Code or Low-Code

Navigating the test automation options

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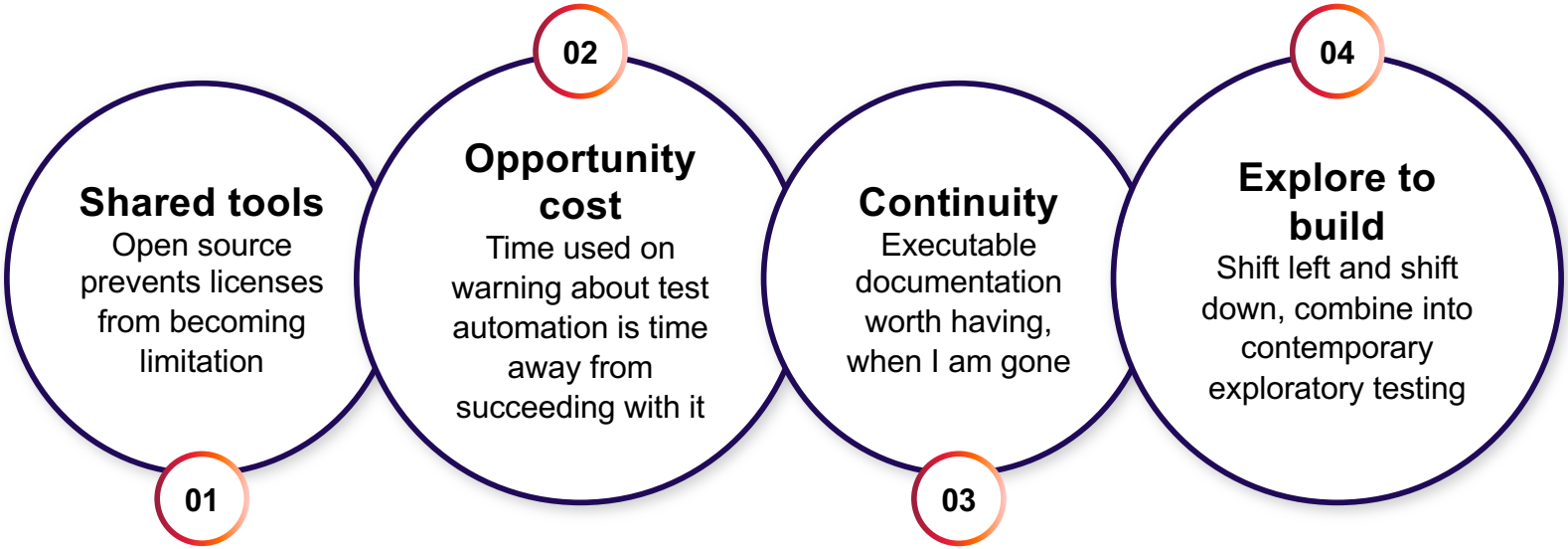
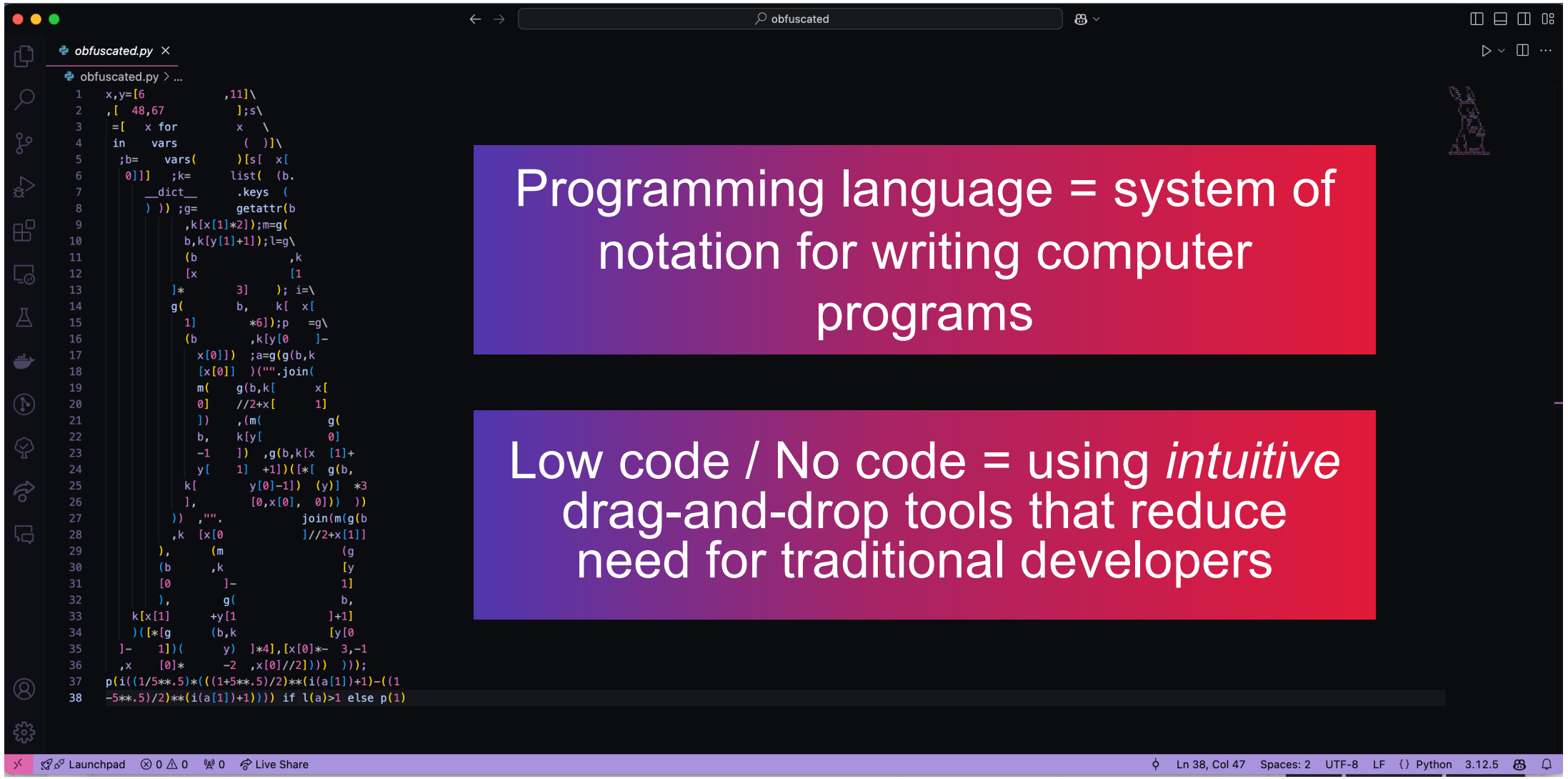
CGI

Hyperautomation – automating everything that can be automated



Collecting **key points** from years with projects of various states of test automation.



Programming language = system of notation for writing computer programs

Low code / No code = using *intuitive* drag-and-drop tools that reduce need for traditional developers

Agenda for learning

1. **Differences in learning**
   Code and Low code

2. **Minimal knowledge for useful contributions**
   Learning in layers

3. **Writing and reading**
   Reading on failures

Differences in learning

Code and low code

Polyglot and polytool is a lot of work

Can’t you just tell us which one to use?

02

Anti-toolist worldwiew

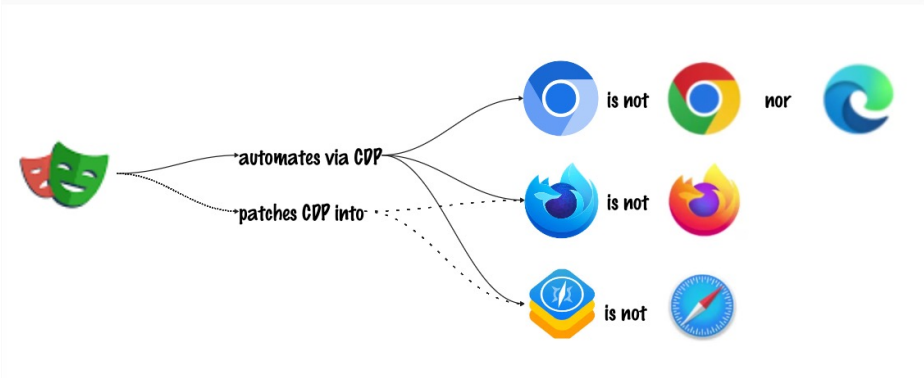
Realize that features in tools can be copied. Looking for the **one best tool makes little sense**. We need to protect our time to a partner of choice.

Photo by Clay Banks on Unsplash

With code

requirements.txt

```
#Popular test runner in python
pytest
#Popular browser approximation library
playwright
pytest-playwright
#Popular real browser library
selenium
#Popular framework that wraps many libraries
robotframework
robotframework-browser
```




```
maaretp@FI-HQ6Q36CQ7C hello_world % python3 -m venv .venv
maaretp@FI-HQ6Q36CQ7C hello_world % source .venv/bin/activate
(.venv) maaretp@FI-HQ6Q36CQ7C hello_world % pip install -r requirements.txt
(.venv) maaretp@FI-HQ6Q36CQ7C hello_world % playwright install
(.venv) maaretp@FI-HQ6Q36CQ7C hello_world % rfbrowser init
```

test_eprime.py > ...

```python
from selenium import webdriver
from selenium.webdriver.common.by import By

def test_simplest():
    driver = webdriver.Chrome()
    driver.implicitly_wait(10)
    driver.get("https://maaretp.com/app/")
    input_field = driver.find_element(By.ID, "inputtext")
    input_field.send_keys("hello world")
    driver.find_element(By.ID, "CheckForEPrimeButton").click()
    assert driver.find_element(By.ID, "wordCount").text == "2"
    assert driver.find_element(By.ID, "discouragedWordCount").text == "0"
    assert driver.find_element(By.ID, "possibleViolationCount").text == "0"
    driver.quit()
```

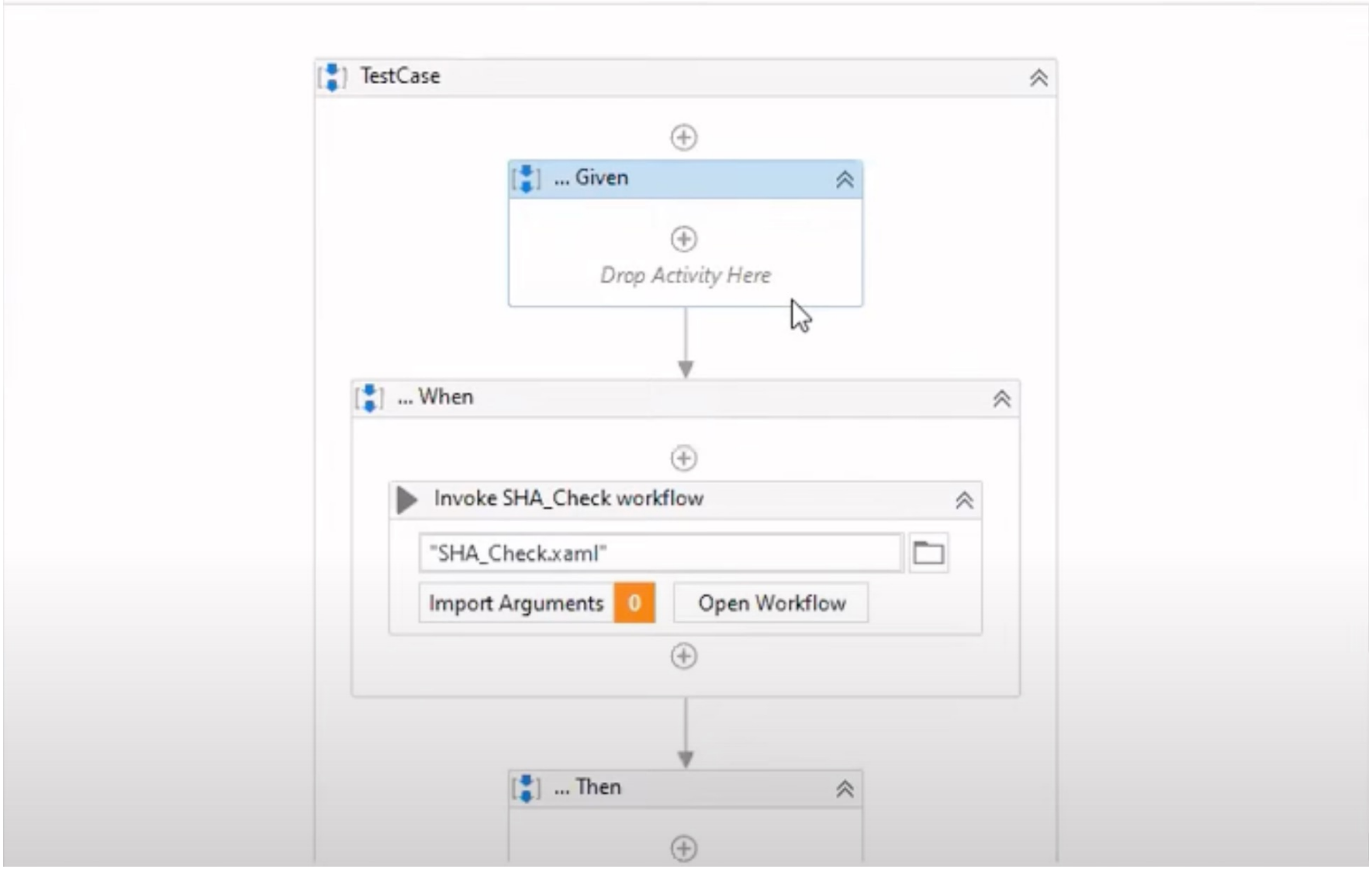
test_eprime.py > ...

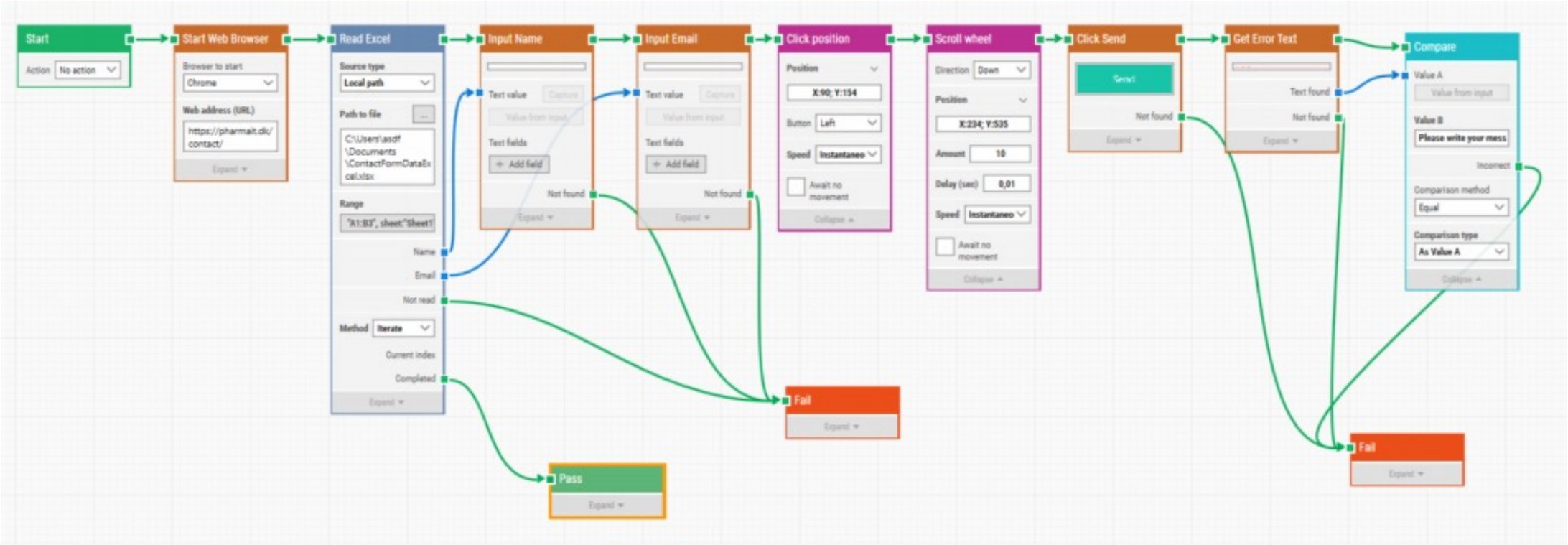
```python
from playwright.sync_api import Page, expect

def test_eprime(page: Page):
    page.goto("https://www.exploratorytestingacademy.com/app/")
    page.fill("#inputtext", "hello world")
    page.click("#CheckForEPrimeButton")
    expect(page.locator("#wordCount")).to_have_text("2")
    expect(page.locator("#discouragedWordCount")).to_have_text("0")
    expect(page.locator("#possibleViolationCount")).to_have_text("0")
```

```
Run Suite | Debug Suite | Load in Interactive Console
*** Settings ***
Library                 Browser

*** Test Cases ***
Run | Debug | Run in Interactive Console
Eprime
    New Browser                 chromium    headless=${FALSE}
    New page  https://www.exploratorytestingacademy.com/app/
    Fill Text  css=#inputtext   hello world
    Click  css=#CheckForEPrimeButton
    ${wordCount} =  Get Text  css=#wordCount
    ${discouragedWordCount} =  Get Text  css=#discouragedWordCount
    ${possibleViolationCount} =  Get Text  css=#possibleViolationCount
    Should Be Equal As Numbers  ${wordCount}  2
    Should Be Equal As Numbers  ${discouragedWordCount}  0
    Should Be Equal As Numbers  ${possibleViolationCount}  0
    Close Browser
```


TestCase
... Given
Drop Activity Here
... When
Invoke SHA_Check workflow
"SHA_Check.xaml"
Import Arguments
0
Open Workflow
... Then


Start
Action
No action
Start Web Browser
Browser to start
Chrome
Web address (URL)
https://pharmait.dk/contact/
Expand
Read Excel
Source type
Local path
Path to file
C:\Users\asdf\Documents\ContactFormDataExcel.xlsx
Range
"A1:B3", sheet:"Sheet1"
Name
Email
Not read
Method
Iterate
Current index
Completed
Expand
Input Name
Text value
Capture
Value from input
Text fields
Add field
Not found
Expand
Input Email
Text value
Capture
Value from input
Text fields
Add field
Not found
Expand
Click position
Position
X:90; Y:154
Button
Left
Speed
Instantaneo
Await no movement
Collapse
Scroll wheel
Direction
Down
Position
X:234; Y:535
Amount
10
Delay (sec)
0,01
Speed
Instantaneo
Await no movement
Collapse
Click Send
Send
Not found
Expand
Get Error Text
Text found
Not found
Expand
Compare
Value A
Value from input
Value B
Please write your mess
Incorrect
Comparison method
Equal
Comparison type
As Value A
Collapse
Fail
Expand
Pass
Expand
Fail
Expand

```
(.venv) maaretp@FI-HQ6Q36CQ7C Hercules-demo % testzeus-hercules --project-base MINI --llm-model gpt-4o --llm-model-api-key sk-proj-6hxuda
```

MINI > input > test.feature

```
1   Feature: Eprime text analysis
2       As a user,
3       I want to verify my text for violations of eprime,
4       So I learn to write proper English
5
6       Scenario: Eprime analysis
7           Given the eprime page (https://maaretp.com/app/) is displayed
8           When user analyses sentence hello world
9           Then user learns sentence has 0 be-verbs, 0 possible be-verbs and total 2 words
```

Minimal knowledge for useful contribution

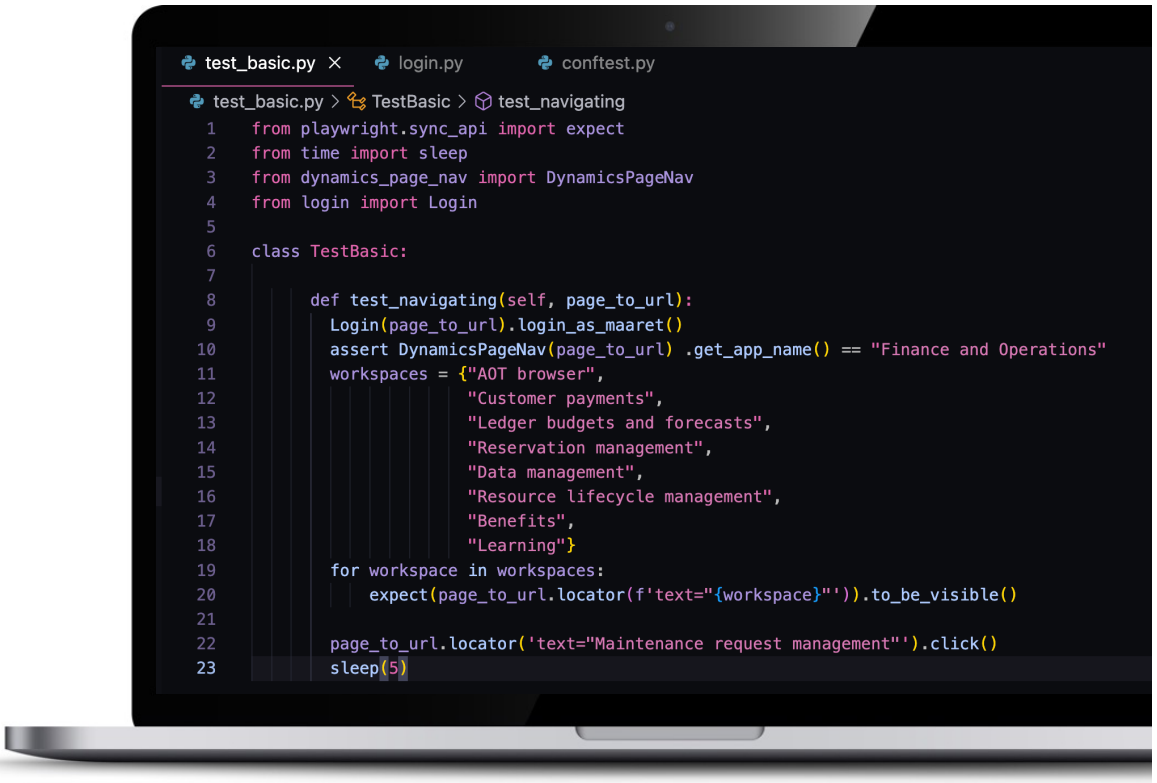
Learning in layers

For test automation, you choose a language

Tradeoffs

- Visual / Robot Framework / Gherkin / TypeScript / Python / Java / C# / …
- Enable ownership over time when people change positions
- Granularity: feedback to where things got broken
- Reuse and integrations

Usual choice: automation in the language of the implementation.



It’s not just the language / tools

Tools

Language + Libraries.
CI/CD pipeline.
Test warehouse of results.

Environments

Conceptual home for where tests run, with needs different for automation.

Test Data

Business systems, business data.
Varying degrees of logic impact and complexity.

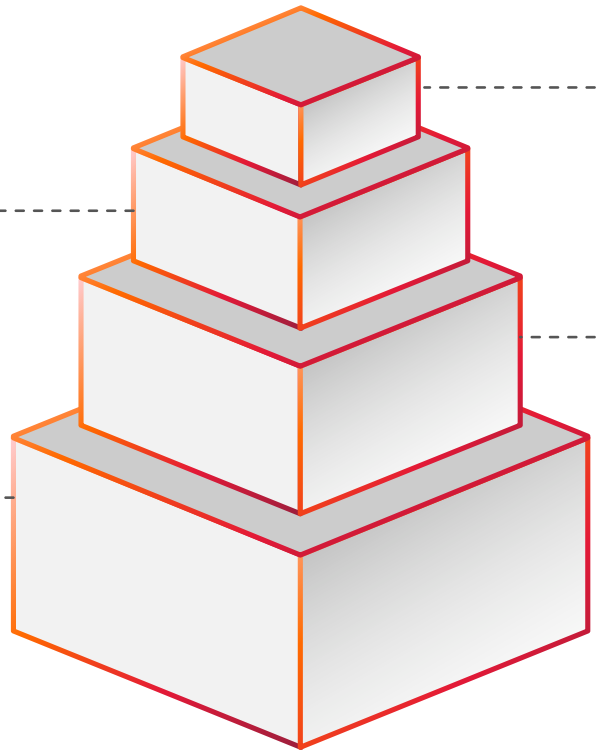
Long flow knowledge

Multiple business expert to test real end to end flow.

Analyze and enhance tests

It’s a system you react to. Fix and adjust. Enhance with functionality.

Learning in Layers



Hello World to Proof of Value

Learning enough to operate.

Integrations

Automation belongs to pipeline. Results belong to warehouse.

Installing and upgrading

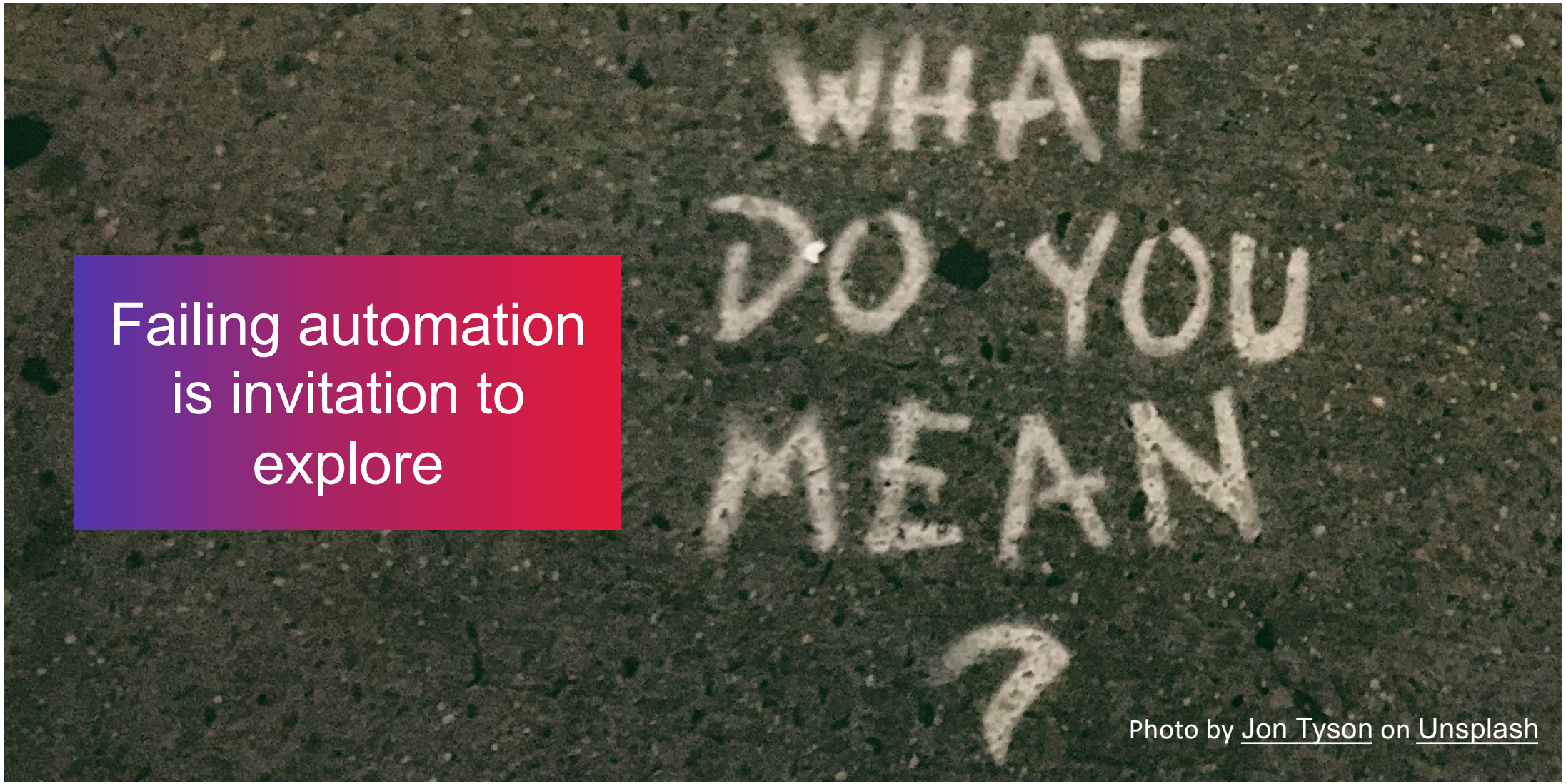
Change with new people and new versions.

Knowledge beyond syntax

Locators and semantic HTML. Object-oriented programming. Property-based testing. Model-based testing.

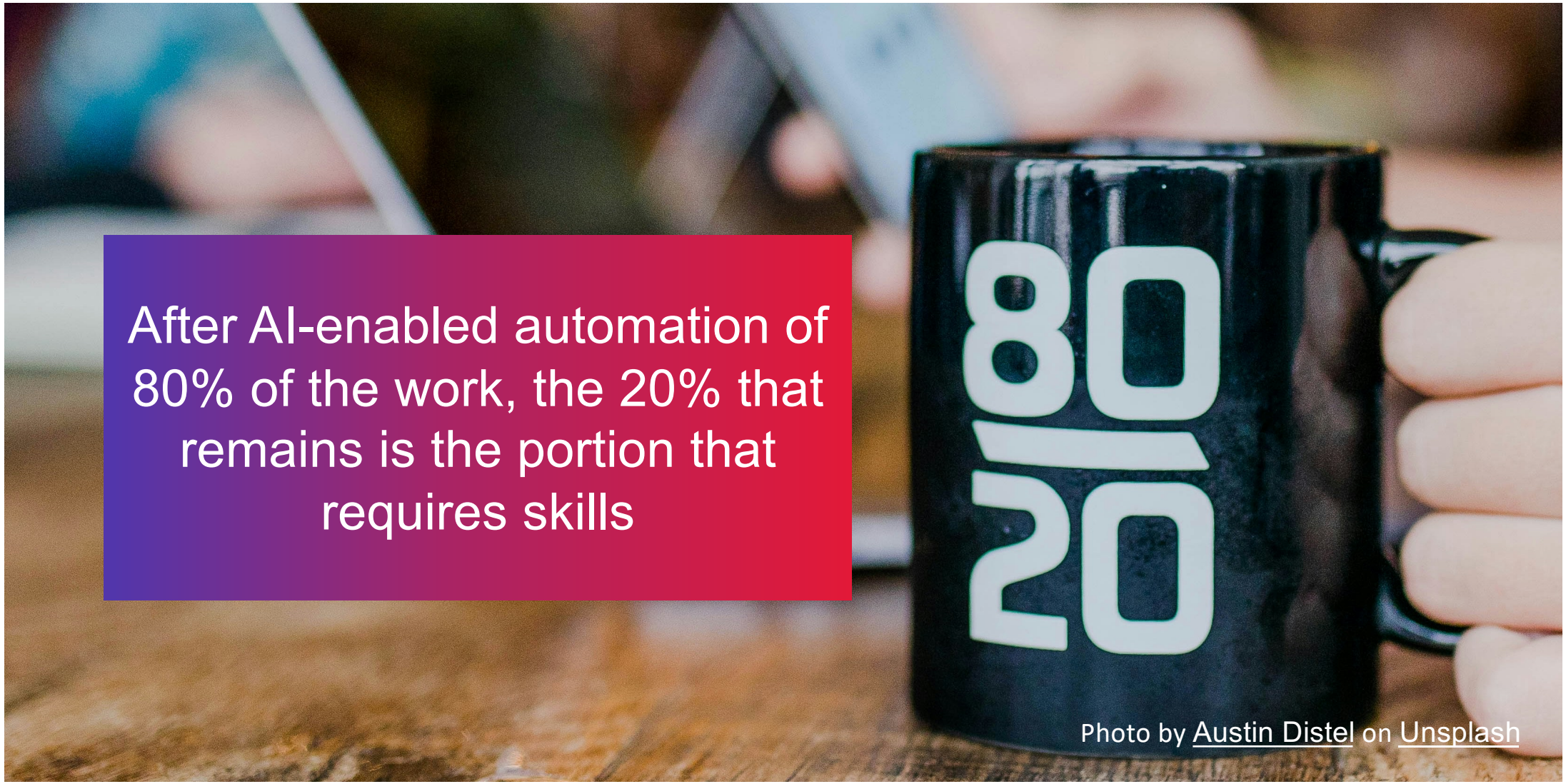
Writing and reading

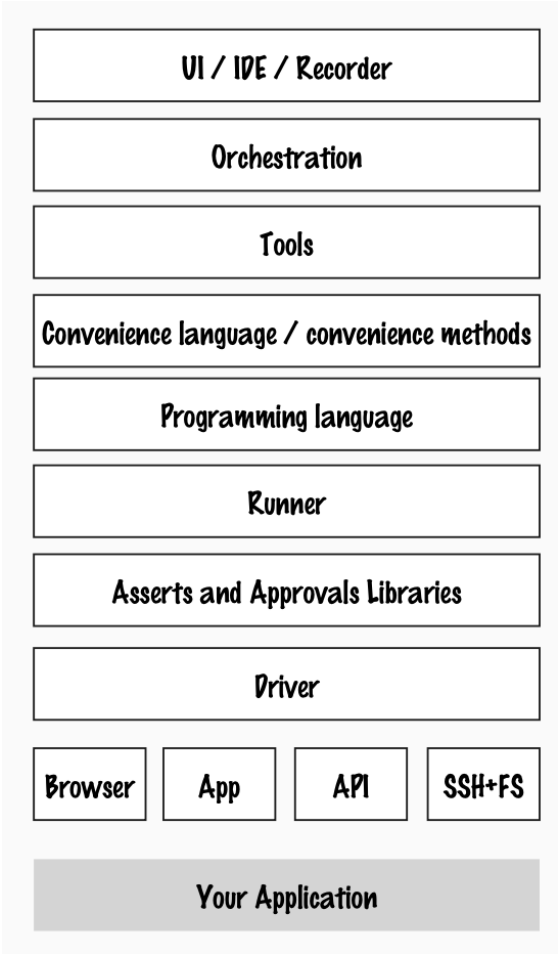
Reading on failures



Failing automation is invitation to explore

Photo by Jon Tyson on Unsplash


After AI-enabled automation of 80% of the work, the 20% that remains is the portion that requires skills
80
20
Photo by Austin Distel on Unsplash



Looking inside the box

…or building up the box so that we know what the box contains?

Key insights

Whole team ownership

Sharing tests with developers is essential.

“The 10 years of success turned into failure within a month after the creator left”

Incremental strategy

One reliable test already running is better than plans.

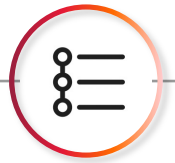
“The plan for what to automate was obsolete after automating the first scenario"

Design for automation

Decomposing feedback for automation.

“We have 5000 tests and half of them are failing. Can you recommend AI that fixes them?”

Test automation gives us more than regression



Specification

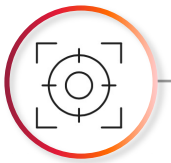
Examples shared **before implementation** act as specification.

Feedback

We know **when it works** as we're implementing the progress.

Regression

We **safeguard our past intent** over lifetime of system ownership.



Granularity

We **know when and what** changed without extensive analysis.

Documenting

Capture examples whenever we discuss them.

Extending reach

Time. Environments. Data.

Alerting to attend

Changes, both intended and unintended.

Guiding to detail

Drives attention to details humans do repair for.

Insights you can act on

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