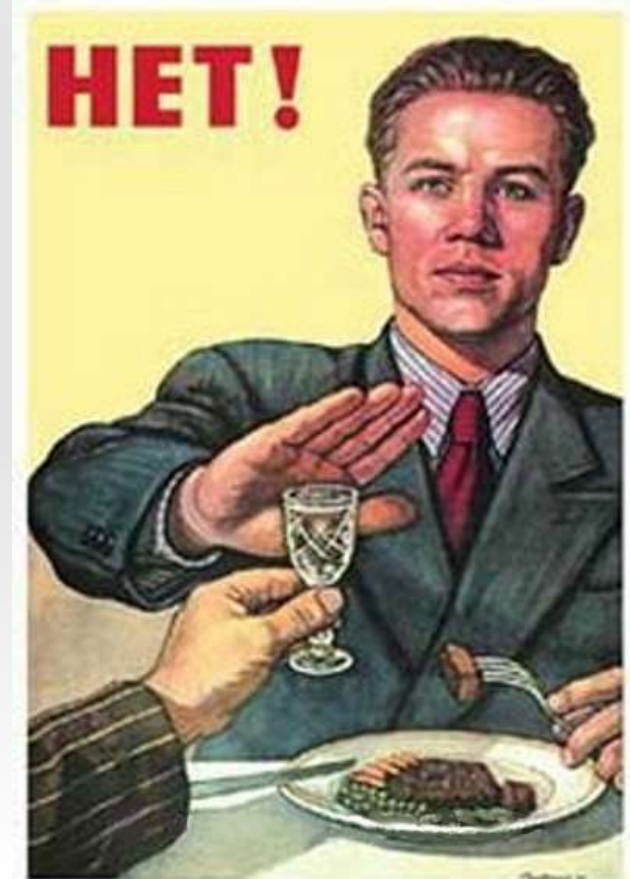
# **Reason #5**

## **Automation is not used**



# Reasons: Automation is not used

- “We do not trust test automation – it’s better to re-check manually”
- It’s so complex to run and analyze the scripts



# Automation is not used: how to fix



# Automation is not used: how to fix

- Integrate test automation with existing test system
- Ease the process of test execution



# Automation is not used: how to fix

- Establish clear result analysis procedure

Run

```
graph TD; A[Run] --> B[If Fail – Do Manually]; B --> C[Post Bug]; C --> D[Fail – To SUT, Pass – To Autotest];
```

The diagram is a vertical flowchart with four blue rectangular boxes. The first box is labeled 'Run'. A light blue arrow points down from the bottom right of the first box to the top right of the second box. The second box is labeled 'If Fail – Do Manually'. Another light blue arrow points down from the bottom right of the second box to the top right of the third box. The third box is labeled 'Post Bug'. A third light blue arrow points down from the bottom right of the third box to the top right of the fourth box. The fourth box is labeled 'Fail – To SUT, Pass – To Autotest'.

If Fail – Do Manually

Post Bug

Fail – To SUT, Pass – To Autotest

# To summarize...



# Summary

- What to do to get success in test automation
  - *Select right tool, framework and technical approach*
  - *Distribute carefully the responsibilities*
  - *Collaborate closely between the teams: development, QA and test automation*



# Thank you for attention!

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