

A Guide to Automated Testing

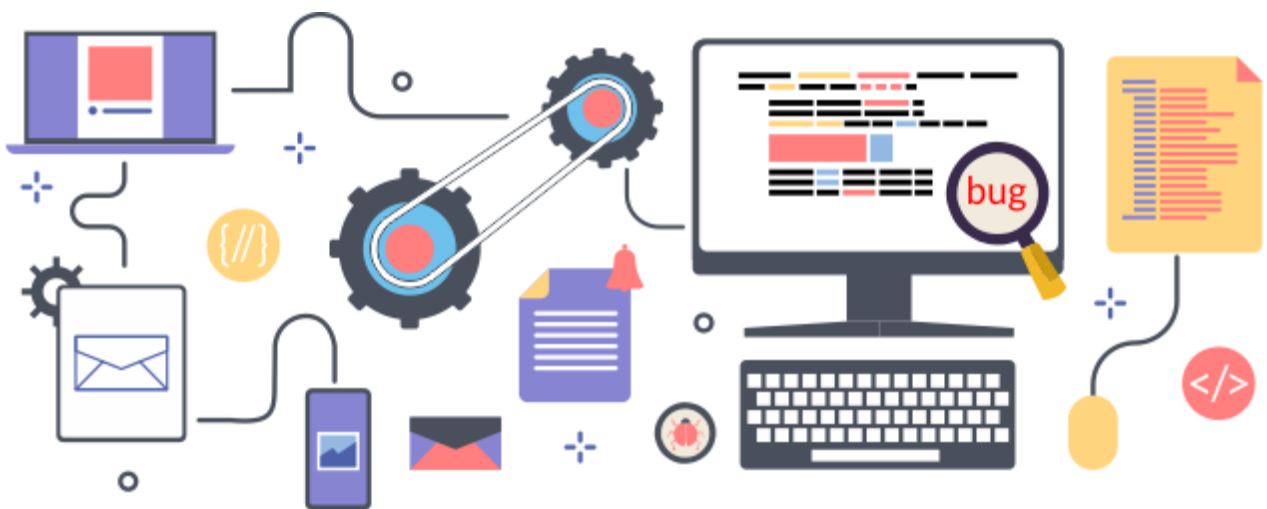


TABLE OF CONTENTS

What is Automated Testing?	03
Why Automated Testing?	04
Picking Right Tests for Automated Testing	05
Automation Testing Framework	07
Types of Automation Framework	08
Automated Testing Tools	10



What is Automated Testing?



Automated testing or Test Automation is the process of running hundreds of test suites using an automation framework and a set of test tools. Automated Testing is important because it helps in automating some of the repetitive tests – all workflows, fields, scenarios, where manual testing will consume a lot of time and becomes a bottleneck to achieving faster releases.

Why Automated Testing?

Automated testing is a well-received technique in SDLC because of the following reasons,



Reduces time spent on manual repetitive testing – Testing must be performed and can be repetitive each time source code undergoes a modification. And, after every release, tests must be carried out across the number of OS and device configurations. Leveraging automated tests can be helpful in these circumstances as it can run these tests repetitively much faster, typically in hours, than a manual tester who will have to spend days to complete it.



Early detection of defects – Automatic running of automated tests whenever there is a change in source code and notifying the developers of the test results helps them to detect defects much early in the cycle.



Improves Test productivity – Freeing manual testers from running repetitive tests can help them focus on creating on new tests and complex features.



Widens Test Coverage – Automated testing can look into the internals of the application under test, execute vast number of complex test cases and compare if the product is behaving as expected. This results in an increased test coverage, which generally lacks in manual testing.

Picking Right Tests for Automated Testing

There is a list of things to keep in mind when taking the automated testing route to deliver high quality products at speed.

First thing is to erase is the idea of 'automating everything' and pick the right test candidates suitable for automation.

Here are some common cues in a business operation that hints the need for automation testing:

- Time consuming and repetitive tests
- Complex and high-risk test cases
- Smoke and Sanity tests
- Test cases that went through multiple regression
- Functionality-based cases that picked a lot of customer complaints

Manually testing the huge number of data for the same workflows, fields will require a lot of time and become a mundane task. Hence, automating these tests will result in having more accurate results, than running manually each time.

If the tester is provided with a form with large amounts of data and be asked to test and verify the results with many variants of data each time, it becomes complex and more prone to manual errors. Running Automated tests for these scenarios can help reduce the chance of these errors and improve quality.





High risk tests are a set of test cases deemed critical by the stake holders, that stresses on testing the critical functions of the product, which upon failing will impact the business. Test team must be on the same lines with the stake holders in identifying the high-risk functionality test cases and automate them to verify results, which helps teams to detect errors early in the cycle.

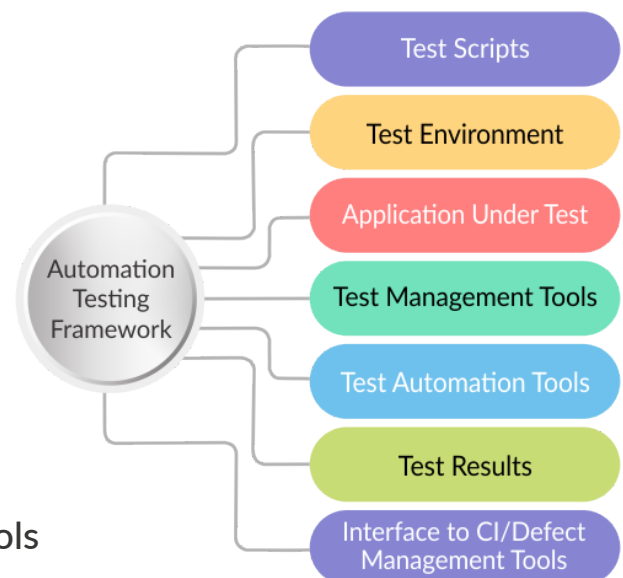
Smoke and sanity tests make the right candidates for test automation since they are 'build' and 'release' focused. After each build or a release, the software requires testing across diverse OS, browser and device combinations. Automation testing is a time-saver and right fit for these types of tests.

Regression testing is common and happen frequently every time there is a change to the existing feature. One of the best ways to get the more of regression testing is by automating them. Regression test scripts can be written and run automatically every time there is an update.

Automation Testing Framework

Test automation framework is a set of basic guidelines to perform test automation, which when followed produce expected results. It comprises of different components needed to perform test automation like,

- ◆ Test scripts
- ◆ Test Environment
- ◆ Application under test
- ◆ Test management tools
- ◆ Test automation tools
- ◆ Test results
- ◆ Interface to CI/Defect management tools



Test Automation framework helps the test teams to develop, run, manage and report test results efficiently. The right framework should be able to support:

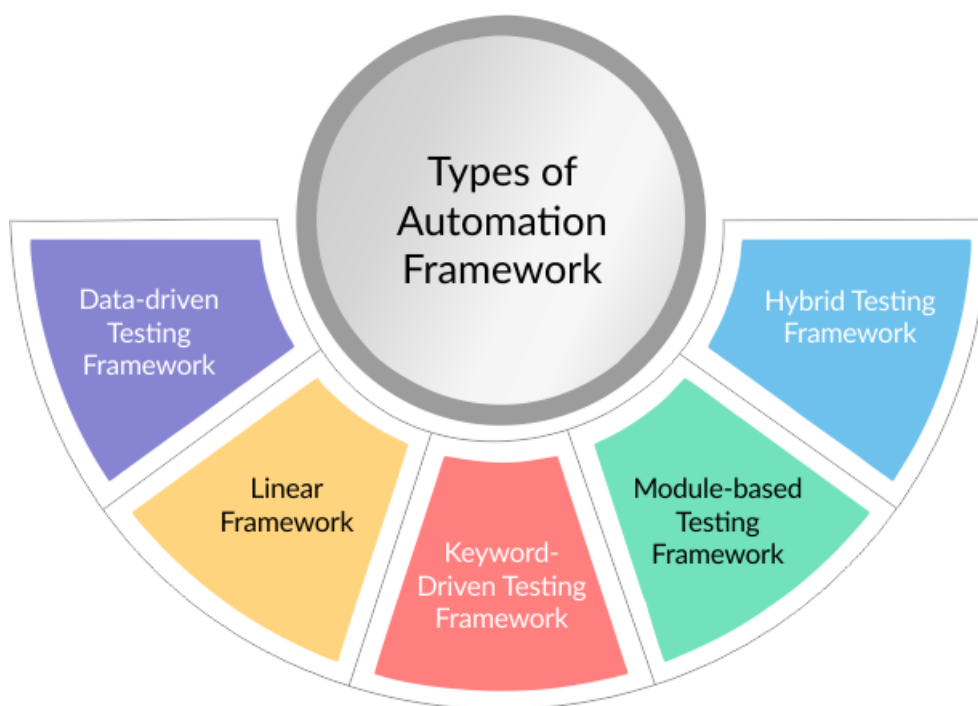


- ◆ Code reusability
- ◆ Low cost
- ◆ Easily manageable
- ◆ Highly efficient

There are wide range of frameworks available today, teams should have a close eye in building the automation framework that rightly fits the application under test.

Types of Automation Framework

- Data-driven testing framework
- Linear framework
- Keyword-driven testing framework
- Module-based testing framework
- Hybrid testing framework



Data-driven testing framework: Testers often find themselves in circumstances where they need to test the same feature or functionality of an application with varying data sets to arrive at different outcomes. In such cases, testers have to hardcode test data every time in the test script, consuming a lot of time. Data-driven framework can help avoid the process and allows testers to store test data in external files in the form of excel sheets or CSV files and can be accessed later to add new scripts.

Linear framework: Linear framework is also called record and playback framework, where testers don't need automation coding skills. In record and play back process, the tester records each step such as navigation, user input, sequentially and then plays the script back automatically to run the test. Unlike data-driven framework, linear framework will need hardcoded test scripts, leaving no room for script re-use. Test cases need to be modified each time the data is altered.

Keyword-driven testing framework: Much like data-driven framework that separates test data and script, this framework allows 'keywords' that essentially represent the functionalities of application under test, to be stored in the external data table. Each keyword is arranged sequentially against its associated objects, stored in a common object repository, that directs these objects to their associated actions.

Module-based testing framework: As the name suggests, in this framework, test scripts are created for each module of the application under test and combined to get the best of this automation framework. If there is a change made to the application, testers will need to modify the test scripts associated to that module only. The other modules of application need no changes, leaving room for reusability.

Hybrid testing framework: As the name suggests, hybrid framework is the combination of all the other frameworks built to bring the best out of each. It is considered to be the perfect automation framework. As more teams are transitioning to the agile set ups at a faster rate now, building a resilient framework is essential that accounts for increased productivity and better test results.

Automated Testing Tools

The success of automated testing, to a great extent depends on the quality of the test automation tools. It's important to evaluate the tools and if they are a right-fit for your automation before choosing one.

There are few criteria that helps evaluate these tools:



Compatibility with your testing requirement



Scripting and reporting capabilities of the tool



E2E traceability



Multi OS/browser/device compatibility



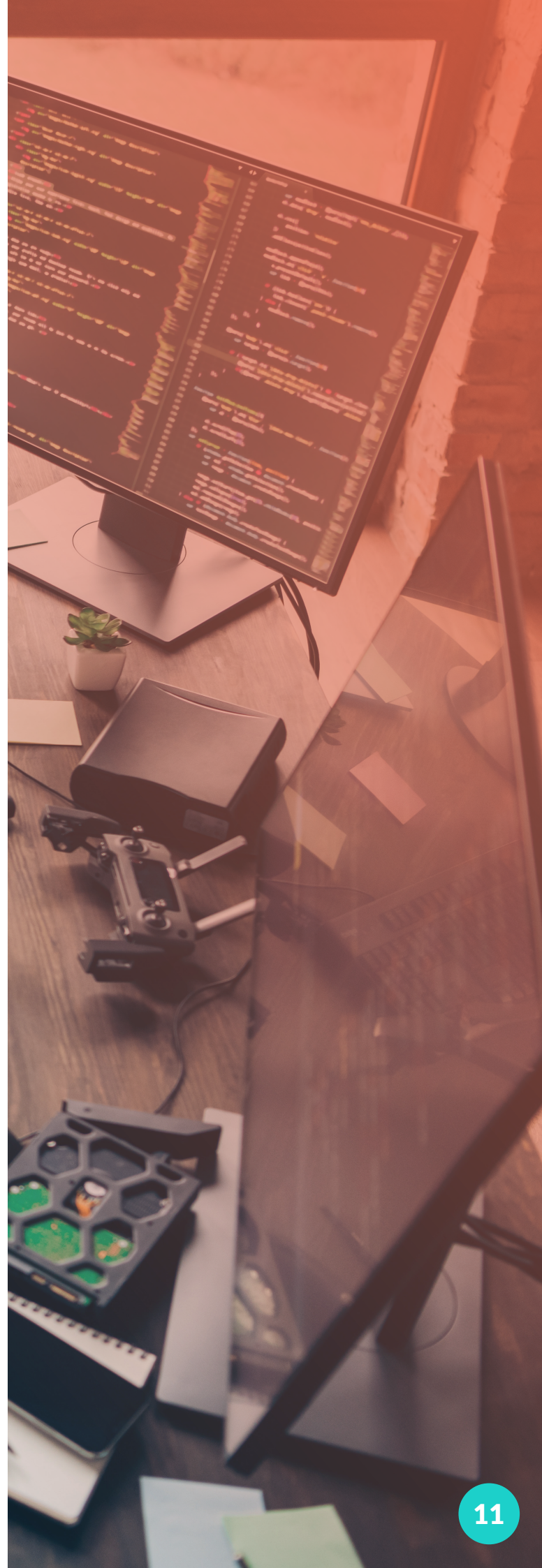
Fitment with the application under test

Tools

Top [test automation tools](#) available in the market are Selenium, Test Complete, Soap UI, UFT. Among them, the common household name is Selenium. With selenium, you can run web and mobile application tests with different combinations of browser/OS versions. It also supports various languages like Java, Python, PHP and others for writing automation test scripts, and its ability to integrate well with other testing tools like Sauce Labs, etc. makes it a favorite among the testing community.

Final Word

To conclude, Automated Testing is indispensable in today's agile and time. Businesses fast transitioning to automated testing must take into consideration the expertise, resources and knowledge on evaluating test results to realize the perfect test automation and obtain the maximum return on investment (ROI) out of it.





About ZUCI

Zuci is a digital organization focused on the craft of assuring quality to software which we have perfected over the years. A perfect blend of test planning, engineering perfection, and customer-centricity in our DNA has enabled us to help small, medium and large organizations with superior quality engineering solutions. [Learn More.](#)

www.zucisystems.com

sales@zucisystems.com

