The Era of Quality Engineering

Testing trends that will impact your organization in 2022 and beyond

mabl

mabl

“The past year brought unprecedented challenges. Software teams around the world shifted to hybrid or fully remote while endeavoring to maintain product velocity and quality. Quality professionals everywhere rose to the challenge as organizations rushed to expand, optimize, and improve their digital experiences.”

mabl cofounders Dan Belcher and Izzy Azeri in the 2021 State of Testing in DevOps report

When it comes to facilitating innovation, quality engineering plays a critical role. Regardless of what your organization is doing — whether broadening your adoption of agile methodologies, moving to the cloud, or embracing a continuous delivery pipeline — quality engineering is a practice that enables and supports these transformations. But the continuing challenges of the pandemic, coupled with changes in consumer preferences and behaviors, have real impacts on how software teams should approach testing.

In this ebook, we'll explore the trends driving the need for quality engineering. Pulling from the findings of our third annual State of Testing DevOps Benchmark Report — where we surveyed more than 600 industry professionals about their progress towards embracing DevOps — we'll cover the reasons why the customer experience (CX) is more important than ever and the role that quality engineering plays in delivering a compelling CX. We'll discuss the four key trends uncovered by the report, and will talk about the technology required to support this shift.

01

The Role of the Digital Customer Experience in Quality Engineering

The digital customer experience is now critical in every industry, including retail, hospitality, banking, and enterprise technology. Though many organizations used to consider the online user experience secondary to the functionality of their product, recent trends are upending that view.

The pandemic accelerated digital transformation

The pandemic radically shortened the timeline for digital transformation, with companies quickly pivoting strategies to embrace the ever-changing “new normal.”

Users are on multiple devices and expect a consistent experience

The pandemic blurred the lines between home and work, between the living room and the conference room. Your customers are everywhere, using multiple devices — from laptops to tablets to wearable technology — and they expect a world-class experience every time.

Digital-first experiences are expanding the importance of the CX

Consumers now expect delightful and functional digital experiences across all software, regardless of context. As digital-first customer experiences become the new normal, users are placing greater importance on the CX, even for traditionally “sticky” industries like healthcare, banking, and enterprise technology. B2B and B2C software companies alike are now competing on their CX, making it essential for every software organization to build quality into their development process.

To succeed in today's hyper-competitive marketplace, every customer interaction and touchpoint matters. Quality must be an integral part of the software development life cycle in order to build customer loyalty through delightful digital experiences. Research from PWC and G2 reveals that the stakes have never been higher:

75%

...of consumers consider the user experience (UX) important when making a purchasing decision: If you cannot provide a seamless, user-friendly browsing and buying experience, your customer is increasingly likely to go elsewhere. This now includes traditionally low churn industries like banking and healthcare.

32%

...of consumers will leave the brand after a single bad experience: With a plethora of choices, customers often give a brand one chance to satisfy their needs. If their experience with your business is less-than-stellar, don't expect them to stick around.

51%

...of employees are unhappy at work because of the software they use: Happy employees lead to happy customers. If your software stymies or frustrates employees, they're unable to deliver the level of service your customers deserve and demand.

02

The Critical Role of Quality Engineering

Quality engineering plays a critical role in enabling innovation.

The need for QE is driven by many industry trends:

Cloud Nativity

Saas / Paas

Agile Development

DevOps

Continuous Testing

Continuous Integration

Continuous Deployment

Continuous Delivery

Our traditional approach to testing is quality assurance. QA focuses on assuring the quality of a product or an app at a particular development stage in the DevOps pipeline.

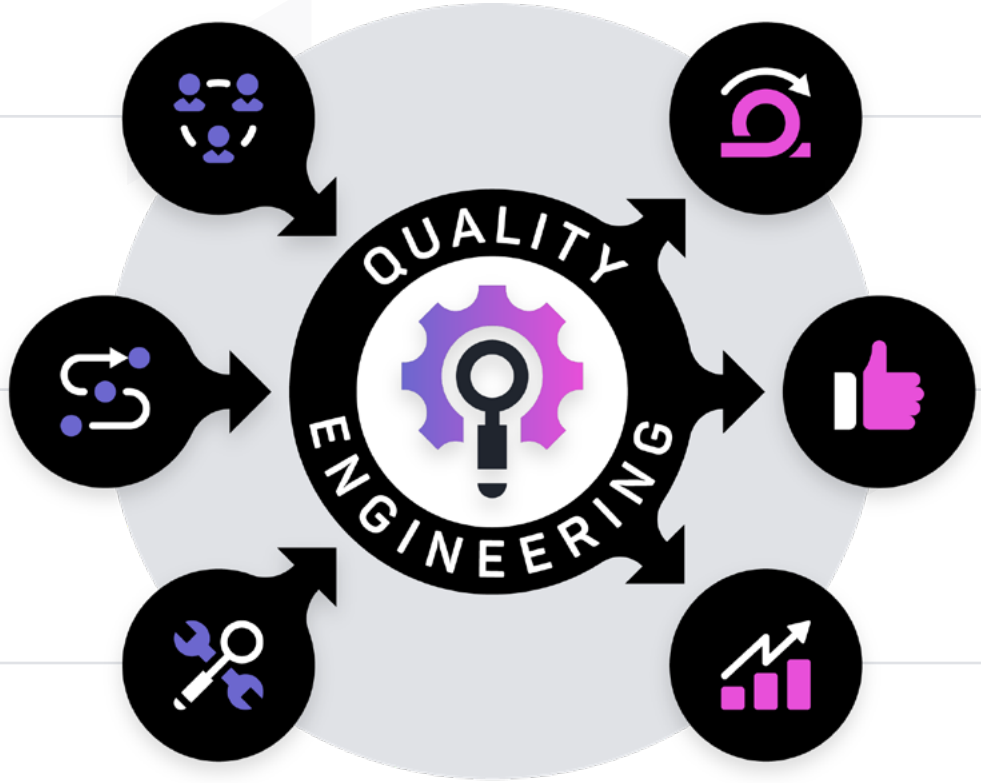
But the pace of change in software development trends and in the number of deployments prevent QA teams from effectively maintaining test coverage in these new processes.

How does it differ from quality engineering? Quality engineering is a set of practices, skills , and technologies that allows software development teams to produce high-quality software in faster, more iterative sprints. It includes planning, testing, analysis, and monitoring throughout the DevOps pipeline to ensure a positive user experience during the full customer experience. Teams practicing quality engineering are effectively using quality insights to make data-driven decisions about application quality throughout the software development life cycle.

INPUT
People

INPUT
Processes

INPUT
Technology

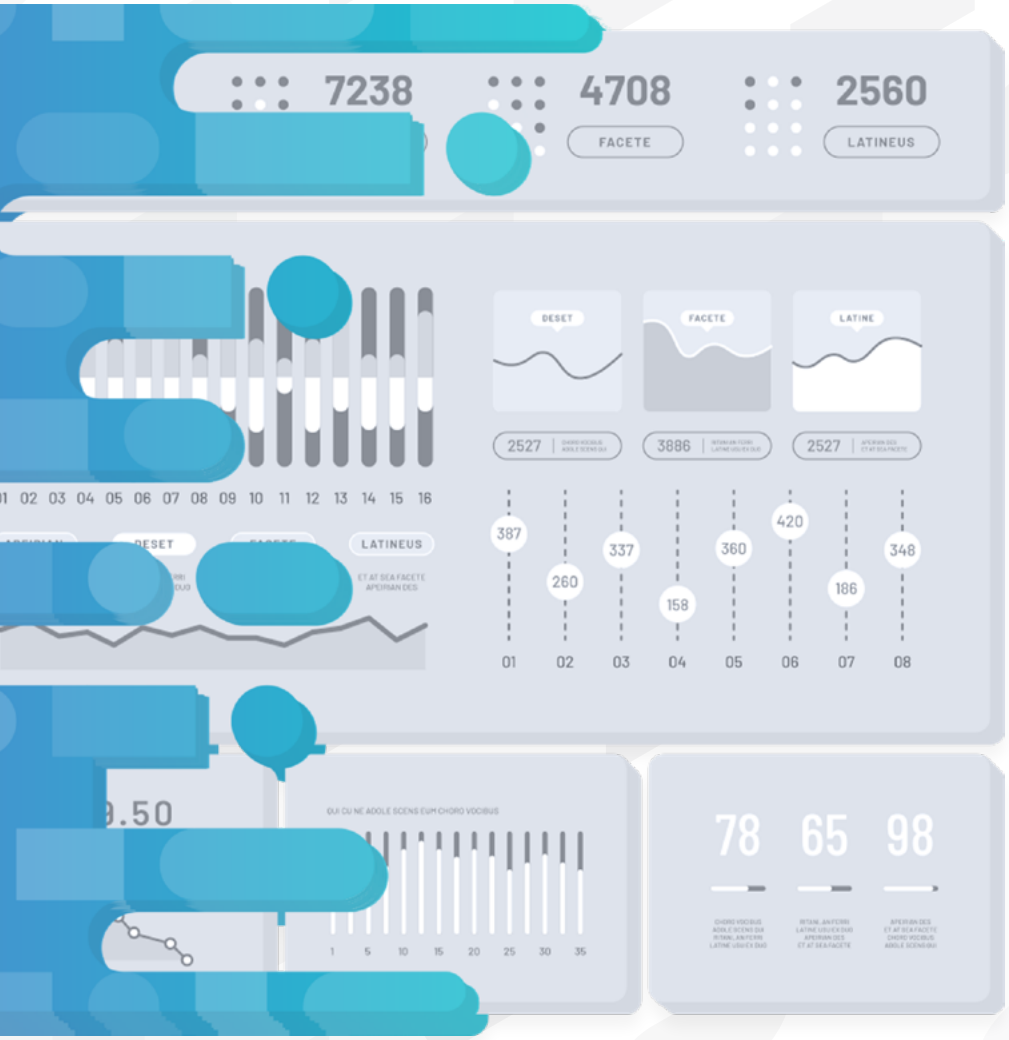


OUTPUT
Embed in the SDLC

OUTPUT
Customer Experience

OUTPUT
Data-driven

To succeed in the global marketplace, brands must take advantage of any competitive edge available to them. And embracing a focus on quality engineering is one way for brands to ensure that they're delivering compelling, bug-free customer experiences.



Test Coverage: An Essential Metric to Impact Customer Outcomes

As a quality leader, how can you practice quality engineering and contribute to a better user experience? By improving test coverage. In mabl's 2021 Testing in DevOps Survey, we found a strong correlation between test coverage and customer happiness. In fact, 80% of teams who self-reported having excellent test coverage are 4x more likely to say their customers love their product.

While test coverage should not be the sole metric quality leaders track, it is a leading indicator towards user happiness and your journey to practicing quality engineering.

03

4 Key Trends Driving Quality Engineering Adoption

The software world is experiencing major shifts that can be observed in four main trends: the work-in-progress adoption of DevOps, the increasingly collaborative nature of quality, the move to continuous testing, and the increase in automated non-functional testing.

01
DevOps adoption is growing

DevOps conversations aren't new — they've been happening for almost two decades. Despite the struggle to fully realize the potential of DevOps, we found that organizations are still committed to adoption. In mabl's 2021 State of Testing in DevOps Report, nearly half of respondents indicated that they're making progress in their DevOps journey, while only 11% of respondents indicated that they're fully running DevOps.

But the DevOps challenge is no longer technological. Instead, most teams in transition to agile are struggling to change their culture and processes. As quality teams adopt continuous testing and build new ways to collaborate across the DevOps pipeline, they have an unprecedented opportunity to lead cultural transformations. With DevOps continuing to be a work-in-progress at many organizations, quality leaders can lean in and establish strong quality practices that enhance and accelerate DevOps adoption.

02
Collaboration on quality is growing

Another trend mabl's State of Testing in DevOps Report highlights is the impact of collaboration on quality. Quality engineering is becoming more integrated throughout development as teams look to find and fix defects faster.

Optimizing quality engineering for collaboration resolves many of software development's biggest headaches. Only 6% of companies in the early stage of their DevOps journey called their issues handoff "seamless," compared to 24% of organizations at later stages of their DevOps transformation. This illustrates just how a collaborative DevOps approach helps people to find issues earlier in the test cycle, which makes it easier to resolve bugs quickly, driving a higher quality product and happier customers.

Beyond finding and fixing defects faster, quality collaboration is tied to DevOps maturity.

For teams that reported being closer to completing their DevOps transformation, 35% indicated that everyone participates in quality. For teams at the beginning of their DevOps journey, only 16% indicated that quality was a team activity. Even more notably, 19% of aspiring DevOps teams described testing as a necessary evil. By adopting a unified testing platform that creates better visibility across the team, quality owners have the opportunity to empower everyone in the organization to participate in quality activities while they oversee the overall testing strategy.

We expect this trend to continue in 2022 and believe developers will continue taking on more unit testing while business stakeholders will continue contributing to test creation for newly identified user journeys. Quality leaders will continue testing staging and production environments while also overseeing all testing activities in the organization.

03
Teams are moving beyond shift-left to continuous testing

Another trend mabl's 2021 Testing in DevOps Report discovered is the adoption of continuous integration (CI), continuous delivery (CD), and continuous deployment (CD) are growing and fueling the adoption of continuous testing. This means that businesses are moving beyond shift-left testing — simply moving testing activities earlier in the development process — and are instead integrating testing activities across the development pipeline from coding through production.

Integrating testing into the team's workflow will ultimately accelerate CI/CD adoption. As the report found, 33% of teams are actively transitioning to CI, while 46% of teams have already fully adopted CI, and 36% of teams have fully adopted CD. Quality leaders have the opportunity to integrate testing into the new processes as they are rolled out across the development team.

Improving testing in tandem with evolving your pipelines allows teams to build with confidence. The Testing in DevOps Report found that although automation significantly improves confidence - 31% of fully DevOps teams are totally confident in their releases versus just 14% of aspiring DevOps teams - most organizations wish they could have tested their product more thoroughly. 61% of fully DevOps teams say they could test new releases more thoroughly, indicating that automation without continuous testing doesn't completely meet the needs of modern development teams.

04
Automation of non-functional testing will increase

Functional testing is undoubtedly a priority, but non-functional testing is also critical to ensuring overall great CX. Mabl's Testing in DevOps Report found that while nearly half of teams (42%) indicated that they perform automated functional testing, a growing number of respondents (26%) indicate that they are also incorporating performance testing into their test automation strategy.

Based on the findings, we anticipate performance and accessibility testing will continue to be a business focus in 2022. It's great if your application works functionally as expected, but if you aren't monitoring performance issues over time, users will become frustrated with timeouts, errors, and slow load times.

Accessibility testing carries even heavier importance. Not only is it the right thing to do to ensure that your application is accessible and usable by everyone, including those with disabilities, but it's also the law. (2020 was a record year for accessibility lawsuits, with more than 3,500 lawsuits filed against online ecommerce brands of all sizes.)

To continue to survive and thrive in today's digital marketplace, quality leaders must think about testing strategies beyond functional testing requirements. Expanding your testing portfolio to also include performance and accessibility testing ensures that your product can continue to evolve with consumer expectations for long-term customer loyalty.

04

Test Automation Solutions Support the Shift to Quality Engineering

Businesses want high velocity and throughput in their development pipelines, with the ability to constantly create and deploy changes. But how do you ensure that your infrastructure is prepared to embrace that change in velocity? You must integrate a broader system that ensures quality— and test automation plays a huge role.

Putting a high level of test automation in place gives your team increased confidence in your ability to deploy changes with good quality. Without test automation, you will have to reduce throughput to manage quality, slowing down the process.

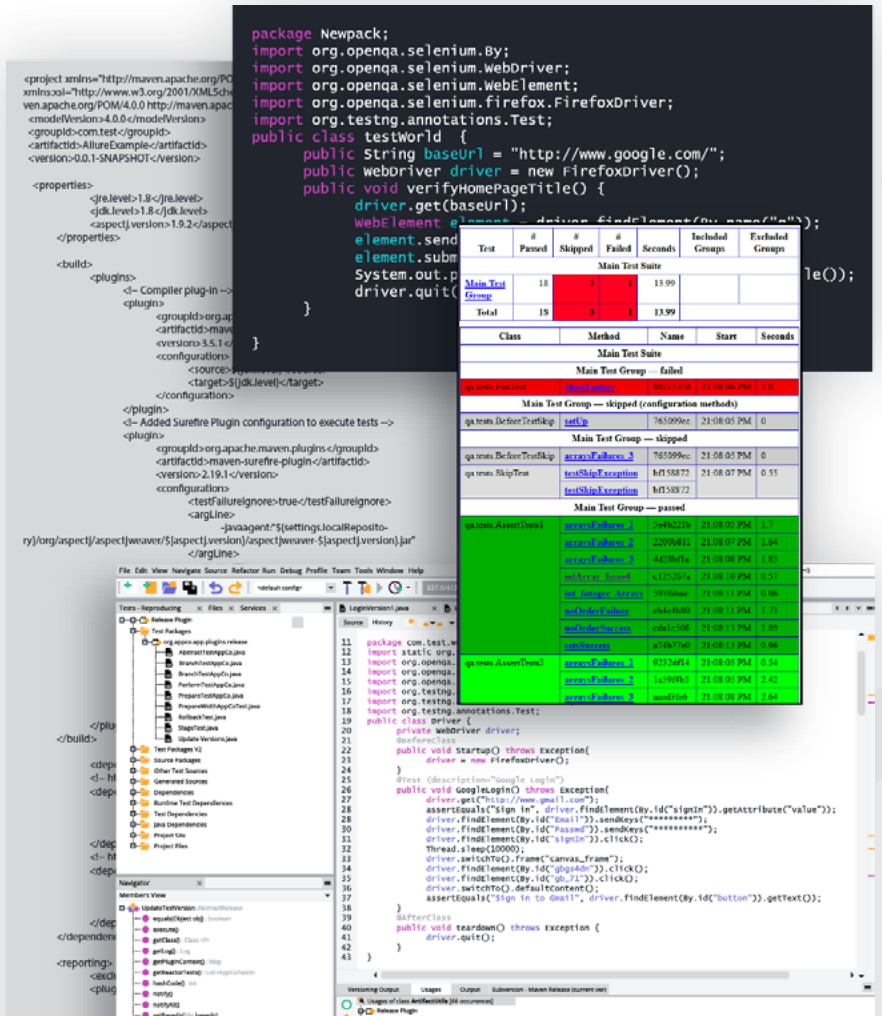
The problem with high-code testing tools

High-code testing solutions may seem attractive at first, but many companies quickly find their ROI disappointing. Why? Because it's either too hard or too easy, and it comes with significant maintenance issues.

Too hard: Many automation solutions have simply been too hard to use — to succeed, one must have extremely specialized knowledge. Finding the right people with a high level of testing competency and coding experience is challenging, especially in today's competitive job environment. When all of your automated testing hinges on 1-2 people, it's difficult to scale testing as needed and your organization risks losing critical knowledge if those QA engineers move on. This makes it impossible to build automated testing into your development pipeline at scale.

Too easy: As we've seen in other areas of technology — from virtualization to cloud computing — if it's too easy to accomplish tasks, you end up with sprawl. It's one thing to empower multiple teams to create hundreds or thousands of tests, but without an effective testing strategy in place, you may not actually impact the number of bugs that make it to production.

Lots of maintenance: Test sprawl also has a massive impact on test maintenance issues, putting your team in the position of spending more time fixing tests than they did creating them. In worst-case scenarios, teams may spend countless engineering years and millions of dollars building out complex test automation frameworks, only to find themselves having to scrap the entire test suite because it becomes too complex and unwieldy to manage.



05

Intelligent, Low-Code Test Automation Increases Efficiency and Test Coverage

Introducing a low-code test automation solution not only gives you more time back in your day but also expands your testing team's impact by making testing more accessible. This allows you to create tests up to 3X faster, empowering more team members to contribute to the testing and quality engineering process. Consolidating automated testing activities allows for a unified testing strategy that helps quantify the impact of testing, enables teams to understand quality trends at a glance, and embrace data-driven testing.

Low-code, intelligent test automation can drive meaningful results for teams. Not only does it create better experiences for your users, but it also gives your team the capacity to focus on additional dimensions of quality by boosting reliability and reducing maintenance tasks:

Intelligence increases reliability

One classic problem in test automation is determining if an application has reached the correct state — for example, your team may have realized they needed to add several wait steps to prevent tests from breaking. By incorporating intelligence into your testing, it will learn over time what the correct state looks like and how long it takes to get there — and it will incorporate those learnings into future tests, allowing them to become more robust and reliable without any additional human effort.

Intelligence supports maintenance activities

Another common test automation problem is maintainability. For traditional automated testing solutions without intelligence, something as simple as a change in a submit button ID can cause a test to fail. But because intelligent automated test solutions understand the intent of the test and are constantly collecting data, they can autoheal, updating tests automatically based on the information learned.

Low-Code Boosts Efficiency

Low-code is a key tenet of quality engineering because without it, you limit the number and type of people in your organization who can participate in quality. Unlike high-code tools that still require specialized knowledge to create and maintain tests, low-code solutions make testing accessible to anyone on your team. The end result is greater efficiency across the entire team, increased test coverage, and decreased maintenance effort.

Research shows that low-code solutions...

Reduce deployment time by 50%

When teams integrate testing into their pipelines — allowing them to contribute to product velocity rather than hinder it — research shows that they're able to reduce deployment time by half.

Lead to an 85% reduction in maintenance

When teams spend less time maintaining tests, they can invest their time in other quality dimensions, resulting in an overall 85% reduction in maintenance effort.

Facilitate a 90% increase in test coverage

Implementing low-code, intelligent test automation boosts test coverage by 90%.

Low-Code Test Automation Benefits

Increase test coverage

Create and manage tests for the entire user journey in a single platform.

Build reliable, auto-healing tests

Reduce maintenance time — as your application evolves, tests auto-heal along with it.

Test at the speed of development

Contribute to product velocity by allowing anyone to build and maintain tests in minutes, not days.

Integrate testing with your workflow

Integrate testing natively with popular CI/CD, issue tracking, and collaboration platforms.

06

Next Steps on Your Quality Engineering Journey

Now that you understand the testing trends that will likely impact your organization in 2022 and beyond, it's time to take the next step in your quality engineering journey. Contact us today for a personalized demo or a free trial. We'll be happy to show you how mabl can support your quality engineering practice with low-code, intelligent test automation.

About mabl

mabl is the enterprise SaaS leader of intelligent, low-code test automation that empowers high-velocity software teams to embed automated end-to-end tests into the entire development lifecycle. mabl customers benefit from a unified platform for easily creating, executing, and maintaining reliable browser, API, and mobile web tests that result in faster delivery of high-quality, business-critical applications. That's why customer-centric brands like Charles Schwab, jetBlue, Dollar Shave Club, Stack Overflow, and many others rely on mabl to create the digital experiences their customers demand.