

5 Trends of Software Quality Assurance in 2021





Executive Summary

The Year 2020 has been the year of transformation, we all have witnessed the shattering of various existing notions as well as the creation of new trends e.g. Work From Home for the entire company, enhanced push for IT modernization, cloud enablement, etc.

Industries realized the urgent need for faster delivery, greater collaboration, and iterative releases. This has led to greater penetration of Agile and DevOps.

Some of the trends which we saw in 2020 will continue to influence the industry for years to come, these are:

- Work from anywhere
- Enhanced focus on security in SDLC
- The blurring of boundaries between Dev and Test
- AI and ML getting more traction
- IoT coming into our lives in various forms

These new trends have a direct impact on the Software Quality Assurance domain.

This whitepaper covers areas wherein we will observe greater traction from a QA perspective which gives us food for thought to fine-tune our Quality Engineering strategies for 2021 and beyond.



1. Cyber Security Testing to get further traction

According to Gartner's 2020 Board of Directors Survey, cybersecurity related risk is rated as the second-highest source of risk for the enterprise. This means companies are increasing their focus on security assessment, monitoring, and control. In the Software Quality Assurance world, it would enhance the scope of security testing, which will include:

- Security Vulnerability scanning
- Penetration testing
- DevSecOps
- Static Code Analysis
- Software Composition Analysis
- Open source code identification and remediation

Gartner's research shows that 74% of organizations surveyed expected to permanently shift to more remote work post-COVID-19. The cybersecurity teams also need to devise processes and systems to work remotely and still provide effective capabilities.

As per another Gartner report, there would be 3.5 million open cyber security positions by 2021 but skills are scarce in the market in this segment. It is the right time for testers to up skill themselves if they want to venture into security testing.

2. Maximizing Automation Testing – A Hybrid Approach is the Key

There is no discussion anymore on the benefits of test automation, as now it is proven and accepted by all IT leaders that automation testing enables faster test execution and frees critical resources that can be allocated on activities that require critical thinking and analysis.

The year 2021 will bring greater demand from companies to automate as much as possible if not 100%. To achieve a true DevOps pipeline, there are no other alternatives than to implement automation testing, including in-spring automation.

Test automation is not the silver bullet that will solve all software quality issues and we can't say the same for any automation testing tool that will help achieve 100% test automation along with its stated benefits.

The best way forward for test automation framework will be to take a hybrid approach involving open source as well as licensed tools to bring out the benefits of flexibility as well as AI/ML capabilities in test automation. This will help achieve predictability of defect injection/detection and confidence in the quality of software build being delivered.

Cloud-based test automation tools will get traction as they will not need any hardware to be procured/managed by companies.

3. Enhanced Focus on Performance Testing

Most of the employees of IT and other organizations working from home post Covid-19 in 2020, led to an unprecedented load on software applications. The ordinary users also started using internet applications as most of the offline businesses were closed due to lockdown. The applications reached to an overloaded stage, even companies like Google and Microsoft could not remain unaffected. These episodes have made companies realize the need for load and performance testing.

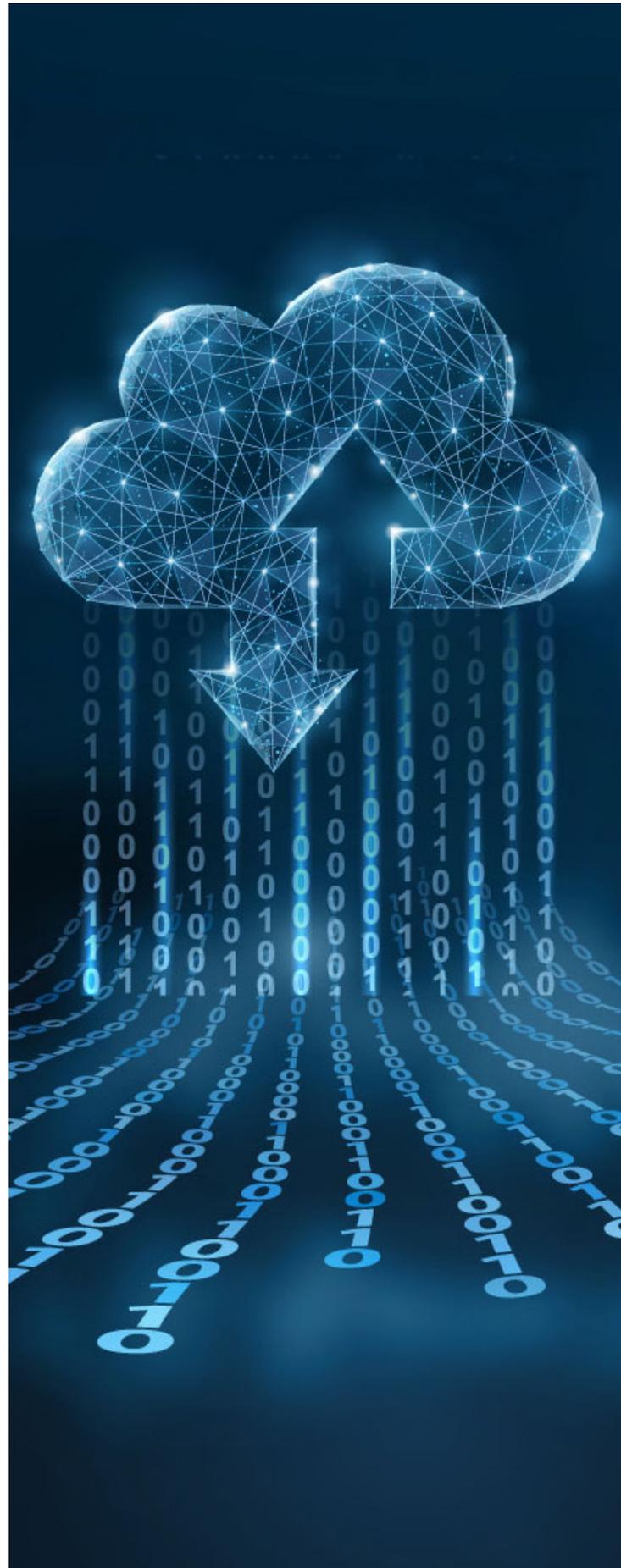
Earlier performance testing had its challenges such as scheduling, test environment availability, test data generation, and debugging for failed load tests. Most of these challenges are now being resolved by cloud service providers providing an environment on demand and releasing the resources when not in use.

2021 will see further re-prioritization of load and performance testing by companies. This will include

- Shift left for performance testing
- Performance testing as a service
- Performance test as a code
- Continuous performance testing by integrating it with CI/CD process

As per a Gartner report, by 2021, organizations that have embraced a performance engineering approach for application development will outperform the competition that has not, in both customer satisfaction and business results.

With applications migrating to the cloud, the older performance metrics are no longer relevant, rather newer sets of KPI are being measured/monitored for the performance of the application under test. Gartner says that by 2021, the need to manage increasingly digitized business processes will drive enterprises to monitor 20% of all business applications with APM suites, up from 5% in 2017.





4. Testers' role is expanding

Gone are the days when the tester was required to perform only specification based test case execution. The current era, of hyper expectation from the end-user and company's need to deliver faster, on multiple channels and of utmost good quality, demands much more from the testers.

In today's world of agile and DevOps, testers need to have skills in programming, in order to:

- Perform white box testing
- Perform automated testing
- Static code analysis
- Statement coverage analysis
- Switching roles with Dev in DevOps / Agile team
- Implement in-sprint automation testing
- Enable automation only testing

To fulfill these requirements, the tester in the team has to have similar skills as a developer, the difference being that he/she has opted to work for testing the application. In the IT industry, we term this role as SDET or Software developer in test.



5. Transformation testing to enable Digital Transformation

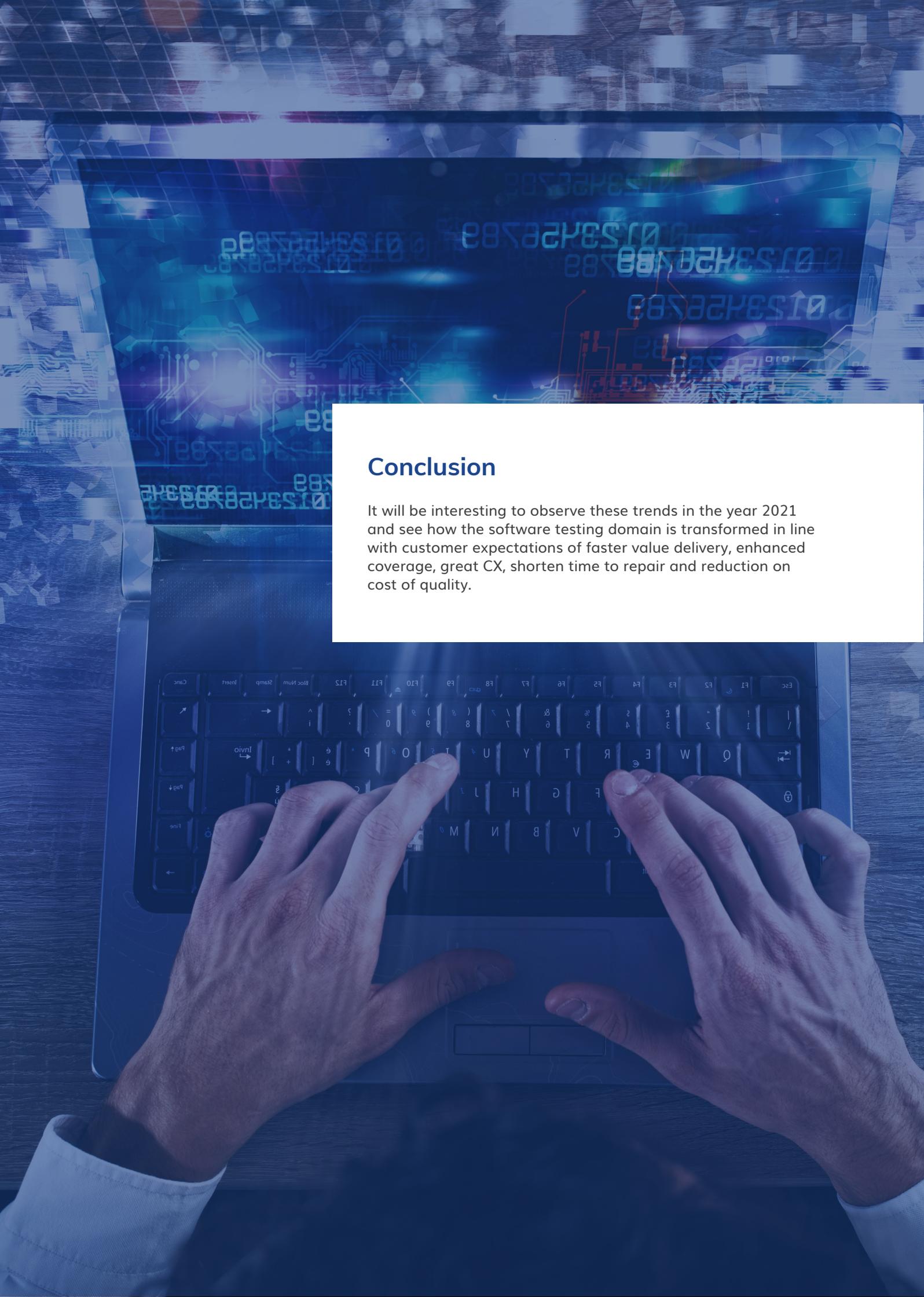
The application delivery ecosystem is expanding to cover all available communication channels, rightly termed as “Omni-channel”. It includes multiple access devices (desktop, laptop, mobile etc.), multiple browsers (Chrome, IE, Edge, Firefox, Safari etc.), Web, or Mobile (native app, mobile browser etc.), application on social media channels etc. With this much coverage to be done in ever-increasing complex applications, the legacy ways of testing will not add value.

To truly achieve digital transformation and to ensure business benefits are being validated at each level/phase, Testing needs to be transformed as well.

For software testing to be transformed and aligned to agile and DevOps, a change in mindset is required, right from test strategy to design, test, reporting etc.

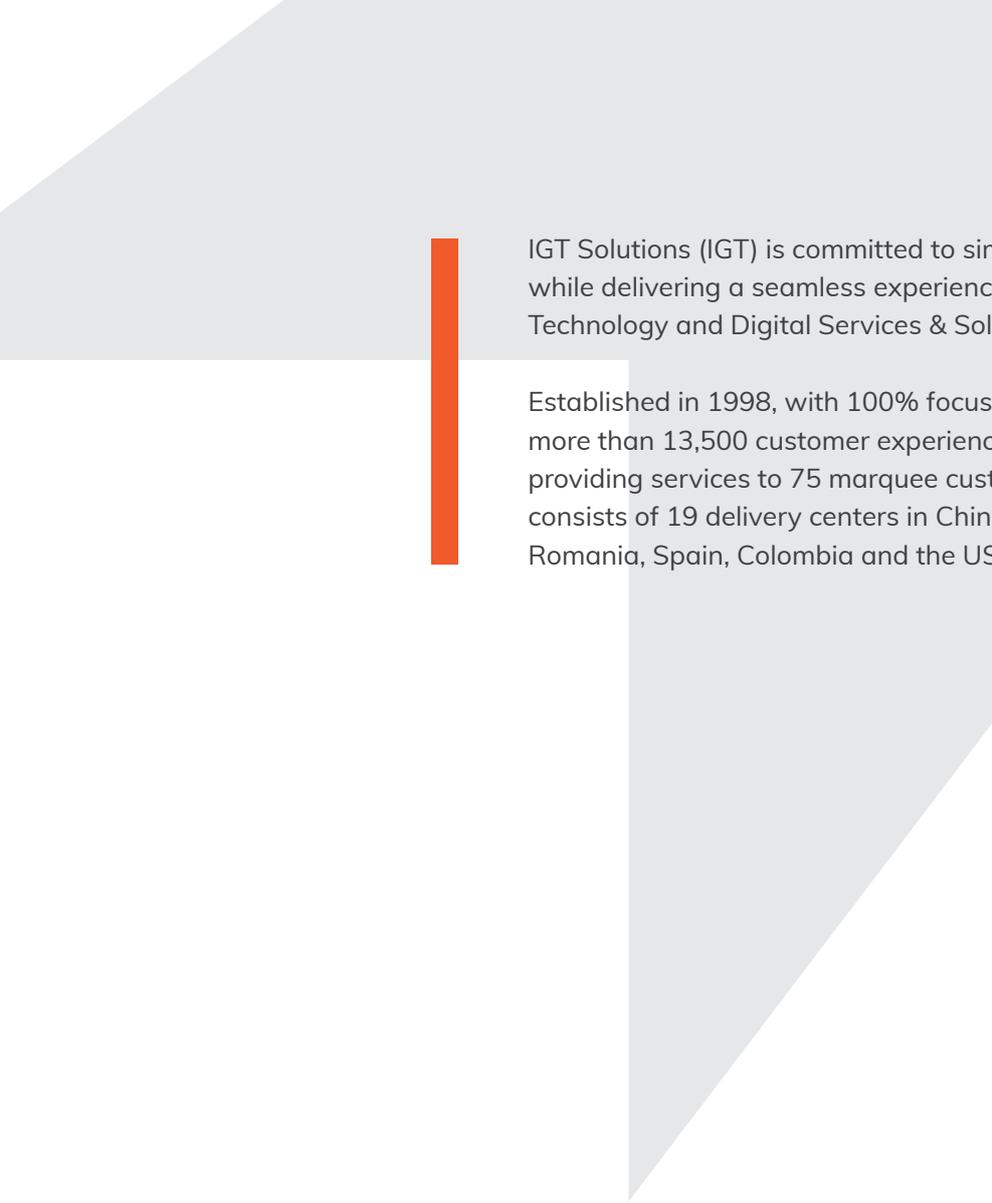
Newer processes and systems should be created in line with the business needs to provide digital assurance to delivery and enable faster value to the customer with good quality.



The background of the entire page is a high-tech, digital-themed image. It features a person's hands typing on a laptop keyboard, which is partially visible at the bottom. The scene is overlaid with a complex, glowing blue and purple digital interface. This interface includes various elements such as circuit-like patterns, data streams, and abstract geometric shapes, creating a sense of advanced technology and data processing. The overall color palette is dominated by cool blues and purples, with some warmer highlights from the digital effects.

Conclusion

It will be interesting to observe these trends in the year 2021 and see how the software testing domain is transformed in line with customer expectations of faster value delivery, enhanced coverage, great CX, shorten time to repair and reduction on cost of quality.



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