ZUCI SYSTEMS

WHITEPAPER

QUALITY ENGINEERING **THE KEY TO SUCCESSFUL DIGITAL TRANSFORMATION**

The Digital Transformation Wave

Organizations no longer view digital transformation as novel or as a source of competitive advantage — rather it has evolved into a strategic imperative. An MIT-Deloitte joint study revealed that over 92% of global executives expect digital technologies to either moderately or severely disrupt their industry, whilst 82% feel digital technologies provide a unique business opportunity.

Significantly, among organizations that have successfully implemented digital transformation programs, over 58% have seen an increase of revenue of over 10% with 13% witnessing revenues increase of over 30%. Maturing digital businesses are focused on integrating digital technologies in the service of transforming how their businesses work.

Some of the challenges businesses face with digital change include the loss of control over customers and stakeholders, low engagement levels through digital channels, commoditization, and greater competition.

This can be overcome by integrating digital technologies and ensuring that they deliver the outcomes necessary for business success. This is precisely where Quality Engineering (QE) comes into play and this paper focuses on how it can be leveraged to enhance your digital transformation strategy. When you buy a fruit, you base your buying decision and judge

Perception and Significance of Quality

the product quality using attributes such as appearance, condition, freshness, ripeness, price, nutritional value, shelf life, convenience to prepare and consume, size, seasonality, calorie content, organic factors, whether it is local or imported, and so on. Despite all these stringent and well-defined criteria, however, only when you take the first bite would you experience the taste and flavor that would conclusively prove whether it really delivers what is expected.

The same principle applies to software as well and that is what makes quality such an important aspect of the software development lifecycle.

With the deluge of off-the-shelf products and apps on the cloud, and every enterprise looking at digital transformation as a strategy, software quality assumes greater significance than ever before.

The cost of software quality is extremely high with as much as 70–80% of the development costs being spent on correcting bugs. An indication of this cost can be found in the statistics for 2017: 606 fails from 134 companies, $1.7 trillion in financial losses, 3.6 billion people affected and 268 years lost to downtime.

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Typically, enterprises deploy a bunch of best-of-breed software products to work together for achieving their digital transformation outcomes across infrastructure such as social, mobile, cloud and virtual environments. More often than not, the success or failure of the deployed applications is dependent on the user adoption, which is driven by User Experience (UX) parameters that makes it easier and intuitive to use. In this scenario, it is immensely critical that not only each of the pieces perform as expected, but that they all function synergistically as an integrated whole to deliver tangible business value. The timelines towards digital transformation have shrunk from months to weeks, and now mere days, and quality needs to be integrated and be a part of the development and delivery process.

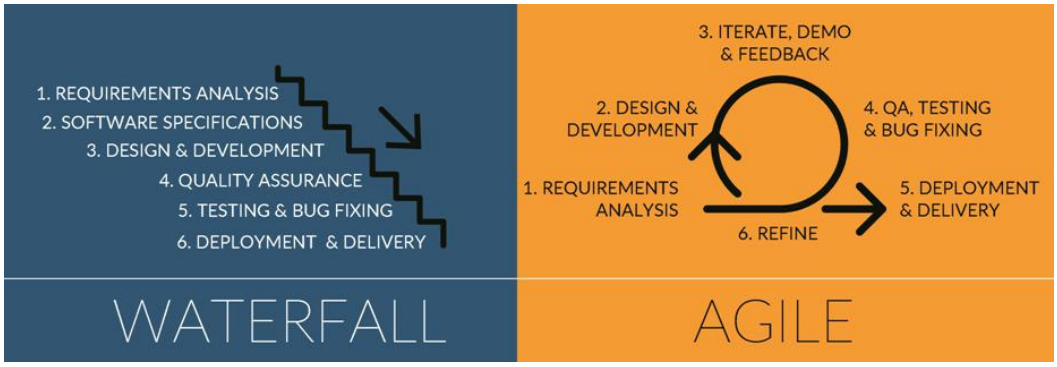
Digital Transformation and Quality

Digital transformation heads the priority list in most enterprises today. Organizations struggle to gain the desired results, however, and as much as 66% to 84% of digital initiatives fail . Though most transformational initiatives tend to be driven from the top, the actual implementation is a much more involved process — it requires creating efficiencies and speeding up processes down the line, towards putting end customers right in the very center of things and visualizing everything from the customers' standpoint.

Is there a way by which the entire digital transformation can be achieved within days with everything designed around the customers' view? Sounds Utopian, doesn't it? Actually, it's not, and the model that can lead us towards this is broadly termed as Quality Engineering.

What exactly is Quality Engineering? To understand this, we need to look at the evolution of software development itself.

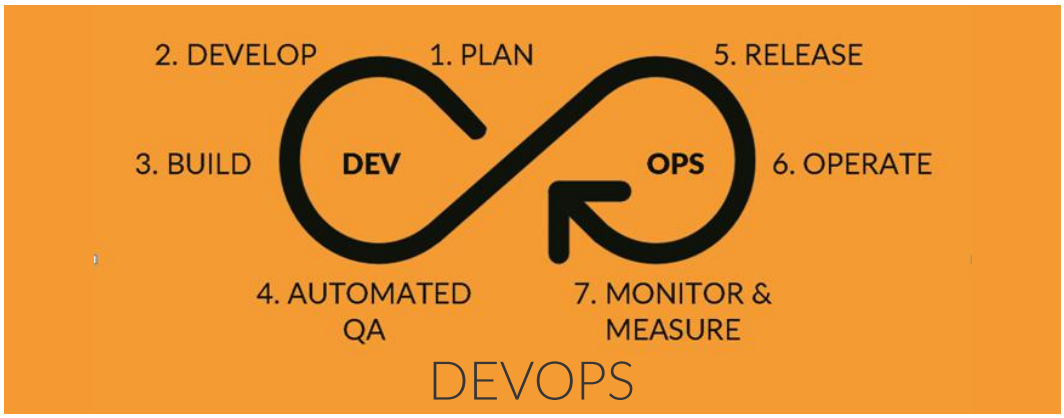
Software Development and its Evolution



The traditional Waterfall model meant that QA and testing were end-of-cycle activities, when it is generally difficult and often too late to receive and incorporate feedback into the software. In order to avoid such unpleasant, last-minute surprises, people moved towards Agile development practices.

Using Agile, development teams released a chunk of working software to the customers periodically and incorporated their feedback back into the software. This kind of iterative development cycle resulted in iterative QA as well, wherein QA started working closely

with development teams towards ensuring the quality of the released software. The standard QA (testing/test automation) approach that Agile development brought triggered Quality Engineering where testers were expected to have programming knowledge to test code better and help developers. Quality Engineering is a result of this approach wherein it improves the total quality of software by focusing on improving the software development process as a whole.



Quality Engineering is the discipline of engineering that creates and implements strategies for Quality Assurance in product development and production as well as software development. QE drives product quality and processes while enabling testing in parallel.

The next level is DevOps, which is a vast enhancement of Agile wherein Development, Quality, and Operations co-exist seamlessly. DevOps is all about bringing different business areas together and there is a fair degree of automation implemented as a part of the SDLC — this ensures that there is continuous development, integration, enhancement, and delivery of the software. This allows faster delivery of software, with greater security and stability, which makes it ideal to approach digital transformation.

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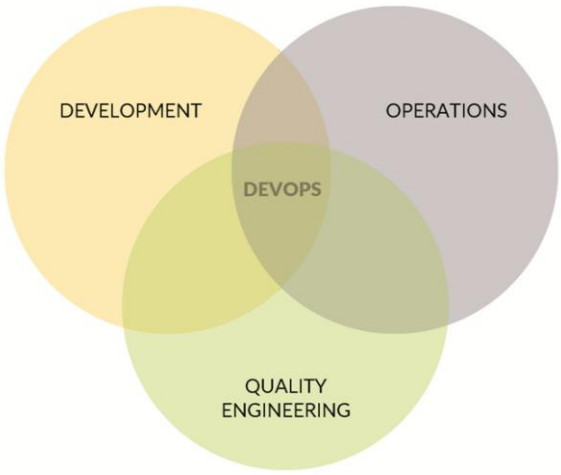
QE ensures that continuous testing is a part of the process that uses a set of automated test cases to validate every build that is produced. DevOps with its Continuous Testing, Continuous Integration and Continuous Delivery is an extension of this scenario.

By its very nature, QE aligns well with the philosophy of Agile and DevOps and ensures the quicker release of software code into the market. QE enables development teams to push more tests into the continuous integration system, and works with operations to deploy monitoring tools to ensure continuous deployment of the software. This approach allows for code to be pushed when it is working and rolled back when there are any issues automatically.



In essence, QE provides you with a real-time test dashboard and quality metrics suitable for the Agile or DevOps process. Then all you need is a set of tools or a platform that tracks and measures these metrics to ensure the success of your digital transformation journey.

Continuous Integration & Delivery A Realistic View

In the Continuous Delivery process, you design the test automation strategy beforehand, and the development, operations, and QE teams work together. Test automation becomes a part of the development process right at the conceptualization stage itself, which prepares the team to validate the functionality of the assets being developed. This allows you to get quicker feedback early on in the software development lifecycle.

Most organizations set up strong continuous integration and delivery systems, and while some of them use it diligently, others still continue to fall back on traditional QA. More often than not, there is a lack of a deeper understanding of what parameters need to be measured and how to identify patterns in the continuous integration and continuous testing framework.

Quality Engineering can be automated to perform software analysis by monitoring the appropriate metrics and suggesting ways and means through which the quality of the software can be improved.

Continuous Automation — The Way Forward

Continuous automation across infrastructure, applications, and compliance as a part of DevOps would expedite the digital transformation journey. It would deliver software faster, manage risks better, and ensure software security and reliability.

As a part of DevOps, continuous automation helps break down silos and create teams that are vertically integrated. This integration ensures that everyone works together towards the digital transformation objectives. For instance, the operations team would create the tools that the development teams need to deliver innovation faster.

However, continuous automation as a part of DevOps that improves software delivery should be measurable. Organizations need to look at a platform that can help them monitor the quality of software automatically and does not rely on static code analysis.

Organizations also need to integrate their platforms with the IDE to ensure that the development team complies with engineering SLAs.

Enabling Digital Transformation Journey

Almost all enterprises are on the road to digital transformation, and deployment of software plays a key role in their journey. Quality of software, its integration, and deployment are crucial as the cost of quality is prohibitively high, which can only be brought down by measuring metrics on continuous integration, continuous testing, and continuous delivery of software.

Most platforms available in the market perform such analysis but fall short when it comes to providing business direction with the results of the analysis. The capability of an automation platform to not only assess meaningful metrics but also provide meaningful suggestions on how to remediate what has been detected is vital to the success of digital transformation initiatives.

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Zuci's Offerings

Zuci Systems is one of the industry's pioneers in providing Digital Enablement As A Service (DEAS) with HORUS, a holistic digital readiness solution that enables organizations to measure, monitor, and manage their applications' health across parameters including:

- Visibility through metrics
- Software complexity
- Technical Debt
- Fatty files & application size
- Code analysis

HORUS provides organizations an exact picture of their digital transformation journey. Furthermore, our integrations such as Slack, Basecamp, Asana, and Zapier help organizations track action items with teams from a project management standpoint, thus ensuring that their Quality Engineering efforts translate into concrete and measurable business results.

About the author

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Anil is an industry evangelist in Financial Services. With around 17 years of experience he has managed projects with Fortune 1000 companies and successfully implemented innovative technology for FinTech. He is a sought-after speaker at various software conferences in several countries and regularly contributes articles and whitepapers to business and software journals.

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