



Modernize your Digital Testing Strategy to Deliver Flawless Customer Experiences



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Role of QA and Testing in Digital Transformation

Digital transformation is the talk of the town all over the world. During today's unprecedented times, future-thinking enterprises are under pressure to accelerate this transformational journey, so that their businesses continue to function normally, let alone put themselves in a profitable position. Of course, with a pandemic at large - the current idea of normalcy is not what anyone is used to since many did not even see it coming. Hence, now they are grappling with challenges to implement fluid work environments, remote client management, and automated customer experiences. They must reimagine the way systems and people interact with each other.

In the process, though, some may ignore a key element in the digital transformation process that requires just as much finesse and innovation to effectively plan and execute.

Testing is more than just fixing software bugs and speeding up the product development cycle. It involves the coexistence of multiple applications and tools, planning cycles, and development methodologies. It is also why manual testing just will not cut the mustard these days. The journey to manual testing is tedious and slow, considering current enterprise and customer expectations, and it also keeps valuable resources away from adding meaningful value to growth areas.

Digital-First Testing: Don't Leave Behind Legacy

The emergence of digital-first testing methodologies has empowered enterprises to strengthen their QA and testing prowess at a quick pace, with very minimal business disruption. With test automation coming to the fore, enterprises working on internal digital transformation projects have been given a head start. Not only does it significantly reduce the time taken to complete testing, but it also creates an efficient feedback system that accelerates the deployment-to-market.

Using legacy integration testing frameworks as part of a phased automation process can be troublesome because it leads to erratic workflows being created to manage system-to-system complexities. When a new system is integrated into a legacy system, some of the challenges that may occur are:

- Managing disparate data touchpoints, applications, and processes between different technology environments
- Compatibility issues between multiple systems
- Separate high-skilled testers required to handle in case of major interdependencies
- Lack of cohesion between present legacy integration goals and near-future digital-first objectives





Setting it Right with Shift-left Testing

In the Shift-Left Testing approach, testing takes place parallelly with development so that possible defects can be proactively fixed. It offers a clearer and cost-conscious path to risk mitigation that solves many of your post-development issues related to software or system. Shift-Left Testing also increases your ability to assure world-class quality by giving you the tools to enable better user experience.

Overall, this approach can play a vital role in enabling digital transformation since it puts a mechanism in place to continuously test, with shorter feedback loops and stronger quality control workflows.

Key Points to Remember in Shift-left Testing

- Get a clear understanding of the requirements of the software before starting the testing process
- Start an early testing cycle in parallel with the software development process
- Bring business strategy and customer feedback into the development cycle
- Enable transparent collaboration between the development, testing, decision makers, and business teams
- Adopt intensive testing stages early in the development cycle to prevent last-minute software hiccups



Digital Testing: The Future is Now

The testing philosophy of enterprises has gone through a lot of changes over the last few decades. From its roots as a software feasibility checker, it has grown to become a critical piece of the digital transformation puzzle.

Within the software application development lifecycle alone, skillful testers are becoming more valuable to scale digital innovations and promote user-friendly experiences for all the stakeholders in the journey. Let's look at some of the advancements in testing methodologies that you should prioritize to enable a future-ready enterprise.

Acceleration Through Automation

Automation has been a gamechanger in testing. It has changed the enterprise mindset of looking at the test cycle as a reactive measure against defects and anomalies, rather than a proactive step in increasing the product quality and speed-to-market. With Agile and DevOps models on top of the testing curve, automation can help fix issues that may slow down the development and deployment stages of the product lifecycle.

Impact Areas of AI-led Testing Automation

- Continuous improvement of modernization cycles
- 360-degree quality assurance across horizontals and verticals
- User-centric product experiences that lead to repeat businesses
- Unparalleled testing scalability across multiple technology ecosystems
- Higher programmer productivity due to lack of manual efforts





Continuous Improvement to Increase UX

User experiences are what make a good product great. Unless you put the user at the center of your product design, from the blueprint stage, it may not fulfill customer expectations. With digital testing, you can make sure that user adoption is high, which in turn, boosts customer loyalty. But first, you need a testing strategy that goes beyond creating a smart user experience design. It should rather be focused on customer experience (CX) as a whole.

What this means is that your products must be tested in demographic-specific groups that are applicable to real-world user scenarios. CX testing is not a one-time activity, but an ongoing process.

How to meet Evolving Customer Expectations

As the adage goes, the customers often know what is best for them – and they have certain expectations of having purposeful interactions. Today, considering the mass exodus to the virtual world that comes with new devices and channels, digital CX testing is how you create effortless user journeys. At times, there are large gaps between customer expectations and the realities of digital experiences. These may be caused by irregular software and applications that hinder their interactions.



Here is what you need to ask before putting CX at the heart of your testing strategy.

- Is your enterprise's overall maturity level high enough to allow seamless collaboration between internal stakeholders to create memorable customer experiences?
- Are you equipped with real-time analytics and customer sentiment analysis to capitalize on unexpected opportunities and solve frequent pain-points?
- Is there a mechanism to get pre-launch user feedback based on social, economic, and cultural demographics?

Three Major Elements of Digital CX Testing

Layout Testing: Test the responsiveness of web layouts for multiple browser formats or devices sizes – with more flexibility to resize the layout as per specifications

Accessibility Testing: Test the ability of users with disabilities to freely experience the web without anomalies or disruptions – ensure accessibility at a design, content, and media level.

Usability Testing: Test the end product, app, or website for usage of functionalities with real users – unearth hidden areas to improve the overall user journey

Proactive Security Testing

These days, the number and complexity of security breaches make it essential for your security testing to be a proactive strategy, rather than a reactive measure. You must comprehensively analyze and test the applications and systems across your enterprise for security vulnerabilities that may threaten your ability to comply with regulatory standards or prevent business disruption.

You should identify potential vulnerabilities through a blended testing approach that empowers your enterprise to be two steps ahead.

Focus Areas of Security Testing

- Implement world-class coding standards and best practices, using a scalable framework
- Provide static code analysis to immediately notify your development teams about vulnerability hotspots
- Conduct continuous testing and detect security flaws before that can harm your business
- Reduce risk exposure to enhance the development cycle



Phased Microservices Testing

The prominence of Microservices architecture has enabled enterprises to break down a single large system into multiple smaller units. It helps them manage the moving parts of a larger machine. But it also led to an increase in the quantity of smaller APIs that need to be tested. Therefore, quality assurance takes precedence since it is vital to strengthen business continuity, even during system upgrades.

What you require are automation frameworks that can be easily integrated with test execution and fail-fast systems. It will ensure that predictive support is available to address dependency issues before they can even begin to impact your business. Before you can embark on your microservices testing journey, though, you must prepare yourself to face challenges in areas such as:

- Managing functionalities, integrations, services, messaging, data
- Increasing velocity and agility
- Ensuring business performance and reliability
- Delivering seamless customer experiences

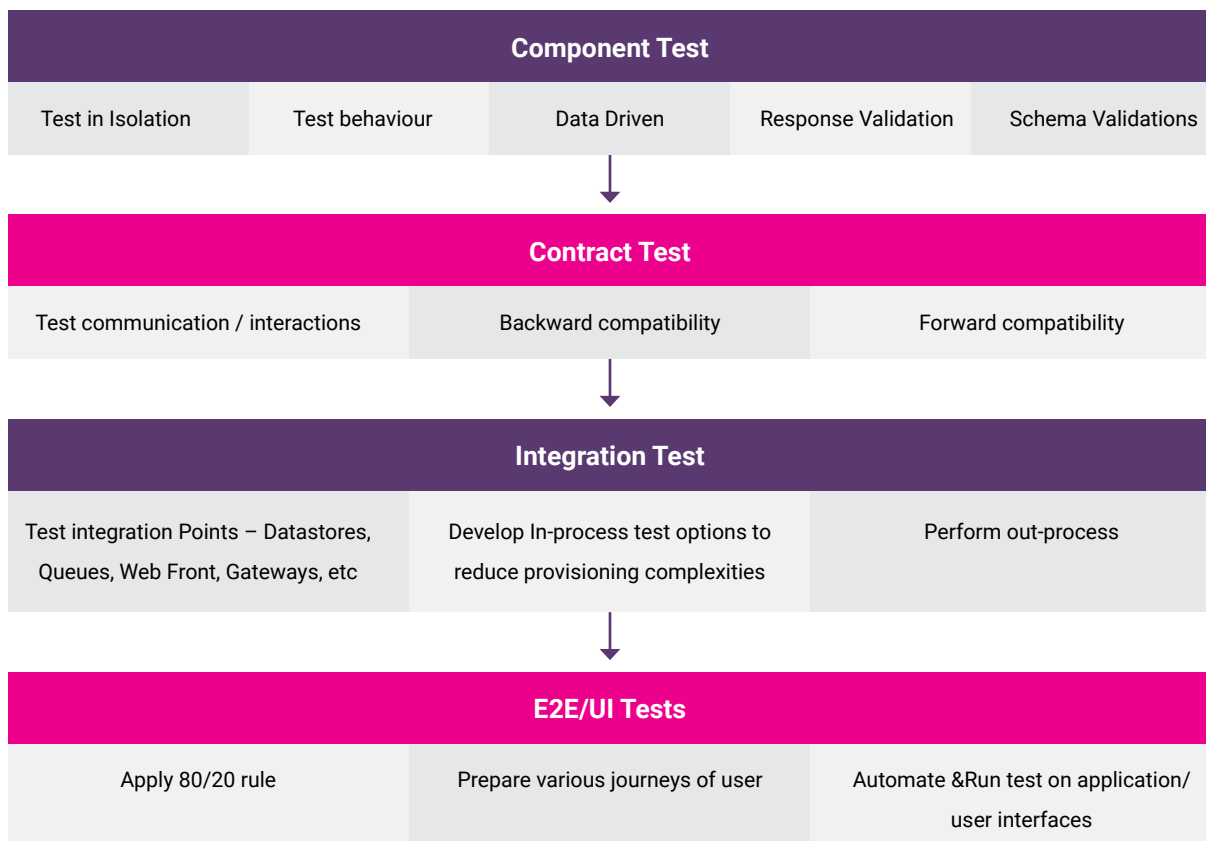




In order to overcome them, you can follow a four-blocked approach to achieve testing efficiency.



With microservices rapidly becoming a mainstream software architecture for future-thinking enterprises, along with the rise of automation, testing can be done an independent level microservice (unit, integration, component, etc.). The importance of delivering unified customer experiences has also put user journeys under the scanner to ensure device or browser-agnostic interactions.





Continuous DevOps Testing

In the absence of continuous testing, DevOps is a one-legged horse in a marathon race. While accelerated implementation is a high priority requirement, unless your software codes are bug-free, you may end up with unavoidable speed bumps. Since traditional QA testing cannot match the pace of a typical modern delivery environment, you must continuously and seamlessly test the software along its journey, from development to the last stage of delivery.

It goes a long way to help you identify and rectify potential errors or possible bugs in the early stage of your software development cycle.

Advantages of Continuous DevOps Testing

- Reduce the time and effort involved in the code review process
- Enable consistency and simplicity in your standard testing process
- Provide developers and testers with more visibility into the overall development process
- Ensure stable releases to production

Flexible Cloud-Based Testing

Today, cloud-based testing is best-known for offering the advantage of speed and scalability to increase or decrease the required configurations without delays or disruptions. It also provides an increased scope of coverage in all the available platforms, browsers, and devices, as well as the capacity for parallel execution of similar tests across these platforms – based on customizable plans.

With options to choose licenses on a month-on-month basis, your enterprise can use a single cloud subscription platform to conduct unified, dynamic, and secure testing.

Why you should go Cloud to go Big on Testing

- Drive continuous delivery by using plug-ins and automated tests that kick into action post-deployment or code changes
- Minimize infrastructure cost by using flexible pricing models that help you achieve the maximum ROI
- Connect thousands of mobile devices, no matter their device configurations, at one go



Emerging Technologies like AI and IoT

Today, the IoT device boom has also made it imperative for you to ensure a testing framework that covers IoT components for performance, reliability, interoperability, and security. If your IoT devices do not smoothly interact with each other, you may run into speedbumps on the road to developing great products. With multiple users accessing the devices from various platforms, the chance of data leak or technical issues may arise.

5 Questions to Ask Before Starting the Digital Testing Journey:

1. Are you creating real-time scenarios in a business environment for users to test the system in parallel?
2. Have you properly defined the scope of testing for each phase, so that quality testing and assurance go hand-in-hand with product development?
3. Can you standardize processes for collecting and managing test data?
4. Did you verify the integrity and security of data and extensively document the findings?
5. What is the right balance between application quality and time-to-market?





How Aspire Boosts Next-Gen Quality Engineering

Aspire's Next-Gen Approach to Hyper-Testing

Aspire's Hyper-Testing services is an enabler of speed, agility, and better performance in your quality assurance processes. In fact, we help you move from quality assurance to quality engineering by giving you access to a growing spectrum of dashboards and metrics, as well as 1,000+ devices or platforms on the cloud. Aspire equips you with the tools you need to manage the efficiency of processes, practices, tools, and reusable assets, as well as make informed release decisions.

What we Enable:

- Breaking through the barriers of conventional testing and consistently deliver quality products within shorter timelines
- Make your applications more robust, with a significantly improved performance rate
- Reduce costs and efforts involved in seamless functioning of all your enterprise-level applications
- Frictionlessly manage any expected convergence across digital platforms
- Guarantee customer delight every time you release a software

At Aspire, our Automation experts have developed two homegrown AI-based automation testing frameworks that can make the most out of your Hyper-Testing efforts. They are optimum and selenium-based frameworks that give you the power of rigorous and disruption-free continuous testing for superior delivery.

1. **AFTA (Aspire Framework for Test Automation)** for cross-browser, cross-platform mobile testing
2. **DCqaf (Digital Commerce quality automation framework)** for addressing the challenges in POS testing and e-commerce testing



Aspire's Framework for Test Automation – AFTA

AFTA is the mother of all frameworks when it comes to automating functional and non-functional test requirements. You can harness a suite of automation tools that comprise Selenium Grid-based components to reduce the turn-around time for testing across your technology environments.

The AFTA 3.0 (Beta) version comes with advanced functionalities, using AI and ML, to enable test automation in the development phase. It helps you avoid any last-minute scramble involved in error detection. If you work in Agile and DevOps-driven environments, you can easily overcome the conventional testing challenges and bridge technology gaps to offer the best possible experience to customers.

The AFTA 3.0 also comprises StabilizedJS that automatically heal the test scripts during the test execution, as and when the UI element properties change.

Aspire's Digital Commerce Quality Automation Framework – DCqaf

DCqaf is a versatile framework, built by Aspire, to ensure an end-to-end testing process across your retail operations. To help you develop bug-free retail solutions, DCqaf supports mobile devices, multi-thread, and multi-browser capabilities in order to downsize cross-browser testing complexities. It also gives you the agility to mitigate costs and boost efficiency during the software development cycle.

Key Differentiators of AFTA 3.0

- Self-healing scripts to identify application changes
- Auto analysis of the test automation results
- Easy integration with Selenium-based application projects
- Defect analytics for better reliability
- Auto-update of errors in the defect tracking tool
- Build analytics on the previous runs
- Livestreaming of test results
- Complex report analysis on execution reports

Key Differentiators of DCqaf

- 60% automation coverage in e-commerce and POS testing
- Reduced time-to-market
- Smooth multi-platform integration
- Minimized overall testing costs
- Higher reusability of workflows



Three of Our Transformational Testing Stories

Go-to-market TAT Reduced by 10 – 15% by using AFTA for World's Largest Learning Company

Client

World's largest learning company with global footprints in 70+ countries

Challenges

- Compatibility issues across various browsers and device that delayed product releases
- Delay in reproducing test results
- Lack of regression testing and new feature enhancement
- Unavailability of manual test execution for 20000+ test cases to certify application stability
- Frequent issues in hotfix testing that impacted regular testing activities

Our Solution

- AFTA test automation framework that offered a unified, dynamic, and secure testing solution
- Provided full compatibility, extensibility, and modularity
- Ensured more than one product was automated simultaneously - within shorter timeframes
- Supported RESTApi to work with test data instead of spending time in test data generation

Benefits

- Increased ROI of smoke and regression test suite
- Reduced regression cycle timeframes down to 5%
- Reduced go-to-market TAT by 10 - 15%



Up to 3MN SGD Saved Within One Year for a Leading Multinational Bank

Client

A leading multinational banking and financial services company

Challenges

- Difficulty in maintaining multiple digital platforms and ensuring device compatibility
- Complexity of testing API integrations
- Lack of adequate skilled testing resources
- Internationalization and localization testing issues

Our Solution

- AFTA framework that enabled scaling of parallel testing across various devices
- Easy integration with non-functional testing tools and continuous integration with tools like Jenkins
- End-to-end digital testing services
- Business analysis, product upgrade, and implementation for end-customers
- Orchestration of onshore-offshore model to provide round-the-clock QA support

Benefits

- Saved up to 3 million SGD within 8 – 12 months
- Achieved faster release time from 5 to 1 day
- Reduced test automation effort by 20%





Up to 500K USD Saved by Shift-Left Testing for a Top Global Insurance Provider

Client

A leading multinational insurance solutions firm

Challenges

- Inability to test multiple integrated systems and massive sets of functionalities within short release cycles
- Lack of cohesive functional and nonfunctional testing aspects
- Need for localization testing across English and Thai language
- Complex product features, without any support documents

Our Solution

- Shift-Left testing approach that supported smoke and regression testing
- Reduced initial feedback time to 30 minutes within deployment time
- Reduced cost of tools and licenses cost by using open-source technologies
- Highly reusable automation coding techniques like Page Object Model that enhanced the test script creation time
- Pairwise algorithm that minimized test combinations while retaining effective coverage

Benefits

- Optimized test pack from 6,000 to 2,000 tests
- Logged over 1,500 defects
- Saved 70 days of manual testing efforts
- Saved \$500,000, along with the increased cost of running a manual investment advisory function

With Miles To Go, Here are 5 Testing Promises to keep:

1. Automation is not a silver bullet to overcome all your testing challenges; adopt a phased approach in which you automate the testing processes on a priority basis to test internal feasibility and external impact
2. Remember that digital testing is a continuously improving process that paves the way for digital transformation; do not wait till everything is perfect to digitalize your testing and QA
3. Beware of bloated test suites and be more flexible in adapting to new environments while keeping high maintenance costs at bay
4. Simplify your application testing structures by breaking down complex testing scripts into short silos which could be integrated at a later time
5. Make available more automation test resources to start working towards future testing requirements

Conclusion

A sub-standard testing strategy can be a 'make or break' moment for the enterprise in the digital transformation journey. It can cause infrastructure breakdowns, skyrocket operating costs, and play havoc in meeting delivery schedules of product updates and releases. Especially with digital transformation, there is a pressing need for enterprises to broaden their scope of testing and adopt a more customer-centric approach.

To embrace and ride the digital wave, they must realign and design a specific user-centric testing approach to address the challenges that come with new technologies like Social, Mobile, Analytics, and Cloud (SMAC).

At Aspire Systems, we have a proven track record of being one of the best Independent Testing Service providers. Our uniquely end-to-end Hyper-Testing approach is in the echelons of world-class quality engineering best practices. Our custom-built user-centric testing approach addresses the challenges that are inherent in the SMAC ecosystem. And we are backed by a team of over 600 test engineers and numerous QA experts who have the reputation of maintaining an average defect leakage ratio of less than 3%.

As a trusted testing partner for many Fortune 500 clients across various industries and geographies, we offer the whole nine yards of testing services, with robust assessment frameworks and proven methodologies that empower businesses to build a strategic and cost-efficient roadmap to testing excellence.



Practice Head



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Janakiraman is the Head of Testing and Test Automation Service Line at Aspire Systems with an industry experience of about 18 years spanning across the SDLC. He also has a delivery experience of managing a 300+ people team with in-depth expertise in designing, testing, and implementing cloud-based SaaS products for various domains.



To know more about our testing services, please write us to: info@aspiresys.com

About Aspire



Aspire Systems is a global technology services firm serving as a trusted technology partner for our customers. We work with some of the world's most innovative enterprises and independent software vendors, helping them leverage technology and outsourcing in our specific areas of expertise. Our core philosophy of "Attention. Always." communicates our belief in lavishing care and attention on our customer and employees.

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