Embracing quality engineering: A new era of agile testing

Jun 8, 2023 by **Nadia Znachko**

< All blogs

In brief

- The best approach to testing employs quality engineering, combining shift-left, continuous testing and agile testing practices for efficient software development, using AI, ML, and DevSecOps tools
- The article goes through key elements of Luxoft's approach, including early defect detection (shift-left), continuous testing and a risk-based prioritization strategy in intelligent test automation, maximizing effectiveness
- Luxoft's quality engineering, underpinned by continuous improvement, a client-focused approach and data-driven decision-making, is paving the way for the future of agile testing.

Software development has seen major shifts recently. Agile methodologies and DevOps are in vogue and fundamentally reshaping how we approach software testing and quality assurance (QA). The evolution of the processes has come a long way — from an often overlooked and underestimated verification and validation activities to the active participation of the QA specialists in product specifications, design and contribution to the overall development process at all stages. Conceptual change is reshaping the role of the tester, driving the most progressive innovators to embrace quality engineering — a holistic approach to building digital products in the software-defined world.

At Luxoft, a DXC Technology Company, we've refined our QA approach, integrating quality engineering principles, ensuring that we keep an excellent standard of delivery for our clients.

A new approach to testing

Quality engineering is a comprehensive approach to software creation. It incorporates numerous testing methodologies to deliver top-tier products. This broad approach integrates shift-left, continuous testing and agile principles, thereby moving away from traditional end-of-cycle validation activities. It also drives close team collaboration, ensuring that now more than ever quality of the end product is the responsibility of everyone involved in the development process.

Quality engineering adopts a thorough system analysis approach. This means we scrutinize every part of the system, from individual units to complex, interconnected components. It also incorporates strong product and industry knowledge that is used as an input for the full flow — from the design and up to the final acceptance. Our focus is not just on isolated features or functionalities. We're more interested in validating the integrity of the entire application workflow and user journeys.

This strategy ensures that all components work together harmoniously, catching potential problems that might only appear in the full system context. The result is software that's more reliable and performs better.

Our quality engineering framework is grounded on several key elements:

- Continuous improvement: We consistently refine our processes, products and tools. This keeps us on the cutting edge, ensuring the highest possible quality
- Client-focused approach: Our clients' needs come first. By involving domain experts, we tailor our solutions to meet unique demands
- Data-driven decision-making: Automation generates extensive data. Setting up the framework that benchmarks, processes and systematizes it is enabling our clients to make well-informed decisions and at the same time provides valuable insights about product quality
- End-to-end testing: Comprehensive coverage across the entire system assures software reliability and performance
- Risk-based prioritization: We focus on the most critical and high-risk functionalities to maximize testing effectiveness and optimize ROI

As the software development landscape keeps evolving, quality engineering's role will keep growing. Luxoft is ahead of the curve thanks to our embrace of shift-left, continuous testing and intelligent test automation.

Let's discuss each of these in more detail.

Intelligent automation

The key to any test automation project is defining the right strategy and optimizing the level of automation to achieve ROI for the customer. Exhaustive testing is impossible — and chasing the "100% automation" target can become very expensive very fast. Optimizing functional test coverage and balancing the target automation coverage is the key to unlocking the operational advantages of shorter and more stable cycles without stepping into diminishing returns area.

To achieve the desired results, it is critical to have the right team for the job. People are the heart of Luxoft. Our domain experts bring deep knowledge and extensive experience to deliver efficient and effective testing services. They understand the intricacies of specific platforms, assuring a tailored approach to each project. This combination of domain background and technical skills helps to "speak the same language" with end users and business stakeholders, capturing the right things to focus on during development and further validations.

Our intelligent test automation strategy begins with close collaboration with business users. Understanding their objectives, priorities and associated business risks helps us create a comprehensive test basis. This optimizes test coverage and ensures extensive testing of the most critical software aspects.

These priorities guide our automation efforts, helping us allocate resources effectively and maximize our test automation ROI. We execute all these steps in a flexible and scalable outcome-based model, assuring software reliability and performance.

We also employ AI and ML tools to reshuffle tests, focusing on the most impacted or highest priority areas first. This strategy generates extensive data on test results, root cause analysis, and defect clusters, offering insights into overall product quality.

Shift-left testing

Shift-left testing involves including test engineers early in the development process. This predictive approach enables QA engineers to review requirements and suggest potential use cases and tests for automation. Shift-left testing fosters collaboration and mitigates potential issues in the later stages of development by closing the gap between defect identification and resolution. The sooner we identify and resolve issues, the better the product and lower the costs.

Another critical feature of shift-left is decreasing the time gap between issue detection and its resolution. Reduced feedback time facilitates better transparency of quality on all levels and makes the development process more agile and scalable, leading the way into continuous testing.

Continuous testing and DevOps

DevOps and test automation are inseparable. Without DevOps, the benefits of test automation are severely diminished, as the need for manual intervention to trigger tests, gather reports and analyze results before making the go/no go decision introduces additional time into the overall time to market. At the same time, implementing DevOps procedures but not having automated tests that will ensure a sufficiently defined level of quality before promoting changes through the pipeline creates a very high level of risk of delivering low-quality features, or worse — introducing regression issues in the previously stable components. Only when combined these methodologies optimize the development pipeline and achieve continuous testing — the ability to test anywhere, anytime with a "zero-touch" automation approach.

Continuous testing is the result of integrating testing into every stage of development, making it a crucial part of DevOps. Automating as many tests as possible and making their execution part of the pipeline reduces the time and effort required for validation activities and report gathering. This streamlines the process, enabling focus on new features and ensuring that regression tests are automatically run as part of the pipeline.

Looking ahead

Quality engineering will become even more vital as software development evolves. Luxoft is well-positioned for this future. We have embraced innovation and industry changes, combining the newest technology accelerators with years of experience and domain expertise. Our commitment to continuous improvement, client focus and data-driven decision-making positions us as a leader in agile testing's new era.

Visit luxoft.com or contact our team for more information on how we can support your software development needs.

Nadia Znachko
Global Head of QA Automation chapter

Nadia Znachko
Global Head of QA Automation chapter

Related content

Blog

What's so special about regulatory reporting projects?

READ MORE >

Blog

How to deliver your data strategy

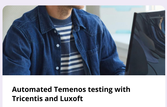
READ MORE >

Blog

Improve the quality of your software delivery

READ MORE >

Related content



Automated Temenos testing with Tricentis and Luxoft

With analytic super-platforms like LXA, anyone can build advanced use cases for their industry

With analytic super-platforms like LXA, anyone can build advanced use cases for their industry