# The Automation Firehose

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DEVOPS

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## Be Strategic and Tactical

Thomas Haver





## Origin Story

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#### **Strategy and Tactics**



Strategy (n) – a plan of action or policy designed to achieve a major or overall aim.

Tactics (n) – the art or skill of employing available means to accomplish an end.

> Source: https://www.merriam-webster.com/dictionary/strategy Source: https://www.merriam-webster.com/dictionary/tactics



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1	Primary Testing Variables					
	<ul> <li>Internet Explorer Version (for MS04-025)</li> </ul>					
	<ul> <li>Internet Explorer 5.01 Service Pack 2</li> </ul>					
_	<ul> <li>Internet Explorer 5.01 Service Pack 3</li> </ul>					
	<ul> <li>Internet Explorer 5.01 Service Pack 4</li> </ul>					
	<ul> <li>Internet Explorer 5.5 Service Pack 2</li> </ul>					
	Internet Explorer 6					
	<ul> <li>Internet Explorer 6 Service Pack 1</li> </ul>					
	<ul> <li>Internet Explorer 6 Service Pack 1 (64-Bit Edition)</li> </ul>					
	<ul> <li>Internet Explorer 6 for Windows Server 2003</li> </ul>					
	<ul> <li>Internet Explorer 6 for Windows Server 2003 (64-Bit Edition)</li> </ul>					
	<ul> <li>Windows Version (for MS04-025)</li> </ul>					
1	<ul> <li>Microsoft Windows NT® Workstation 4.0 Service Pack 6a</li> </ul>					
	<ul> <li>Microsoft Windows NT Server 4.0 Service Pack 6a</li> </ul>					
	Microsoft Windows NT Server 4.0 Terminal Server Edition Service					
	Pack 6					
	<ul> <li>Microsoft Windows 2000 Service Pack 2</li> </ul>					
	<ul> <li>Microsoft Windows 2000 Service Pack 3</li> </ul>					
	<ul> <li>Microsoft Windows 2000 Service Pack 4</li> </ul>					
	<ul> <li>Microsoft Windows XP and Microsoft Windows XP Service Pack '</li> </ul>					
	<ul> <li>Microsoft Windows XP 64-Bit Edition Service Pack 1</li> </ul>					
	<ul> <li>Microsoft Windows XP 64-Bit Edition Version 2003</li> </ul>					
	<ul> <li>Microsoft Windows Server® 2003</li> </ul>					
	<ul> <li>Microsoft Windows Server 2003 64-Bit Edition</li> </ul>					
	Microsoft Windows 98					
	<ul> <li>Microsoft Windows 98 Second Edition (SE)</li> </ul>					
j	<ul> <li>Microsoft Windows Millennium Edition (ME)</li> </ul>					

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#### Automation Tools | Origin Story

Promise to: Save time and lower costs while raising quality





#### **Ultimate Goal**





Elfriede Dustin, "Implementing Automated Software Testing"

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#### What Should We Automate?



Is the test or task going to be repeated? How often?

How much time could be saved?

Are the requirements, the test, or task low risk, stable, or unlikely to change often?

Is the test or task subject to human error?

Is the test or task time consuming? Does it contain significant downtime between test steps?

Is the test or task repetitive?



#### **Organizational Constraints**



#### **Organizational Constraints**

Feature	Critical / Freq.	Legal	Data / Env.	Reuse
Login	M	Ŋ	M	Ø
Bill Pay	Ø		Ø	
Bank-to-Bank Transfer	Ø	Ø		
Spend Analyzer			V	
Disclosures		Ŋ		
Manage Alerts	M		M	Q
Registered Devices	Ø		Ø	
Account Nicknames				



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## Framework and Tools

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#### Framework and Tools

#### @smoke test @testcaseid12345

Scenario: Validate Azure DevOps Services URL Given the user navigates to the Azure Test Plans Home page When the user clicks Learn About Pricing And the application navigates to the Pricing for Azure DevOps page Then the user validates the url of the browser wildow contains Services







#### **Automation Coding Standards**



#### @regression @defect12345

Scenario: Selecting a Predictive Search Question will redirect to the Search Results
Given the user navigates to the Home Welcome page
And the user fills in "money" for Ask Us Questions
When the user selects the 3rd predictive search questions result
Then the application navigates to the Search Results page

When(/^the application (?:navigates to|remains on) the (.+) page\$/) do |page\_name|
expect(application\_is\_on\_page?(page\_name)).to eq(true)
end

```
When(/^the user clicks(?: the)? (.+)$/) do |page_element|
Watir::Wait.until(timeout: 10) {elementify(page_element).exists?}
elementify(page_element).focus
elementify(page_element).click
```

end

When(/^the user goes back to the previous page\$/) do
 @current\_page.navigate\_back
end

Imperative Steps Can Lead to Declarative Steps in Functional Automation. Refactor out the UI.





## Challenges

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#### **Automation Firehose**

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I'm going to automate all our test cases and there's nothing you can do to stop me!

Just because a scenario CAN be automated does not mean it SHOULD be automated. Adopt a risk-based approach for automation.



#### **Data Failure**

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My scripts can run anywhere!

Automation should be crossenvironment compatible. That means test data generation & manipulation should be an up-front concern. Include Test Data access in the readystate criteria for testing.



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So what if my tests are flickering. They're done and we're focused on the next project anyway!

Automated Tests that don't consistently pass are soon ignored by the entire team. The execution report and notification emails should mean something. Either fix or remove flickering tests (and examine why you wrote a flickering test to begin with).



#### **Shaky Foundation**

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Our Automation Suite started off small and coding was easy enough, but now there are so many custom implementations and workarounds I don't know where to begin!

Treat the Automation Code the same way you would want good Development Code to be treated:

Implement good practices (DRY, KISS) with scheduled code reviews, code analysis tools, and refactoring sessions.

#### Lagging Behind Development

We don't have time to automate during a Sprint. We have to finish the story cards and have too many meetings!

Automation feasibility must be incorporated into the definition of READY and completed scripts must be in the definition of DONE.



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## Schedule

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#### Example Mapping by Matt Wynne



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### Example Map | Process







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#### Example Map | Feedback

![](_page_31_Figure_1.jpeg)

![](_page_31_Picture_2.jpeg)

![](_page_32_Picture_0.jpeg)

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![](_page_32_Picture_1.jpeg)

![](_page_33_Figure_0.jpeg)

#### Code Reviews and Refactoring

![](_page_34_Picture_1.jpeg)

#### **Code Reviews**

All possible automation scripts for the feature are scripted

The automation scripts are understandable by the team

![](_page_35_Picture_3.jpeg)

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The Features and Scenarios best represent the state of the application (living documentation) The automation scripts don't duplicate effort already present

All required Objects and data needs are addressed

All standards & practices are followed (traceability, Gherkin, formatting, etc.)

![](_page_36_Figure_0.jpeg)

#### Implementation

![](_page_37_Picture_1.jpeg)

#### **Team Leader**

- Scheduling
- Delegation of work
- Focus Area selection
- Bug Report

![](_page_37_Figure_7.jpeg)

- Technical
- Oracle
- Session
- tracking
- Action Items
- Improvement Status Report

#### **Focus Area**

- Code Metric Report
- Feature Item
- Project Release
- Regression
- CI Report

#### Summary -0 $\bigcirc$ 0 00 0 D D 0 $\bigcirc$ 00 000 0

![](_page_38_Picture_1.jpeg)

#### Summary

![](_page_39_Picture_1.jpeg)

Focus on the fastest, most robust tests. Create UI & E2E tests as needed. Unit > Service > UI > E2E

Build based on probability of failure, impact on business, and complexity.

Budget, Schedule, and Technical Skillset will always limit the path forward.

![](_page_40_Picture_0.jpeg)

#### **Books**

![](_page_41_Picture_1.jpeg)

![](_page_41_Picture_2.jpeg)

![](_page_41_Picture_3.jpeg)

![](_page_41_Picture_4.jpeg)

![](_page_41_Picture_5.jpeg)

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![](_page_41_Picture_6.jpeg)

![](_page_41_Picture_7.jpeg)

![](_page_41_Picture_8.jpeg)

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#### Appendix

- Browser Analytics
  - <u>https://analytics.usa.gov/data/</u>
  - <u>http://netmarketshare.com/</u>
- Internet Explorer
  - <u>https://blogs.msdn.microsoft.com/ie/2004/08/17/the-basics-of-the-ie-testing-matrix/</u>
- Unit & Integration
  - <u>https://www.softwaretestinghelp.com/unit-testing-tools/</u>
- Selenium

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- <u>https://github.com/SeleniumHQ/selenium/wiki/DesiredCapabilities</u>
- Automation Maintenance
  - <u>https://blog.testproject.io/2018/03/20/maintaining-value-automations-forgotten-cost/</u>

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