

From Design to Deployment: Achieving System Reliability with Keysight Eggplant

Comprehensive End-to-End Testing, Ensuring Your
Systems are Reliable and Efficient from Start to Finish

The Challenges of End-to-End Testing

Modern organizations rely on highly connected ecosystems. Rarely does a system or mission workflow operate within a single application or environment. Instead, today's solutions span multiple layers, from front-end interfaces and back-end services to APIs, data exchanges, hardware components, and integrated platforms.

Take the example of designing and manufacturing a new product. Engineers start by creating the design, then prototypes are built and tested, and finally, the product goes into full production. Behind the scenes, the design files must be accurate, parts must arrive from suppliers on time, machines need to be calibrated, and quality checks ensure everything works as expected. If any one step fails, such as when a part doesn't fit or a machine is set up incorrectly, the whole process is disrupted, and production grinds to a halt with costly reworks.

This is where the limits of traditional testing become clear. Unit tests validate small components of code. Integration tests confirm that two systems exchange data correctly. UI tests check whether a front-end behaves as expected. But these approaches often run in silos, leaving gaps between layers. They do not answer the most important question: does the whole process succeed for the end user?

For QA and Test Engineers, the challenge is significant. Writing scripts that connect multiple systems is complex and maintaining them as workflows evolve is even more demanding. In large enterprises, connecting to multiple environments seamlessly as a single flow is especially difficult when systems span devices, platforms, and databases. Running tests on a browser may be straightforward, but coordinating those same tests across a desktop client, validating data in backend tables, and verifying outcomes that involve physical files or peripheral devices adds layers of complexity.

For Testing Managers, fragmented test coverage creates blind spots where defects can slip through despite "green" reports from component-level testing. And for Executives, the cost of failure is steep: lost revenue, reputational damage, compliance risks, and reduced customer trust.

This is where enterprise orchestration becomes a game-changer. By coordinating workflows across devices, platforms, and databases, it ensures that tests run as a seamless end-to-end process, not as isolated scripts. These orchestration capabilities reduce blind spots, improve test reliability, and give QA teams the ability to validate complex systems efficiently. More importantly, at the enterprise level, it aligns testing processes with organizational goals, ensuring that cross-system dependencies are managed, risks are mitigated, and overall operational confidence is strengthened.

End-to-end testing is no longer an option. It is the only way to ensure that complex digital experiences deliver as promised.

How Can You Solve These Challenges?

Keysight Eggplant Test addresses this challenge by shifting the perspective from components to complete user journeys and business critical workflows. Instead of focusing on whether individual parts of the system work in isolation, Eggplant validates whether the end-to-end process delivers the intended business outcome. The solution combines three powerful capabilities:

AI-Driven Test Case Creation

Eggplant automatically builds a visual model of application workflows that captures both user interactions and system states. By testing at the UI level rather than relying on DOM or XPath elements, these models are inherently more stable and require less maintenance as applications evolve. Because the user interface remains largely consistent across versions and platforms, teams spend less time updating fragile scripts and more time validating real business processes end-to-end.

AI-Driven Test Generation

Once workflows are modeled, Eggplant applies AI-driven model-based testing to automatically generate a comprehensive suite of test scenarios. These scenarios are derived from the system model to ensure both positive and negative paths are validated, covering expected behaviors as well as edge conditions. This approach eliminates the need for engineers to manually script individual tests, while maintaining traceability between business processes, system states, and test coverage.

Platform-Agnostic Execution

Eggplant interacts with systems at every layer, from clicking through UIs to sending API calls and validating database records. This ensures tests reflect the true complexity of modern, multi-platform environments.

Enterprise Orchestration

Eggplant coordinates tests across multiple systems, devices, and environments, orchestrating workflows end-to-end. Whether it's connecting PLM, CAD, ERP, and MES systems in manufacturing or managing diverse enterprise IT landscapes, Eggplant ensures that all components work together seamlessly. By automating the execution and integration of tests across these environments, Eggplant overcomes the complexity of cross-system dependencies, reduces setup and maintenance overhead, and provides comprehensive visibility into end-to-end business processes.

What sets Eggplant apart is its holistic approach. It doesn't just test whether buttons work or APIs return the right status codes, it tests whether the entire customer journey, from start to finish, delivers the right outcome. This perspective makes end-to-end testing a tool not just for QA, but for protecting business value.

How It Works

End-to-end testing with Eggplant follows a structured flow that aligns with how real users experience software.

1. Define the Workflow

The first step is mapping the journey that matters most to your business. For a manufacturing organization, that may be the path from product design in CAD, through approvals in the PLM system, sourcing components, production scheduling, and final assembly across ERP and MES systems. Eggplant models these workflows visually, creating a digital twin that defines each state and transition. This makes testing accessible and understandable across teams.

2. Generate Test Scenarios

Once the workflow model is created, Eggplant's AI generates end-to-end test cases automatically. These test scenarios are aligned with critical business workflows, covering the full journey across interconnected systems, devices, and platforms. For example, in a manufacturing context, a workflow might span CAD design approvals, PLM change management, ERP scheduling, and MES execution. Instead of engineers manually scripting each step, Eggplant creates these comprehensive test cases in minutes, ensuring robust coverage of enterprise IT and business workflows while accelerating testing across the organization.

3. Execute Across Layers

Eggplant executes these tests across all relevant platforms and layers of the system. This includes:

- Front-end UIs (web, mobile, desktop)
- APIs for back-end validation
- Databases to confirm data consistency
- Third-party systems such as payment gateways, CRM, or ERP integrations

This holistic coverage ensures that every step of the workflow works together, exactly as a real user would experience it.

4. Adapt to Change Automatically

One of the biggest challenges in testing is that workflows are never static. Interfaces change, APIs evolve, and back-end logic is updated. Traditional scripts often fail with even minor changes, requiring constant rework. Eggplant solves this with computer vision and self-healing recognition. Whether a button is moved, a screen is redesigned, or an API endpoint changes, Eggplant adapts, reducing maintenance overhead and keeping regression packs stable.

5. Report Results in Business Language

Finally, Eggplant reports results in terms everyone can understand. Instead of cryptic technical logs, stakeholders see insights such as “Checkout fails when applying discount codes in Chrome, but succeeds in Safari”. This makes it easier to prioritize fixes and ensures that both business and technical teams can act quickly.

Benefits & Impact

The benefits of automated end-to-end testing extend across the whole team.

For QA Engineers

Eggplant eliminates the need to handcraft fragile scripts that attempt to connect multiple systems. QA and Test Engineers can focus on innovative testing, while Eggplant handles execution and adaptation. This leads to higher coverage with less manual effort, reducing burnout and increasing job satisfaction.

For Testing Managers

Managers gain full visibility into whether critical business processes are functioning correctly. Instead of fragmented reports from different teams, they see a unified picture of workflow health. Traceability features link requirements directly to test outcomes, making it easier to demonstrate compliance and accountability. Predictable, automated regression cycles reduce last-minute fire drills before releases.

For Executives

The strategic impact is clear. Faster regression cycles accelerate time-to-market, while reduced defect leakage protects brand reputation and customer loyalty. By validating entire workflows, companies reduce the risk of costly production incidents. The ROI is significant: organizations have reported significant productivity improvements, cost reductions up to 70%, and cycle time reductions of more than half. End-to-end testing ensures that innovation is not slowed by fear of failure.

Case Study

Keysight Technologies, a global leader in design and validation solutions, shows the power of its own technology by using Keysight Eggplant to accelerate its digital transformation.

With nearly 15,000 employees across 100 countries, Keysight manages a highly complex Enterprise Resource Planning (ERP) environment that supports over 500,000 components, 100 integrated internal systems, and 90,000 records processed each day. As part of its digital

transformation strategy, Keysight faced significant challenges in upgrading this global ERP system, which underpins its manufacturing, logistics, and financial operations worldwide.

Manual and platform-isolated testing made ERP upgrades slow, resource-intensive, and risky. Each system update triggered thousands of regression tests across interconnected applications. Past upgrades required months of stabilization after go-live, consuming large amounts of engineering time and delaying new digital initiatives.

After implementing Keysight Eggplant, Keysight transformed its ERP testing approach. The IT team trained and deployed Eggplant to automate thousands of test scenarios, resulting in a 30% faster ERP upgrade implementation — the first time a major Oracle ERP upgrade was completed on schedule in the company's history. Using Eggplant's AI-driven automation, the team expanded testing coverage beyond ERP to include CRM and e-commerce systems, enabling end-to-end visibility and validation across the entire quote-to-cash process.

Keysight Eggplant's automation also dramatically reduced the ERP stabilization period following go-live, compressing it by 80%, from several months to just weeks. What was once a complex, high-risk, and lengthy testing process became a streamlined, intelligent, and repeatable automation cycle, capable of running overnight and identifying issues before they impacted production.

With automation in place, Keysight's IT organization can now deliver updates and innovations faster and with greater confidence. The success of the ERP program has become a blueprint for future digital transformation initiatives, including ongoing cloud migrations and agile software development across the enterprise.

The impact of Eggplant automation on Keysight's ERP upgrade was significant:

- Accelerated ERP upgrade by 30% through intelligent test automation
- Reduced system stabilization time by 80%, ensuring faster go-live readiness
- Established a foundation for faster, safer, and more efficient digital transformation across enterprise systems

Beyond the measurable gains, Keysight has strengthened its reputation as a technology-driven innovator — one that uses intelligent automation not only to improve operational efficiency but also to empower its teams to move with agility and confidence into the future.

"An ERP system is the heartbeat of your internal infrastructure. Every time you touch it, you risk months of issues afterwards as you "stabilize." By intelligently automating testing with Keysight Eggplant software, we stabilized within weeks of go-live."

Dan Krantz, CIO, Keysight Technologies

Turning QA into a Competitive Differentiator

End-to-end testing is about more than software quality — it is about business resilience. Customers don't care which part of the system failed; they only care that their transaction didn't complete, their order wasn't delivered, or their loan wasn't processed. In regulated industries, the consequences are even more severe: fines, legal exposure, and loss of customer trust.

By adopting a true end-to-end approach, companies can innovate faster while reducing risk. New features can be rolled out with confidence that they won't break existing workflows. Integrations with partners can be deployed quickly without fear of disrupting the customer experience. Compliance audits become easier, because testing aligns directly with documented workflows.

For executives, this translates into strategic advantage: faster innovation, stronger customer trust, and reduced operational risk. For managers, it delivers predictability and scalability. For engineers, it means less time spent on repetitive tasks and more time finding meaningful defects.

Ultimately, end-to-end testing ensures that digital transformation efforts succeed. It is the bridge between technical change and business value, turning QA into a driver of competitive differentiation rather than a bottleneck.

See End-to-End Testing in Action

Experience the difference of true end-to-end testing. Share one of your business-critical workflows with our team, and we'll demonstrate how Eggplant can validate every step, from the first click to the final confirmation, faster, smarter, and more reliably than ever before.

The best way to see how Keysight Eggplant n can help your organization enhance testing efficiency is to [book a demo](#).

For more information on Keysight Eggplant products and solutions, please [contact us](#).



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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