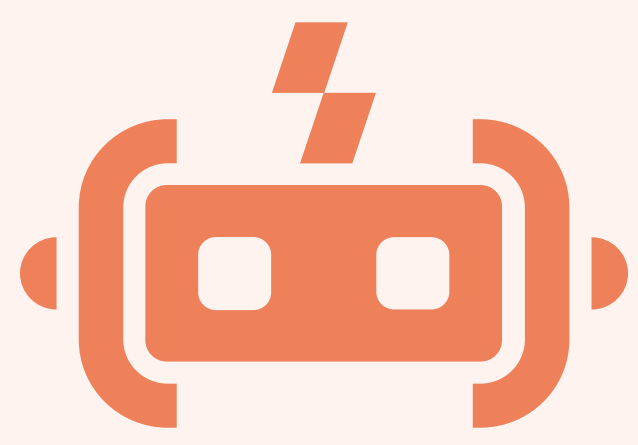


Continuous Quality Journey:

3 Test Strategies to Enhance Engineering Efficiency



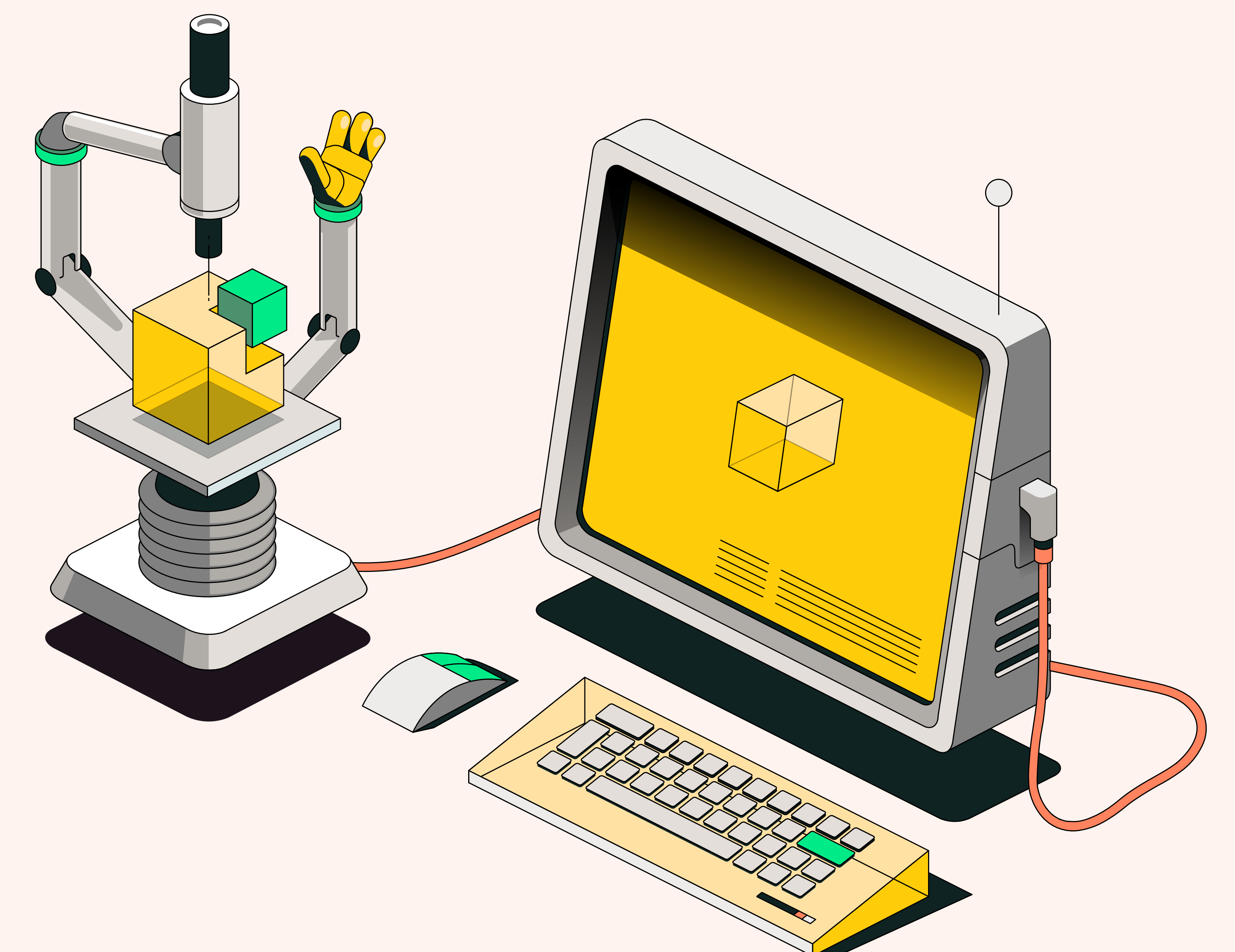
Your organization faces pressure on multiple fronts: deliver increasingly innovative and complex digital products on web and mobile, all while doing it faster and at scale, all before your competitor, and all without any broken experiences and errors that will drive away your users.

At the same time, budgets continue to be slashed, schedules continue to be shortened, and developers continue to be spread ever thinner while expected to do more. No pressure.

Engineering efficiency has never been more important for keeping quality high while increasing time to value. That's where a continuous quality approach to testing comes in. By integrating testing throughout development, integration, and production, a testing strategy built on continuous quality allows organizations to test smarter so developers spend more time building instead of debugging.

The ability to drive engineering efficiency gains is one reason why Gartner® predicts 70% of engineering teams will shift to continuous quality by 2026, up from 20% just last year.¹ According to their report, "Continuous quality significantly improves an organization's ability to serve and delight its customers. It provides the framework for operational excellence that drives value, supports the realization of business outcomes for customers and streamlines operational processes."

This guide outlines how leading enterprise companies use continuous quality-focused testing strategies to increase their engineering efficiency. By understanding how others leverage this innovative approach, you'll learn how to test in a way that decreases your development cycles, reduces costs, and helps you deliver a better user experience.



¹ Gartner, Innovation Insight: Continuous Quality, By Joachim Herschmann, Thomas Murphy, Jim Scheibmeir, 17 October 2023.

Your Choice: Continuous Quality or Continuous Headaches?

Now that people are online 24/7, users no longer have the patience for bugs, outages, or errors. Not only that, but a broken digital experience often results in real-world consequences: a car that doesn't start, a critical payment that gets missed, or vital healthcare that can't be delivered. Beyond being annoying, broken code impacts people's lives.

This means that everything you ship must work all the time, every time, no matter how, when, or where it's used. Despite that expectation, the reality is that organizations still ship products that aren't ready for prime time, with 42% of people reporting that they still run into bugs, defects, and quality issues in their digital experiences at least some of the time.²

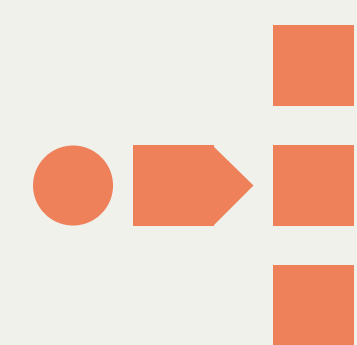
That's not to say they accept it: 70% agree that a poor digital experience impacts their decision to purchase³, while over 50% will consider switching to a competitor after just 3-4 negative interactions with a website, software, or mobile app⁴. And if your app happens to be mission critical for a major customer, downtime due to bugs can cost thousands of dollars an hour, damaging your brand reputation and your bottom line.

While testing is the key to delivering quality software, a traditional approach brings with it several challenges:



High Costs

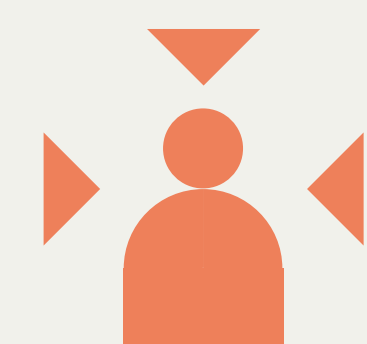
When developers spend a lot of time on testing, they have less time to work on new and innovative products. This can make your team less productive and drive up costs. Inefficient testing processes can cost up to 38% in additional FTE time⁵ – that's 15 hours per week per developer.



Scalability Challenges

Organizations are working overtime to produce more digital experiences, with 86% of companies surveyed reporting an increase over the past three years in the applications they've developed, and 47% saying their production has doubled⁶. However, two-thirds of organizations say they have issues with the scalability of their current testing strategy⁷, turning an essential task into a bottleneck.





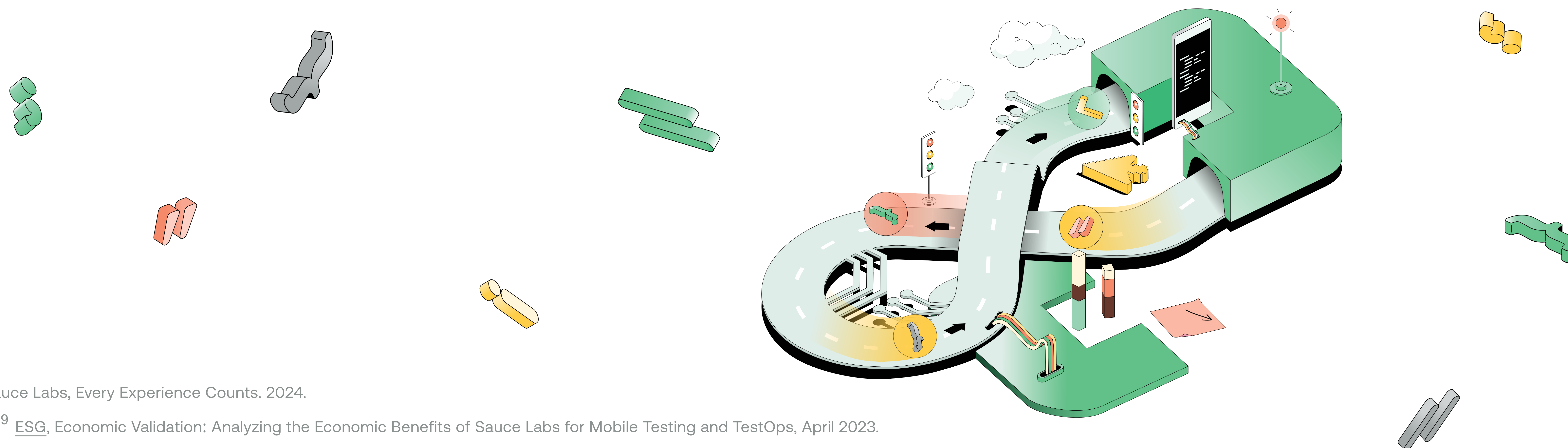
Operational Burdens

Developers have an average of 82 unique device/OS/browser combinations they need to juggle.⁸ Maintaining the devices and infrastructure required to test all these combinations takes time and money, especially with new devices, browsers, and OS updates constantly being released. It's no wonder that organizations cite maintaining their testing infrastructure as the top challenge for their mobile application development efforts.⁹



Triage Overload

Remote work and distributed teams mean that people responsible for building and delivering digital products within an organization – developers, quality assurance teams, product managers, etc. – often struggle with collaboration, which slows down troubleshooting. At the same time, even the best organizations can easily be overwhelmed by more defects than there is time to solve. As complexity grows, oversights and false-negative test results can lead to more bugs escaping into the wild, which are then much more expensive to remediate than when caught in the early stages before they reach production.



2, 3, 4 Sauce Labs, Every Experience Counts. 2024.

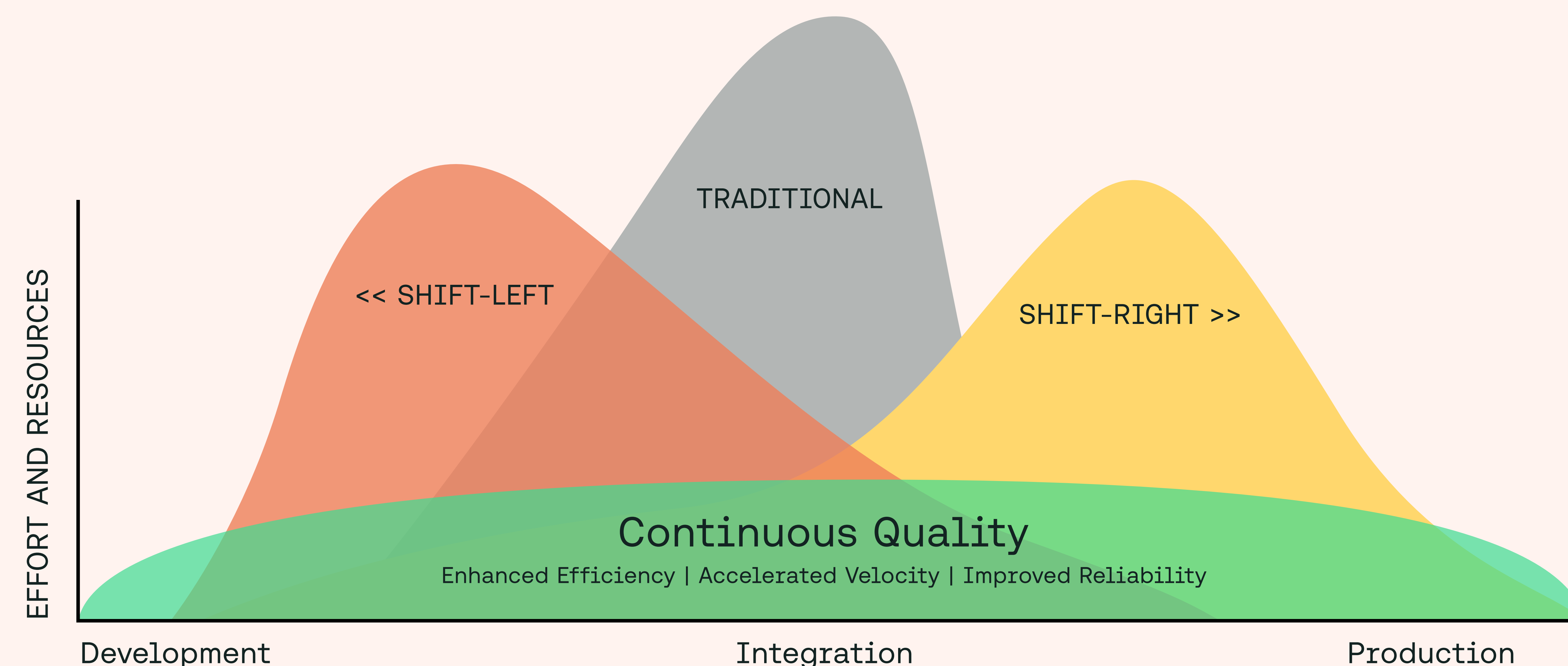
5, 6, 7, 8, 9 ESG, Economic Validation: Analyzing the Economic Benefits of Sauce Labs for Mobile Testing and TestOps, April 2023.



The 3 Ways to Implement Continuous Quality and Increase Engineering Efficiency

We've talked a lot about the apparent need for a testing strategy driven by continuous quality, but what does it mean to adopt this way of thinking and working across your organization?

With the rise of “shift left” and “shift right,” testing no longer occupies a specific stage in the development cycle, but is continuously integrated throughout every stage of development. By leveraging continuous quality throughout the software development lifecycle (SDLC), engineers can reduce their overall testing time and costs, get faster feedback when they need it, and ship more reliable products.



Leveraging an automated, end-to-end testing platform purpose-built for enterprises allows your organization to use powerful AI-augmented tools to detect bugs and errors faster, at less cost, and at enterprise scale. The proper testing platform provides everything you need to manage your testing infrastructure from top to bottom, allowing you to effortlessly scale your testing program while maximizing engineer productivity. This allows developers to overcome the testing complexity that often holds quality control back, while also helping to identify the root causes of issues so they can predict and prevent errors in the first place.

Here are the three key components to look for in an automated testing platform to improve engineering efficiency.



Automate testing to ensure continuous quality throughout the SDLC

Take a moment to think about how disruptive it is to constantly interrupt your team's workflow with manual code testing. With an automated testing platform, your developers can focus on writing solid code while letting automated tools leverage scalable virtual architecture to execute thousands of parallel tests without interruption.

The right automated test platform seamlessly integrates into your test strategy at every development stage for unparalleled extensibility, flexibility, and scalability across the SDLC. It allows you to test thousands of device, browser, and OS combinations using your framework of choice. This increases engineering efficiency by allowing you to improve quality at every stage of the process, reduce the amount of bad code that makes it into production to fix later, and eliminate wasted resources by ensuring you run the right test at the right time.



Time is money

The benefits of an automated testing solution



217%

ROI



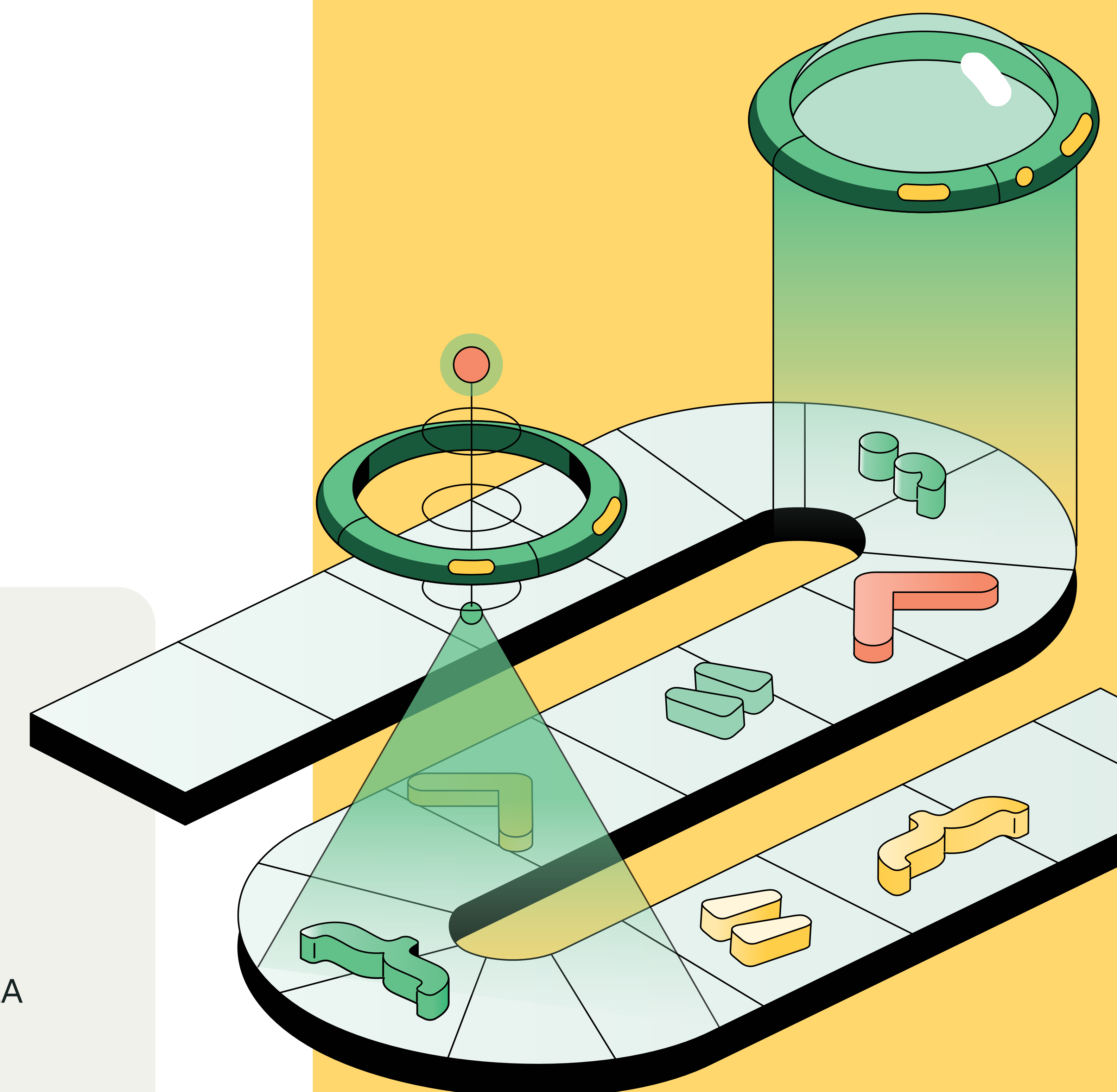
<6 months

Payback



+90%

Developer and QA
Time Savings



¹⁰ Forrester, The Total Economic Impact of Sauce Labs, June 2023.



Expand your mobile test capabilities

With people relying on smartphones and tablets more than ever, it's critical for your digital strategy to prioritize mobile. However, the challenges of juggling multiple devices and OS versions, localization, and frequent updates can make ensuring quality both complex and costly.

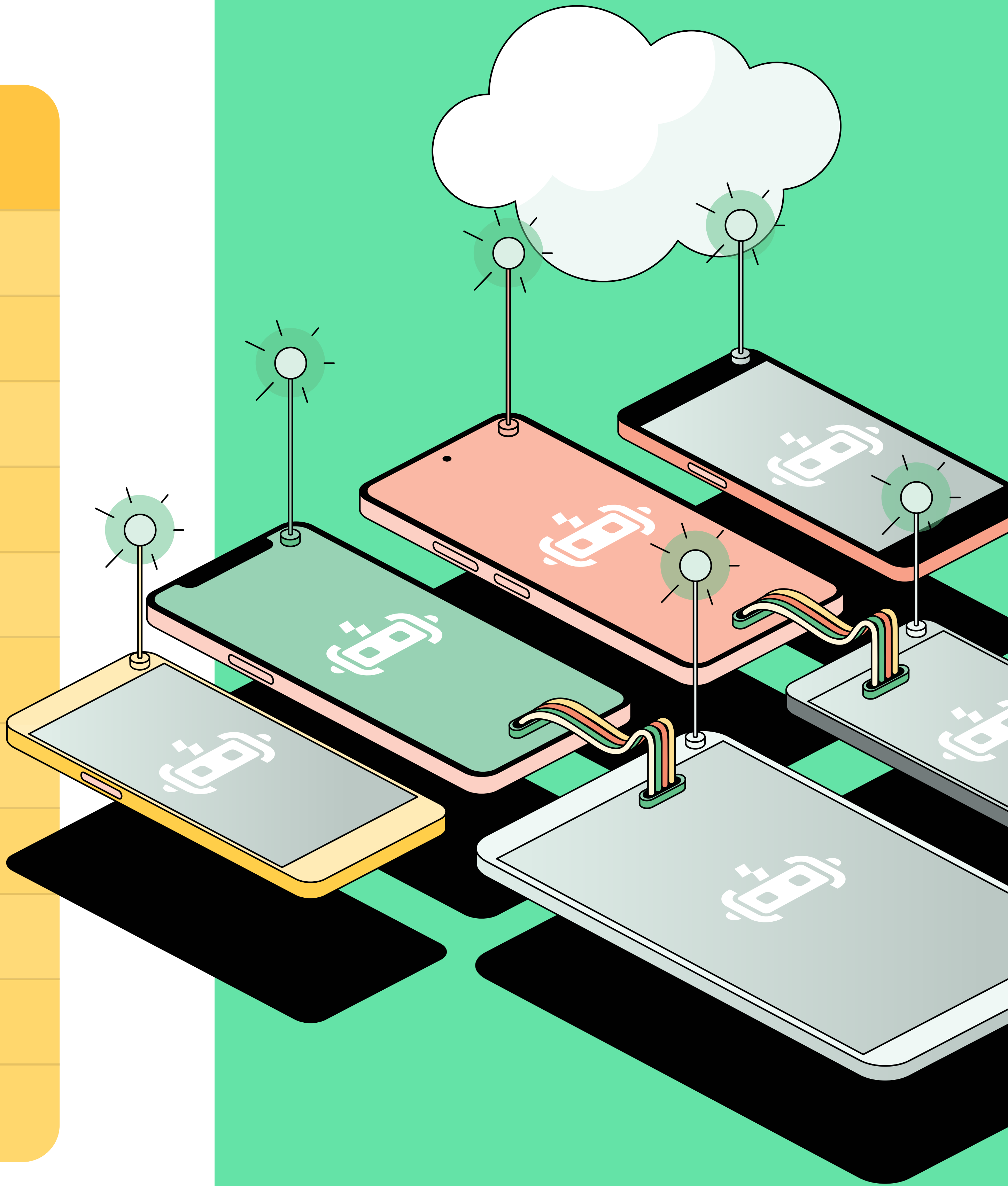
To increase your efficiency, your testing platform should make mobile app testing simple and efficient throughout the entire development process. Start by using Android emulators and iOS simulators early on to catch and fix problems sooner, which can save you both time and money. You can then use real device testing to ensure your app works well in real-world conditions. Combining these approaches helps you test more affordably and effectively, both early in development and in real-world scenarios.

The best of both worlds

	Real Devices	Emulators / Simulators
Functional testing for large integration builds		✗
UI layout testing	✗	✗
Functional testing for large integration builds	✗	
Panel/compatibility testing	✗	
System testing	✗	
Display testing (pixels, resolutions)	✗	
Replicate issues to match exact model	✗	
Camera mocking	✗	
UX testing	✗	
Push notifications	✗	
Natural gestures (pinch, zoom, scroll)	✗	

How to integrate emulators/simulators and real devices into your continuous quality testing strategy

In broad strokes, emulators and simulators let you automate testing so you can test faster and more frequently, while real devices let you test against device-specific features that can't be replicated virtually. By using both testing methods at the right time and for the right issue, you can increase your testing cadence, volume, and quality without impacting costs, scalability, or release cycles.



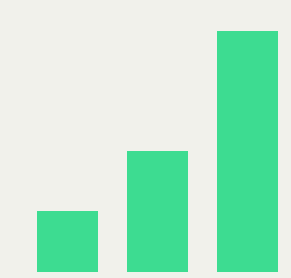
Enhance productivity with test analytics

Leveraging test analytics in your test strategy is critical to optimize for continuous quality. Automatically executing the right tests at the right time and in the right sequence ensures that your tests are executed more efficiently across the SDLC. By integrating test within their CI/CD pipelines, enterprises have been able to increase QA team productivity by 90%¹¹ while saving more than 4,500 hours of developer time per year.¹²

The more you test, the more data you'll generate about both your apps and your test process itself. The right platform will let you leverage real-time test analytics to help you prioritize test cases across the SDLC, accelerate debugging through root cause analysis, uncover deceptive or unproductive tests, identify failure patterns, and drill deeper into your test effectiveness.

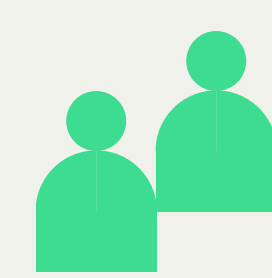
Test analytics and insights not only help to deliver higher quality software with more confidence but also enable you to be more targeted with improvements in your testing pipeline. Data can reveal opportunities to make long-running test builds shorter, contributing significantly to overall efficiency.

The benefits of test analytics



Maximize the efficiency of continuous testing

Test early and smarter so you can detect and fix bugs before they affect the development lifecycle.



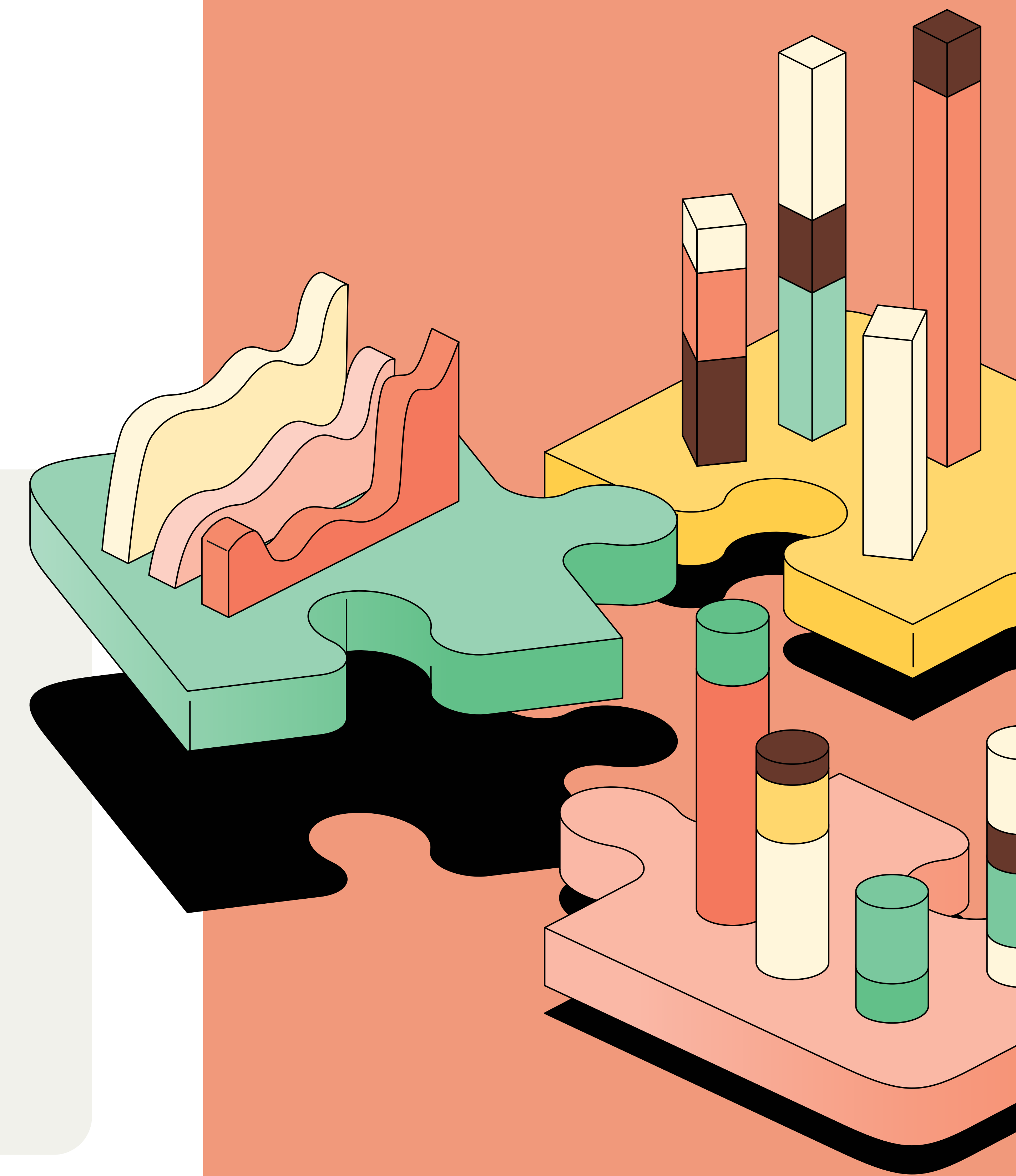
Promote transparency and collaboration

Give siloed developers and teams insight into test status across each phase for faster feedback and greater clarity.



Increase insight

Use data analytics to help developers make smarter decisions when debugging so they can get back to coding.



¹¹ Forrester, The Total Economic Impact of Sauce Labs, June 2023.

¹² Sauce Labs, Verizon Media Accelerates Millions of Tests Every Month Using Open Source Technology and Sauce Labs, April 2019.



The Case For Continuous Quality: Real-World Examples

By automating testing, leveraging mobile app testing (across virtual and real devices), and leveraging test analytics, leading organizations have been able to use a continuous quality approach to enhance engineering efficiency, reduce testing bottlenecks, and bring quality products to market faster.

Examples of leading enterprises leveraging Sauce Labs to achieve continuous quality:



This global retailer now executes more than 50,000 automated tests per day, allowing them to accelerate their deployment cycles from twice per month to multiple times per day.

[READ THE STORY →](#)



This financial planning technology provider went from zero mobile app automation to a comprehensive automated testing strategy that maximizes test coverage while significantly scaling mobile, browser, and visual testing.

[READ THE STORY →](#)



This e-commerce marketplace increased its productivity by 5x by optimizing the ability of developers to solicit and integrate feedback for its app's beta features.

[READ THE STORY →](#)



This marketing platform provider replaced their costly and inefficient in-house testing solution to speed up test execution times, manage and parallelize a high volume of test cases, modernize QA efforts, and shift their strategy from manual to automated testing.

[READ THE STORY →](#)

Ready to learn more?

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About Sauce Labs

Sauce Labs is the leading cloud-hosted platform for automated testing of web and mobile applications, enabling fast delivery of high-quality software across the development lifecycle. Founded by the creators of Selenium, Sauce Labs has been the testing leader for over 15 years and now runs over 1 billion tests annually. Trusted by Fortune 500 companies like Toyota, Walmart, Verizon, Gannett, and Fidelity Investments, its scalable, secure platform supports testing across thousands of operating systems, browsers, and devices while meeting the highest compliance standards.

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