



CUSTOMER JOURNEY

**Delivering a Seamless Omnichannel
Experience with Test Automation**

INTRODUCTION

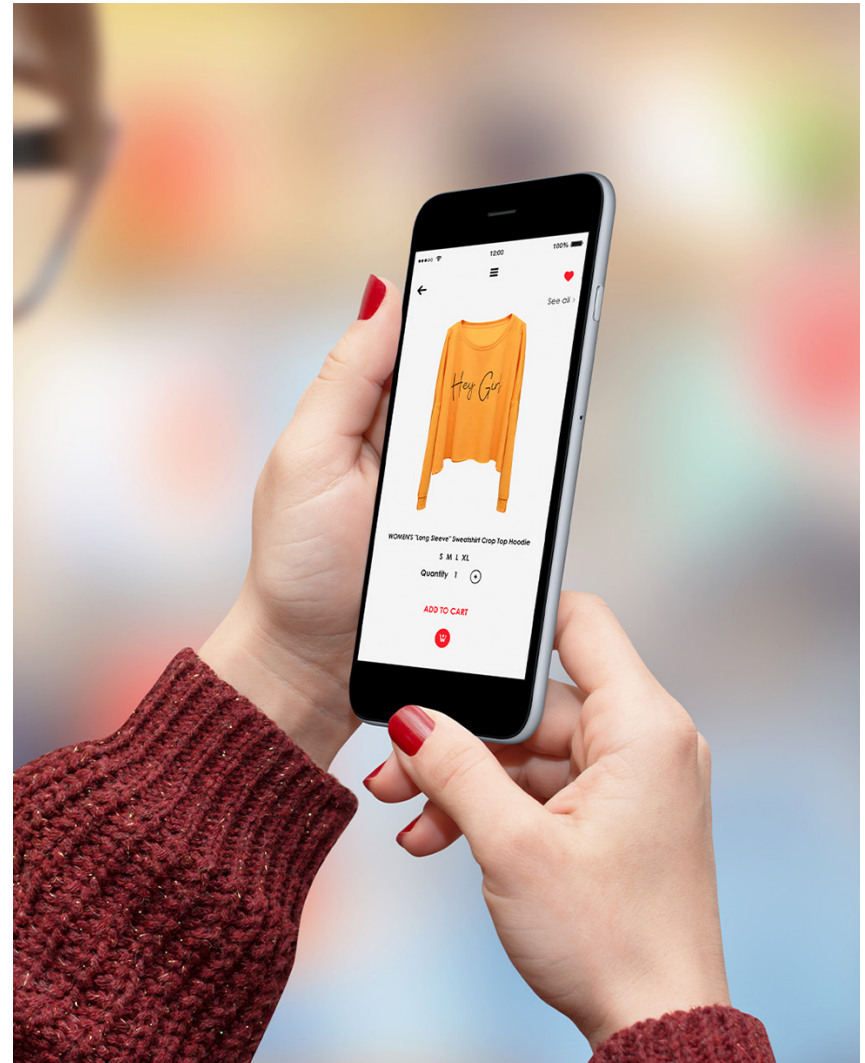
Test Automation for Omnichannel Shopping

It's challenging for retailers to adapt to constant change and quickly connect back-end operations, online experiences, and in-store transactions to meet customer expectations.

Retailers are implementing user-centric test automation to overcome these challenges and deliver a frictionless omnichannel experience wherever their customers shop.

However, automated testing across the end-to-end customer experience buying journey can be complex for retailers. The key elements that retailers must test are maintaining smooth customer journeys, quick and simple checkout experiences, and secure integrations for point-of-sale (POS), inventory management, and payment systems.

This eBook highlights the five areas where the omnichannel shopping experience benefits from software test automation solutions to win the brand loyalty of new buyers.





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CHAPTER 1

Intelligent Customer Journey Testing



Intelligent Customer Journey Testing

Delivering a seamless, simple online experience will positively impact any potential customer who visits your website or mobile application. The customer experience is important — it determines whether someone will buy an item from you or shop with a competitor.

To do this, retailers have more than likely visualized the perfect customer journey that includes stages such as:

- Discovery
- Interest
- Intent
- Purchase

Customer journeys that follow these four stages are happy paths and require testing to ensure these function as expected. Manually testing happy paths can take an excessive amount of time. It is an incredibly mundane process that may lead to human-related errors entering the testing process. These errors can result in missed deadlines or bug-filled applications and websites.

However, happy paths aren't the only user journeys a consumer can take; there are "what if" scenarios. As the number of happy paths and permutations of those paths increase, manual testing simply cannot scale effectively.

What if a customer forgets an item while checking out? What happens when they click the back button to add it to their cart? What if a customer needs to update an expired credit card midway through a purchase? These everyday actions must be easy to complete. If the buying process is flawed or overly complicated, the likelihood of customers getting frustrated and abandoning their carts increases.

Complications lose carts: **27%** of carts were abandoned because the checkout process was too complex, or the site was slow.

Annex Cloud

Other “what if” moments, such as potential customers landing on URLs retailers never expected before making a purchase, can also occur. Paths like these may lead to more frequent and higher conversions you never considered when visualizing the perfect customer journey.

These customer journeys are undiscoverable without analyzing an entire website or application. Without accurate data testing, your company may focus on areas of an application that does not generate as much revenue. Using a solution that turns behavioral trends into actionable insight, QA engineers can test the highest converting paths to prevent them from breaking, returning a 404 error, or loading slowly.

Trying to test manually is nearly impossible. Even the best manual testers struggle to predict and document user behavior to write the necessary scripts to enhance the customer journey.

Implementing automation accelerates customer journey testing and removes the opportunities for errors. Retailers can validate the UI level by using a model-based approach to test functionality instead of only relying on code verification. This method mirrors the user’s experience to uncover system bugs before they negatively impact the buying experience.

Retailers need to employ AI-powered exploratory testing to increase test coverage and intelligently auto-generate test cases based on actual user behavior when testing “what if” scenarios.



Proving the value of customer experience (CX):
65% of respondents would become long-term customers if brands deliver positive experiences throughout the customer journey.

Forbes Insights Report



CHAPTER 2

Cross-Device and Browser Testing



Cross-Device and Browser Testing

Every customer expects the same, seamless shopping experience no matter what device and browser they use. To complicate matters for retailers, customers commonly use multiple technologies before making a purchase.

One customer will place an order through an application on the latest iPhone and iOS versions. Another might begin their shopping journey on an Android tablet and complete their purchase in a Chrome browser on a Windows machine. The next customer could have a OnePlus mobile and then continues shopping in Safari on a Mac.

Some retailers might conduct research and discover that Chrome browsers and Android devices dominate the global market. Although useful, it doesn't provide any real value as it is neither specific to their business or customers.

How do retailers know which browser, device, and operating system version to test? Even if it was possible, trying to test every possibility manually is time-consuming and inefficient.

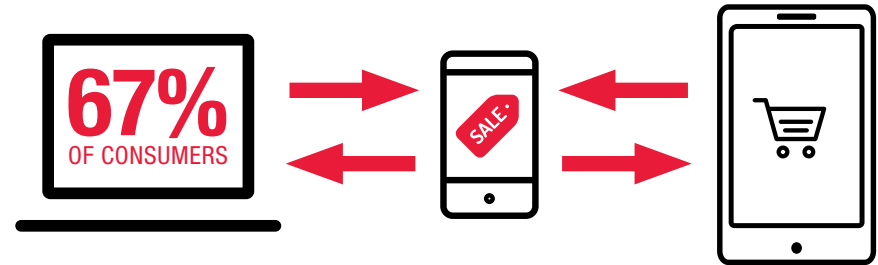
73% of retail consumers use multiple channels to shop.

Harvard Business Review



The most successful retailers use data to gather insights on user journeys and behavior across device types and browsers. By turning behavioral trends into actionable insights, retailers can test the most popular technologies that produce the most revenue. Integrating the data into a test automation framework will improve software quality and ensure the user experience keeps conversions high.

Retailers can visually replicate every possible journey, no matter the technology, by using a digital twin model-based approach. Retailers can also reduce test maintenance as one model can validate the UI without verifying the underlying code, which varies across devices, browsers, and operating systems. Using an automated test model can quickly uncover bugs before negatively impacting your customer's shopping experience.



Move between devices when they're shopping online — and **98%** of those switch between devices in a single day.



Figure 1. Delivering a seamless customer experience requires intelligent testing across various devices, operating systems, and browsers.



CHAPTER 3

End-to-End Testing



End-to-End Testing

There are numerous touchpoints available when interacting with a brand — navigating between the different channels must be simple for the customer. The retail systems that support these journeys require integration and need to function seamlessly. Retailers must also consider the number of essential front-end and back-end system integrations requiring testing to deliver a quality omnichannel experience.

However, manually testing and integrating these connections to create a seamless omnichannel experience is a complex challenge.

Retailers may not have in-depth customer journey analytics to determine which phase a journey may begin or end. One customer might land on an eCommerce site via a link in an email. Another may purchase an item via an advertisement on a social media site, which needs to connect to a payment option via a POS system. Another customer might place an order through a mobile application for curbside delivery, requiring up-to-date inventory data.

Because user journeys involve various touchpoints and technologies, creating manual tests that include every permutation is cumbersome, time-consuming, and costly. The increase in cost is due to the

numerous tools it takes to find the bottlenecks or errors that impact the customer experience.

By combining end-to-end testing with AI and machine learning, retailers can significantly increase test coverage by quickly identifying integration gaps or broken links. This process ensures the customer has an exceptional omnichannel experience across any device they use. Implementing a model-based approach to testing removes the need for multiple tools as one model can test across all channels and technologies.



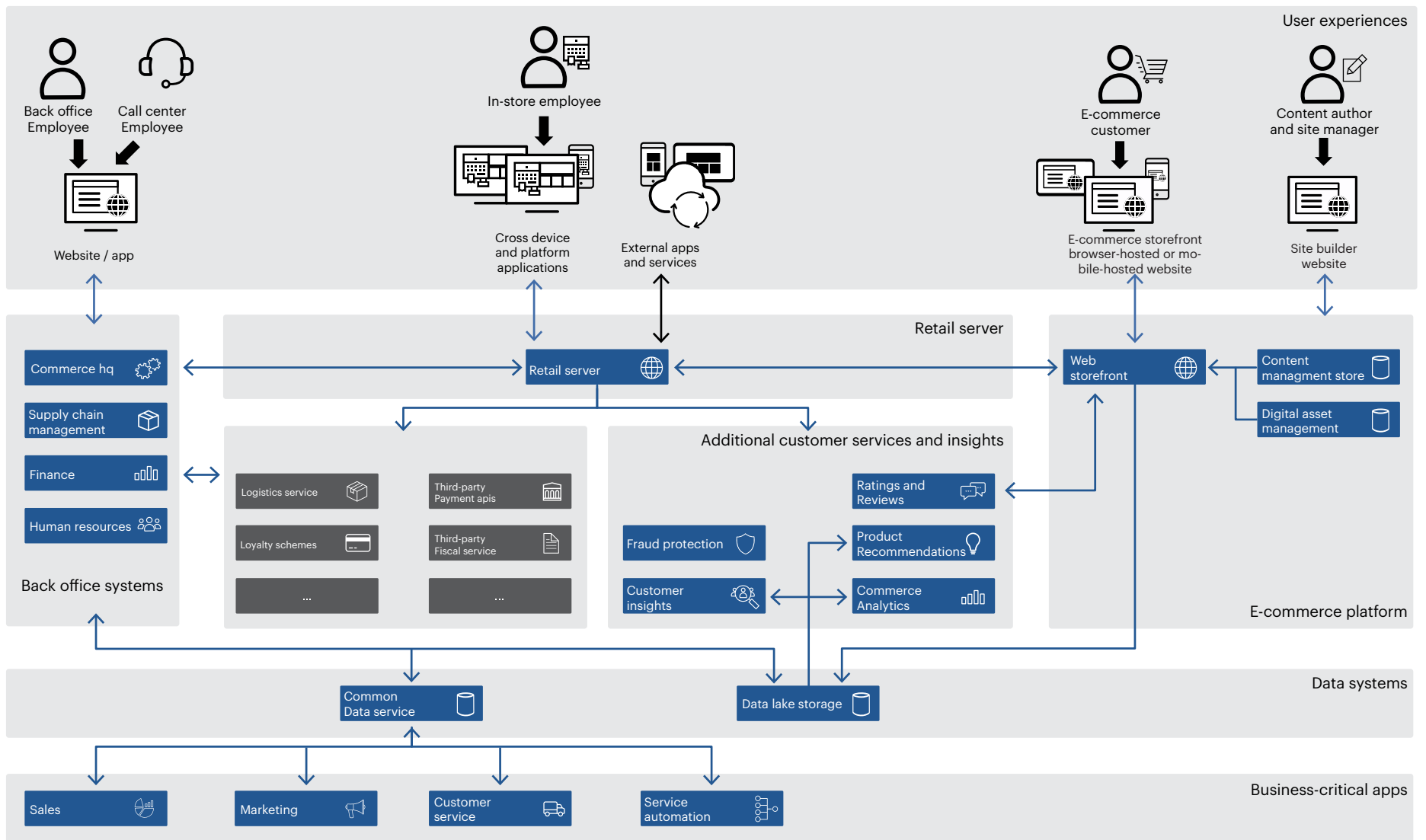


Figure 2. End-to-end testing across the entire retail technology environment ensures every application, workflow, and back-office system functions as expected and delivers an exceptional omnichannel experience.



CHAPTER 4

Performance Testing



Performance Testing

When a customer lands on a website or mobile application, they expect it to work. And retailers need to rely on their IT infrastructure to monitor traffic levels, no matter how many people use it.

eCommerce is increasing, and retailers can experience surges in online activity, especially after promotions or holiday shopping. Marketing campaigns across various communication platforms such as social media, email, or SMS text also contribute to an increase in online traffic.

Amazon Gets Biggest Prime Day —
\$100 Million in Lost Sales During One
Hour of Downtime.

Netimperative



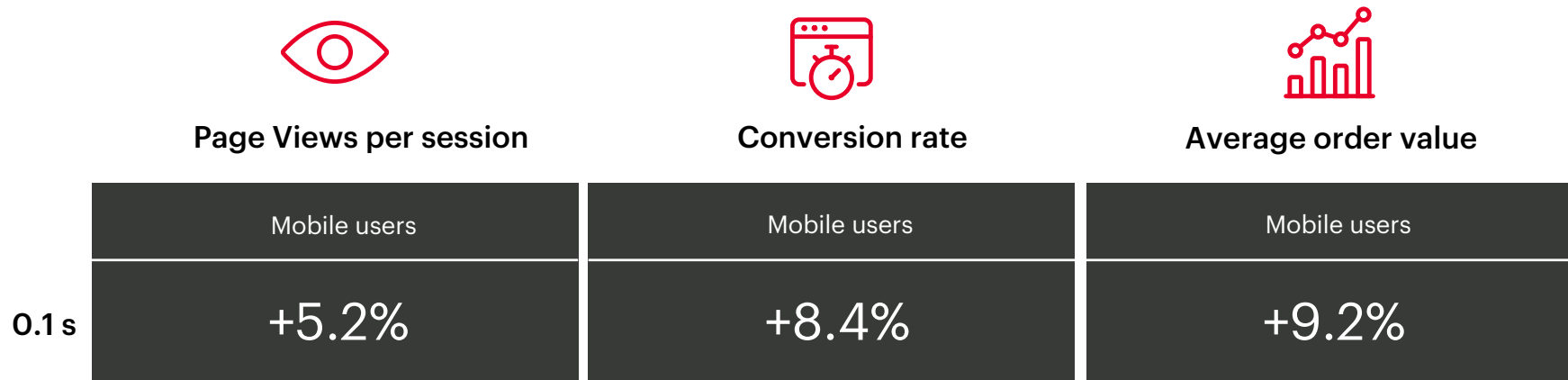


Figure 3: When site speed is improved by 0.1 seconds, retailers can see a positive impact on page views per session, conversion rates, and average order value.

Google/Deloitte - Speed Impact Study

Retailers must undertake load testing to prevent websites or mobile applications from taking too long to load or, worst-case scenario, crashing. Load testing verifies website or mobile application performance under peak load and identifies any bottlenecks along the customer journey that could cause downtime.

Ensuring websites and mobile applications perform every time, retailers must continuously monitor and test the various platforms. This approach enables retailers to analyze data to understand how it affects performance using various scenarios, such as how user numbers affect load times and conversions.

To do this effectively, retailers must test performance at the user-interface (UI) level and visually validate the system under test to understand precisely how it impacts the customer experience.

Reducing your page load time by **0.1** seconds can boost conversion by **8%**.

Deloitte Digital Report



CHAPTER 5

Point-of-Sale Testing



Point-of-Sale Testing

Modern POS systems have become crucial for retailers to connect online and offline journeys across various customer channels. By integrating eCommerce platforms with in-store devices, and back-end systems, retailers can offer seamless omnichannel experiences.

Successful retailers can analyze customer behavior and offer cross-channel promotions, discounts, and personalized recommendations to help increase purchases. A choice of diverse payment options can boost conversion rates to reduce cart abandonment. Activating marketing initiatives and loyalty programs when retailers connect their POS systems to a customer relationship management (CRM) platform can lead to an increase in sales.

However, retailers must cater to shoppers who use a mix of shopping channels. Some customers will start their shopping

journey online but want to collect an item in-store. Others still want to shop in person, requiring POS integration with chip-and-pin devices, credit card terminals, or automated self-checkout lanes.

POS must also connect to back-end systems and cloud-based databases to manage inventory levels, coordinate logistics — deliveries, returns, and curbside pickup — and analyze accounting data to enable company growth.

With so many integrations with software applications, physical devices, and databases, POS systems are incredibly complex and require extensive testing.

80% of consumers are more likely to make a purchase when brands offer personalized experiences.

Epsilon

Retailers must overcome further challenges, such as different codebases used to build these applications and systems, including validating the UI, not just verifying the code. Every time a new feature, upgrade, or a release of a new workflow, the entire configuration changes. Each phase of the customer journey requires end-to-end testing.

If manually testing these varying components, the chances of test fatigue and human error increase and make it a challenge when creating repeatable tests and identifying errors.

As the omnichannel experience shifts, retailers need an agile test automation solution that copes with constant change and can test any technology.

Model-based testing is flexible and can adapt to any system under test (SUT). Because of the complexities of POS systems and their integrations, using a model is far quicker than manual testing because multiple tools are not necessary. Models can also process test scenarios of POS systems on-premises or in the cloud. You only need one model to validate the GUI and functionality for every online and in-store action, whether made by a customer or retailer's employee.

Introducing AI into the test automation framework optimizes test execution. It automatically prioritizes high-risk errors along user paths and maximizes coverage to prevent vulnerabilities from reaching production. Identifying gaps in the customer journey ensures a positive shopping experience.



Figure 4: Modern POS systems connect online and offline customer journeys, so testing is required to prevent bugs impacting the user experience.

How a Test Automation Solution Can Help You

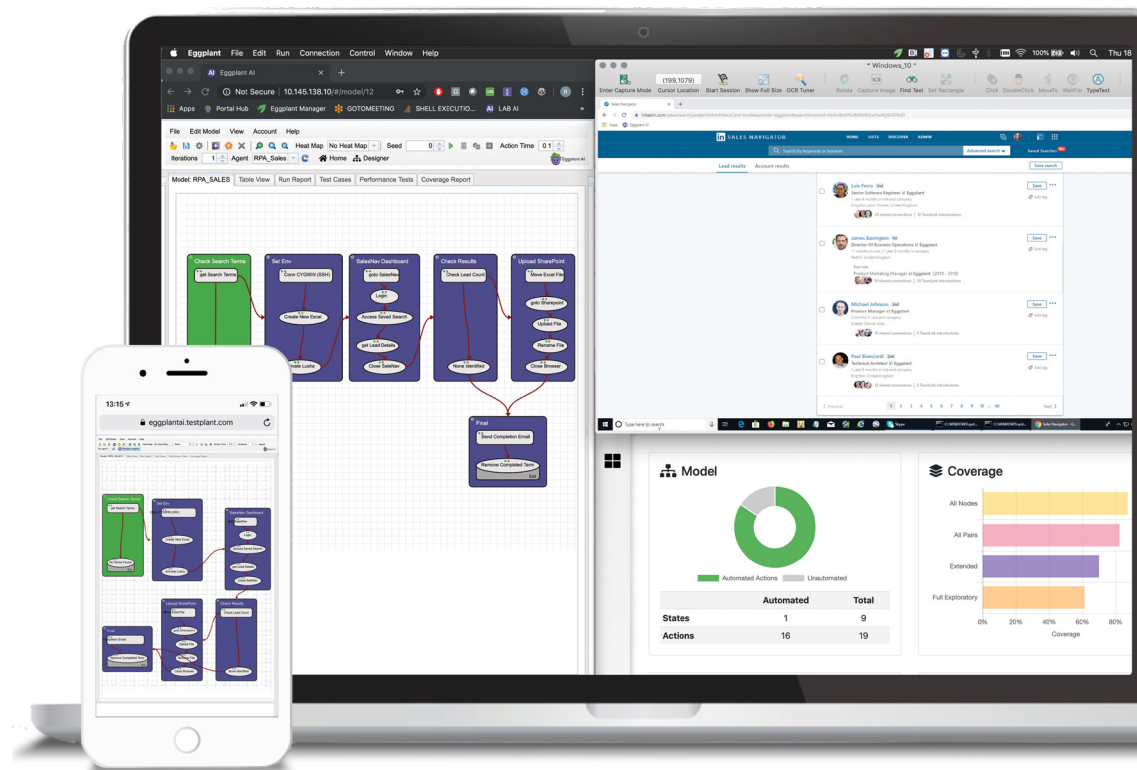
Each touchpoint must deliver a flawless experience to meet your customers' expectations. Failure to meet these expectations and customers will be quick to shop elsewhere.

Keysight's Eggplant model-based test automation solution supercharged by AI is your perfect partner to ensure you deliver what your customers demand — a seamless omnichannel experience.

- Ensure customer satisfaction by using fast, accurate happy path testing.
- Create auto-generated test cases with actual user data for exploratory testing of complex, non-linear customer journeys.
- Perform model-based testing that intelligently understands visual information for any device, browser, or operating system regardless of the codebase.
- Use AI for intelligent end-to-end testing to identify bugs and bottlenecks across the entire user journey.
- Test integrations with physical devices to ensure they function correctly with a host of digital platforms.
- Execute performance user-centric testing to truly understand how your software affects the customer experience under peak load.

If you are ready to see the benefits that test automation can deliver for all digital experiences, let Keysight's Eggplant solution put you on the right path to delight, convert, and retain your customers.

Request a free trial today.





Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at www.keysight.com.

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