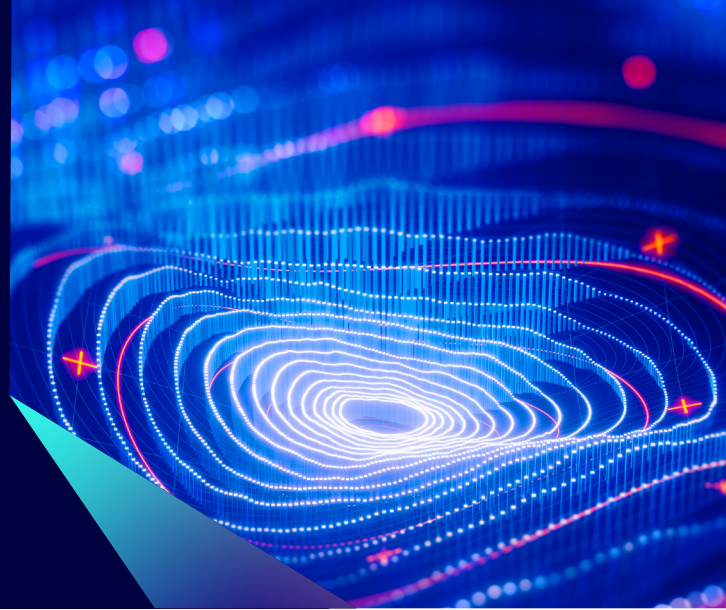




Go beyond testing:
Time to make quality
non-negotiable

After recalling over 675,000 vehicles in China and the United States over collision risks due to potential equipment failure¹, Tesla was again probed by the National Highway Traffic Safety Administration when more than a dozen Tesla vehicles in 'autopilot' mode crashed into stationary emergency vehicles². These repeated incidents greatly impacted Tesla's credibility, causing it to rank second to last in the Consumer Reports Auto Reliability Report 2021³.



Closer to home, MOE's artificial intelligence (AI) therapy chatbot tasked to provide mental health support for teachers, has been labelled unhelpful, when its responses to a teacher's sharing came across as "devoid of empathy", which "could further aggravate teachers"⁴.

When technology is so intimately interwoven into our daily lives, the ability to deliver a service experience that is reliable, consistent and safe is key to earning customer trust, establishing brand recognition and bolstering corporate credibility. With 72% of business leaders considering "trust in the seller" to be of utmost importance⁵, it is vital to build trust by putting quality on tap and hardwiring it into one's 'quality culture'.





Pivotal: Making quality assurance a proactive priority

Customers in today's one-tap, connect anywhere world expect seamless digital experiences that work — intuitively and every time.

Ensuring quality in one's products and services starts from intentionally engineering it across the entire product lifecycle. Getting it first-time right requires a mindset change — away from today's focus on 'testing' and Quality Assurance (QA) as a gatekeeper governing quality processes. Instead of 'testing' until one gets a 'quality product', quality must be deliberately built-in — right from the get-go of product inception. Like a chain which is only as strong as its weakest link, a well-designed app that does not meet customers' functionality requirements nor deliver the expected experience, would be forced out of commission.

Especially so for governments where service delivery often involves cross-agency collaborations, the breakdown of any function, from stalled business grant applications to erroneous immigration entries, can have dire repercussions. These service disruptions will likely trigger substantial efforts (both technically, financially, and even requiring crisis management) to restore the service, placate users and reinstate trust — resulting in further inconveniences and strain on resources.

Yet, while many organizations and governments recognize the importance and need to impute quality early, many fail to drive quality through the end-to-end product development and service delivery processes due to time pressure, resource crunch and the lack of investments for change.



New perspectives: Engineering quality into your organizational DNA

Instead of worrying if you are testing enough, the right question to ask is — **how can quality be built into one's organizational culture to empower greater responsiveness to customers' demands, while establishing trust, cutting production costs and enhancing investment returns?**

Akin to how the automotive industry manufactures automobiles that are safe to drive, governments and organizations need to have a 360-degree, end-to-end view of quality — by ingraining quality elements across the entire spectrum of the product lifecycle. In other words, quality needs to go beyond assurance but, more importantly, be engineered to ensure that high quality elements (ideas, requirements, codes, tests, etc.) are accepted, processed, measured and validated at every juncture for the product or service delivery process.

Here are three perspectives to effectively engineer quality:

01

Focus on the expected product quality from the customers' viewpoint:

It is important to understand how customers' perception and expectations of quality in the product affect quality management across the product lifecycle. To avoid any 'weakest link' in today's complex and integrated systems, anything that can impact its quality needs to be tested, verified and properly validated from the customers' perspective.

02

Align and integrate quality elements into product delivery processes:

From inception, design, development to validation, operation and measurements, quality needs to be ingrained into each step of the delivery process. This consistent discipline should be assimilated across all business functions with a holistic view of the end-to-end product lifecycle – front-to-back business operations and top-to-bottom technical stack integration. For example, how easy is it to extend or change a feature/functionality of an integrated system with minimum risks? This will help to ensure the effectiveness of building quality products that work from the get-go.

03

Automation-driven and continuous 360-degree testing:

Manual testing of all product parameters across its lifecycle, while complying the needed process governance, is often curtailed by human limitations, making it a 'best-effort' endeavour. Coupled with the ever decreasing time-to-market to beat the competition, continuous testing round-the-clock through automation is no longer an optional good-to-have, but a non-negotiable quality enabler, ensuring comprehensiveness and robustness, without circumventing good processes and governance.

A well-engineered product that is expected to deliver both exceptional business values and customer satisfaction need to go beyond functionality, performance and security (the usual testing parameters). At the core of all these quality engineering elements is the service and accountability to, and the protection of the citizens/end-users and corporate/statutory stakeholders who are the reasons for the success and existence of the business. Incorporating (or even mandating) the adoption of Business Process Assurance Automation (BPA2) elevates one to the next level of quality. BPA2 not only looks at the satisfaction of compliance, regulatory and safety requirements, but also the effectiveness and efficiency of the approach to embedding these across one's quality success chain through automation, to deliver quality right every time.

A proactive culture which prioritizes the engineering of quality as non-negotiable lays a solid groundwork for brand success. It empowers you to deliver the expected quality of service that brings excellent experience, confidence, convenience and assurance — which are all that matters to customers/citizens. This is what builds trust on the services that the business/government delivers.





Embracing modern technologies and best practices to ensure quality

New technologies like autonomous vehicles, remote surgery using AR/VR, robotic home care and metaverse are getting introduced in rapidity, becoming more personal and increasingly integrated into our everyday lives. However, like any other existing technologies, they can fail.

For example, during the recent Tokyo Olympics 2020, a visually impaired Paralympian was knocked down by an autonomous bus, which took him out of the competition⁶. Such incidents expose new challenges and exacerbate the weakness and limitations of traditional quality approach and methods. It further stresses the need for quality measurement to consider even the ethical elements of product and service assurance.

As such, quality engineering methods and technologies also need to innovate to keep pace with new technology introduction. This helps businesses and governments to continually assure customers and citizens that their products and services are meeting the highest level of quality possible to maintain the confidence and trust established.

Examples of such innovation in test automation technologies is the use of collaborative robotics to overcome the limitations of testing onboard navigation and infotainment systems, which traditional test automation technologies are inadequate to handle. This enhances testing efficiencies, while ensuring regulatory compliance and safety. As part of Singapore's National AI Programme in Government⁷, AI text analytics ingest and correlate the data collected from apps to help agencies understand citizen feedback, and thereby strengthen policymaking, enabling more personalized services for better citizen experience.



Hardwiring quality into one's transformation agenda

Hardwiring quality into one's culture and DNA fuels the transformation agenda. The success of this transformation hinges on the effective employment of strong engineering disciplines to impute stringent quality elements across the product lifecycle. This should also be tightly complemented with investment in effective and integrated automation across all the quality elements, coupled with a diligent focus on regulatory compliance and safety.

Rounding up the lifecycle will be an efficient mechanism to proactively gather users' and citizens' feedback and systematically incorporate them into the product development lifecycle. This will give businesses and agencies a comprehensive 360-degree view on both product quality and user confidence. When done diligently across all facets of policy work, the brand value of the government and businesses will be enhanced — evidenced by the widespread adoption of the services, while also increasing the competence of the workforce involved in these product deliveries through upskilling.

As Aldo Gucci famously quipped, **"Quality is remembered long after price is forgotten"**⁸, it is time to invest, innovate and rewrite the script on delivering service with first-time-right quality.
Are you ready?





Hearsay or Truth: Three QA myths to debunk

01

Having sufficient testing is enough to deliver quality products:

How do you know if you have sufficiently tested all aspects of your product to deliver the required quality that customers expect? The reality is: one can never have enough time or resources. Ensuring quality goes beyond testing, which is but one activity that occurs almost at the end of the food chain.

02

QA requires only testing to detect defects:

Many mistakenly think that comprehensive testing before going live is sufficient for detecting defects before product roll-out. Just like manufacturing where quality raw materials are vital to final product quality, the output of each phase of the product lifecycle needs to be of excellent quality, to ensure that defects are detected along the way, way before an app goes live.

03

Automation outpaces people, leading to job loss:

Rather than outplacing humans, modern technologies from robots, AI, AR/VR and more, extend the capabilities of the human operator, elevating them beyond everyday tasks to focus on higher-value priorities. In fact, the adoption of these modern technologies require novel ones to test and ascertain the quality of new apps.

Footnotes:

- 1 & 2. [Tesla recalls another 200,000 cars in China due to collision risk](#)
3. [Tesla is second-to-last in reliability as Consumer Reports says Elon Musk-led company has its 'fair share of problems'](#)
4. [#trending: MOE therapy chatbot for stressed teachers labelled unhelpful by some](#)
5. [Now more than ever customers want to trust companies they do business with](#)
6. [Paralympic athlete ruled out of Games after being run over by self-driving bus in village](#)
7. [Two New National AI Programmes Launched](#)
8. [Quality is remembered long after the price is forgotten](#)



Cognizant (Nasdaq-100: CTSI) engineers modern businesses. We help our clients modernize technology, reimagine processes and transform experiences so they can stay ahead in our fast-changing world. Together, we're improving everyday life. See how at www.cognizant.com or follow us [@Cognizant](https://twitter.com/Cognizant).

World Headquarters

300 Frank W. Burr Blvd.
Suite 36, 6th Floor
Teaneck, NJ 07666 USA

APAC Headquarters

#05-01/06, Nexus@One-North,
North Tower,
1 Fusionopolis Link,
138542, Singapore