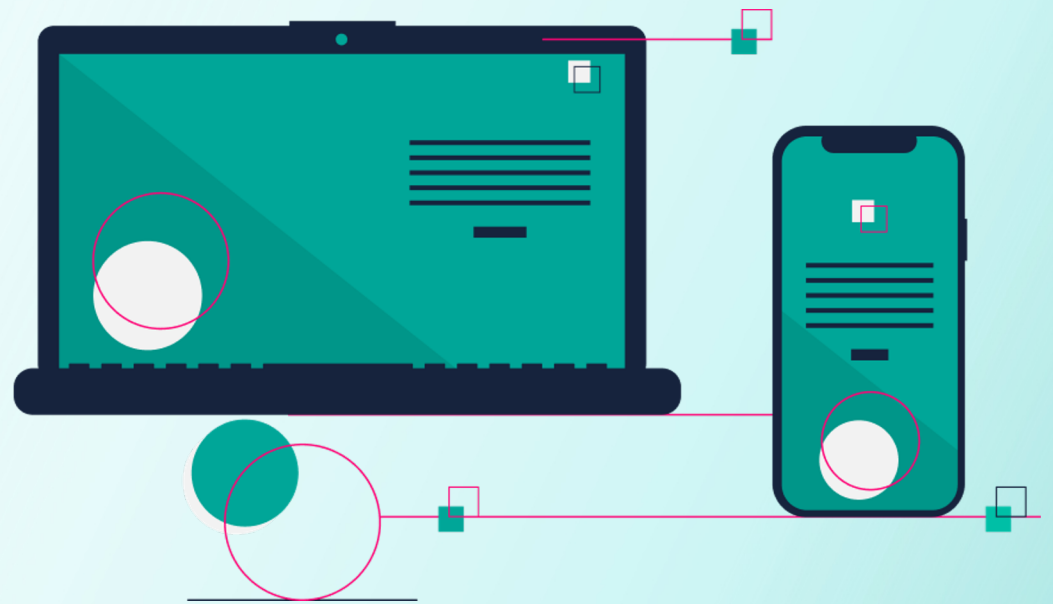




# The Buyer's Guide to AI- Powered End- to-End Testing



## How to use this guide

The Buyer's Guide to AI-Powered End-to-End Testing is created to help you navigate the new market of AI testing platforms.

- ▶ Introduce AI testing platforms and their role in end-to-end testing
- ▶ Explain the key capabilities of AI testing platforms and why you need them
- ▶ Provide a checklist for you to evaluate platforms

## Introduction to AI-Powered Testing Platforms

The world of testing has evolved rapidly with the integration of artificial intelligence, enabling QA and development teams to test applications more accurately and efficiently. As organizations shift from traditional testing methods, AI-powered end-to-end testing platforms now offer intelligent capabilities that support more comprehensive and resilient testing processes.

From visual validation to autonomous test creation, AI-powered platforms deliver a spectrum of solutions. AppliTools pioneered Visual AI and now offers autonomous testing, balancing advanced automation with human oversight to ensure quality in fast-changing environments.

## The Role of AI in End-to-End Testing

AI is transforming testing across the entire lifecycle, addressing pain points in test management, creation, execution, analysis, and maintenance. By leveraging technologies like machine learning (ML), deep neural networks, and, more recently, generative AI (GenAI), these platforms augment test creation, streamline maintenance, and enhance the reliability of test coverage.

Platforms such as AppliTools provide a range of options, from visual regression testing to autonomous test authoring, with each capability designed to extend coverage and reduce time spent on repetitive tasks. While visual testing with AI covers UI consistency and functional issues, autonomous features allow testers to record and customize key user flows interactively.

**A recent Gartner report found 86% of respondents said that AI is now a key criterion for selecting QA solutions, products or tools.**

## Key Capabilities to Evaluate in AI Testing Platforms

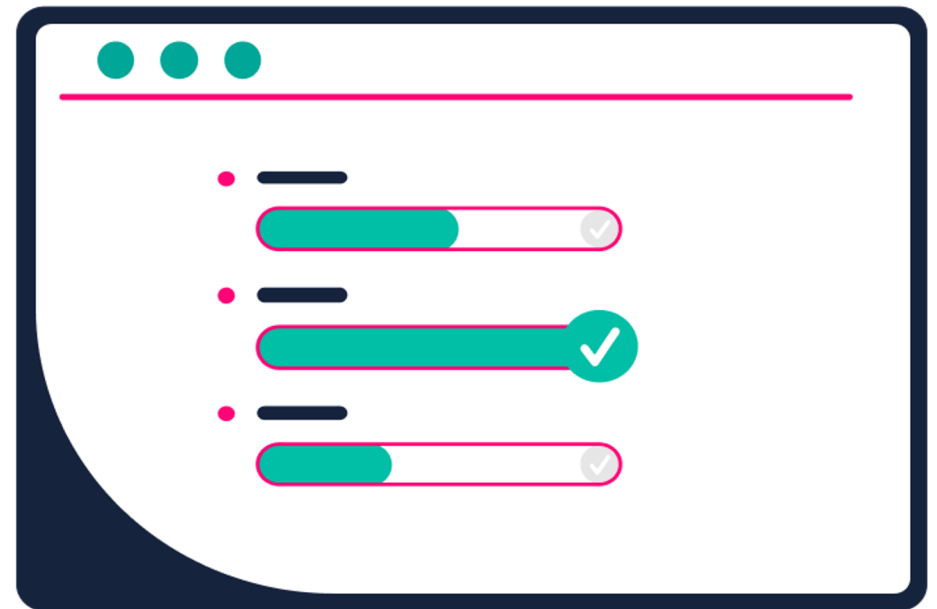
### Reliability and Accuracy

AI-powered testing platforms should prioritize accuracy in detecting meaningful differences while minimizing false positives. More proven AI technologies, such as AppliTools Visual AI, rely on deep learning to emulate how humans perceive visual content, offering enhanced reliability over pixel-based comparison engines.

#### Considerations:

- ▶ How does the tool avoid creating false positives?
- ▶ Is there an easy way to confirm false negatives?
- ▶ Does it recognize layout shifts or elements that aren't visible to the user?
- ▶ Can it accurately test dynamic content including dynamic images and data?

Some tools, like AppliTools, use established machine learning models, ensuring that visual testing aligns with user expectations by focusing on relevant differences rather than pixel-to-pixel inconsistencies.



## Key Capabilities to Evaluate in AI Testing Platforms



### Scalability and Speed

With the ability to execute tests in parallel across multiple browser and device configurations, some AI testing platforms can significantly reduce execution times. Platforms that provide cross-browser/device coverage, such as through cloud execution services, streamline test execution by reducing local resource consumption and speeding up the feedback loop.

#### Considerations:

- ▶ How does the platform handle large-scale parallel testing?
- ▶ Can it integrate with CI/CD tools to automate test execution seamlessly?

Applitools, for instance, offers cloud-based testing capabilities that allow tests to be run in parallel across multiple environments, enhancing scalability without adding strain to local resources.

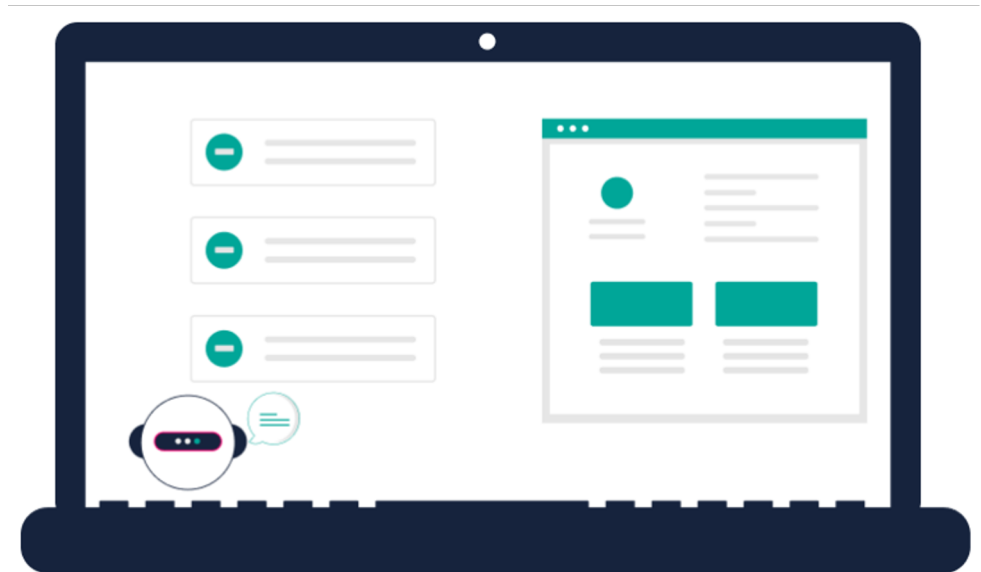
## Key Capabilities to Evaluate in AI Testing Platforms

### Usability and Test Creation Flexibility

Effective AI-powered testing platforms prioritize usability, enabling testers to quickly create, modify, and scale test scenarios with minimal complexity. Platforms that support natural language scripting allow testers to write and adjust test steps in plain English, making custom test authoring more accessible to teams with varying levels of technical expertise. Autonomous testing capabilities, like those seen in Applitools, provide interactive authoring tools that simplify complex scenarios, allowing testers to adjust flows in real time without needing extensive coding knowledge.

#### Considerations:

- ▶ Can test steps be created and edited in plain language?
- ▶ Does the tool support parameterization and dynamic data handling?
- ▶ Are there options to reuse test components or modules across multiple test cases?
- ▶ Does the platform offer interactive authoring tools that allow real-time adjustments to test flows?
- ▶ Is it possible to add custom validations and assertions easily within the test authoring interface?



## Key Capabilities to Evaluate in AI Testing Platforms



### Cross-Browser and Cross-Device Coverage

Today's users interact with applications across diverse environments, making cross-platform testing crucial. AI-powered platforms should be equipped to test applications on multiple browsers and devices, offering scalability across operating systems, screen sizes, and configurations.

#### Considerations:

- ▶ Does the platform support cross-device/browser testing for web and mobile?
- ▶ Can it run tests in parallel to reduce execution times?
- ▶ Do you have to maintain baselines for each browser, device, and screen size?

Applitools enables these capabilities through cloud-based execution, offering options to scale across platforms and minimize local resource demands. A single baseline can be used from multiple browsers, devices, and screen sizes allowing for significantly easier maintenance.

## Key Capabilities to Evaluate in AI Testing Platforms

### Considerations for Security

In regulated sectors like banking, insurance, and e-commerce, data privacy and security are paramount. Many organizations are cautious about using GenAI and LLMs due to data exposure risks. While AI-powered testing platforms can enhance efficiency, it's important to understand how these tools manage sensitive data, particularly when training or indexing are involved.

Platforms like AppliTools prioritize security by isolating GenAI interactions and minimizing data exposure, offering a controlled environment suited to stringent security requirements.

#### Considerations:

- ▶ Where is test data stored, and is it used for training AI models?
- ▶ Does the platform provide options to keep sensitive data secure during testing?
- ▶ Can the platform be deployed on private cloud infrastructure or your own infrastructure?
- ▶ Is the vendor ISO 27001 and SOC 2 Type II compliant?





## Key Capabilities to Evaluate in AI Testing Platforms



## Human Oversight in AI Test Creation

Studies show that AI-based code generation can increase bug rates, underscoring the need for human oversight in testing workflows. To mitigate risk, GenAI should be used to augment rather than replace testers. For instance, AppliTools Autonomous allows testers to use GenAI for flow authoring while keeping control over final test design, following the 80/20 rule where AI enhances coverage but does not drive the entire process autonomously.

### Considerations:

- ▶ Does the platform allow testers to refine and approve AI-suggested tests?
- ▶ How does it support a balanced approach to AI-assisted test creation?

## Key Capabilities to Evaluate in AI Testing Platforms

### Leverage Existing Testing Frameworks

AI-powered testing platforms should prioritize accuracy in detecting meaningful differences while minimizing false positives. More proven AI technologies, such as AppliTools Visual AI, rely on deep learning to emulate how humans perceive visual content, offering enhanced reliability over pixel-based comparison engines.

#### Enhanced Functionality without Redundant Efforts

By integrating with frameworks like Selenium, Cypress, Playwright, Appium, and Storybook, an AI testing platform can layer visual AI over functional tests, catching both UI and DOM-based issues without requiring duplicate test creation.

#### Reduced Learning Curve

Integrating with these frameworks through SDKs means teams can use the platform with minimal training. Testers can continue using familiar coding languages and syntax, making it easier to adopt AI-powered testing capabilities with little to no new learning overhead.

#### Streamlined Test Maintenance

SDKs enable users to leverage AI within their existing tests, minimizing additional maintenance. Visual AI can identify and adjust to changes in the UI, allowing for quick updates across tests without needing to rewrite framework-specific scripts.

#### Faster Test Execution in Parallel

With SDK-supported integration, tests can be executed in parallel across multiple environments (browsers, devices) through the platform's infrastructure, such as AppliTools' Execution Cloud and Ultrafast Grid, improving speed and scalability across tests without additional configuration in the framework.

# Checklist for Evaluating AI-Powered Testing Platforms

## Reliability and Accuracy

- ❑ How does the platform manage false positives, especially for visual testing?
- ❑ Does it provide options for adjusting sensitivity to layout shifts and other visual elements?
- ❑ Can it identify critical UI changes without noise from pixel-level inconsistencies?

## Scalability and Speed

- ❑ Can the platform handle parallel testing across multiple browser and device configurations?
- ❑ How seamlessly does it integrate with CI/CD pipelines for automated execution?
- ❑ Are there options for cloud execution to minimize local machine resource consumption?

## Usability and Flexibility

- ❑ Does the platform allow for plain language test creation and editing?
- ❑ Can testers parameterize data and validate API responses directly within test flows?
- ❑ Does it support a range of test types, including visual regression, functional, and accessibility tests?

# Checklist for Evaluating AI-Powered Testing Platforms

## Cross-Browser and Cross-Device Compatibility

- ❑ Does the platform support cross-platform testing (web, mobile, desktop)?
- ❑ Can it efficiently test across a variety of operating systems, screen sizes, and device types?
- ❑ Are tests run in parallel, allowing for faster execution across different environments?

## Security and Privacy

- ❑ How is test data stored, and does it use data for training AI models?
- ❑ Are there clear data privacy protocols for sensitive information?
- ❑ Does the platform support isolation of GenAI data processing to prevent indexing?

## Human-Guided AI Assistance

- ❑ Does the platform enable GenAI to assist rather than fully automate test creation?
- ❑ Can testers refine and approve AI-generated steps to maintain quality control?
- ❑ Does it balance AI coverage with human oversight for critical workflows?

# Checklist for Evaluating AI-Powered Testing Platforms

## Visual AI Capabilities

- ❑ Does the platform offer a reliable Visual AI solution with established machine learning models?
- ❑ Can it scan large applications or sitemaps to capture visual baselines for regression testing?
- ❑ Are the visual testing capabilities designed to catch UI and DOM-based functional issues?

## Support for Existing Testing Frameworks via SDKs

- ❑ Does the platform provide SDKs for popular frameworks (e.g., Selenium, Cypress, Playwright, Appium, Storybook)?
- ❑ Can visual and functional validations be added to existing tests in supported frameworks?
- ❑ Does SDK integration allow for executing visual and functional tests together, enhancing coverage without duplicating effort?