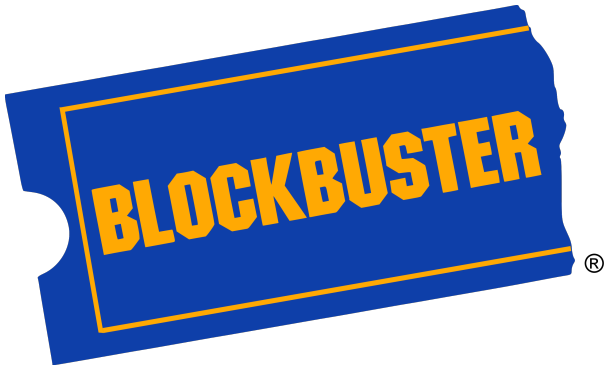
NOKIA

SAMSUNG



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software testing
BEER EX
6.-7.10.21'
SANAE
GO LIVE with us.

Welcome !

Don’t miss the train!

Test automation is finally growing up.

About me

Marcel Veselka

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Testing in change . . .

Situation in Software Testing

1. Expectations

- Responsibilities
- Skills & competencies

2. Organization changes

- Test transformation surges
- Adoption of Agile / DevOps

3. Market moves

- Merges & acquisitions
  (e2e offerings + market share)
- Open-source vs vendor tools

4. Disruption & disruptors

- AI / ML
- Autonomous testing
- RPA

The key drivers . . . still same?

Quicker Cheaper Better quality

. . . . **Test Automation** might finally solve it

Current status of Test Automation

Elite DevOps teams perform only

10% of Testing Manually

. . . not in future

NOW ! ! !

Source: Accelerate: State of DevOps 2018

. . . so what are the

Trends in Test Automation?

Trends in Test Automation

1. The old ideas

- More tools (support API & microservices, simulation)
- Record & play is back!
- Selenium era is over?

2. Fixing the pain of scale

- Intelligent test execution
- Predictive test selection
- Intelligent maintenance (self-healing)

3. AI & ML

- AI/ML opportunities in Automation
- Autonomous Test Automation

4. Other opportunities

- Continuous testing (shift left & right)
- Chaos engineering
- Robotic Process Automation

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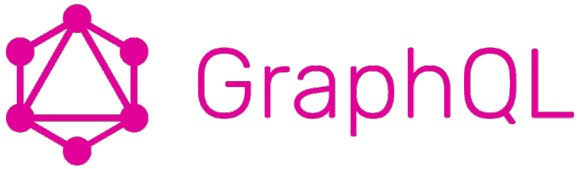
1. The old ideas

- More API & microservices; more simulation
- Record & play is back!
- Selenium era is over?

Containers, Simulators, Cloud

- Microservices & APIs



- Containers & virtualization

- Cloud services

Microsoft Azure

Google Cloud

- Web & mobile configuration simulators

The new names for old ideas
Record & play come back
No-code / low-code test automation

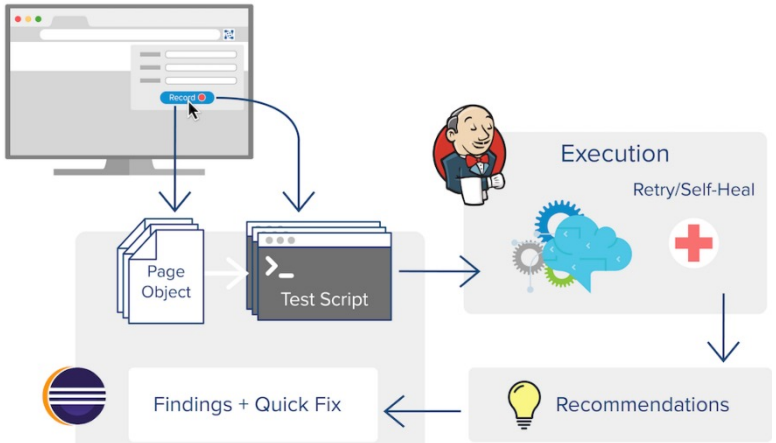
Record & play come back

Example 1: New Selenium IDE

- Better & more complex implementations
- Better stability
- Better Execution
- Extensible with Plugins

Example 2: Parasoft Selenic

- Self-healing
- Generate (both into existing or newly build projects)
  - Page objects and
  - Better code structure



- **Example 3: TestProject.io**
  - Both web and mobile
  - Self-healing
  - Development SDK

TestProject

Bonus example:
visit the booth at sector A1

COPADO

Is the Selenium era over?

Selenium 4
https://cypress.io

Cypress.io
https://cypress.io

Playwright
https://playwright.dev/

Taiko
https://taiko.dev/

WebDriver.IO
https://webdriver.io/

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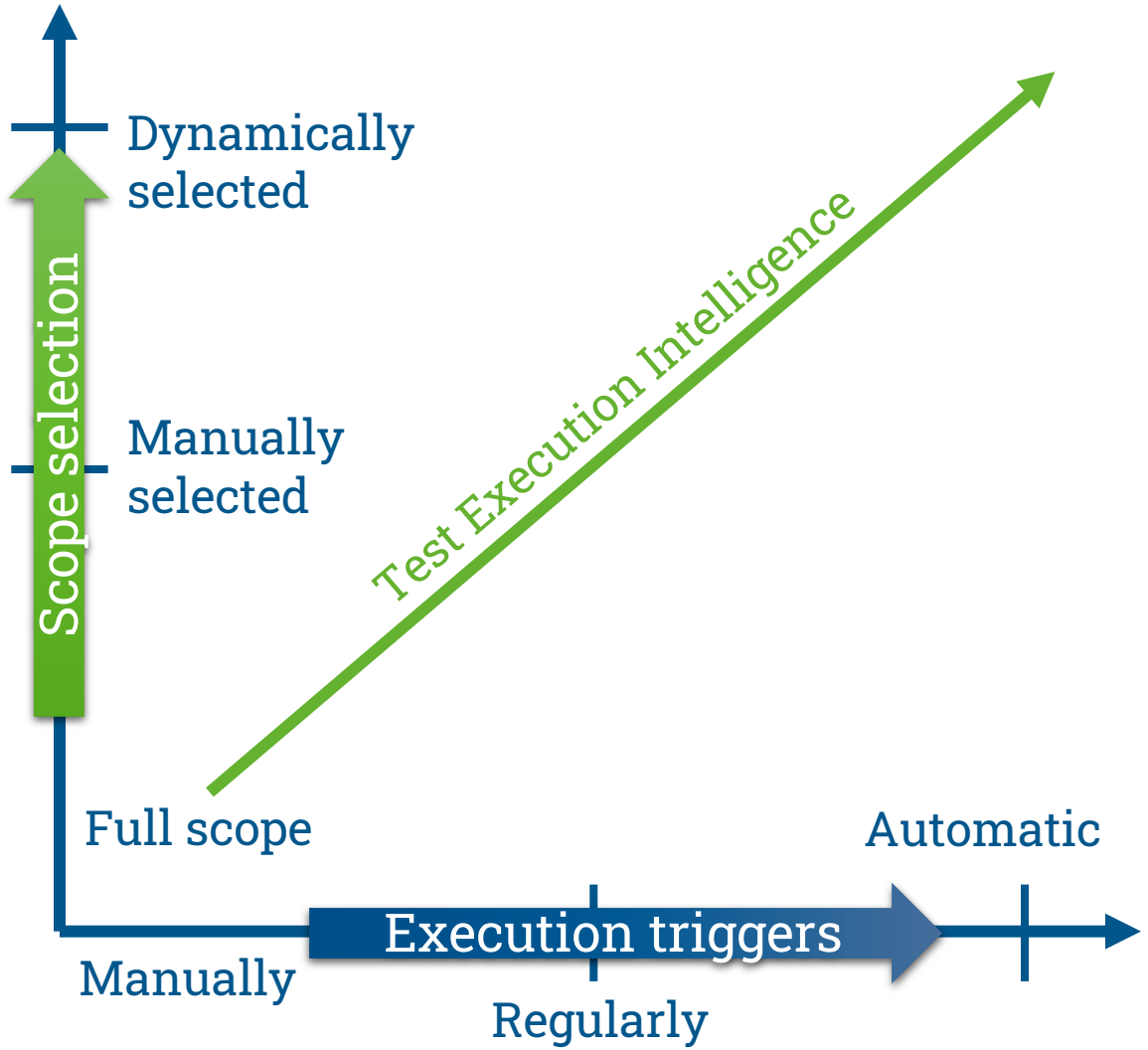
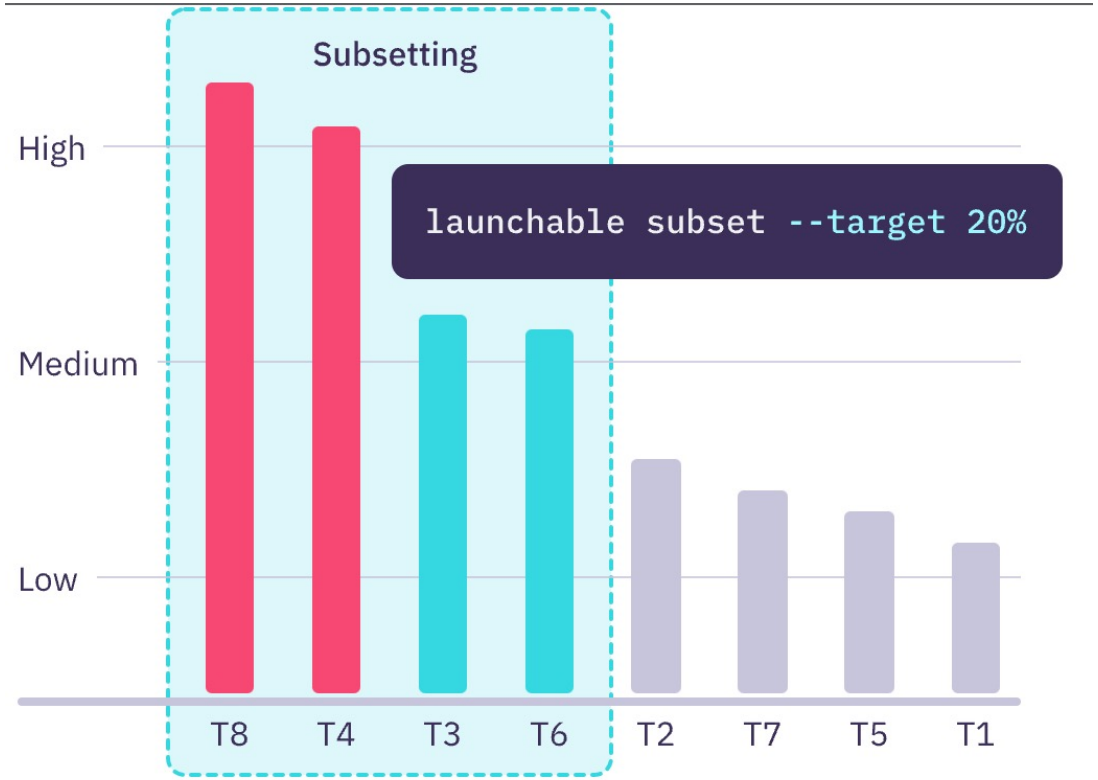
2. Pain of scale

- Intelligent test execution
- Intelligent maintenance (self-healing)

Intelligent Test Execution



Example: Predictive Test Selection



Select subset with highest probability of failure

Launchable

Self-healing tests

= ability to automatically update scripts / behavior during test execution

Features of self-healing tests

1. Fix locators

Dynamic

Intelligent (powered by AI/ML)

2. Assessments

Improved maintenance

- Advanced reporting
- Dynamic assertions

3. Code update

Automatic script updates

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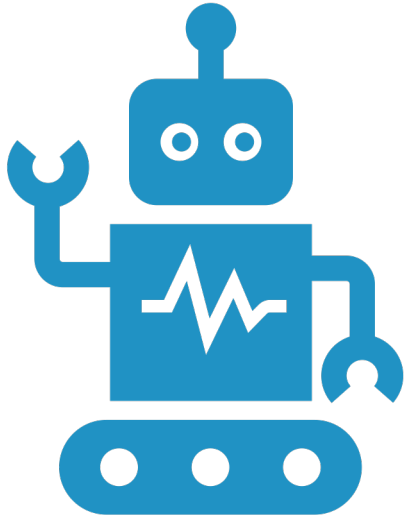


3. AI & ML

- Opportunities in Automation
- Autonomous Test Automation

AI & ML

Difference?

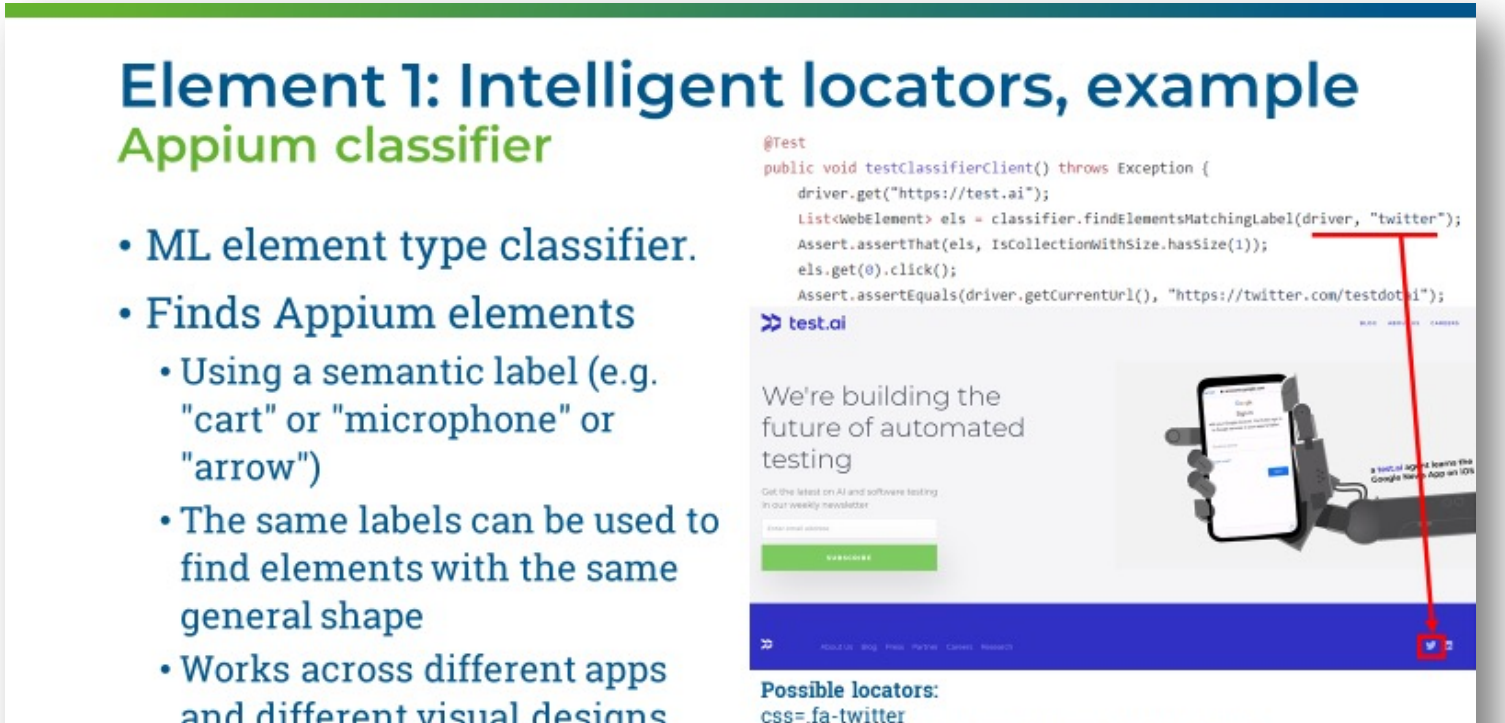
If it’s written in Python, it’s probably ML

If it’s written in PowerPoint, it’s AI

My top ~~AI~~ / ML Opportunities in Automation

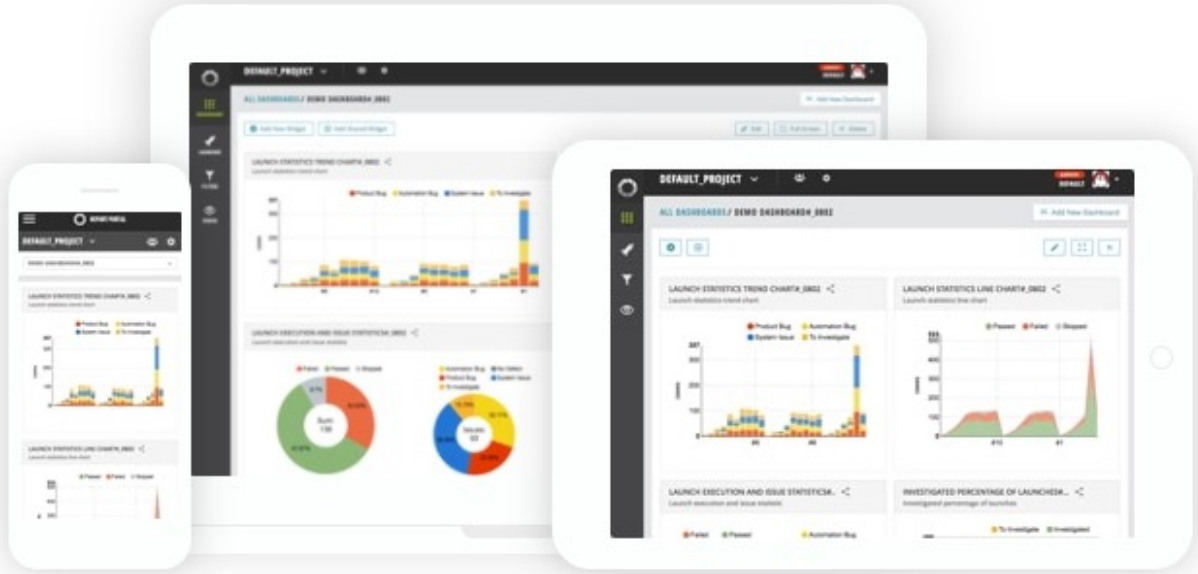
1. Execution & Maintenance

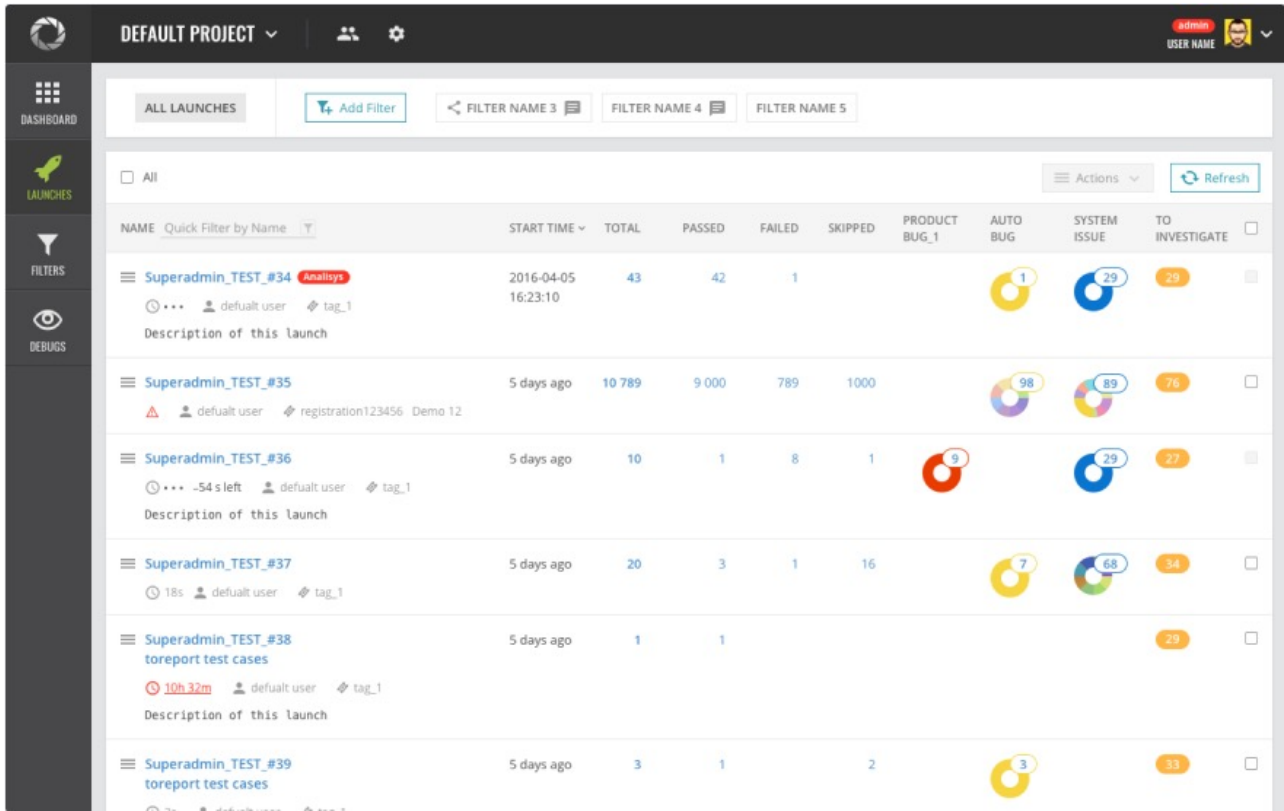
- Easier navigation through apps
- Intelligent (UI) interaction, dynamic locators
- Re-execution with self-healing



2. Result Analysis & Reporting

- Identify / classify results from reports
- Predict quality / result based on code changes



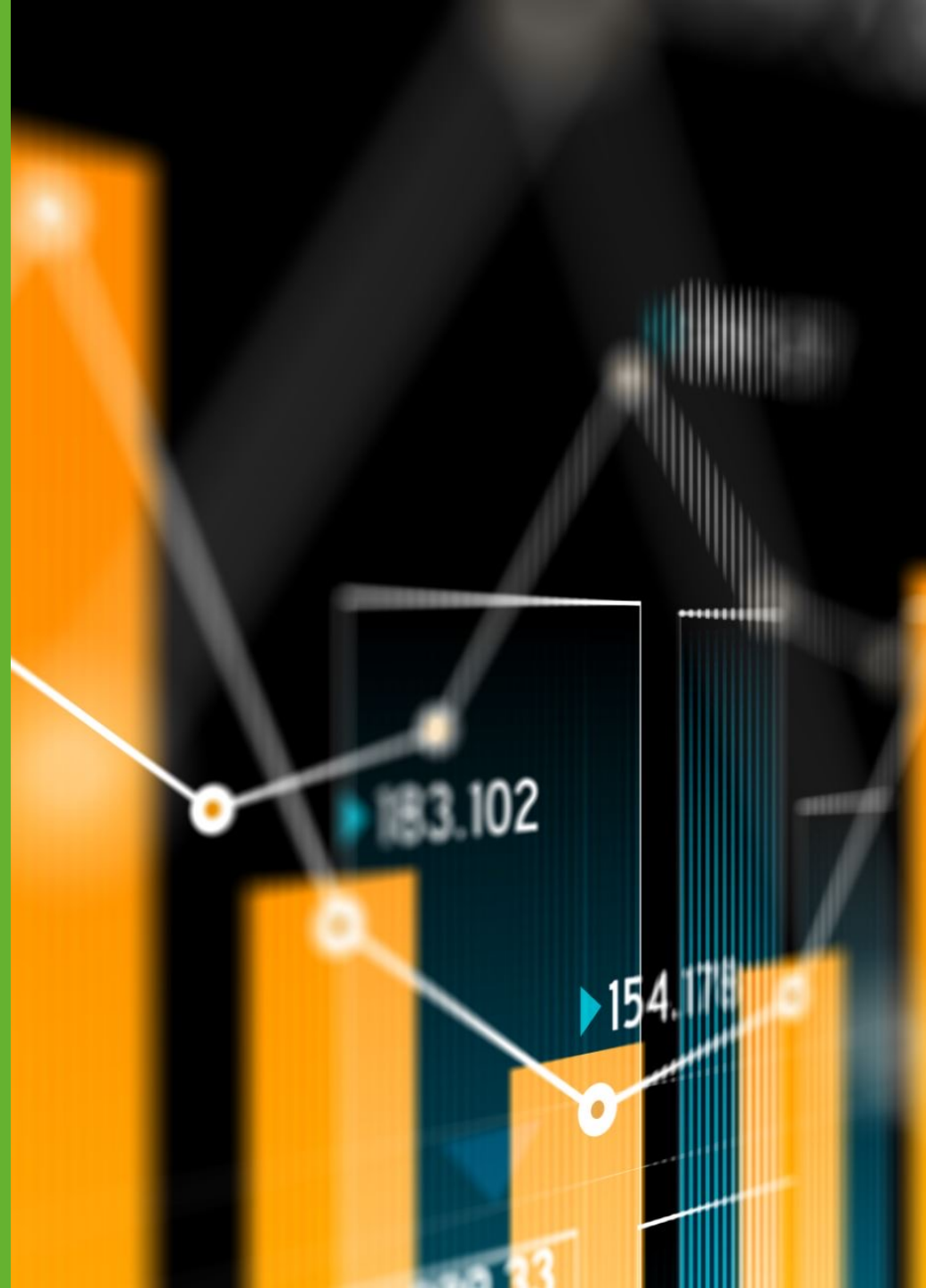


3. Autonomous testing

. . . lets finally put all the pieces together !!!

By the end of 2025,
30% of organizations will
have implemented an
autonomous automation
strategy

-- Source: Innovation Insight for Autonomous Testing
by Gartner, 28 October 2020



Autonomous testing

applies AI/ML based technologies to make the testing process

independent from human intervention

Test Autonomy Level Definitions

0. Manual Testing ("Unassisted")	• Manual exploratory and regression testing physically carried out by people.
1. Scripted Automation ("Hands On")	• Handcrafted test automation scripts that can repeatedly execute a test case, sometimes with basic self-healing attributes if the application structure changes.
2. Exploratory Bots ("Hands Off")	• Automated semi-intelligent exploration of apps and some measurement of performance/stability without human intervention.
3. Human-Directed Regression ("Eyes Off")	• Humans describe the high-level intent of a test case e.g. "Add two items to shopping cart, delete one, and make sure there isn't a crash." Automated machines autonomously decide out how to execute the intent of the regression test case on one or more applications.
4. Generative ("Mind Off")	• Machines generate and execute most test coverage across exploration, and regression testing efforts.
5. Fully Autonomous ("Human Tester Optional")	• Without human assistance, machines are able to evaluate an application, decide what, when, where and how testing should be performed, and summarize the results for humans (or machines) to make a release/no-release decision based on test results.

Better automation = autonomous?

Self healing	Deviation clasification	Image based (UI) object recognition
Natural Language Processing (NPL)	Predictive test selection	Autonomous interation with SUT
Dynamic/magic POM	Automatic error identification	. . . and many more

Better automation = autonomous? Examples of tools

healenium.io	reportportal.io	Test.ai
testrigor.com	launchableinc.com	QApe
Dynamic/magic POM	Applitools	. . . and many more

4. Other opportunities

- Continuous testing (shift left & right)
- Chaos engineering
- RPA

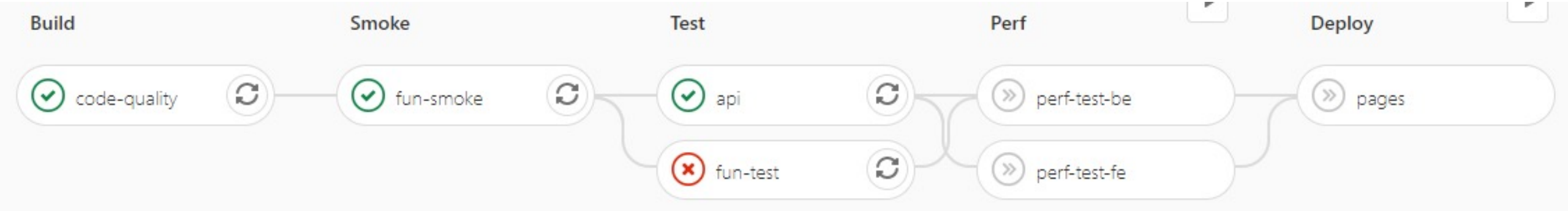
Automate **entire Testing**
NOT just **Test Execution!**

Even better: automate whole development process.

// continuous testing: . . . integrate testing into your DevOps pipelines

Continuous testing in DevOps
(shift left & right approach)

- Automate all testing stages
  - Static analysis & scanners
  - Dynamic Testing
    - Test automation
    - Exploratory testing
  - Monitoring & phased (canary) deployment



Chaos engineering

- Experimenting on a software system in production
- Goal: to build confidence in the system's capability to withstand turbulent and unexpected conditions
- Effective (testing) method for modern microservice architecture
- **Chaos Monkey**: tool invented in 2011 by Netflix to test the resilience of its IT infrastructure

Robotic Process Automation (RPA)

- Automating processes in production
- Tools we use for test automation could be used in RPA
- Tools: UIPath, Robot framework, Blueprism or RPA Studio

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World is changing
Don't miss the train!

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Thank You!

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