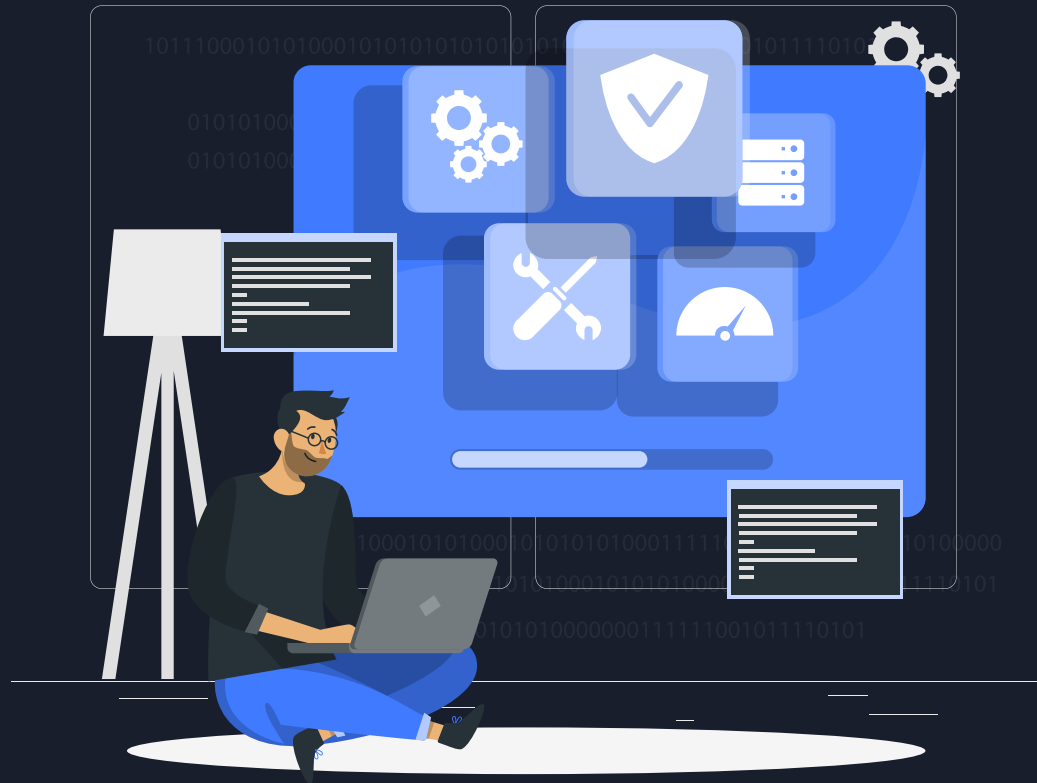


Essential Guide to Shift Left Testing – Embrace Quality Engineering in Your Organization



Preface



Emphasize Prevention and Risk Reduction and Ensure a Positive Customer Experience

88% of service leaders say their current quality assurance processes are ineffective and rarely match up to the customer view of quality ~ Gartner

Conventional quality assurance methodologies were proven ineffective a long time back. The approach doesn't deliver the same results because the magnitude and usage of new applications are much broader. Organizations cannot afford to recall or patch their products once released without losing their reputation and revenue. A solution here is to start the testing process early during the development. This practice is being adopted worldwide for being too accurate with results. With increasing compliance and regulatory guidelines, IT companies will eventually move on from traditional testing methodologies and embrace the shift left mindset.

Continuous testing market revenue is expected to accelerate at a CAGR of 15.8% between 2022 and 2030

In an agile development space, developers are constantly under pressure to deliver projects faster. At the same time, the pressure to decrease testing costs for higher profitability has also been around, and companies prefer practicing this way. This vision and ambition led to developers focussing more on improving quality on each successive product release.

When testing is an afterthought, it leaves several loopholes in the product's design. It is not suitable for users because it compromises their privacy and security. Today, companies have substantial assets invested in digital products. We are deeply connected to global technology networks, and a single bug or quality issue can cause significant damage. The need to improve product quality while meeting the demand for faster application release cycles, reducing costs of defects, and improving test coverage are key factors that have made continuous testing a much-preferred development approach.

The relative cost of fixing defects in the production of SDLC is 100x more than the design stage because testers are involved during the subsequent phases of development ~ IBM Systems Sciences Institute.

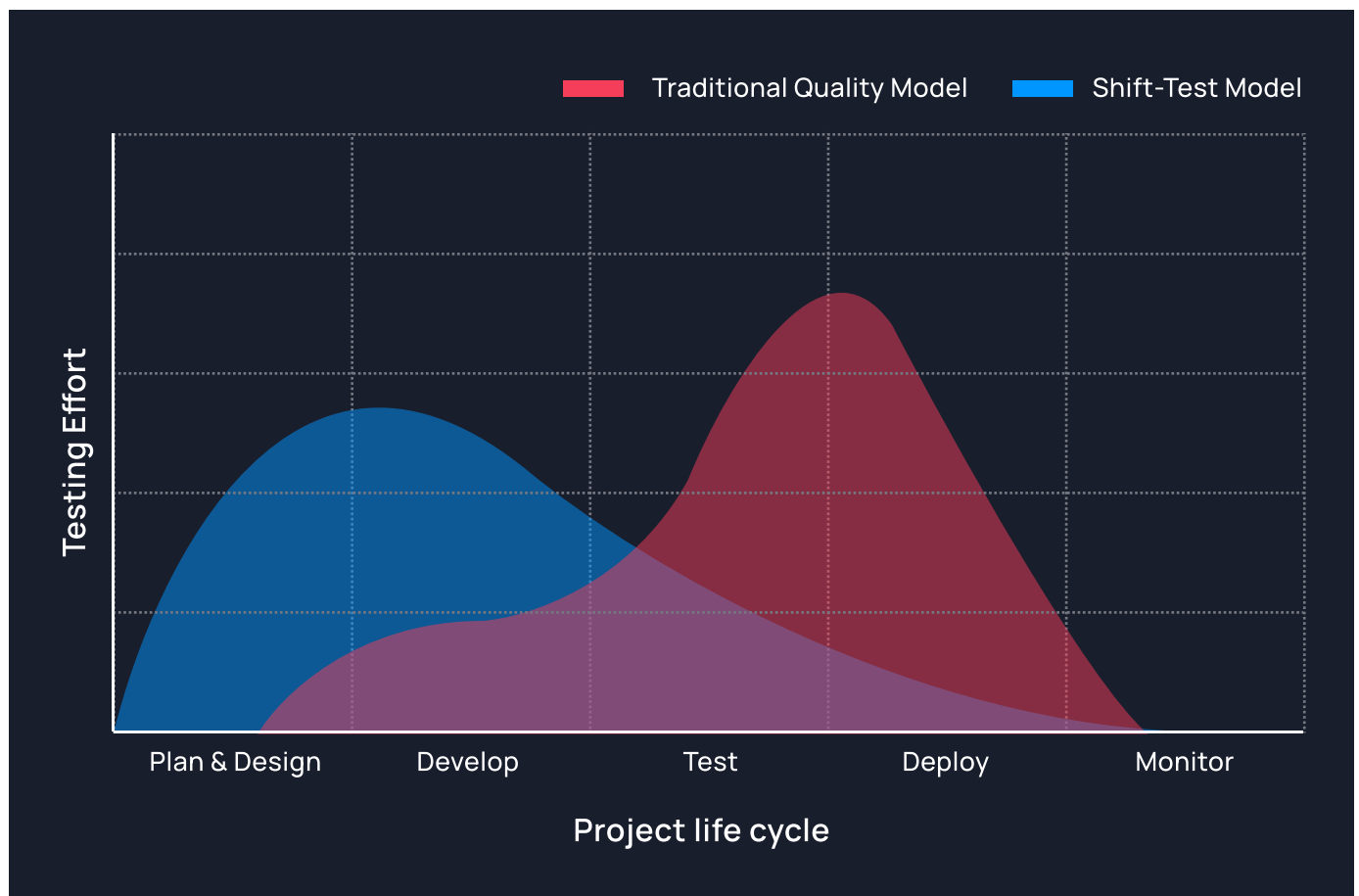
We cannot rely on traditional development practice to confirm that the product works as intended. Any flaws detected will be resolved right before the product is launched on the market. This practice always leaves specific issues that compromise marketability, KPIs, and profit goals associated with the product.

Take the popular delivery app DoorDash, for example. A minor glitch led to thousands of customers ordering free food and drinks. The issue was resolved, but the brand lost a lot of reputation and trust.

A simple solution to resolve these issues and possible scenarios in the future is to move on from waterfall methodology and introduce shift Left testing in the organizational work culture. It is a great solution to improve code quality, build a great user experience and meet stakeholders' expectations simultaneously.

What is "shift left" testing?

The shift left testing strategy focuses on improving code quality by bringing software testing activities forward in time. The shift left strategy incorporates testing strategies and execution at each stage, rather than waiting till the late stage of the development process.



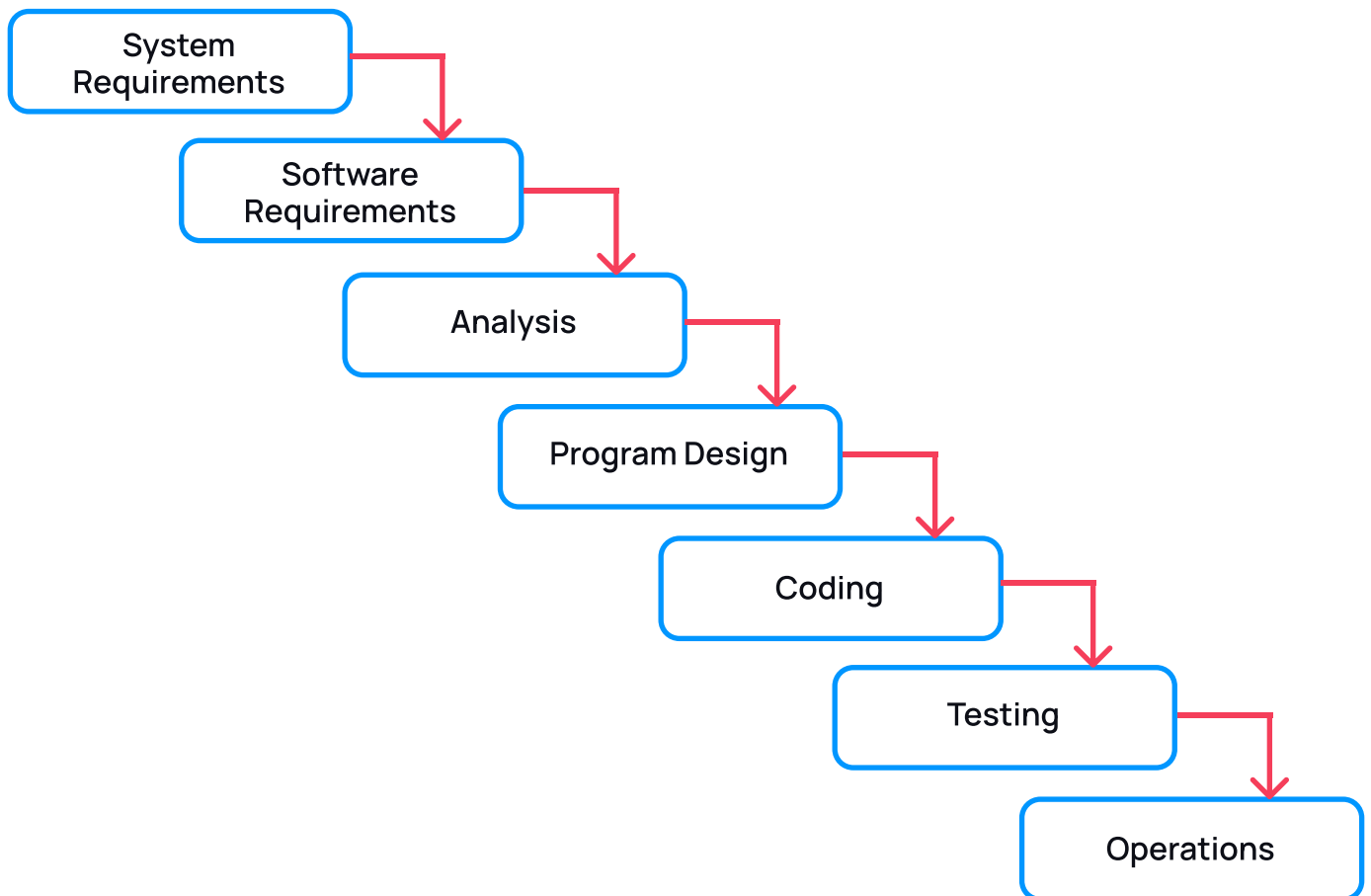
In the traditional methodology, testing followed the logical sequence of a software life cycle, where quality assurance only begins after design and coding. The importance of software or an application was not as significant as today, so the quality assurance method was not seriously questioned, and hence a replacement was never considered.

Today, digital products have become an integral part of our lives. An IT company with significant digital assets and properties cannot compromise the quality and only rely on finding the bugs and defects in the later stage of development. Shift Left testing is a foolproof technique to overcome these obstacles and enhance the product quality tenfold.

Shift Left Testing: The New Must-Have

In the past, the approach for SDLC provisioned that one process could only start when the previous process was complete. The workflow resembled Winston Royce's "Managing the Development of Large Software Systems," first published in 1976.

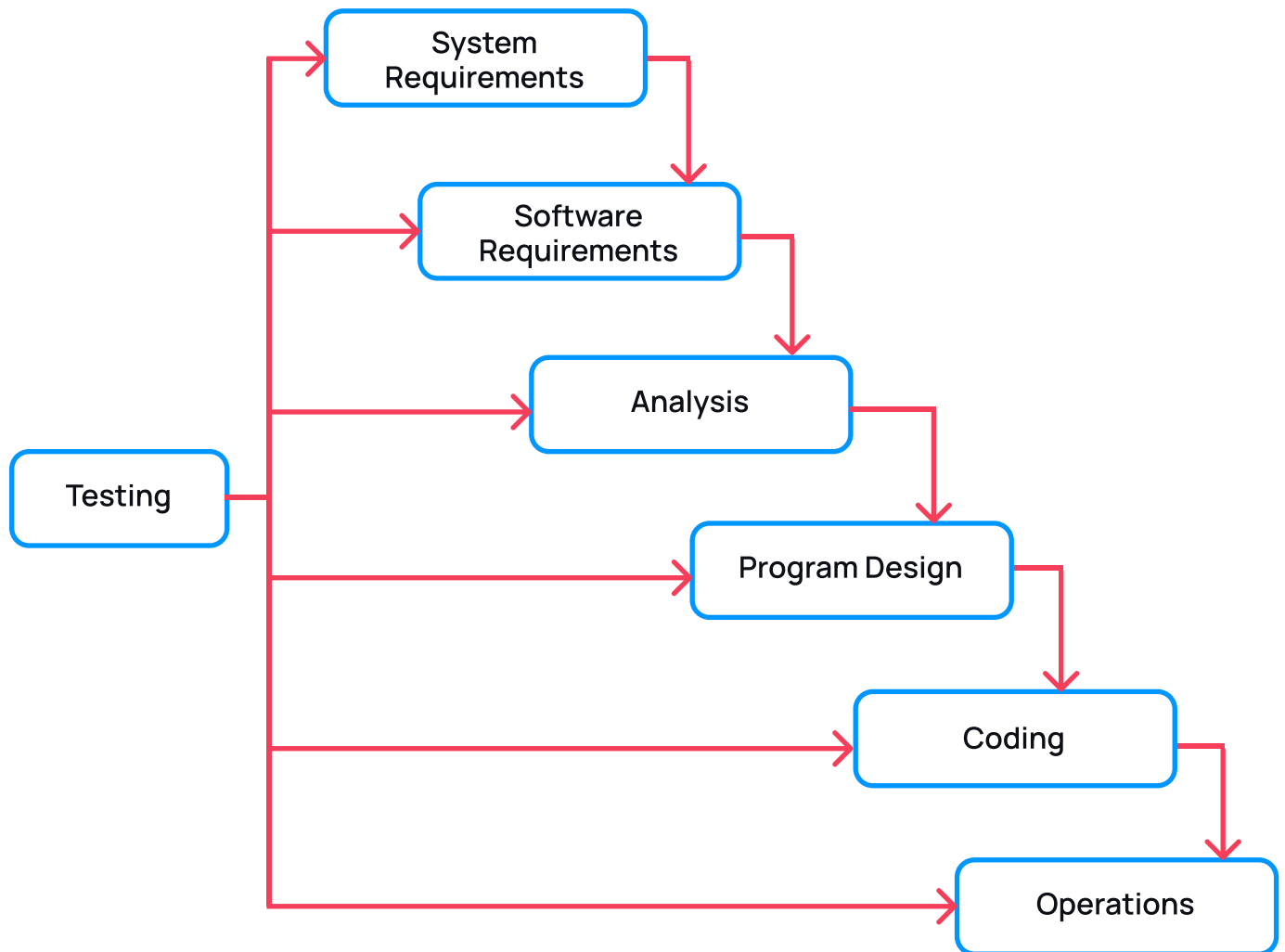
The traditional SDLC (also known as The Waterfall Methodology) model looked like this:



In the past, most software development teams employed this methodology because only the product team would work with the customers to understand their requirements. Product managers would share customer requirements with the development teams. Tasks would be assigned after a short meeting, and everyone would start working in silos. Testing would only occur once the coding was complete and the product was ready for market launch. Since the timelines were strict, the testers would get a short window to ensure that the product performed as intended. Any issue detected post-launch was fixed with patch release or product updates.

Organizations cannot afford to rely on this practice anymore.

Shift Left testing approach transforms everything you have known about SDLC while uplifting the quality of the end-product:



In the Shift Left approach, testing is incorporated in every stage of the development process. Enterprise application software testing has developed over the years to include all aspects of technology change. Microservice architecture and cloud-enabled deployment are becoming more frequent, necessitating dramatic modifications to test projects if organizations want to remain successful.

How Shift Left Testing Improves Application Development Process

Waterfall Methodology

- Consumes more time to fix issues because the process begins in the last stages. It also consumes more budget and resources.
- The method is less productive for testers because their help is only needed in the later stages of development.
- All departments work in silos leading to a significant lack of coordination.
- Companies are burdened with hidden costs due to technical debt when fixing software defects in production.
- The conventional approach relies on manual testing, which is cumbersome and not accurate.

Shift Left Testing

- Consumes fewer resources and budgets because testing happens in real-time.
- The approach is more productive for testers as they are involved in every stage of development.
- Departments are in sync because testers are a part of every team.
- The costs are crystal clear because there is no need to fix software defects in the late stages.
- Automated continuous testing makes testing more reliable and improves the quality of the code.

Some organizations have also adopted the practice of pushing shift left testing toward the coding phase. This practice is known as test-driven development (TDD) and involves writing the test code in advance. This strategy helps testers immediately verify their code's validity once implemented.

Many other companies prefer using static analysis tools as it helps in identifying problems with parameter types or incorrect usage of interfaces.

The modern testing scenario has seen the popularity of BDD or behavior-driven development. BDD uses a common design language that is easy for every stakeholder to understand. This includes product owners, managers, testers, and developers. It improves the team's agility by allowing every team member to work on product quality simultaneously.

Shift left testing is empowered tenfold by the arrival of automation. Automated testing removes time taking and expensive processes and makes testing relatively cost-efficient and faster. Test automation and shift left testing fit together like a glove. You will speed up tasks like architecture and automated code reviews with the right test automation tool and framework. Test automation will also help you adopt new services faster and start performance and security testing at early stages. Development and testing teams can also integrate automated tests (unit, services & functional) into the CI-CD pipeline and significantly incorporate feedback (defect history & defect trends) into the software design phase.

As a result of the shift-left approach, applications are market-ready sooner and less susceptible to severe disruptions.



Whatever Industry it is, Shift Left Has Got You Covered.

Don't be under the misconception that shift left testing is only for software companies and industries functioning in the IT sector. It has a varied range of benefits that helps every organization improve the quality of its products.



Banking and Financial

Create applications that protect user data and confidential information. Ensure that your digital presence is not hindered due to peak user load.



Retail

Create digital products keeping user behavior as a priority. Leverage advanced technologies like AI and ML to learn from user spending habits and continuously improve your services and offers.



Utilities and Energy

Improve energy consumption and distribution through advanced software. Control and channel your precious resources to industries leveraging software testing and quality engineering tools.



Healthcare

Safeguard patient data in the digital space and ensure that your digital tools are free from external threats. Leverage continuous and cloud migration testing to reduce operational costs and improve the quality of the products and services.

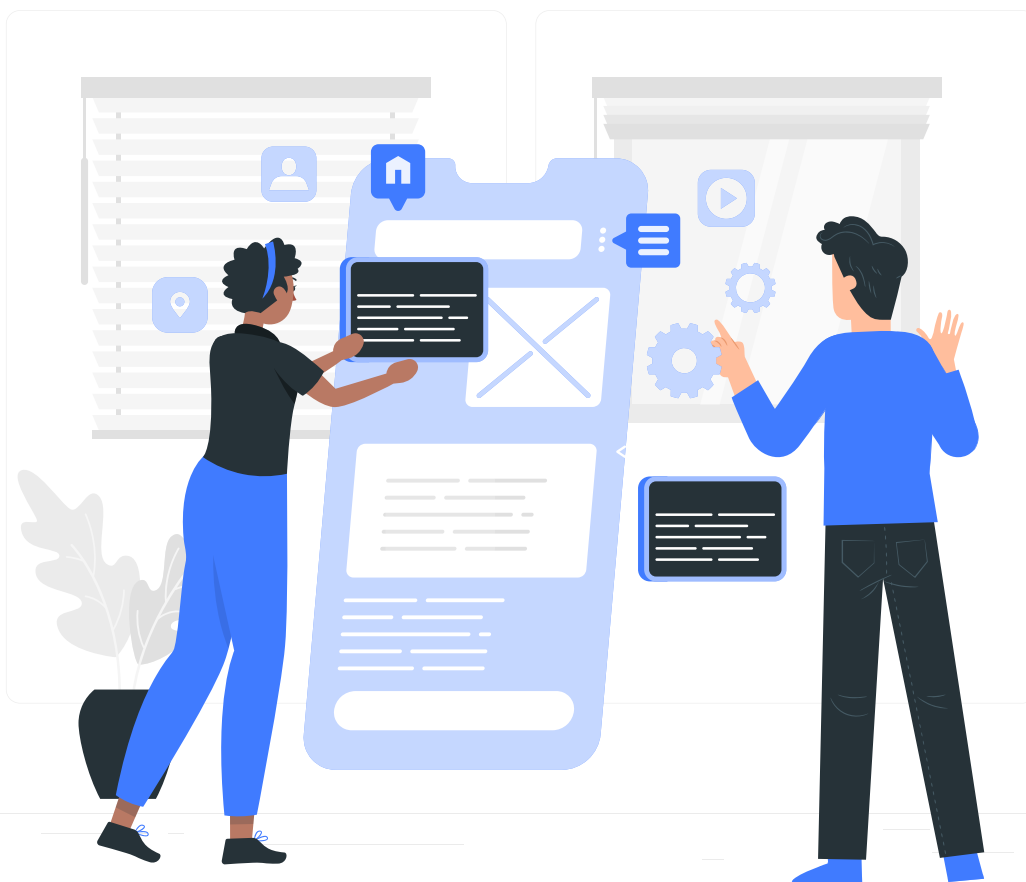


Travel and Hospitality

Build robust and compliant travel apps and products for the best user experience. Leverage AI and ML to understand travelers' demands and upgrade your products in real-time.

How Can Your Organization Adopt Shift Left Testing?

The importance of digital products is growing, and so is user dependency. Companies cannot compromise their product quality without risking their reputation. This is the right time to introduce shift left testing in the application development culture. In a few simple steps, your IT ecosystem will start embracing continuous testing and automation frameworks, making it an integral part of the application development process.



- Highlight shift left in all the client pitches and introduce it as the attribute that gives you an upper hand over your competitors.
- Develop new coding standards after consulting and getting an OK from all development teams.
- Develop strategies with shift left testing at the forefront.
- Adapt your SDLC to accommodate automated testing and continuous testing.
- Let dev teams write integration tests in the later stages of SDLC to ensure that all the units integrate easily.

The Extensive Scope of Shift Left Testing

Shift left testing has a broad scope covering a range of solutions for every type of project. You don't have to implement these solutions alone, as experienced quality engineering service providers do the same for you within your budgets and timelines.

Some services you can take advantage of:

Functional Testing

Verify the functionality of the application against the critical benchmarks. Shift left testers to determine if the end-product features work according to pre-determined requirements.

Performance Engineering

Embed performance engineering in all product development phases and ensure that the end product is agile, scalable, and responsive and would perform under peak user load as intended.

Product Testing

Measure product performance, safety, and quality and ensure they adhere to established compliance and regulatory guidelines.

Mobile Testing

Make sure your mobile application is compatible with the platforms and others, a seamless experience for the users while catering to their needs.



Making the Shift – The Way Forward

One of the essential things ambitious and future-ready organizations need to do to meet the demands of modern consumers is to change their approach toward software testing and development. Integrating shift left into the software development process is the key to improving the final product's quality.

If we look at the trends and expert opinions, the next five years will see a massive transition to shift left testing and less dependency on manual testing methods. Organizations can quickly shift left by introducing new coding standards and test automation frameworks.

You don't even need to start implementing shift left testing in your organizational infrastructure by yourself. An integrated quality engineering partner would do the same for you while understanding your business requirements and goals.

When it comes to independent quality engineering service partners, QualiZeal is the name you can always trust. With an immersive approach to shift left testing, we focus on eliminating redundancies, improving the software release cycle, and decreasing overheads. Whether it is manual testing or testing with automated tools, we provide extensive support with several frameworks and tools leveraging AI-driven, Continuous Testing & Test Automation tools. With advanced solutions in Functional Testing, Test Automation, Performance Engineering, Product Testing, and Mobile Testing, you'll gain a complete overview of what works and what doesn't with your digital applications, giving developers the information they need to resolve issues in real-time.

