Testbirds

TESTING REALITY

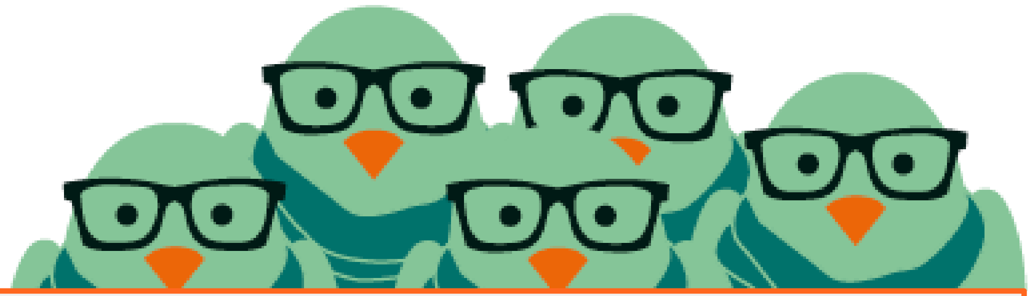
REAL USERS, REAL DEVICES, REAL TIME
Powered by Crowd & Cloud Technologies

...

A complete Selenium Techstack –
From conception to evaluation with open source software

Test Automation

Test Automation at a glance



Test Design

Test Development

Test Execution

Test Evaluation

Test Design

The Challenges

Legibility

1

Accelerates error analysis, ensures broad common understanding and thus promotes cooperation.

Structure

2

Promotes logical structure, for example by precondition, action and assurance.

Reusability

3

Reduces potential sources of error, improves overall maintainability and increases scalability.

Abstraction from the test object

4

Using declarative instead of imperative test case descriptions shifts focus to functional rather than technical aspects.

Test Design

Tools in our stack

Legibility

- BDD with Cucumber
- Human-readable test specification thanks to Gherkin Syntax
- Involves the entire team, from tester to developer to PO

Reusability

- Step Definitions by Gherkin Syntax
- Flexibly combinable

Structure

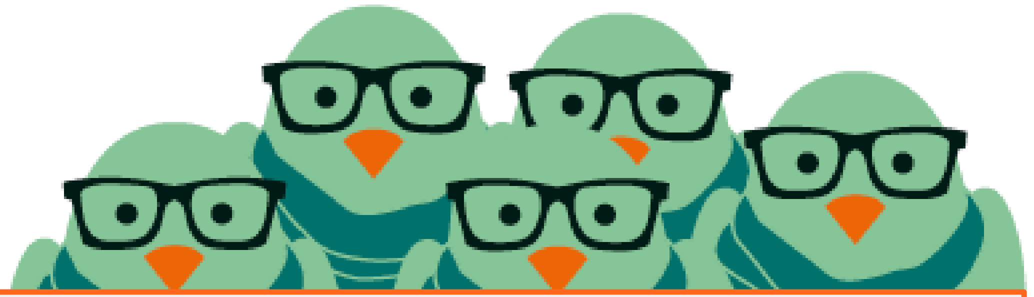
- Logical structure according to Given - When - Then thanks to Gherkin template
- Supplementary explanations with the help of narratives

Abstraction from the test object

- Gherkin as a natural additional level of abstraction

Test Automation

Test Automation at a glance



Test Design

- Legibility
- Structure
- Reusability
- Abstraction from the test object

Gherkin Syntax as an interface

Test Development

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Test Development

The Challenges

Stability

Reduces the number of so-called false negatives, speeds up individual test runs.

Reusability

Reduces potential sources of error, improves overall maintainability and increases scalability.

Best Practices

Prevents the use of bad practices (such as static waits), promotes good practices such as the Page Object Pattern.

Test Development

Tools in our stack

Reusability

- Selenium Browser Testing with Selenide
- Simplest test configuration
- User-friendly session and driver management
- Always updated framework methods

Stability

- Cross-browser proven framework methods
- Possibility to communicate directly with the backend

Best Practices

- Implicit, globally configurable timeouts before each operation
- Native page object integration
- Integrated error handling, screenshots and DOM dumps

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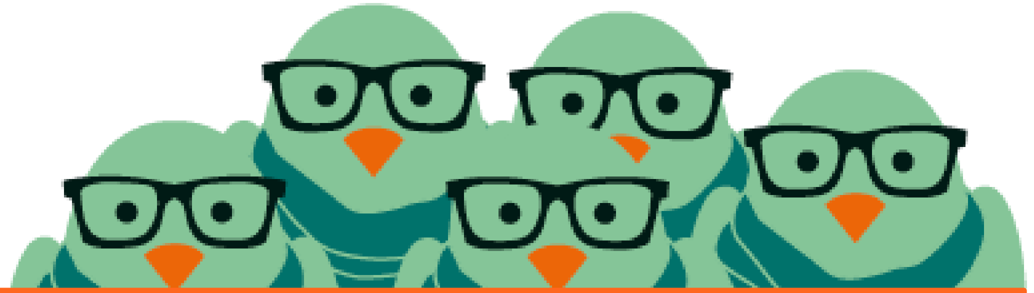

Test Design

- Legibility
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Gherkin Syntax as an interface

Test Development

- Simple code with clear structure
- Stable Selenium framework
- Best Practices

Selenide Framework, Best Practices

Test Execution

Test Evaluation

Test Execution

The Challenges

Predictability

1 Event and time based execution of E2E tests

Parameterizability

2 Execution of the same test suite in different test environments and in different browser operating system combinations.

Connecting data

3 Execution of the E2E tests only after successful build (including execution of the unit tests) and deployment on the test environment.

Test Execution

Tools in our stack

Execution of the tests in an independent system (Continuous Integration, CI)

- Jenkins with Jenkins Pipelines
- Parameterization of the pipelines in Jenkinsfile incl. schedule possible
- Own projects as required for special test runs (e.g. nightly-main-browsers)

Loose coupling of product and test development

- Jenkinsfile in every git on every branch
- Parameterization allows easy coupling, e.g. the URL (staging-123.tests.local)

Backgrounds and benefits of this tool choice

- Test development of unit tests is part of every feature
- E2E tests can "hang behind" for time / cost reasons or achieve less coverage
- Jenkinsfiles in Git define the complete build - (almost) no configuration in Jenkins

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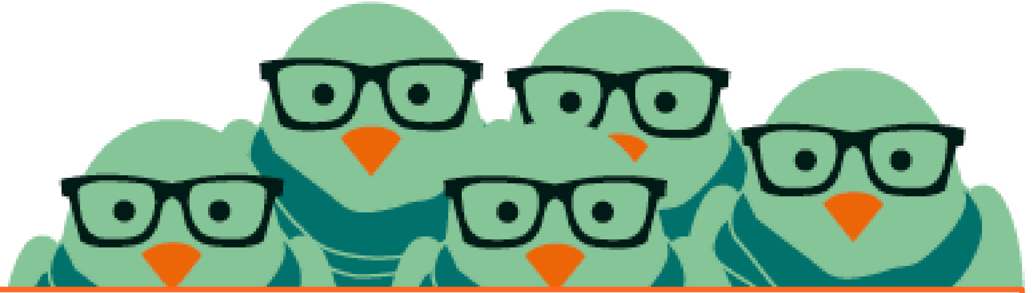

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- Simple code with clear structure
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Selenide Framework, Best Practices

Test Execution

- Smoke tests after each build
- Time-controlled long test runs
- Parameterization of builds
- Different test environments

Jenkins Pipeline

Test Evaluation

Test Evaluation

The Challenges

Assessability

1 Freely determinable evaluation and error category of test run errors, automatic assignment for frequently recurring errors.

Structurability

2 Sensible grouping of test results by product version, test environment and browser operating system combination.

Analysability

3 Integration of stack traces, error logs, screenshots and video recordings, link to specification and issue trackers.

Visualizability

4 Graphical processing of test results, configurable dashboards, automatic error notifications.

Test Evaluation

Tools in our stack

- **Example: 200 test cases from 10 feature groups of a web portal (horizontal in the matrix)**
- **Test runs on all common desktop browsers (vertical)**
  - Win 10: IE11, Edge, Chrome, Firefox, Firefox ESR
  - macOS: Safari, Chrome, Firefox, Firefox ESR
  - Win 7: IE11 (strong OS dependency)
  - = 10 Test environments/Browser
- **→ 200x10 matrix with 2,000 test results per test environment**
- **5 feature branches + Staging = 6 branches / environments to be tested**
- **= 12,000 test results per night**

Test Evaluation

Tools in our stack

- **Many tests, a lot of data → Jenkins plugins or similar often inadequate**
  - Own tool for the evaluation of all test runs and statistical correlation
  - Delivery of additional data to the tool (not just junit-results.xml)
  - Integration of test or system specific data by the test code, e.g. Resolve UUID error in backend and extract stacktrace
- **Statistically, errors occur even with very good stability of the system**
  - Quote of a developer: "The system has to recognize outliers easily!“
  - Solution: "AI" or automatic data analysis with machine learning
  - Tags, feedback from users and more data feed the system for future analysis
  - Checks of system availability
- **reportportal.io provides many of the desired functions here**
  - Automated analysis and easy integration into the test suite
  - Dashboards and clear UI

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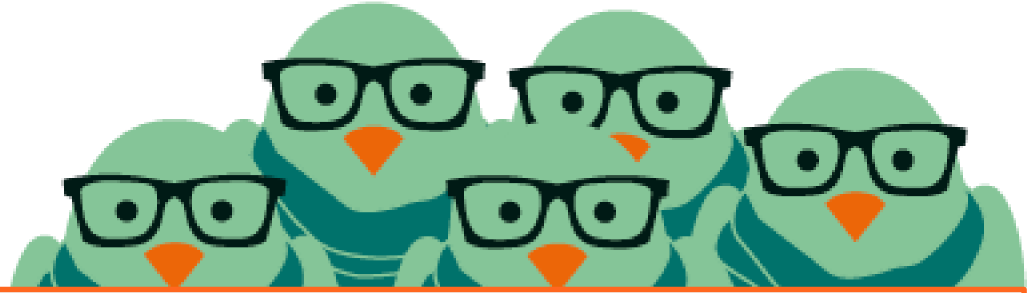

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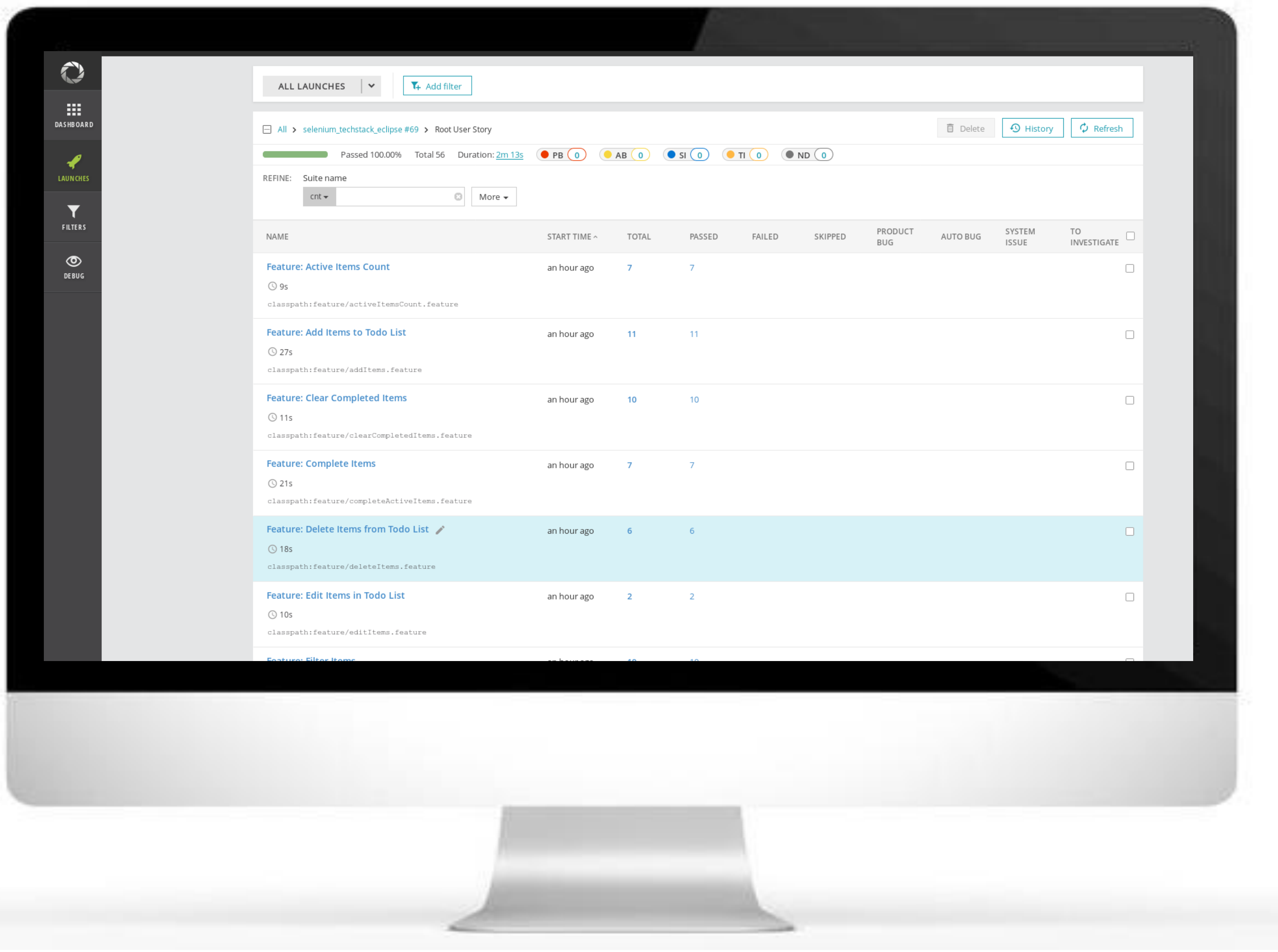
Jenkins Pipeline

Test Evaluation

- Correlation with past tests
- Extension of the reports
- Screenshots, Backend information
- Automated analysis

reportportal.io with connection in the code

Live Demo



All > selenium_techstack_eclipse #69 > Root User Story

Passed 100.00% Total 56 Duration: 2m 13s PB 0 AB 0 SI 0 TI 0 ND 0

REFINE: Suite name cnt

NAME	START TIME	TOTAL	PASSED	FAILED	SKIPPED	PRODUCT BUG	AUTO BUG	SYSTEM ISSUE	TO INVESTIGATE
Feature: Active Items Count 9s classpath:feature/activeItemsCount.feature	an hour ago	7	7						□
Feature: Add Items to Todo List 27s classpath:feature/addItems.feature	an hour ago	11	11						□
Feature: Clear Completed Items 11s classpath:feature/clearCompletedItems.feature	an hour ago	10	10						□
Feature: Complete Items 21s classpath:feature/completeActiveItems.feature	an hour ago	7	7						□
Feature: Delete Items from Todo List 18s classpath:feature/deleteItems.feature	an hour ago	6	6						□
Feature: Edit Items in Todo List 10s classpath:feature/editItems.feature	an hour ago	2	2						□
Feature: Filter Items									

GitHub: https://github.com/Testbirds-GmbH/selenium-techstack

Contact

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