



Driving Business Innovation Through Continuous Testing

In an age where your users demand no-fail experience, continuous testing has become a mission critical component for engineering teams of all sizes. However, while this topic was once discussed at lower levels, the conversation has made it all the way to the C-suite. No matter your industry, if your team isn't thinking about testing at a high level, then there is a chance that you are missing out on revenue due to flawed app functionality, delayed releases and slowed innovation. It is important to understand the business benefits of continuous testing and automation to avoid these outcomes, and make the changes necessary to set your applications up for success.

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INTRODUCTION

Apart from quality assurance engineers, most people have traditionally tended to pay little attention to automated testing. Test automation -- which refers to an approach to software quality control that is founded on automated tests to identify and address performance and security bugs -- is a technical topic that, until recently, interested only software testing practitioners.

Yet over the past several years, mostly due to the advent of Continuous Integration and Delivery practices, automated testing has joined the group of major technological innovations that, although inherently technical in nature, have crucial ramifications for business value. Like virtualization, cloud computing and containers, automated tests have emerged as an essential technology for driving business innovation.

Automated testing has become even more critical as organizations shift left towards continuous testing practices. Unlike legacy testing methods that occur at the end of the development process, continuous testing requires that an app be quality checked at multiple stages in its lifecycle, including development, integration, pre-release and production. This practice is required for continuous delivery of applications, as it ensures that defects are caught during development, and that new features are reaching users faster than ever, all while saving time and money from bugs showing up in production.

This white paper begins by explaining why automated testing is so important for modern business innovation. It then takes a deep dive into the significance of automated testing in three major industries: financial tech, retail and media.

By explaining the business value of automated testing in ways that can be understood by stakeholders who are not testing engineers, this white paper highlights why automated and continuous testing is now vital for sustaining a healthy business and empowering it to grow.

WHY TESTING MATTERS

In the past, testing was rarely a topic of discussion among managers. The quality control processes of most companies were driven by feedback from end-users. Developers responded directly to user complaints, with no need to loop management into the process.

In cases where companies invested in quality control teams rather than relying on users to identify software problems after applications had

been delivered to production environments, there was still no need for management to involve itself in the work performed by testing engineers.

Today, however, automated testing has become an important consideration for business managers. Digital disruption has fundamentally altered the approach that companies must take to software quality assurance. Underperforming, buggy and insecure applications can cause companies billions of dollars in losses.

This is true not just because of the direct costs associated with software failures, which can amount to \$686,250 per hour of downtime for large companies, [according to the Aberdeen Group](#), but also because of indirect damages.

In an age when installing a new app is as simple as a few swipes of the finger inside an app store, users abandon underperforming applications -- and, by extension, the companies that deliver them -- very quickly. 79% of users [will only retry an app once or twice](#) if it fails to work the first time. 40% of mobile visitors [will abandon a site](#) after a three-second delay.

In addition, one user's dissatisfaction can quickly create negative impressions among other users or potential users as a result of the ease with which unhappy users can leave negative feedback in app store comments and social media. An app with a rating of 4.5 stars in an app store [will be downloaded](#), on average, 3.7 more times than an app with 3.5 stars.

Another major challenge impacting businesses today is the fact that time spent chasing bugs translates to less time innovating and developing new features. Lack of innovation undercuts a business's ability to remain competitive in the market and continue to attract new users. And because bugs are much faster and less costly to fix when they are discovered before software is released into production, a poor testing strategy exponentially increases the distraction that bugs cause to business innovation.

Finally, quality problems severely damage a company's reputation. Even if problems impact only one of several applications developed by a company, or are quickly resolved, the damage to the brand is done as soon as reports of bugs or security vulnerabilities reach consumers. This is a lesson that companies such as Intel and Yahoo! have learned with difficulty in recent years, following the disclosure of severe performance or security problems with some of their products.

As Intuit, a company that provides a range of consumer-focused accounting and tax preparation software, [notes](#), "A key factor in growing our customer base is to deliver an amazing first-use experience so our customers can get the value they expect from our offerings as quickly and easily as possible."

The concerns described above have pushed many businesses to prioritize automated testing as a top-down initiative. Forward-thinking managers realize that it cannot be the responsibility of software engineers alone to assure product quality. Engineers need committed support from management to provide focused, comprehensive support for quality assurance via automated testing.

THE COST OF POOR APP PERFORMANCE: A LOOK AT THREE INDUSTRIES

No industry is safe from the risks of a poor testing strategy. The only means of ensuring that your business avoids the losses described above, while also delivering new features and innovations at the speed of user demand, is to build a testing strategy founded on test automation.

How does a business transition to an automated testing strategy?

The sections below explain why and how companies in three major verticals -- fintech, retail and media -- successfully made test automation a business priority, and discusses the innovation they achieved as a result.

Financial Tech

The financial technology, or fintech, industry is terrifically crowded and competitive. Between just 2013 and 2015, investment in the fintech industry in the United States [increased from about \\$4 billion to more than \\$30 billion](#). There are [over one thousand companies](#) in the space, including startups as well as established financial companies that are striving for digital transformation. 18% of millennials changed banks in the last 12 months, according to a [recent Accenture survey](#), highlighting how difficult it is for financial services companies to retain customers.

This competitiveness means that fintech companies face tremendous pressure to compete for and satisfy customers by delivering quality products. At the same time, because the value offering of fintech companies centers on using digital technology to provide consumers with new value within the traditional finance industry, delivering a seamless digital experience is all the

more important. In many cases, companies must balance innovation with the need to preserve compatibility with existing legacy technologies, such as mainframes, since they remain important parts of the infrastructures of many companies in the financial industry.

For these reasons, developing agile software delivery workflows and maximizing software quality are essential for ensuring the success of fintech companies. Without test automation, achieving the speed, quality and technological integration required to sustain rapid innovation and avoid software quality problems is simply not feasible.

The fintech industry is taking note of this trend. According to a [recent Capgemini/Sogeti World Quality Report](#), the top 3 IT initiatives in finance include:

- Enhanced security
- Higher software quality
- Better customer experience

Automating testing, as well as testing across multiple combinations of browsers and operating systems, is key to achieving these goals, as the [experience of the mobile bank N26](#) shows. The company, which operates in nearly two dozen countries and counts 500,000 customers, focuses on mobile-first banking.

A core part of N26's value offering is its ability to deliver a consistent, convenient banking experience, no matter which platforms customers use. Customers choose N26 because it offers a more seamless banking solution than other financial institutions.

Maintaining this level of service requires N26 to provide flawless support for any type of mobile device and browser.

Initially, the company relied on a tedious manual testing strategy for ensuring that its application worked as intended on iOS and Android devices across multiple browsers and versions. That strategy was not effective for preventing application performance problems that could drive users away. It also failed to enable the company to scale its application quickly as it expanded into new markets.

Today, N26 has solved these challenges by automating software tests using Sauce Labs's Continuous Testing Cloud. The company is now able to test its

software daily and integrate automated testing into its continuous delivery pipeline, which ensures the ability to innovate quickly. "The main benefits to our business are continuous releases and happier customers" Martyna Wojna, a quality assurance engineer at N26, said about using Sauce Labs, "Our automated testing framework on Sauce Labs identifies more bugs before release," leading to "a better customer experience."

Retail

In the retail industry, which is beset by [miniscule profit margins](#) and the ever-present threat of digital disruption, market and industry changes quickly make existing products and services obsolete. In order to overcome the challenges currently facing the industry, retailers must be able to innovate their products and services quickly in response to market demand. They must also be able to extend their reach into the world of ecommerce and deliver an omnichannel user experience for all customers, whether in a brick-and-mortar store, through a traditional website accessed from a PC or via a mobile app.

When it comes to ecommerce, simply offering a website or app is not enough for retailers to remain competitive. Standing out from the rest of the ecommerce crowd -- and competing successfully with retail companies that have an online-only strategy -- requires delivering a flawless, personalized shopping experience. The experience must also allow customers to move seamlessly between physical and digital shopping portals in order to provide an integrated shop-and-buy experience and maximize consumer choice.

Successful retailers are leveraging automated testing to help meet this challenge. One major omnichannel retailer that runs automated tests on Sauce Labs found that by adding an additional browser/operating system combination to its tests, it was able to increase online sales revenue by one million dollars per month.

Another retailer, which specializes in online sales of electronics components, found that browsers and devices that were not part of its automated testing routine suffered an abandonment rate that was 60 percent higher than that for other versions.

Automated testing is important for helping retailers keep pace with the demands of continuously delivered applications, too. Amazon, the world's leading online retailer by revenue, updates its online shopping software every eleven seconds on average. Without automated testing, ensuring the quality of applications that change so frequently would not be possible.

Media

The media industry is similar to retail in that companies have to deliver seamless customer experiences no matter how customers engage -- which they may do via PCs, mobile devices or tablets, using streaming video, audio, interactive media and more.

Although the current trend is toward mobile-first media consumption, with [48 percent of millennials](#) now viewing videos solely through mobile devices, other types of devices remain widely used. To succeed, media companies must maintain Web and mobile apps that work flawlessly across a huge number of devices, operating system and Web browser combinations.

Optimizing media application performance across such a diverse range of environments is challenging. However, as the [story of Bleacher Report](#), a media company that specializes in sports content, shows, an effective testing strategy allows media companies to meet this challenge and leverage multiple engagement channels effectively.

Beginning in 2012, Bleacher Report experienced a significant climb in mobile traffic, which began to account for more than 50 percent of its user base. By extension, the company faced increased pressure to ensure a quality user experience across multiple platforms.

Its ability to do so was severely hampered by its reliance at the time on a manual testing strategy. Although the company had a quality assurance team, its engineers were not able to perform tests quickly or systematically because they lacked the ability to automate them.

That changed in 2013, when the company implemented the Sauce Labs' Continuous Testing Cloud "Once we realized our mobile traffic was surpassing our desktop traffic, we knew we needed a way to figure out how to test all the things," said QA Engineer Felix Rodriguez.

Today, Bleacher Report is able to test a total of nineteen native and mobile applications across multiple hardware profiles. Thanks to automated testing and the ability to run tests in parallel, its test suites take only two minutes to complete.

As a result, the company's engineers are able to focus on innovation, rather than chasing bugs and manually addressing software quality problems. Bleacher Report can now "focus on the bigger picture," Rodriguez explained.

"We can now work on fun internal tools, such as a deployment dashboard, that lets everyone know what's being deployed to what environment."

CONCLUSION

For companies across multiple industries, automated continuous testing is not simply a nice-to-have technology or a way to make engineers' work a little easier. It is an essential resource for helping the business to remain competitive and continue to innovate.

Sauce Labs provides instant access to a cloud-based continuous test execution platform that supports virtually any combination of desktop and mobile software. Because Sauce Labs runs in the cloud, it requires no setup or maintenance on the part of the customer, and it can scale seamlessly along with customers' needs. In addition, the advanced Analytics dashboard gives teams visibility into real-time test data that allows you to prioritize your efforts - leading to faster releases and happier users.

To learn more about the value Sauce Labs offers for business, we invite you to review our library of [customer case studies](#). You may also [sign up for a free trial](#) of our testing service.



ABOUT SAUCE LABS

Sauce Labs is the leading provider of continuous testing solutions that deliver digital confidence. The Sauce Labs Continuous Testing Cloud delivers a 360-degree view of a customer's application experience, ensuring that web and mobile applications look, function, and perform exactly as they should on every browser, OS, and device, every single time. Sauce Labs is a privately held company funded by Toba Capital, Salesforce Ventures, Centerview Capital Technology, IVP, Adams Street Partners and Riverwood Capital. For more information, please visit saucelabs.com.



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