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TEST IT
software testing system

Top 25 tools for TEST AUTOMATION in 2020

Research Paper

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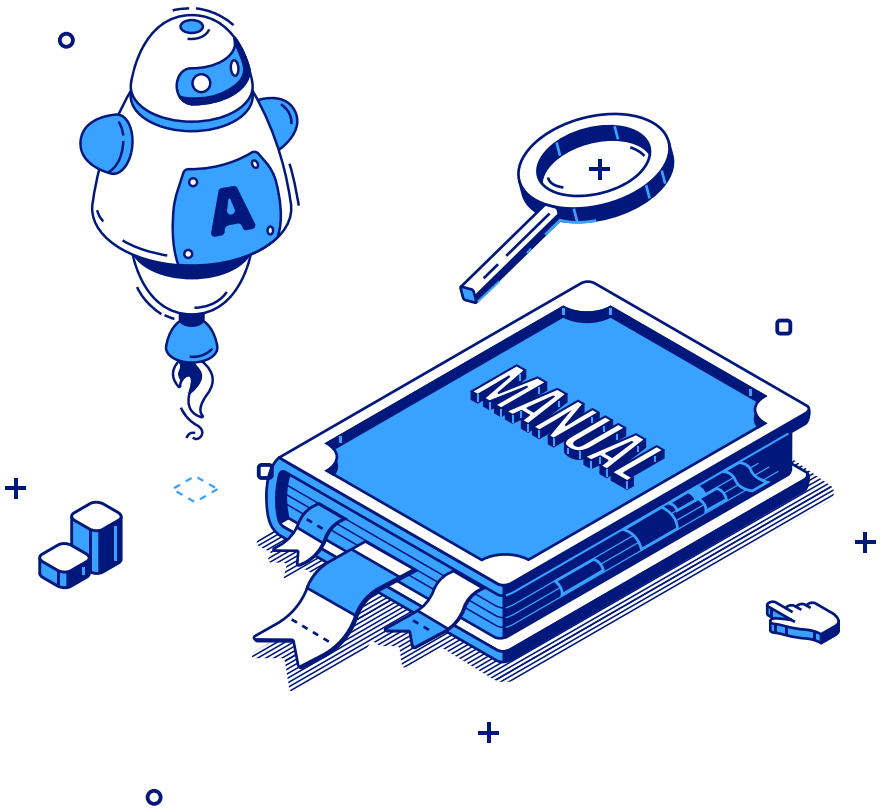
TOP-25 TOOLS FOR TEST AUTOMATION IN 2020: RESEARCH PAPER

Test automation has logically entered the world of software testing years ago. Enabling successful Agile and DevOps adoption, with time, it became an even more progressive and in-demand part to deliver quality at speed. More test automation tools emerged on the market, opening up more advantages for product owners. Yet, not all the tools are equal.

This research paper reflects an exhaustive and unbiased analysis of the most powerful test automation tools as of 2020. All the information above was prepared jointly by QATestLab and Test IT. We relied both on current trends and the experience of our specialists. Our ultimate goal is to help QA engineers to know how to choose the right tool and derive maximum benefit from test automation.



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INTRODUCTION

The Power of Test Automation

The reason to lean on automation of routine tasks is evident. With the increase of test coverage, you minimize the need for manual intervention and receive more time to do tasks with higher priority. As a result, you accelerate the testing process, improve its accuracy and reduce business expenses. More specifically, test automation allows you to get:

Fast execution
After scripts are automated, there is no need to check documentation each time when running scripts.

Repeatability
Automated scripts can be reused many times.

Lower cost on support
Automated scripts take less time to maintain and analyze the results than doing the same amount of testing manually.

Test Reporting & Analysis
Each step of test automation is committed with reports.

All the above strengths help to stay competitive on the market. But test automation cannot be realized without good tools.

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WHAT DEFINES A GREAT TEST AUTOMATION TOOL?

To answer this question, we have analyzed a variety of aspects and came into the conclusion, there should be a combination of such features:

- Fast and convenient installation
- Great community support
- Easy to understand user experience
- Cross-platform
- Availability of client libraries
- Support for scripts
- Tracking errors in the code
- Integration with CI/CD

All of these things were taken into consideration while making a list below.

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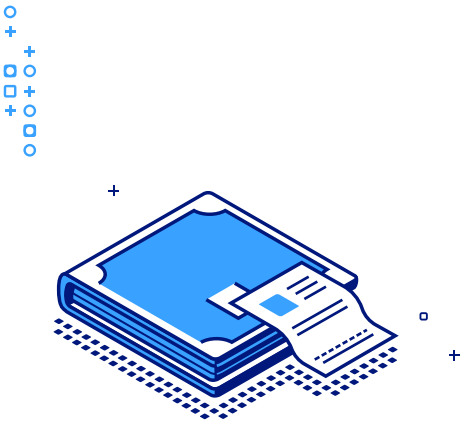
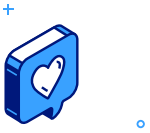
TOP-20 TOOLS FOR TEST AUTOMATION IN 2020

Here is an overview of tools believed to best address the challenges in test automation. Please note right from the start; there is no tool that will be perfect for every occasion. Each of them has its own strong and weak sides. For this reason, the tools above are sorted not in rating but in random order and are categorized by focus:

- **Web testing**
- **Web and mobile testing**
- **Cross-platform testing**
- **API testing**



This whitepaper will be enough for choosing test automation tools. Here we analyzed both the strong and weak sides of each instrument and included the geography of usage to better understand the community support.



DISCLAIMER:

«Mostly used in» item represents the geography of each instrument's usage in the form of countries with the largest number of users. Information provided is based on behavioral indicators gathered from google trends + data from our QA Automation Engineers.

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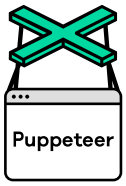
TOOLS FOR WEB TESTING



/ Selenium / Apache JMeter / Tricentis Tosca / LambdaTest /

/ Selenide / Cypress / Protractor / Qualibrate / Puppeteer /

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#01 SELENIUM

Overview

Without Selenium, this list is waste. It is open-sourced, portable, and one of the most popular tools for test automation today. The main benefit of Selenium is support for testing of applications on multiple OS (Windows, Mac, Linux), as well as browsers (Chrome, Firefox, IE, Edge, Safari, Headless). Scripts for this frame can be written on the most popular coding languages: Java, Groovy, Python, C#, PHP, Ruby и Perl.

Selenium consists of a set of tools:

Selenium Integrated Development Environment (IDE) — a plugin for Firefox and Chrome that allows QA professionals to record their actions following the workflow they need to test.

Selenium Remote Control (RC) — a tool for «remote» browser control. It leverages the full power of programming languages such as Java, C #, PHP, Python, Ruby and PERL to create more complex tests.

Selenium WebDriver — the successor to Selenium RC that sends commands directly to the browser and retrieves the results.

Selenium Grid — a tool used to test in parallel on different computers and different browsers at the same time, resulting in minimized execution times.

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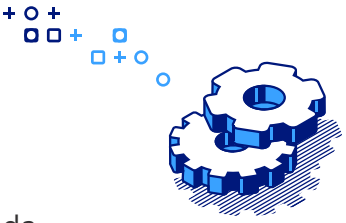
#01 SELENIUM



Mostly used in	India, Vietnam, Canada, USA, Europe
Advantages	▫ free, with an open-source license; ▫ has great community support; ▫ test distribution support; ▫ allows executing scripts in different browsers and on various operating systems; ▫ allows running tests in the browser, so no focus is required during script execution; ▫ allows running tests in parallel using selenium meshes.
Disadvantages	▫ learning curve is steep, middle or advanced programming skills are required; ▫ no built-in image comparison; ▫ no technical support; ▫ no reporting capability: to generate reports, the user needs to use external tools such as TestNG or jUnit; ▫ supports only web apps; ▫ users must rely on the programming language for parameterization.

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#02 APACHE JMETER

Overview

A light and straightforward automated software testing tool, Apache JMeter can be used for load testing. Developed by Apache Software Foundation, originally it was suited only for web application testing. Even though, today it offers robust load testing for JDBC-connections, FTP, LDAP, SOAP, JMS, POP3, IMAP, HTTP and TCP.

Distinctive feature of this tool is an opportunity to create a large volume of requests from several computers at once and control the overall process from one of them. Tool's architecture supports third-party plugins and thus allows adding new functionality. The authorization of virtual users is also possible through user sessions. Besides, there is logging of test results and the ability to present them in the form of diagrams, tables, etc.

Mostly used in	India, Korea, Japan, Russia, USA
Advantages	▫ free; ▫ great visualization of obtained testing results; ▫ allows to record all actions made in browser; ▫ since it is a Java-based product, it can be activated in various browsers; ▫ allows to write your own test cases; ▫ can be integrated with Selenium and Bean Shell for executing auto-tests; ▫ easy run and installation; ▫ simple and logical user interface; ▫ the basic delivery is easy to extend with numerous plugins.
Disadvantages	▫ doesn't support functions to record HTTPS-connection; ▫ AJAX is not intercepted; ▫ there are no advanced features in the reporting process.

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#03 TRICENTIS TOSCA

Overview

Tosca is a test automation tool created by Tricentis. Among other continuous testing tools, Tosca is a model driven tool that automatically scans and loads AUT directly into software with minimal manual action. The automated testing environment for HTML, Java, .NET applications, created by the Austrian software company Tricentis, is written in VB6, Java and C #. The program is aimed at testers without programming knowledge. Contains ready-made configurations for testing SAP and Siebel CRM business applications.
Uses Microsoft SQL Server, Oracle Database or DB2 to store infrastructure and support collaboration.

Mostly used in	India, Australia, Germany, USA, Europe
Advantages	▫ easy to learn; ▫ support for many protocol arrays: HTTP (s) JMS, ▫ AMQP, Rabbit MQ, TIBCO EMS, SOAP, REST, IBM ▫ MQ, NET TCP; ▫ integration into Agile and DevOps cycles; ▫ maximize reusability and maintainability of test automation tools based on the use of models; ▫ API tests can be used on mobile as well as browser and batch applications, etc.; ▫ supports many programming languages like Delphi, .NET, WPF, Java Swing, Visual Basic, etc. ▫ good set of test reports and analytics capabilities; ▫ no programming skills required; ▫ allows solving cross-browser and device compatibility issues.
Disadvantages	▫ not free; ▫ supports only one operating environment — Windows; ▫ some features and integrations are no longer supported, such as mobile exploratory testing, Flood integration, Android SDK, etc.

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#04 LambdaTest

Overview

LambdaTest is a comprehensive and one of the most popular tools for cross-browser testing available. It offers robust testing of websites or web applications in the cloud infrastructure. The LambdaTest framework helps you ensure smooth rendering of web application elements (such as JavaScript, CSS, HTML5, video, etc.) on any desktop and mobile web browser with manual, visual, and automated testing support. With LambdaTest, you can access over 2000 combinations of desktop and mobile browsers in the cloud.

Mostly used in	Morocco, India, Algeria, UK, USA
Advantages	▫ intuitive user interface; ▫ huge browser selection; ▫ supports Selenium and Selenium Grid; ▫ testing interactive browser compatibility in real time; ▫ fast automatic testing of screenshots; ▫ parallel testing; ▫ API for continuous testing; ▫ continuous testing with continuous integration tools; ▫ testing sensitivity to geolocation; ▫ 24x7 chat support; ▫ fast integration of bugs into the functionality of defect tracking systems (one-click bug logging in any bug tracking tool); ▫ free start, meaning you can actually see how it works and then decide to buy.
Disadvantages	▫ not free; ▫ many users report a frequent decrease in work speed.

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#05 SELENIDE

Overview

Selenide is a framework for automated testing of web applications based on Selenium WebDriver. First of all, Selenide helps you make stable tests by solving (almost) all problems with timeouts and ajax. Selenide offers a concise API for using Selenium WebDriver in UI tests.

Mostly used in	Estonia, China, Belarus, Ukraine, Korea
Advantages	▫ smart expectations; ▫ automatic browser control (opening, closing — you don't have to think about it anymore); ▫ convenient methods; ▫ has Ajax support; ▫ automatic screenshots.
Disadvantages	▫ controls the WebDriver by default, if you want a custom setting, you need to declare a new WebDriver; ▫ when to run tests in parallel, you may encounter some timeout exceptions.

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#06 CYPRESS

Overview

Cypress is an open-source next generation automation testing tool. It offers robust end-to-end testing for websites and applications. Just like Puppeteer, it is a relatively new tool, however it brings new concepts and solutions to the way automation and testing is done.

What makes it powerful is that it can be applied inside the browser itself. In other words, Cypress always keeps track of when all kinds of events are called in the browser and never misses any manipulation of page elements, which greatly reduces the likelihood of floating tests.

Mostly used in	USA, Canada, Australia, New Zealand, Ireland
Advantages	▫ integrated suite of tools for testing built on frameworks like mocha, chai, sinon; ▫ built-in automatic waiting mechanism; ▫ time machine feature that allows the Cypress test runner to roll back to certain steps in the test execution sequence; ▫ comprehensive documentation with a large set of examples; ▫ ability to write test cases (including unit tests).
Disadvantages	▫ no large community support; ▫ supports only JavaScript.

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#07 PROTRACTOR

Overview

Protractor is a Node.js program built on top of WebDriverJS. Protractor works as a solution integrator, bringing together powerful technologies such as Node.js, Jasmine, Selenium, Mocha, Cucumber and Web.

Mostly used in	Jamaica, Philippines, New Zealand, Australia
Advantages	▫ simple installation and configuration; ▫ has built-in support for identifying elements for angular.js; ▫ suitable for both Angular and non-Angular applications; ▫ easy to read jasmine framework; ▫ support for data driven testing; ▫ include all the benefits of Selenium WebDriver; ▫ auto sync; ▫ support for parallel testing across multiple browsers; ▫ excellent speed; ▫ compatible with continuous integration.
Disadvantages	▫ supports only JavaScript / TypeScript; ▫ has no support for mobile app automation; ▫ has no detailed test report.

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#08 PUPPETEER

Overview

Puppeteer is a headless Google Chrome based on Node.js that provides a clean API to work with. This means you can launch Chrome from the command line without even opening a browser window. You can open pages that will render CSS, execute JavaScript — just like desktop Chrome does, but without a user interface.

Mostly used in	China, Israel, Singapore, Hong Kong
Advantages	▫ offers more control over Chrome; ▫ headless mode works very quickly; ▫ includes web scraping; ▫ takes screenshots and PDFs of pages for UI testing; ▫ measures render and load times with Chrome performance analysis tool.
Disadvantages	▫ does not provide cross-browser compatibility; ▫ supports only JavaScript (Node); ▫ requires a solid knowledge of programming.

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#09 QUALIBRATE

Overview

Qualibrate is a cloud testing platform that allows automating web applications and SAP processes. Since it is a cloud solution, all data are automatically synchronized, and all needs can be realized in one place. Apart from testing, it allows documenting and track test progress. Moreover, it offers an open API for integrating popular tools like Jira, GitHub, Jenkins, etc.

A distinctive feature of Qualibrate Platform is that it reduces the time needed for execution regression testing and optimizes both testing activities and financial resources. As a result, it allows test automation engineers to achieve more and spend less.

Mostly used in	USA, India
Advantages	▫ easy to use, especially for non-technical users; ▫ requires little programming skills; ▫ fully extensible, allows integration with the most CI/CD tools; ▫ test cases are highly reusable and easily maintainable; ▫ great support from the team; ▫ easy to record and playback; ▫ supports parallel execution.
Disadvantages	▫ not free; ▫ no option for multiple screens side by side; ▫ reporting is difficult to set up; ▫ no option to merge flows.

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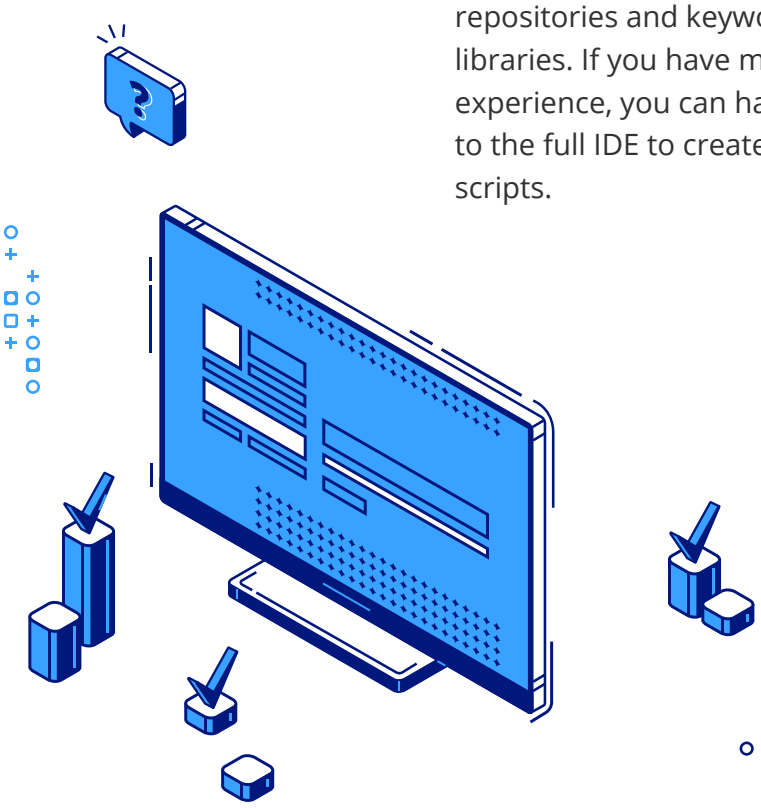
#10 KATALON STUDIO

Overview

Katalon Studio is a free test automation solution developed by Katalon LLC. The software is built based on the open-source automation frameworks Selenium, Appium with a specialized IDE for testing APIs, web applications, and mobile devices. This tool includes a full suite of powerful features to help overcome common challenges in automating frontend testing. The prime advantage is combining UI and Business (API / Web services) tiers for different operating environments (Windows, Mac OS, Linux).

This tool is excellent both for professionals and newbies. If you have no experience, you can use recording and keywords to create automated tests. Testers can run their first test script fairly quickly using pre-built templates and test scripts such as object repositories and keyword libraries. If you have more experience, you can have access to the full IDE to create advanced scripts.



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#10 KATALON STUDIO

Mostly used in	India, Singapore, Pakistan, Philippines, Canada
Advantages	▫ supports web, and mobile testing; ▫ has built-in Object Repository, XPath, Object Reidentification; ▫ supports Java / Groovy scripting languages; ▫ has built-in support for image based testing; ▫ has the support for continuous integration tools like Jenkins and TeamCity; ▫ can be integrated with the majority of DevOps / ALM tools; ▫ supports Duel editor interface; ▫ customizable runtime workflow; ▫ AssertJ support for creating flexible checks using BDD style; ▫ cross-platform.
Disadvantages	▫ support not all programming languages; ▫ lack of detailed reports; ▫ impossible to run multiple tests at the same time; ▫ paid support; ▫ method library and toolbox under development.

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#11 RANOREX

Overview

Not free yet a comprehensive tool for a multifunctional range of tasks. From desktop to mobile and web, Ranorex allows testing various kinds of applications on real devices and emulators/simulators as well. Moreover, it allows conducting testing both with and without scripting or coding in any programming language.

Using Ranorex, you can create a test in the control center and run it in various external environments and on any device. The instrument easily integrates with existing CI environments: ticket management systems like Jira and TFS, as well as version control systems like Git and SVN. Plus, it has improved data-driven testing with data loading from SQL, CSV, Excel.

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#11 RANOREX

Mostly used in	Australia, Switzerland, Germany, Netherlands, India
Advantages	▫ quick and clear installation; ▫ plug-in free web testing across all major platforms and browsers; ▫ shows much greater efficiency and stability in working with web applications (if compared to Selenium); ▫ can be integrated with Webdriver; ▫ allows to combine black-box, white-box and grey-box testing; ▫ allows to conduct testing without knowing programming languages; ▫ has a repository of elements with the ability to store screenshots (useful to analyze old code); ▫ has tracking UI elements — Click & Go Xpath assistant (once you click on element, the tool records its path automatically, so you can check it later); ▫ has the embedded logging / running / reporting options; ▫ powerful play-record feature; ▫ re-use of code; ▫ quick to reply customer support.
Disadvantages	▫ testing for applications designed only for Windows (can't support MacOS, Linux); ▫ not free; ▫ no option to export scripts to various programming languages — Java, VBscript, etc.; ▫ no gesture support, and drag and drop actions; ▫ long waiting time for object identification; ▫ focus required during script execution; ▫ weak public support (community).

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#12 TESTCOMPLETE

Overview

Be it mobile, web, or desktop application, TestComplete can handle ensuring quality and automating test cases for all of them. Developed by SmartBear company, it mainly supports VBScript, JavaScript, Python, C ++ Script. Using it, QA specialists both can manage testing data, and test with keywords as well.

Compared to UTF, TestComplete is similar to the GUI object recognition function. As a result, the user interface elements are automatically detected and updated. All this avoids the extra worries of maintaining test scripts when AUT changes. The tool can also integrate with Jenkins during the CI process.

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#12 TESTCOMPLETE

Mostly used in	China, New Zealand, India, Pakistan
Advantages	• allows to test desktop, mobile and web applications; • supports variety of programming languages (JavaScript, Python, VBScript, JScript, Delphi,C++ and C #); • can be suited for a wide spectrum of applications; • has GU object detection function; • can be integrated with the majority of DevOps/ALM instruments; • supports integration with CI tools; • easy to install and run; • only basic programming skills required; • Great procedures of record and running tests: TestComplete records the key steps required to replay the test and undo any unnecessary steps; • Distributed testing: TestComplete can run multiple automated tests on separate workstations or virtual machines; • Bug Tracking Integration: TestComplete includes issue tracking templates that you can use to create or modify items stored in issue trackers; • Data Driven Testing: Data Driven Testing with TestComplete means using one test to test many different test cases by driving the test with input and expected values from an external data source instead of using the same hard-coded values every time the test runs.
Disadvantages	• distributed on a commercial basis; • mono platform tool — available only for Windows OS.

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#13 UNIFIED FUNCTIONAL TESTING (UFT)

Overview

Unified Functional Testing (UFT), formerly known as QuickTest Professional (QTP), is an icon-based tool that automates regression and functional testing. More specifically, it is designed for conducting automation of test cases for API, web services, GUI, mobile and web applications on all platforms.

Object detection is a feature that makes UFT stand out from similar tools. It allows to detect objects from images, reusable test components and even from test documentation. All procedures for register test processes and management of objects while testing are done through one scripting language — Visual Basic Scripting Edition.

Mostly used in	India, Australia, Germany, USA, Europe
Advantages	▫ testing of API, web, mobile and desktop applications; ▫ support for all browsers: Internet Explorer, Chrome, Firefox, Edge, Safari and PhantomJS; ▫ integration with Mercury Business Process Testing and Mercury Quality Center; ▫ unique feature to detect objects (object detection); ▫ error handling mechanism; ▫ automated test documentation; ▫ creation of parameters for objects, checkpoints, and data-driven tables; ▫ integration with the majority of DevOps/ALM tools; ▫ support for integration with CS instruments; ▫ requires basic programming skills; ▫ ease of use due to well-designed functionality.
Disadvantages	▫ not free, requires high fees for license and maintenance; ▫ support only VBScript; ▫ doesn't support MacOS, Linux.

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#14 TESTPROJECT

Overview

TestProject is a free end-to-end test automation platform for web, mobile, and API testing. It supports a variety of platforms like Windows, macOS, Linux, iOS, Android, Webservices, and more. For web testing, it offers Web Test Recorder powered by Artificial Intelligence that learns from itself and acts both as recorder and object spy.

Mostly used in:	Israel, Belgium, India, USA
Advantages:	▫ free; ▫ cross-platform testing; ▫ powerful and comfortable to use record and playback capability; ▫ allows leveraging Artificial Intelligence power for web testing; ▫ integration with CI/CD tools; ▫ can use Android devices & Emulators; ▫ can do manual test recording or write tests manually or a combination.
Disadvantages	▫ UX design that may hide button elements, making finding features less intuitive to novice users; ▫ not easy to debug, no built-in service to see error output to easily correct through the UI.

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#15 QMETRY

Overview

QMetry isn't just a tool but an end-to-end automation framework created by test engineers for testers to help in web and mobile testing. Since it is designed not only to automate test cases but also to manage and deploy projects, QMetry is a comprehensive solution for Agile and DevOps teams. Built upon java, it simulates real user activities and can be integrated with TestNG, Selenium/Webdriver, Appium, etc. Apart from this, QMetry lets you test both on cloud and on-premise and simultaneously use various devices and browsers to ensure quality.

Mostly used in	India, USA
Advantages	▫ open source; ▫ user-friendly & easy to use; ▫ no installation required (pure web based platform); ▫ enables testing across multiple platforms with or without selenium grid; ▫ script-less customization of requirements, tasks, reports, fields, test cases; ▫ supports Behavior Driven Development (BDD), Keyword Driven and Code Driven Development; ▫ supports integration with various tools like Jira, Jenkins & identity management etc.
Disadvantages	▫ has small community and weak public support; ▫ may be issues with swapping test steps.

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#16 WORKSOFT CERTIFY

Overview

Worksoft Certify is a test automation platform covering ERP applications, web apps, mobile apps, and SAP projects testing. This is an open-source tool with a mission to mitigate risk with continuous automated testing of end-to-end business processes. Worksoft Certify allows you to create easily, maintain, share, and consume automated process tests as part of continuous testing, integration, and delivery cycles. It is pretty straightforward to reuse the steps from existing tests for our new tests and build upon them.

Mostly used in	India, Norway, China, Philippines, USA
Advantages	▫ fast to automate SAP PM, FI, SD, PP, and MM Modules (the software is SAP-certified); ▫ supports scriptless testing and doesn't require having programming skills; ▫ easy integration with third-party tools.
Disadvantages	▫ slow exporting the scripts as XML; ▫ may be not enough intuitive and user-friendly; ▫ may have confusing error messages which are not adequately explained; ▫ may output bad testing results if there will be data that are poorly interpreted; ▫ long delays during process debugging when attempting to repeat a step.

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#17 CUCUMBER

Overview

Cucumber is not just a tool but the overall testing infrastructure to bridge the gap between software developers and business managers. For using it, you don't need to have programming skills at all. All test cases are being written through simple and intuitive language controlled by behavior-driven development (BDD): Given, When, Then (conditions, operation, result).

What makes it powerful is that control tests are written to the file functions, covering one or more test cases. Cucumber interprets tests in the specified programming language and uses Selenium to manage tests in the browser. It uses Gherkin notation to write tests, which defines the test structure and a set of keywords. The test is written to a file with the *. feature and can contain one or more scenarios.

Mostly used in	USA, Russia, Nigeria, Jamaica, Ghana, Singapore
Advantages	▫ free; ▫ support a wide spectrum of languages (Java, Perl, PHP, Python, Net, and more); ▫ easy to understand, allows people even with no or basic programming skills to write test cases, comes in handy for business managers to make reports and presentations; ▫ there is no need for logging when writing tests — each step (user action) is essentially logging; cross-platform; ▫ unlike other tools, it serves the purpose of a comprehensive testing environment; ▫ enables code reuse due to simple test case architecture.
Disadvantages	▫ more complex test framework setup; ▫ may be complicated for newcomers (you need not only to understand the work of all components of the framework, but also to be able to write Gherkin scripts correctly); ▫ complicated integration with other components of the test framework (reporting, parallelization, etc.).

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#18 APPIUM

Overview

Appium is the tool with a variety of benefits. First, it's a free open source and cross-platform instrument. It is designed to conduct test automation both for Android-based applications and for iOS. Just like Selenium WebDriver, it receives JSON-requests from customers and converts them into other types suitable for all possible platforms. It is compatible with almost all programming languages available and it gives you a wide variety of commands and options, which you can manipulate.

Mostly used in	China, India, Israel
Advantages	▫ free; ▫ support the majority of programming languages (due to json wire protocol); ▫ allows to test both Android and iOS; ▫ supports test automation of hybris, native and web apps; ▫ can work in various frameworks; ▫ cross platform; ▫ open source; ▫ allows integrating API; ▫ can run the application through the appium server without manipulating the application; ▫ backend is Selenium so you get all selenium functionality; ▫ doesn't require an APK to use, although some app automation does; ▫ huge community that is always available.
Disadvantages	▫ doesn’t support image comparison; ▫ demand long customization both for Android and iOs; ▫ can produce unexpected errors; ▫ doesn’t identify user interface elements in software built on multi-platform engine like Unity and UnrealEngine; ▫ has limitations for support of Android <4.1.

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#19 ROBOT FRAMEWORK

Overview

Robot Framework is an open-source Python-based framework that provides an extensible test automation framework for end-to-end acceptance testing and acceptance test-driven development (ATDD). It can be used to test distributed heterogeneous applications where multiple technologies and interfaces need to be tested. Test scripts are written using keyword testing techniques and written in table format.

Mostly used in	Finland, China, Tunisia
Advantages	▫ free; ▫ allows to use Keyword Driven Testing (KDT); ▫ has variety of internal libraries that you can expand; ▫ convenient and detailed logs with test results; ▫ large and active community; ▫ supports CI integration; ▫ provides ability to integrate with TestRail and TestLink test management systems; ▫ provides ability to write automated without knowledge of the programming language.
Disadvantages	▫ no parallel test run; ▫ additional difficulties while debugging that cannot be solved without programming skills; ▫ autotests are slower due to shortcomings of frameworks and creating an additional layer of abstraction; ▫ development and maintenance of the code of functions «under the hood» of the project often takes longer than writing tests in natural language; ▫ BDD requires writing its own libraries; ▫ supports only Python and Java.

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#20 WATIR

Overview

Watir is an open-source testing tool made up of Ruby libraries to automate web application testing across various browsers and platforms like Windows, Mac, and Linux. Pronounced as “water”, it is an acronym from Web Application Testing in Ruby. Watir will connect to the specified browser and follow the instructions to open a URL, click a button, enter data into a text box, just like any real person would.

It is most commonly used to support browsers with testing frameworks like RSpec, Cucumber, etc. It can be integrated with Cucumber, Test/Unit, and RSpec, and is free and open source. This is a solid product for companies that want to automate their web testing as well as for a business that works in a Ruby environment.

Mostly used in	China, Indonesia
Advantages	▫ free; ▫ open source; ▫ codeless click-and-go interface; ▫ all latest browsers are supported in Watir, making testing easier; ▫ has built-in libraries for checking page performance; ▫ provides data driven testing; ▫ supports integration with Cucumber; ▫ support for continuous integration; ▫ cross-platform.
Disadvantages	▫ supports only one programming language (Ruby); ▫ supports testing only of web applications; ▫ requires having advanced programming skills; ▫ has small community and weak public support.

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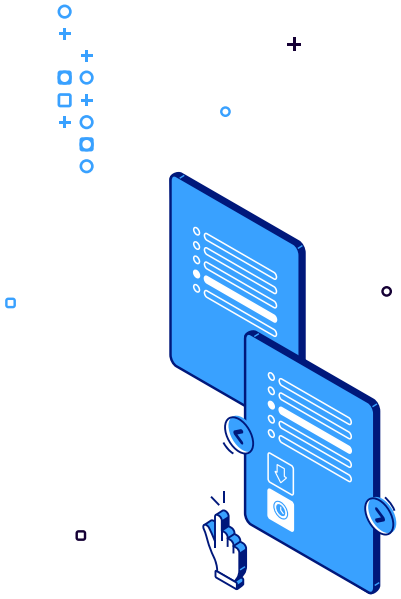
#21 IBM RATIONAL FUNCTIONAL TESTER

Overview

Rational Functional Tester is an object-oriented, automated functional testing tool that allows to test HTML, Java, Windows, .NET, Visual Basic, SAP, Silverlight, Eclipse, SAP, Siebel, Flex, Ajax, Dojo, GEF, and PowerBuilder applications. In addition, you can choose from Adobe PDFs and zSeries, iSeries, and pSeries applications for testing. With Rational Functional Tester, you can record robust scripts and replay them to test new builds of the application under test.



Rational Functional Tester is available in two integrated development environments. In the case of automated testing, the product records custom actions to create simplified test scenarios that are easy to understand. In addition, two scripting languages are supported for advanced users. The Rational Functional Tester integration with Eclipse uses Java, while the Rational Functional Tester integration with Microsoft Visual Studio .NET uses the VB.NET language and the Microsoft Visual Studio .NET development environment.

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#21 IBM RATIONAL FUNCTIONAL TESTER

Mostly used in	India, USA
Advantages	▫ supports testing of web and desktop applications; ▫ cross-platform — Windows, Linux; supports cross-browser compatibility on Windows — Chrome, Firefox, Internet Explorer; ▫ function of recording and visualization of all user actions; ▫ scriptAssure technology allows testers to create automated tests that are resistant to frequent changes in the application user interface; ▫ storyboard Testing makes it easy to visualize and edit tests by using natural language and screenshots; ▫ allows to integrate the platform with IBM Jazz application lifecycle management systems; ▫ allows to repeatedly run separate tests with different sets of test data.
Disadvantages	▫ not free; ▫ requires integration into the IBM environment to unleash all product capabilities; ▫ only two scripting languages are supported: Visual Basic .Net and Java; ▫ for Linux supports only Firefox browser.

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#22 TESTSIGMA

Overview

Testsigma is a cloud-based test automation ecosystem providing functional and regression testing for web and mobile applications. AI-driven Maintenance, Custom Functions, Integrations and lot more for all the flexibility needed for complex test automation requirements.

Mostly used in	India
Advantages	▫ easy to configure and set up parameters; ▫ simple for non-technical users, can be sued with simple English; ▫ simple record and playback UI; ▫ supports multiple OS and browser versions; ▫ supports parallelism while running test cases.
Disadvantages	▫ not free; ▫ sharing option is limited between the team; ▫ no reliable technical support.

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#23 POSTMAN

Overview

Postman is a leading platform that has one purpose: testing API collaboratively. The number of Postman's users is impressive: nearly 7 million developers are using it, and 300 000 companies around the world. Without any exaggeration, this is a one-size-fits-all tool. It lets QA engineers perform all needed procedures for API, namely to develop, imitate, set, test, document, track, and publish software.

Moreover, the tool's community offers extended functionality and instruments for macOS, Windows, and Linux. You can also find extended functionality when using Newman, a command-line tool, Postmans, API Postman API network, and while the integration.

Mostly used in	Singapore, India, New Zealand
Advantages	▫ concise and clear user interface; ▫ allows to run both test automation and exploratory testing; ▫ convenient and advanced REST client; ▫ wide package composed of many possibilities for integration including compatibility with RAML and Swagger formats; ▫ can be installed both as browser extension and as a desktop-application; ▫ works well in software developed for Windows, Linux, Mac and Chrome; ▫ includes functions Document, Monitoring, Run and Test; ▫ doesn't require to learn new programming language; ▫ allows to interact and share experience within a team, the program organizes requests and expected responses, sends the results to the project participants; ▫ free version is enough for basic API testing.
Disadvantages	▫ has limited reporting capabilities; ▫ poorly designed for SOAP APIs and other APIs; ▫ low script reusability.

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#24 SOAPUI

Overview

SoapUI is another popular API testing tool. Most often, this particular tool is recommended for API testing, since it was developed for these purposes. There are two variations of this tool: the free open-source version and the Pro version. The free version allows you to make modifications to the code, but the Pro version has a more user-friendly interface and additional functionality, including a form editor and an SQL query editor.

Mostly used in	China, Luxembourg, Estonia, India
Advantages	▫ free; ▫ easy to learn for beginners; ▫ easily create tests with drag and drop, point and click; ▫ adapted for testing SOAP services; ▫ powerful data driven testing with data from files and databases; ▫ asynchronous testing; ▫ scripts can be easily reused; ▫ functional tests in SoapUI can be easily turned into load or safety tests; ▫ extending capabilities with Groovy scripts; ▫ ability to integrate with CI systems; ▫ excellent reporting engine.
Disadvantages	▫ full functionality is available only in the Pro version; ▫ requires having basic or middle programming skills.

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#25 TESTPLANT EGGPLANT

Overview

TestPlant eggPlant is an image-based automated functional testing tool that enables testers to perform AUT efficiently. With regard to testing methods, TestPlant eggPlant is completely different from traditional testing tools: it simulates the process as if you are the user of an application not a tester. This feature allows testers to use this test automation tool intuitively. Moreover, TestPlant eggPlant is supported on a variety of platforms, lab management and CI integration tools.

Mostly used in	UK, USA
Advantages	▫ easy to learn and use; ▫ supports all major platforms including web systems, mobile systems, POS systems, etc.; ▫ supports API and database testing; ▫ ability to reuse automation processes for performance testing; ▫ parallel testing; ▫ fast development; ▫ possibility of CI integration and laboratory management; ▫ no advanced programming skills required.
Disadvantages	▫ not free; ▫ not all tests developed for one OP are adapted for another OP; ▫ weak community support.

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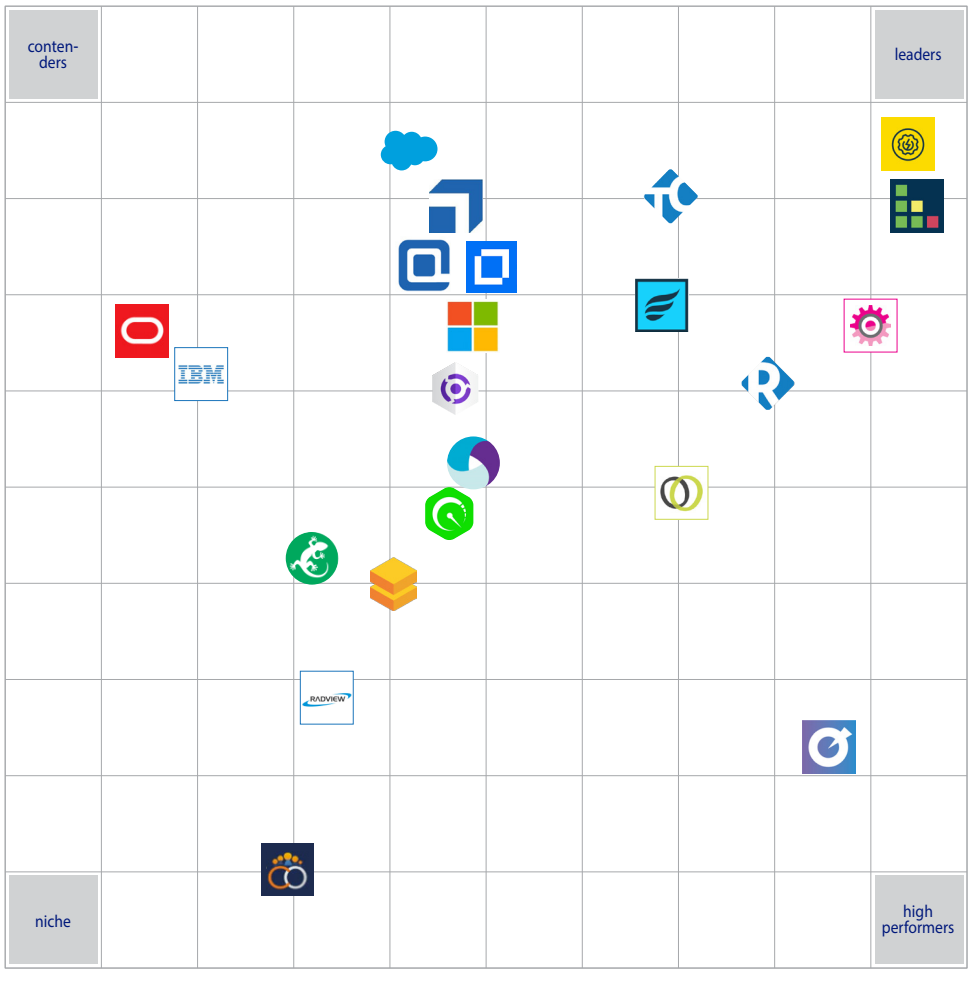
In software testing there are no right or wrong tools. Choosing one largely depends on the type of your project. Some tasks require multiple automated products, and some can be done using one all-purpose testing tool. One way or another, do not expect wonders and do not get your hopes upon the level of the tool's popularity. Carefully investigate your project requirements, define what needs to be automated, compare these data with the description above, and only then make your choice.

HAPPY TEST AUTOMATION!



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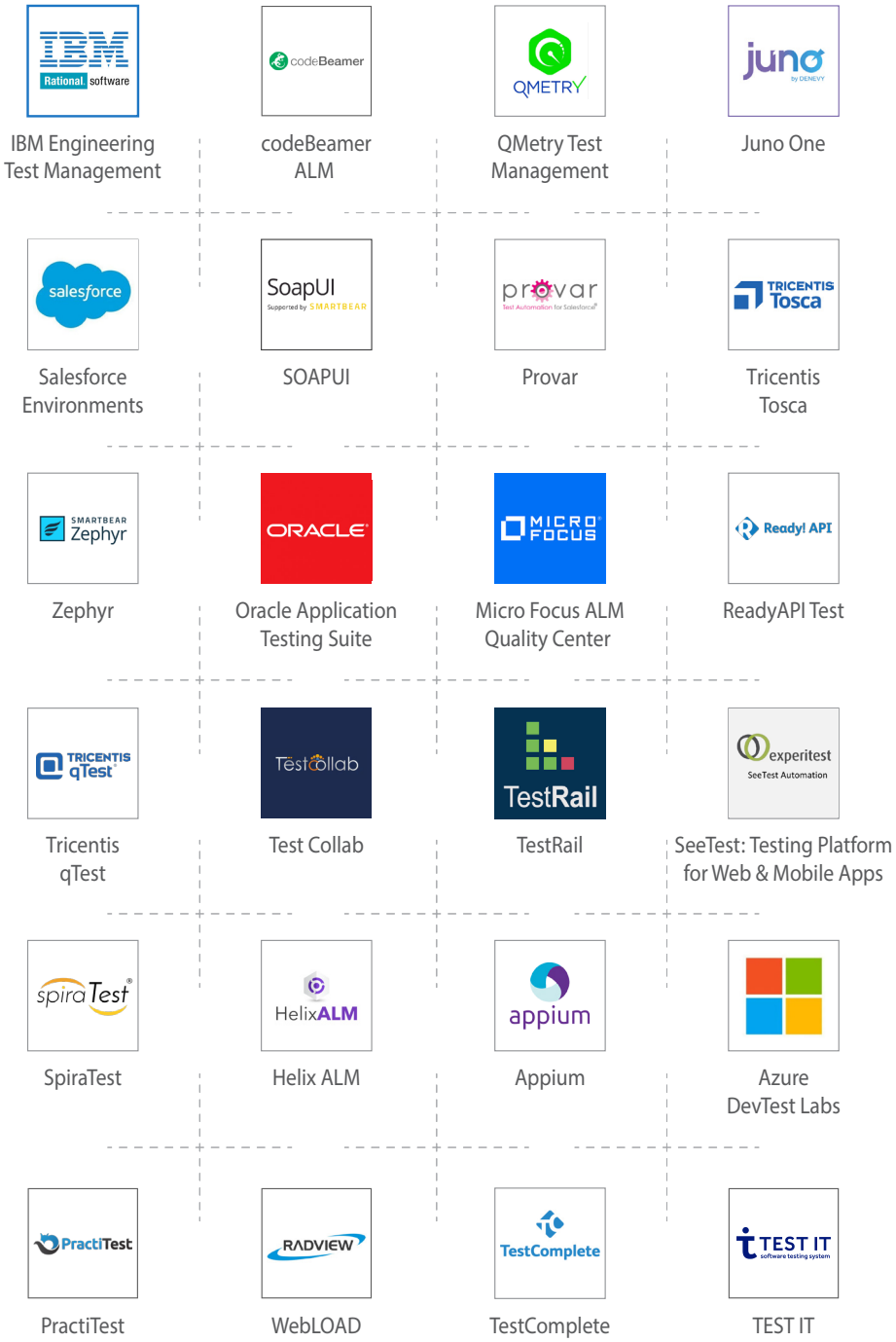

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