Perfecto
by Perforce

2023

State of Test Automation

Welcome to the 2023 State of Test Automation Report

In the fourth annual edition of its State of Test Automation Report, Perfecto continues to keep its ear to the ground of the testing industry — including trends in testing, automation rates, and testing concerns and priorities for 2023.

To learn more about the challenges facing teams today and their areas of focus moving forward, we surveyed hundreds of leading digital enterprises across multiple industries. Here's what we found, and where testing is going this year.
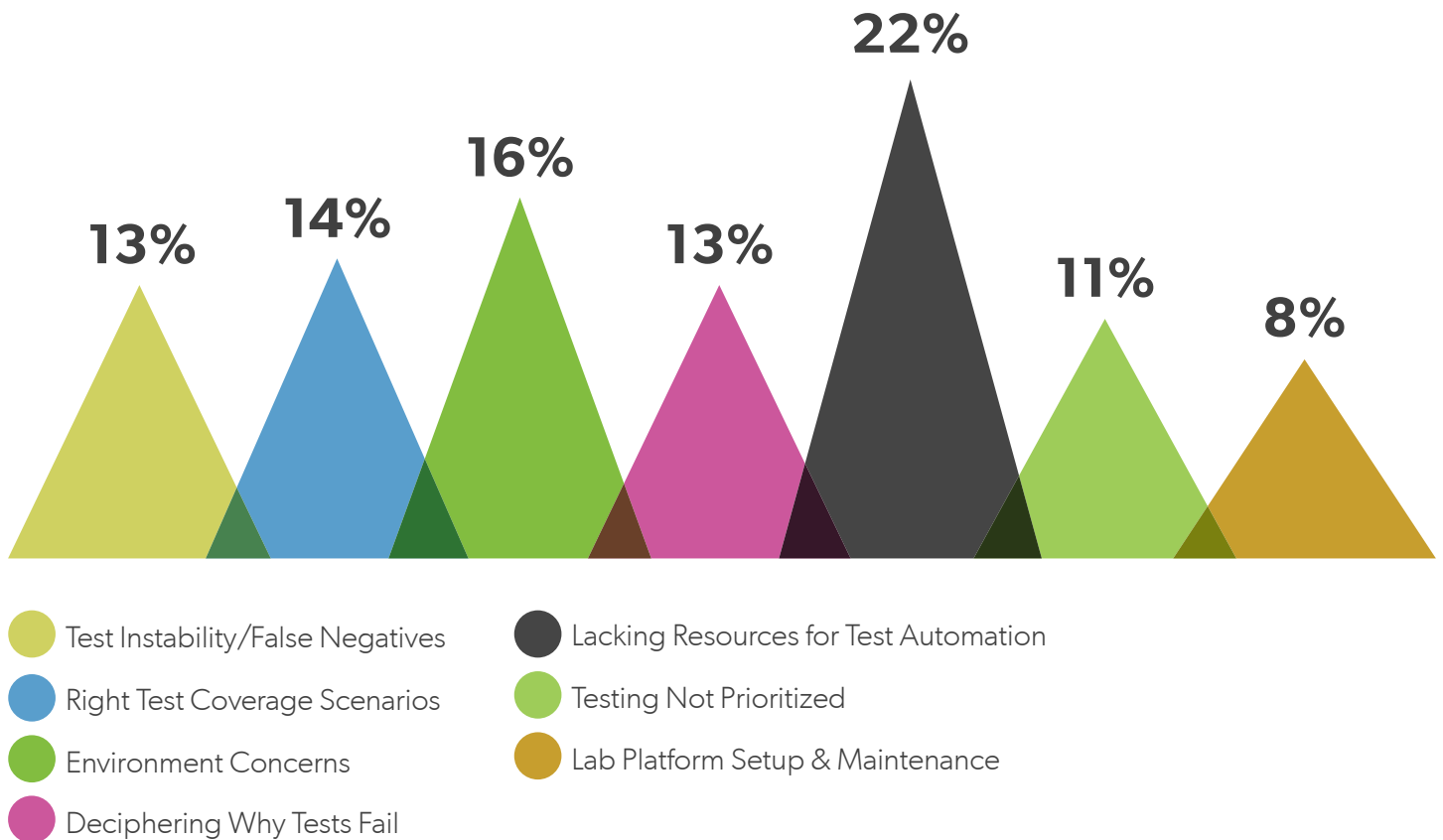
KEY TAKEAWAYS

- **Lack of automation resources challenges teams most.** Getting the management team on board with implementing testing best practices is continuing to prove easier said than done.

- **Improving test coverage is growing as a software testing priority.** Ensuring the testing strategy encompasses as much area as possible is a rising focus for teams.

- **Teams continuing to focus on non-functional testing.** In 2023, organizations are seeking to expand non-functional testing, focusing on API, performance, and app security.

- **Teams embracing low-code/no-code solutions in 2023.** Teams are investing in solutions that can be used by the entire team regardless of skillset.

Lack of Automation Resources & Environment Concerns Challenges Teams Most

In 2023, the most frustrating challenge facing teams is the lack of available resources to implement the proper testing best practices into their test strategies. Additionally, 16% of respondents indicated environment concerns such as service virtualization, device labs, and test data are prominent pain points.

WHAT DO YOU FIND THE MOST CHALLENGING ABOUT TESTING?

13% — Test Instability/False Negatives
14% — Right Test Coverage Scenarios
16% — Environment Concerns
13% — Deciphering Why Tests Fail
22% — Lacking Resources for Test Automation
11% — Testing Not Prioritized
8% — Lab Platform Setup & Maintenance

Managers, practitioners, and agile teams are trying to measure and showcase the benefits of test automation. As achieving sufficient test automation coverage continues to be a major challenge, proving test automation ROI, or the business value of test automation, is more important than ever. A few of the best ways to prove test automation ROI for your business are:
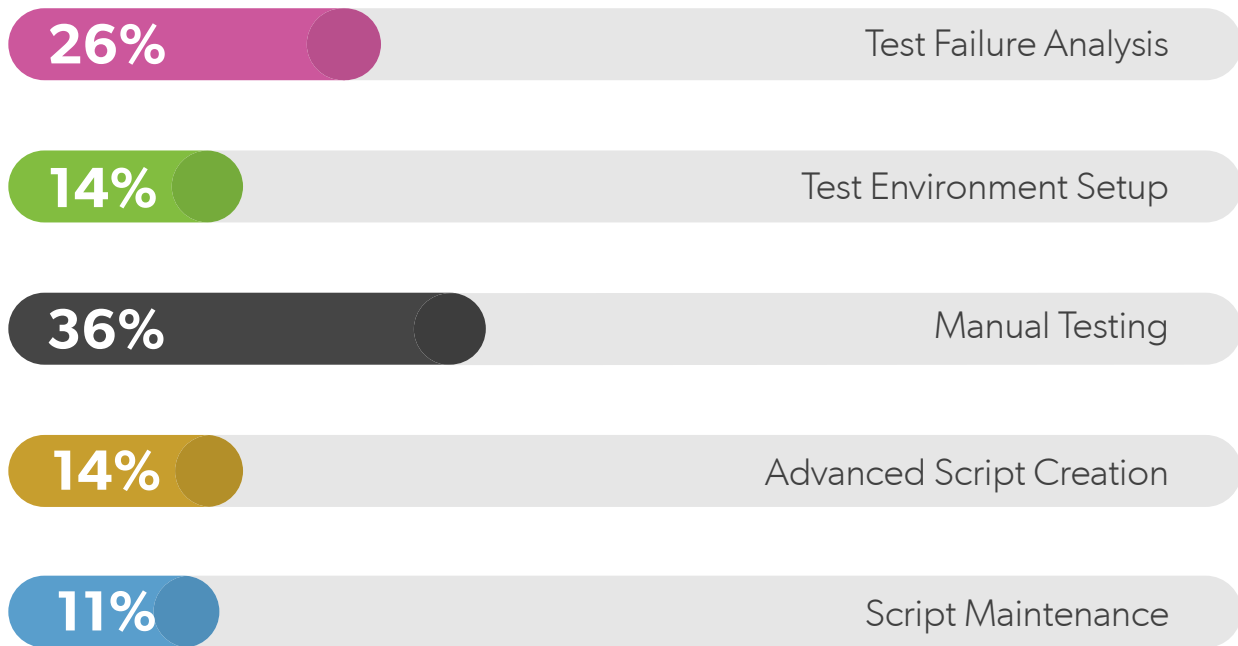
- Different phases of test automation maturity.
- Reduction in manual testing costs.
- Developer productivity gains.

Download eBook: ROI of Quality: Making a Business Case for Modern Testing

Test Failure Analysis Increasingly Time-Consuming

This year, test failure analysis continues to join manual testing as an especially tedious part of the software testing lifecycle.

WHAT IS THE MOST TIME-CONSUMING ACTIVITY FOR YOU WITHIN A TEST CYCLE?

26%	Test Failure Analysis
14%	Test Environment Setup
36%	Manual Testing
14%	Advanced Script Creation
11%	Script Maintenance

There are four main reasons why tests fail:

1. Environment issues.
2. Test issues.
3. Issues with test data.
4. Actual defects.

Based on the data gathered by Perfecto, barely 4% of failures are a result of actual defects. Yet defects are the most important failures to analyze when looking through testing reports. Organizations that do not have coordinated reporting methods ultimately spend more time and resources than necessary on backlogs.

Perfecto's advanced reporting features, particularly its latest Test Automation Insights capability, drive an optimized pipeline by categorizing failures within the Perfecto reporting dashboard, as well as sharing the organization's most common issues and failure trends. Top organizations leverage these insights, as well as other methods such as heatmaps, to cut through the noise and spend no more than 30 minutes evaluating and resolving issues behind failed test cases.

Shift-left testing also helps teams address the most time-consuming aspects of testing, due to the following benefits:

- It is more cost-effective to reveal defects earlier (fail fast/fix fast).
- It supports the goals of Agile/DevOps (releasing faster).
- Easier to maintain code and quality.
- Covers more functional and non-functional areas early on (security, accessibility, performance, API).

Related Reading: Introducing Insights for Perfecto's Analytics and Reporting

With the continuous proliferation of new mobile technologies, mobile and mobile web application testing are increasingly complex. As mobile apps become more advanced and mobile phone releases happen every few months, mobile test automation feels like a moving target.

Related Reading: The Complete Guide to Mobile Automation Testing

Mobile Testing Remains Highly Important

Nearly 40% of respondents said native and mobile web apps are very important to their testing strategy. This remains consistent with previous years.
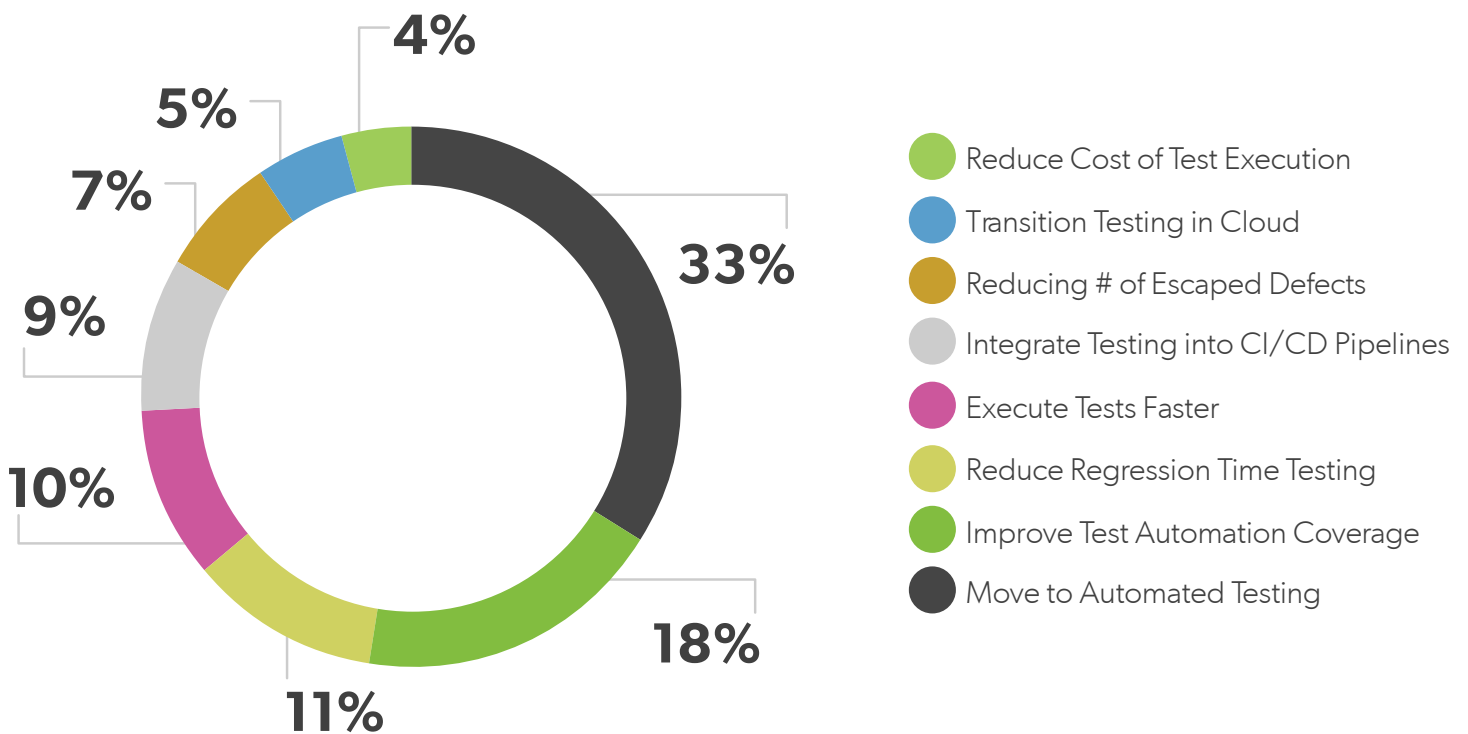
ON A SCALE OF 1 (LOW) TO 5 (HIGH), PLEASE RATE HOW IMPORTANT MOBILE NATIVE AND MOBILE WEB APPS ARE IN YOUR OVERALL TESTING STRATEGY

1	2	3	4	5
14%	8%	18%	22%	38%
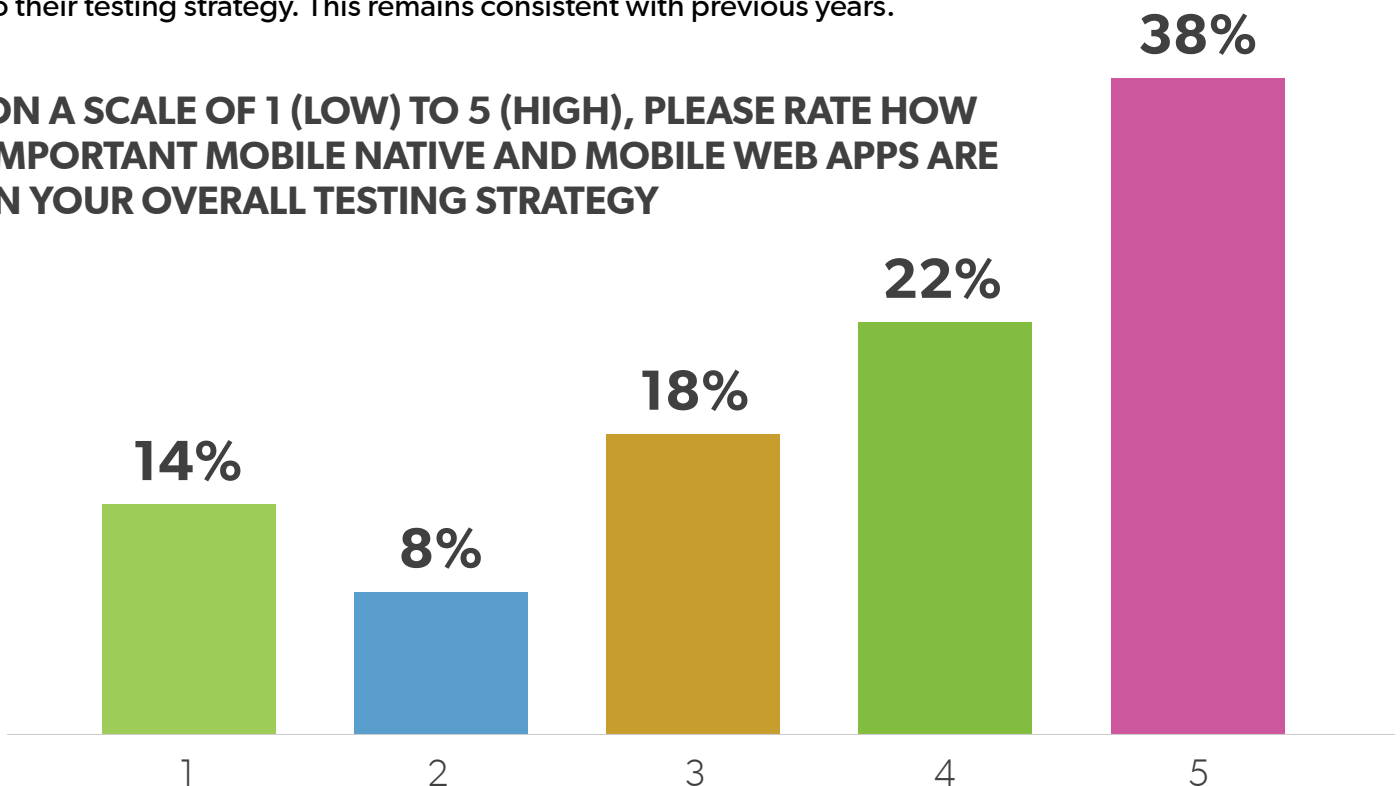
Improving Test Coverage is Growing as a Software Testing Priority

Making strategic decisions about test coverage based on users, their location, device trends, and a team's comfort with risk have come to the forefront of priorities for organizations. Test coverage is one of the key aspects of a testing strategy that teams are focusing on in 2023.

WHICH IS YOUR TOP PRIORITY IN THE NEXT 6 TO 12 MONTHS?

4%
5%
7%
9%
33%
10%
18%
11%

- Reduce Cost of Test Execution
- Transition Testing in Cloud
- Reducing # of Escaped Defects
- Integrate Testing into CI/CD Pipelines
- Execute Tests Faster
- Reduce Regression Time Testing
- Improve Test Automation Coverage
- Move to Automated Testing

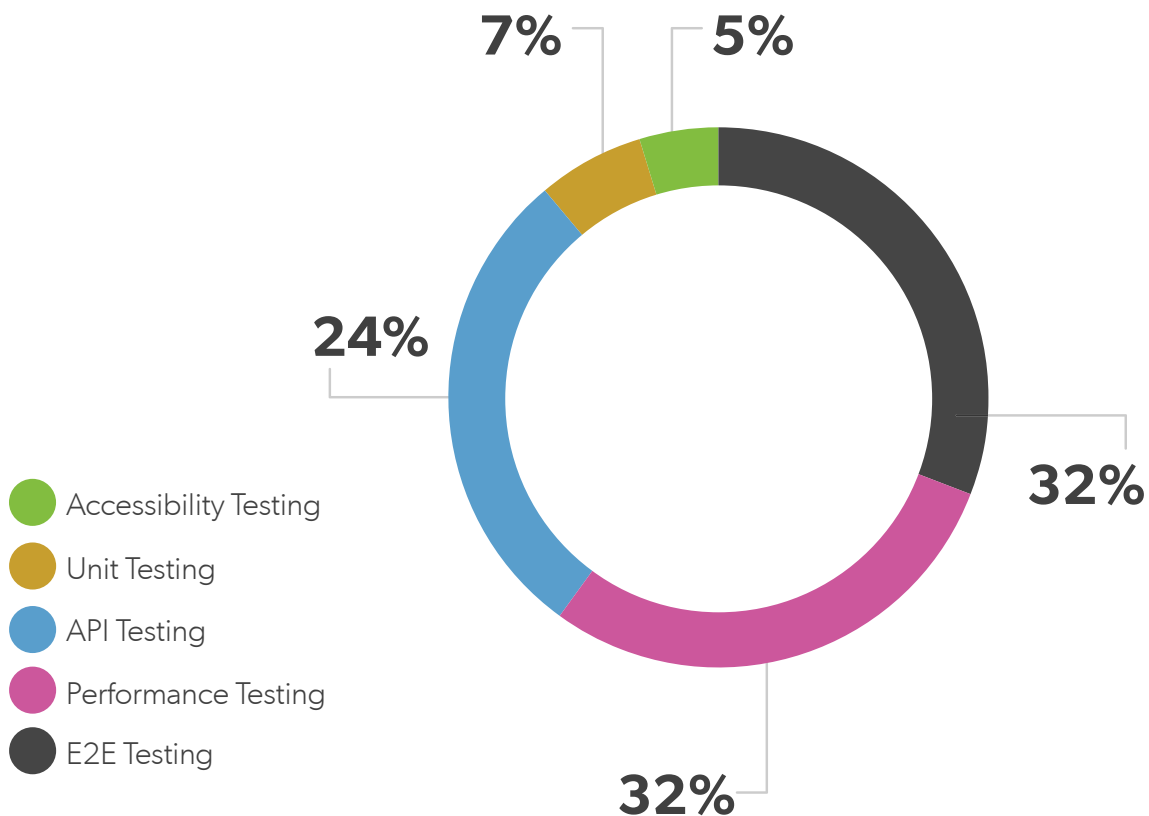Some of the best ways to optimize and expand your test coverage are:

- Balancing data & analysis with risk.
- Optimizing your lab configuration.
- Testing against security vulnerabilities.

Related Reading: Test Coverage Guide

Teams Continuing to Focus on Non-Functional Testing

2023 will see organizations seeking to expand shift-left testing with more of their non-functional testing capabilities by focusing on API, performance, and application security.

WHICH TEST AUTOMATION TYPES ARE YOUR MAIN FOCUS AREA IN 2022?

- Accessibility Testing
- Unit Testing
- API Testing
- Performance Testing
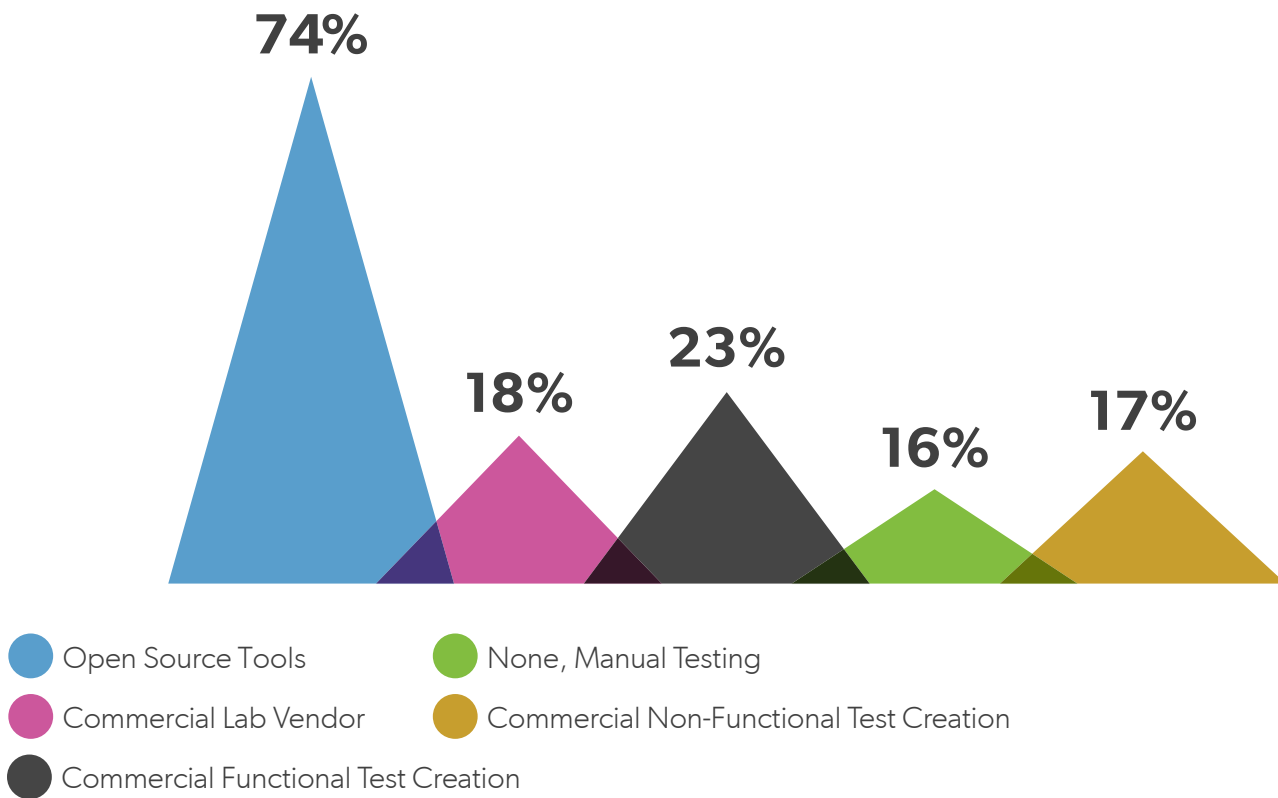- E2E Testing

7% — 5% — 24% — 32% — 32%

Shifting testing left remains critical in 2023. To do so, shifting more aspects of non-functional testing left will be a focus for teams.

Many organizations don't worry about areas like performance, accessibility, or security testing until the end of each sprint, or worse, only when something goes wrong. The results of not testing for things like performance and accessibility can be disastrous for a company. That's why organizations are looking for ways to incorporate these testing types into the sprints themselves.

54% Investing in Commercial Test Creation & Testing Lab Solutions

Organizations are continuing to see the benefits of commercial test creation tools for both functional and non-functional testing. By adding a commercial testing lab to the mix, teams will experience more effective testing by ensuring adequate test coverage.

WHICH TESTING TOOLS ARE ORGANIZATIONS INVESTING IN?

74% Open Source Tools
18% Commercial Lab Vendor
23% Commercial Functional Test Creation
16% None, Manual Testing
17% Commercial Non-Functional Test Creation

- Open Source Tools
- Commercial Lab Vendor
- Commercial Functional Test Creation
- None, Manual Testing
- Commercial Non-Functional Test Creation

Combining continuous testing platforms that support both functional and non-functional testing helps make web and mobile testing end-to-end a simpler and more achievable process.

That is why commercial platforms like Perfecto and BlazeMeter work better together by offering a unique cloud-based environment to create, execute, and analyze all testing types. You can see for yourself how features like Mobile UX Testing and Synthetic Mobile Application Data can benefit you with a demo.
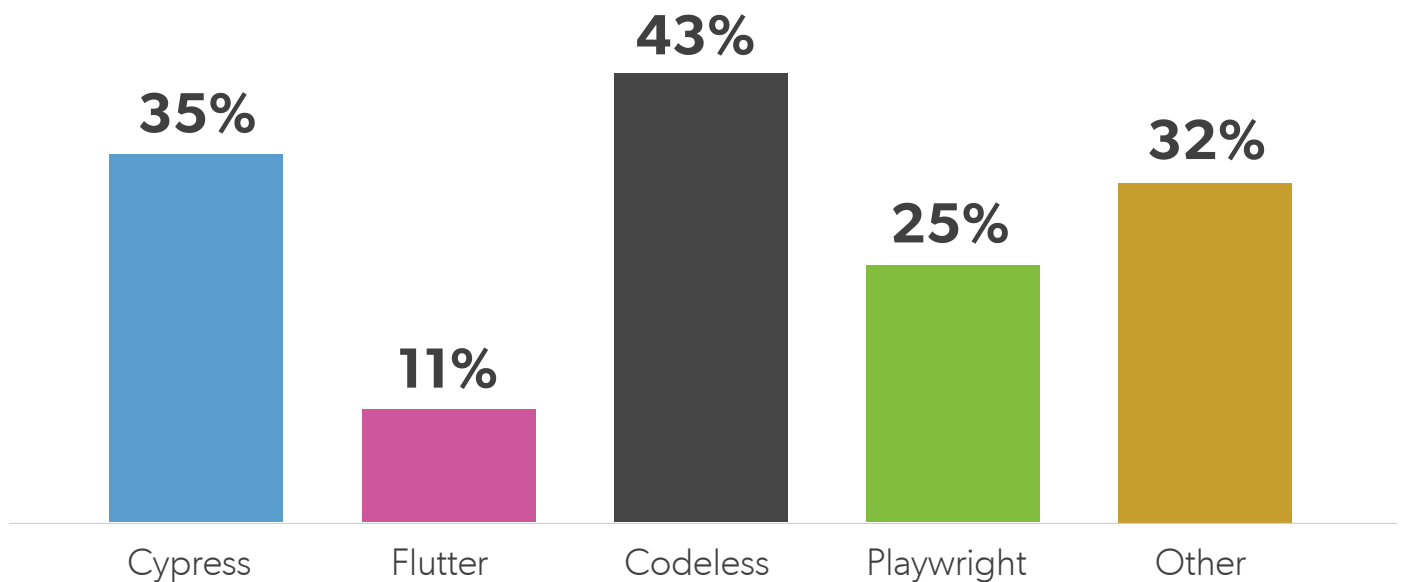
View Demo >>

Teams Embracing Low-Code/No-Code Solutions in 2023

Low-code and no-code solutions are continuing to see an increase in popularity. Organizations are investing in tools that can be used by their entire team regardless of coding skillset.

WHICH FRAMEWORKS ARE TOP OF MIND TO YOU IN 2022?

Cypress	Flutter	Codeless	Playwright	Other
35%	11%	43%	25%	32%

This increase is likely due to the rise in popularity of tools like behavior-driven development (BDD) and scriptless test automation options. Using a BDD framework for testing is a great way to expand automation to non-technical testers. With tests that anyone can understand, automate, and troubleshoot, teams can leverage BDD test automation to improve speed and quality at scale.

Similarly, scriptless testing offers the same powerful capabilities as more traditional frameworks while also making automation accessible to teams of any skill level.

Another aspect of the data to note is that the two most popular open-source frameworks of respondents are Cypress (35%) and Playwright (25%).

***Related Reading:** 3 Scriptless Automation Myths*

A Year in Review & What's to Come in 2023

The past year saw a lot of the same concerns and priorities as previous years while also addressing new and developing ways that testing changes.

As we look forward to 2023, teams will be looking for new ways to mature their testing and leverage new technologies — and Perfecto will be there with you every step of the way.

CHALLENGED BY LACK OF TEST AUTOMATION RESOURCES

As teams strive to bring their testing strategies up to speed to the best of their abilities, they will continue to bump into the roadblock of a lack of resources to put behind their efforts. Whether it be from a lack of buy-in from leadership or the constraints of a tight budget, being thoughtful and deliberate about testing will be imperative.

Teams will continually be pressed to prove the business cases of their tests, so it will be important to properly analyze the risk/benefit of a testing strategy, the complexity of tests, and highlight whenever possible the wins and efficiencies gained by moving to test automation. Always be ready to stand behind your desired testing strategy.

EXPANDED COVERAGE & STABILITY

Organizations will continue to look for ways to expand their test stability and coverage in 2023. By keeping test suites lean and valuable, while leveraging testing labs that support the latest devices, browsers, and OSs, keeping up with market changes can be much simpler.

We also see increased collaboration amongst team members to maintain test stability and resolve issues quickly. By increasing visibility and tailoring those insights to the responsibilities of each persona involved in testing (tester, developer, SDET, and agile/feature teams), will increase productivity and efficiency on all fronts.

SCALED TEST AUTOMATION

With more testing done on digital platforms, teams show a greater increase in test automation investment. In 2022, teams not only continued to grow their mobile and web app test suites, but also adopted additional technologies to serve different personas within the same team.

Frameworks such as Cypress and Playwright, together with more BDD adoption, have seen tremendous usage as developers and testers take on more testing responsibilities. This is not going to change going forward as digital winners will continue with such investments.

Additionally, the growing emphasis on shifting testing left will place more focus on performance, application security, and API test automation across platforms. These types of testing have become top of mind for digital businesses serving all types of users, as well as eliminating manual testing activities that happen too late in the development process.

About Perfecto

Perfecto powers exceptional digital experiences by combining the power of flexible test authoring, cross-platform execution, and AI-driven analytics into one secure, cloud-based web and mobile testing platform. Visit www.perfecto.io for a free trial, demo, or to learn more.

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