

Modern Quality Engineering

For Healthcare Payers



Table of Contents

- 1 Abstract
- 2 Healthcare payer needs to be future-ready
- 3 Tech interventions and implications for quality
 - 3.1 Business and technology interventions
 - 3.2 The Quality Engineering strategy checklist
- 4 The road to comprehensive quality
 - 4.1 Insights-driven QE function for continual quality
 - 4.2 Accelerating automation for faster releases
 - 4.3 Building a resilient health ecosystem
- 5 LTIMindtree's offers you the perfect canvas for modern Quality Engineering
- 6 Conclusion


01

Abstract

In order to keep pace with the industry, Healthcare payers are trying to build competitive advantage and market position by accelerating cycle time for launching new products and services, leveraging digital business models and technologies.

Application Testing and Quality Assurance are being modernized with greater focus on automation, next generation technology and non-functional aspects.

02

Healthcare payers need to be future-ready

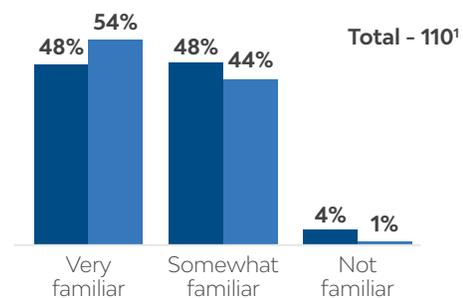
The first two decades of the 21st century have seen an ever-increasing rate of change in the products and services offered by healthcare payers. This change has been fueled by regulatory changes, a shift in consumer behavior and expectations, and new-age breakthrough technologies such as data and analytics, AI, ML, and cloud computing. The global pandemic in 2020 has forced these enterprises to rapidly adopt new ways of working and adjust their business models, further accelerating their digital transformation journey.



Value-based care

A patient-centric approach has led to a shift from the fee-for-service model towards a value-based care model, which results in better sharing of patient data and greater adoption of data analytics. It includes connected care for patients like telehealth, online scheduling, and digital profiles. UnitedHealth Group reported that, value-based payments to care providers grew at more than 15% in 2019, and they are expecting them to accelerate in the coming years. Humana has entered a value-based care arrangement with the population health management company Fullwell. Aetna has also been heavily investing in expanding value-based care payment models and aims to have 75 percent of its spending in such a model by the end of 2020. Cigna has built a new service company, CareAllies to support value-based care payment models among providers.

Familiarity with outcome-based contracts
percentages of payers 2017-18



Outcome-based contracts driven conversations
Percentage of payers. 2017-18

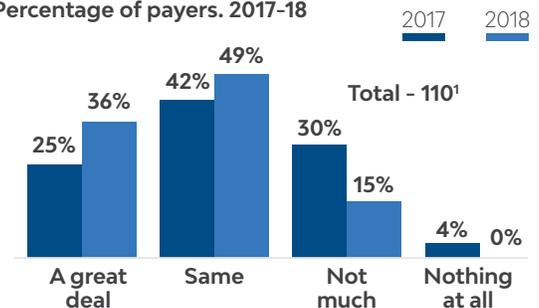
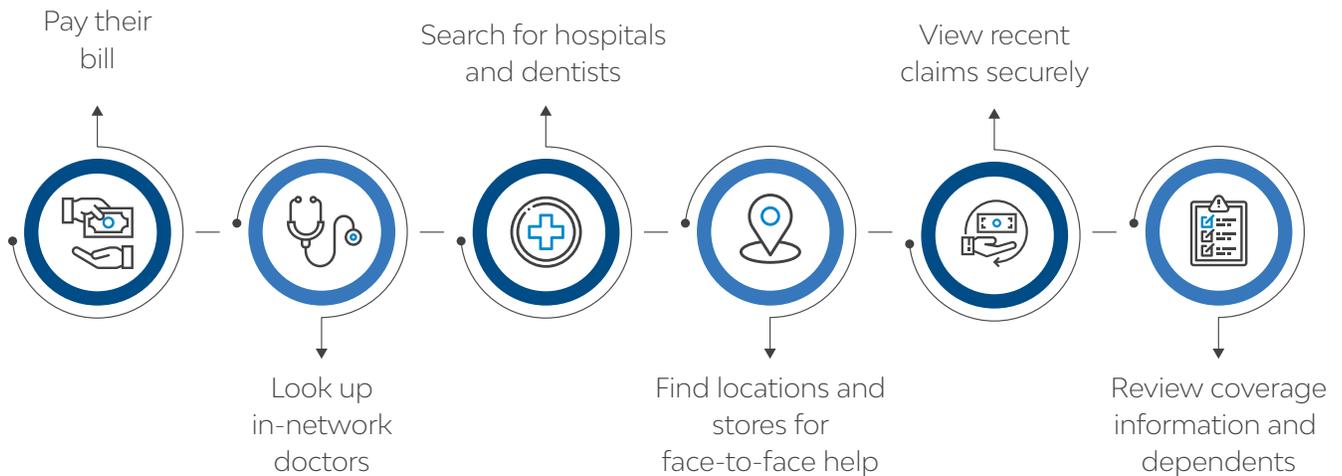


Figure 1: Increasing adoption of value-based contracting among large national plans, mid-sized, and regional health plans (Source: Everest Group)



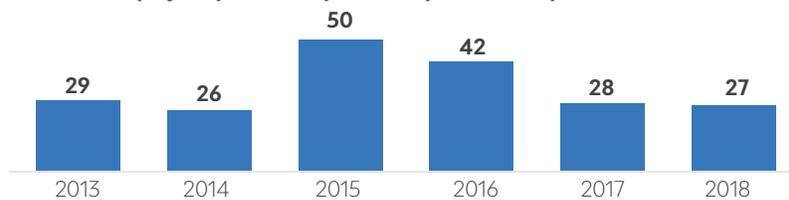
Payer-provider-PBM convergence

Amidst the healthcare industry's continued efforts to provide a more integrated member experience, the consumers are seeking higher transparency and trust. Members need better visibility through price transparency, simplified EOB, invoicing, and at the same time, they are looking for data privacy protections. Arkansas Blue Cross and Blue Shield app allow members to:



Members are also seeking better digital experiences in enrolment, claims, and other interactions with the payers.

Number of payer-provider product partnerships launched 2013-2018



2019 witnessed a few payer provider collaborations to improve operations and overall growth

Type of collaboration	Payers	Providers
Partnership	HCSC ventures (venture capital arm of HCSC)	Sanitas
Partnership	Blue cross Blue shield of Minnesota	North Memorial Health
Acquisition	Anthem(Aquirer)	Beacon Health Options



Figure 2: Number of payer-provider partnerships (Source: Everest Group)



Interoperability

There is increasing collaboration and data exchange due to the regulatory mandate for healthcare interoperability, which requires integration across multiple channels and parties, including providers. Payers are also collaborating with various partner platforms to ease access to virtual care. Anthem is working with Samsung Electronics America and American Well to enable access to virtual doctor visits and other non-emergency healthcare services for its health plan members. The collaboration will enable access to American Well physicians through an updated Samsung Health app that now offers access to Live Health Online. Newer efforts such as blockchain consortium - Synaptic Health Alliance, in addition to existing solutions such as CAQH, Availity etc. are expected to further the push towards greater data exchange.

offer its Apple Watch. Non-traditional players such as Amazon and Walmart are making serious forays in this market bringing out more cost-competitive health plans. In recent times, in response to the pandemic, healthcare payers are waiving the in-network treatment costs for members and reimbursing out-of-network treatment costs, which require changes in enrolment and credentialing processes.

The above market changes have increased the need for healthcare payers to achieve faster speed-to-market and respond quickly to changes. It means to continue focusing on increased accuracy of provider directory, deciphering complex rules between primary and secondary care, claims adjudication for reinstatements, adoption of EFT and minimizing Fraud, Waste, Abuse (FWA) to name a few.



The entry of big tech

Cost optimization is increasingly becoming a key driver for healthcare payers, even as they try to increase their reach and channels of service through platforms such as pager.com. Google Cloud has revealed plans for a \$100 million investment in Amwell as part of a strategic partnership aiming to advance telemedicine with artificial intelligence and other cutting-edge cloud technologies. Amazon, Berkshire Hathaway and J.P Morgan have created a joint healthcare venture - Haven, with the mission to be a partner to care providers and to focus on the healthcare needs of their 1.2 million employees. Google has invested in insurance startups Oscar, Clover and Apple have partnered with insurers to

Key takeaways



Quick adoption of changes



Increasing data accuracy



Higher transparency and trust



Cost optimization

03

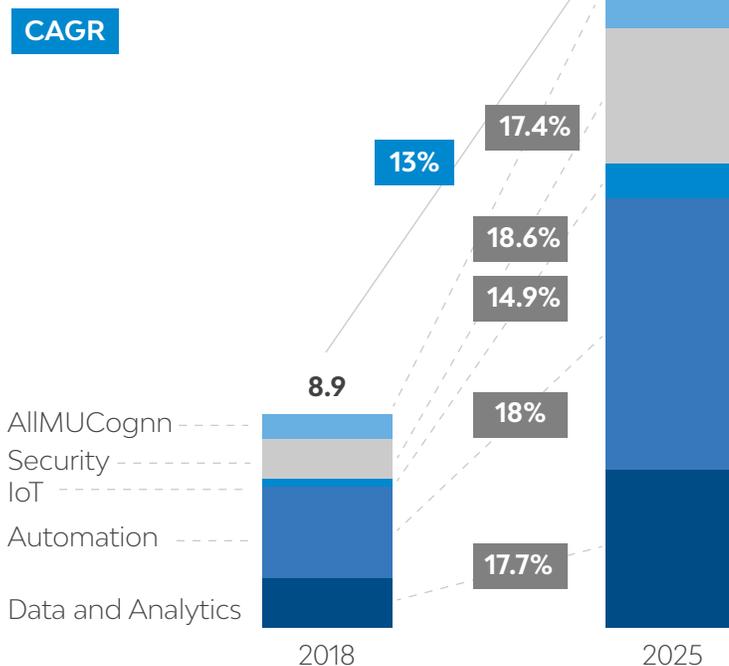
Tech interventions and implications for quality

3.1 Business and technology interventions

Payers today are leveraging digital technologies to transform their operations in multiple areas as shown below. They are increasingly investing in technology advancements like AI, cognitive ML, IoT, automation, data and analytics while looking to solve the challenges of ROI, scalability and maturity.

Payer digital services global market

US\$ billion



Business trends

The overall healthcare payer digital services market is close to a US\$9 billion opportunity.

Payers are leveraging digital technologies to transform operations. Increased cost efficiency, enhanced member experience/engagement, and improved time to market launch are the key drivers for adopting digital for payers.

Lack of proven ROI, high cost of deployment, and lack of scalability and technology maturity are the key digital transformation challenges for payers.

Figure 3: Changing Business Trends - 2018 to 2025 (Source: Everest Group)

The new areas of focus and investments for healthcare payers can be broadly categorized into:



Speed-to-market and continuous innovation

The healthcare payers are constantly looking to accelerate their speed-to-market in response to the ever-changing market trends, new offerings and solutions for both consumers as well as other entities in the healthcare ecosystem. To enable this acceleration, they are increasingly adopting the agile methodology to fortify collaboration between businesses and IT. From a technology standpoint, there has been a significant push for investments in CI/ CD to support the agile adoption. Additionally, there is an increased partnership and collaboration with healthcare insurtechs for continuous innovation and adoption of SaaS and cloud computing.



Higher transparency and trust

As the focus increases towards greater engagement, transparency and self-service for the consumers, the healthcare payers are increasingly concentrating on a user-centric design based on consumer journeys throughout the lifecycle. It includes onboarding, servicing, claims to improve the overall experience of the consumers securely.



Data exchange and APIs infrastructure

Healthcare payers continue to invest towards interoperability using data exchange and API management as enablers. United Healthcare's app for

its members provides access to tools that allow them to track their benefits and compare pricing and access on-demand telemedicine, and aims to provide a one-stop-shop for healthcare.



Privacy and security

Data privacy and security have been at the forefront of the Healthcare industry to safely allow greater collaboration within the healthcare ecosystem and to increase consumer transparency, while complying with regulatory mandates such as GDPR and CCPA, and addressing cybersecurity threats.



Cost optimization

Healthcare payers are increasingly looking at driving down the cost of IT as a percentage of overall operating costs. It is leading to greater adoption of cloud and SaaS solutions.



Connected ecosystem

Healthcare payers must get longitudinal data from all ecosystem participants, which include providers, social networks, nutritional apps, fitness devices/wearables. This data will help in developing better innovative solutions targeting individuals and groups. Cigna will be joining IBM's collaborative blockchain project designed to improve transparency and interoperability in the healthcare space.

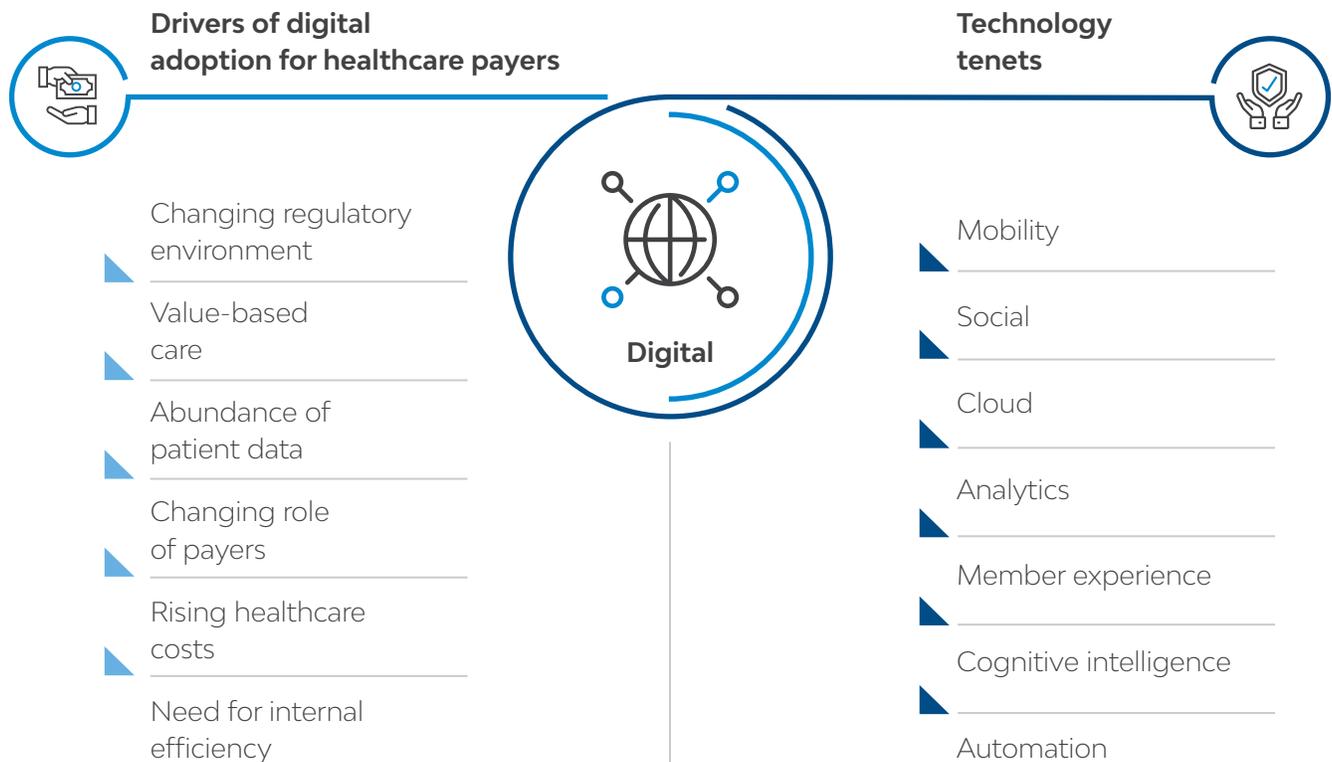


Figure 4: Business drivers and corresponding technology drivers (Source: Everest Group)

Key takeaways



Faster speed-to-market



Intuitive usability



Automated and comprehensive API testing



Automated interoperability assurance



Reliable and secure interfacing medical applications



QA cost optimization

3.2 The Quality Engineering strategy checklist

Due to evolution of technology and fast-paced business strategies, healthcare payers are trying to build a competitive advantage and market position by accelerating cycle time for launching new products and services.

The overall strategy towards quality has undergone a paradigm shift from validating quality to engineering quality. A more proactive Quality Engineering approach with a greater focus on automation,

change impact, improved risk-based testing and environment availability is becoming the need of the hour. Greater focus is needed to solve non-functional aspects including usability, performance, reliability, resiliency, privacy, compliance and security validations. Testing and quality assurance needs to be more tightly integrated with the development process, giving visibility to additional opportunities which will help in accelerating the development cycle of AI and other technologies.



Patients want an experience they can trust, understand, and navigate. Healthcare hasn't done a great job of personalizing the digital experience for patients. If payers, providers, and health systems don't provide the experience, outside disruptors will make moves to fill the gap.

Phil McKoy, CIO, UnitedHealth Group – Top of Mind Summit, 2020



Let us take a case where a unified platform for centralized policy administration needs to integrate with systems for claims, billers and revenue management along with digital, AI and analytics enablement for faster resolution of claims. Such an end-to-end process uses multiple enterprise systems and tools to manage its sales, services and regulatory

operations. This dynamic environment requires a company's Quality Engineering team to bring in a holistic approach to build new software and deploy it every two weeks. This way, you save many hours in the testing cycle, and more importantly, raise the quality of medical devices and software-based products.



Quality Assurance in a heterogeneous environment

Role of payers of the future

- Customer experience**
 - Payers will **position themselves as an end-to-end enablers of customer experiences**. They will utilize analytics for insights and model development for a value-based patient-centric plan, with AI and automation solutions to help in reducing processing times.
 - Mobile applications leveraged for access to tools and information delivery, with the application of chatbots to enhance engagement at multiple touchpoints.
- Interoperability**
 - CMS and ONC interoperability guidelines mandate **payers to share data through provider directory and patient access APIs** to third party developers.
 - Payers are already evaluating blockchain solutions providing an immutable source of records and a secure distributed ledger model help maintain payer provider record quality and data accuracy.
- Connected care ecosystem**
 - Payers will be investing in **telehealth capabilities and digital devices allowing remote access** to healthcare and real-time tracking of patient data.
 - There will be increase in use of IoMT for devising preventive care plans for members.

QA of the future

- Open**
 - Enterprises can leverage / contribute to the ecosystem.
 - Network effect to accelerate and de-risk innovation.
- Outcome led**
 - Customer experiences and outcomes are assured by the QA function.
- Consumption-based**
 - Ability to stitch together aaS stacks for QA activities from available catalogs.
- Ready for emerging tech**
 - Tools and expertise for integrating emerging technologies such as AI, blockchain, and IoT.

QA stack of the future - heterogeneous

- Expertise**
 - Beyond the firewall
 - Integrated
 - Verticalized
- Process**
 - Agile
 - Intelligent
 - Compliant
- Tools**
 - Catalog-based
 - API-driven
 - Interoperable
- Infrastructure**
 - Elastic
 - Shared & secure
 - BPaaS

Figure 5: QA orchestration center - Platformization of QA for a heterogenous environment (Source: Everest Group)

For Quality Engineering, the organization continuously needs to focus on:



Strengthening quality assurance methods

It's vital to look into:

- A comprehensive coverage.
- Technical and business alignment of the test solution.
- Implementing industry best practices.
- Building an optimized automation tool reference model.
- Operating model set-up with shared service focus and availability of techno-functional skillset teams.



Institutionalizing QE practices

This practice needs to be implemented by:

- Shift-left practices focusing on underlying causes for defects (technical debt, code vulnerabilities).
- Provisioning data through a self-service platform.
- Extending automation to data, virtualization, environments, reporting; ensuring resiliency within applications.
- Automation democratization across programs
- Continuous testing with Agile / DevOps adoption and collaboration across teams.



Adoption of cognitive technologies for quality

The process can be undertaken by:

- AI/ML-based techniques that study code change analytics.
- Executing impact-based regression testing.
- Analyzing production logs, defects and identifying application hotspots.
- Predictive analysis to influence software development and testing.
- Enhancing user experience through perception and experience benchmarking.
- Self-service Bots usage etc.



How does this strategy work?

This holistic strategy for the development of testing services helps to influence enterprise quality, reduce spend on testing, and improve time-to-market. It also helps in:

- Driving faster buildout of new capabilities through lifecycle automation.
- Detecting early defects and optimized testing across QA phases.
- Improvement in the ability to respond to changing business demands.
- Delivering an enhanced and consistent experience across multiple channels for consumers, partners and internal employee personas.
- Driving higher quality with overall leakage of functional defects to production.
- Reduction of the overall cost of testing.

Critical success factors

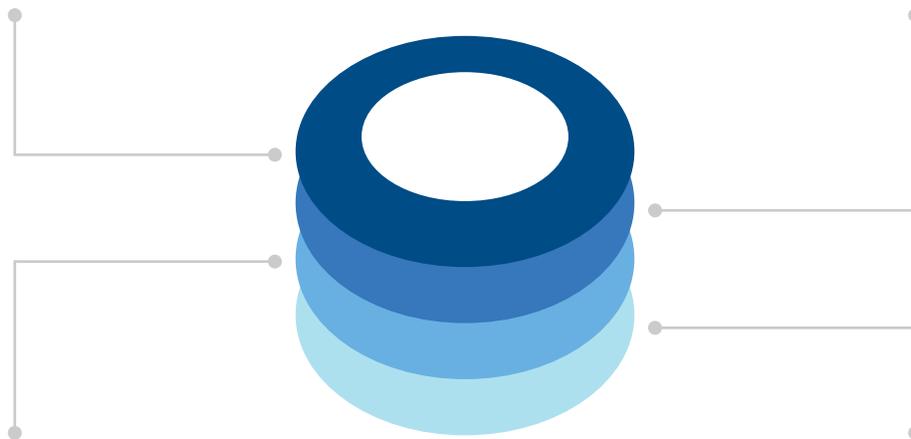
There are a set of critical success factors that play a vital role in implementing such a holistic quality approach.

Mature quality engineering practices

- Stability and availability of test environment and test data.
- Open architecture and frameworks.
- Multi-channel integrated platform validation.

Transparency & visibility

- Insights driven QA function leveraging AI.



Increasing automation coverage

- Automated interoperability testing.
- In-built security, privacy and compliance validations (HIPAA, FDA, CMS).

Early reliability and resiliency

- Higher quality and performance thresholds.
- Usability, reliability, business resiliency.
- Customer experience driven transformation.

Figure 7: Critical success factors for accelerated Quality Engineering

Key takeaways



Insights-driven comprehensive QA



Automate beyond execution



Responsive test ecosystem



AI-driven engineering approach

04

The road to comprehensive quality

Today Quality Engineering inevitably plays a strategic and transformative role. In our point of view, quality plays the role of an influencer across the software lifecycle, right from requirements/ development in the left to business users in the right.

Quality Engineering for healthcare payers needs to focus on:

01

Building insights-driven cognitive function leveraging AI and engineering approaches to collect, correlate and predict quality imperatives across the software development lifecycle. It is essential to bring in a Quality Engineering mindset and reduce the defect injection rate, ensuring the right product is built for the end-user.

02

Automate beyond test execution by expanding to test reporting, application hotspots, and code impact analysis. Autonomous automation supported by cognitive methods can reduce maintenance overhead, put RPA at ease, accelerate and improve the accuracy of repetitive tasks, continuous testing solutions, and data visualization platforms.

03

Building a responsive test ecosystem for validating end-to-end business processes and functionalities across SDLC. It helps in reducing the cost of modernization by providing a fit-for-purpose test environment with high availability and lower costs, virtualization for early E2E test data, the right set of testing tools – commercial, open-source, proprietary.

04

AI-driven engineering approach:

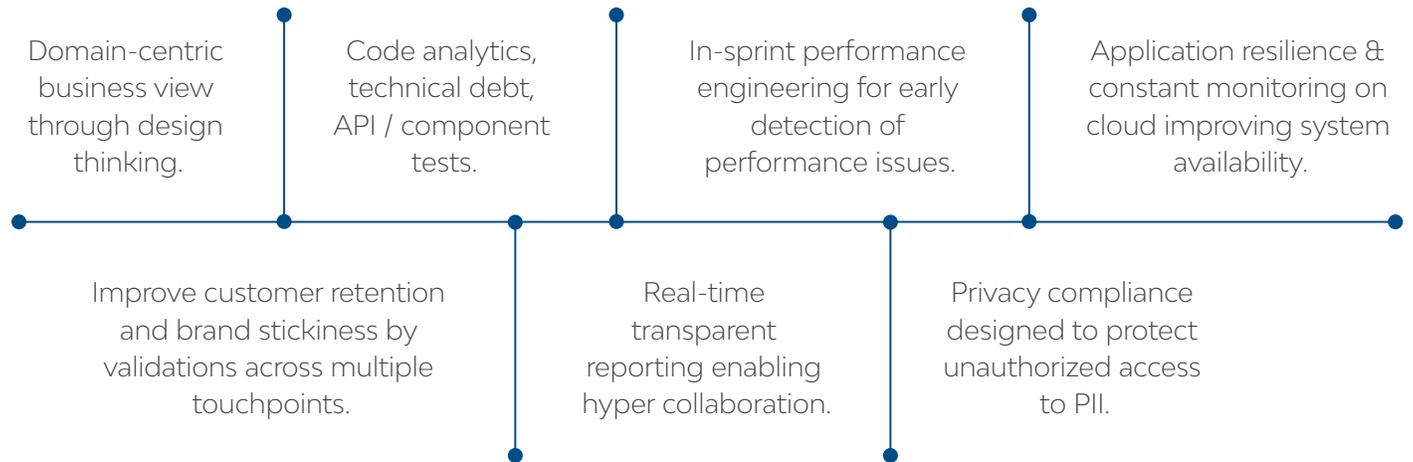


Figure 8: AI-driven engineering approaches

The 3 key immediate focus areas that any competitive healthcare payer should embark on:

4.1 Insights-driven QE function for continual quality

In recent years, healthcare payers and other stakeholders are moving to technology platforms, which enable interconnectivity among provider systems, physicians, payers, patients, wearables, and other physical devices enabling the exchange of historical and real-time data. This paves the way for on-demand interactions, reducing the overall time-to-market for new capabilities/ programs. It becomes imperative for payers to bring in higher continual quality improvements with zero leakage of defects into production, in turn reducing the cost and time for testing.

QA imperatives of a compliance and claims management process transformed by Artificial Intelligence (AI)

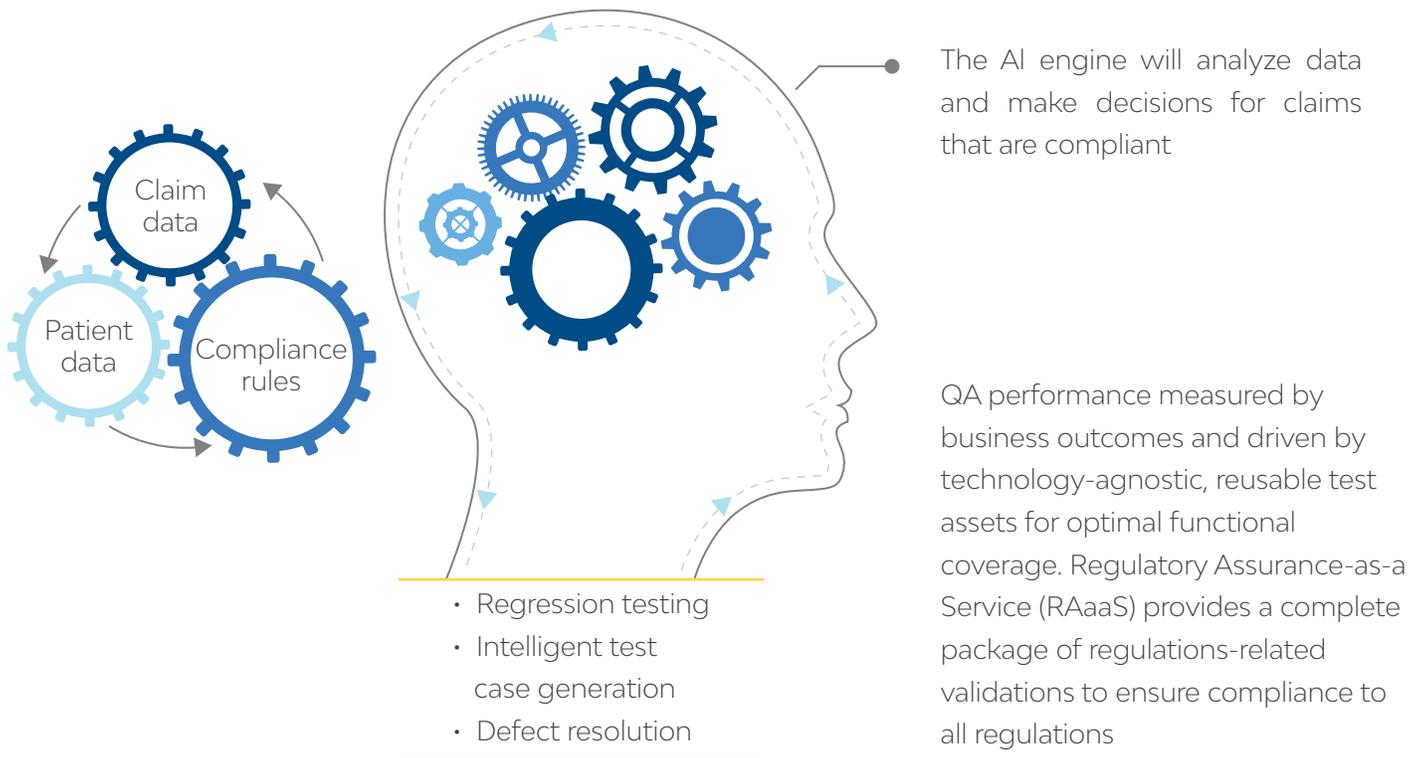


Figure 9: QA imperatives in a claim management process influence by AI (Source: Everest Group)

Quality Engineering services need to be designed to collaborate and influence the quality of deliverables across each of the core services – design, development, testing, and release. Quality Engineering should be able to go beyond testing. It needs to ensure the indirect impact of testing is addressed by influencing the upstream and downstream quality. This is only possible by bringing AI-driven engineering tools that can offer an interface with different systems across the SDLC lifecycle, and establish intelligent correlation across the system data while providing powerful insight/ metrics

Healthcare companies could learn from other industries with similar technology challenges. As an example, for assuring the quality of its wealth management platform on cloud for a large investment management fintech, LTIMindtree implemented a QA automation framework designed to cater to agile delivery, BDD and waterfall methodologies along with integration testing across digital and legacy applications and products.

4.2 Accelerating automation for faster releases

One of the key themes driving accelerated application releases in the healthcare sector is the faster buildout of new capabilities, services, and products. Embedding integrated testing automation across engagements helps to accelerate the delivery lifecycle.

For embedding testing automation into engagements, an automated engineering approach should be adopted. This model should focus on building an automation-first approach that is based on E2E lifecycle automation. This includes test

design, technical debt check, environment readiness, service virtualization, test data creation, test execution, security test, performance testing and monitoring, reporting and test repository creation.

Next, it should focus on building reusable scripts and components and reducing the efforts for script creation and maintenance by multiple teams. Finally, it should leverage AI and ML methods to amplify the benefits of automation by influencing requirements, design, test cases and development, predictive insights, test optimization, monitoring etc.

For a large DOW 30 Insurer, LTIMindtree implemented right size testing that was based on impact determination from the business requirement and code dependency standpoint leveraging AI and ML led to ~70% automation across all integrated applications.

4.3 Building a resilient health ecosystem

The need of the hour is to build systems that are well prepared for the evolving needs of the digital world and are ready to take on unforeseen challenges like the COVID-19 pandemic. This means creating a resilient health ecosystem which has an ability to respond to any surge at any given moment.

Today, the spotlight is on delivering critical information and services as and when needed. This is only possible by applying machine learning algorithms for predictive performance based on the correlation of historical data, response times, outages, and intelligent dynamic log analytics. Automated performance anomaly detection should be enabled for real-time scaling of infrastructure resources.

05

LTIMindtree offers you the perfect Canvas for modern Quality Engineering

To enable quality as well as wider application delivery transformation, LTIMindtree has developed a modern software engineering platform - LTIMindtree Canvas, which uses AI to nudge the right set of behaviors and collaboration. It is a ready-to-use plug and play platform for hybrid working powered by AI/ ML based analytics.

Below listed are the Quality Engineering capabilities of the LTIMindtree Canvas platform family:

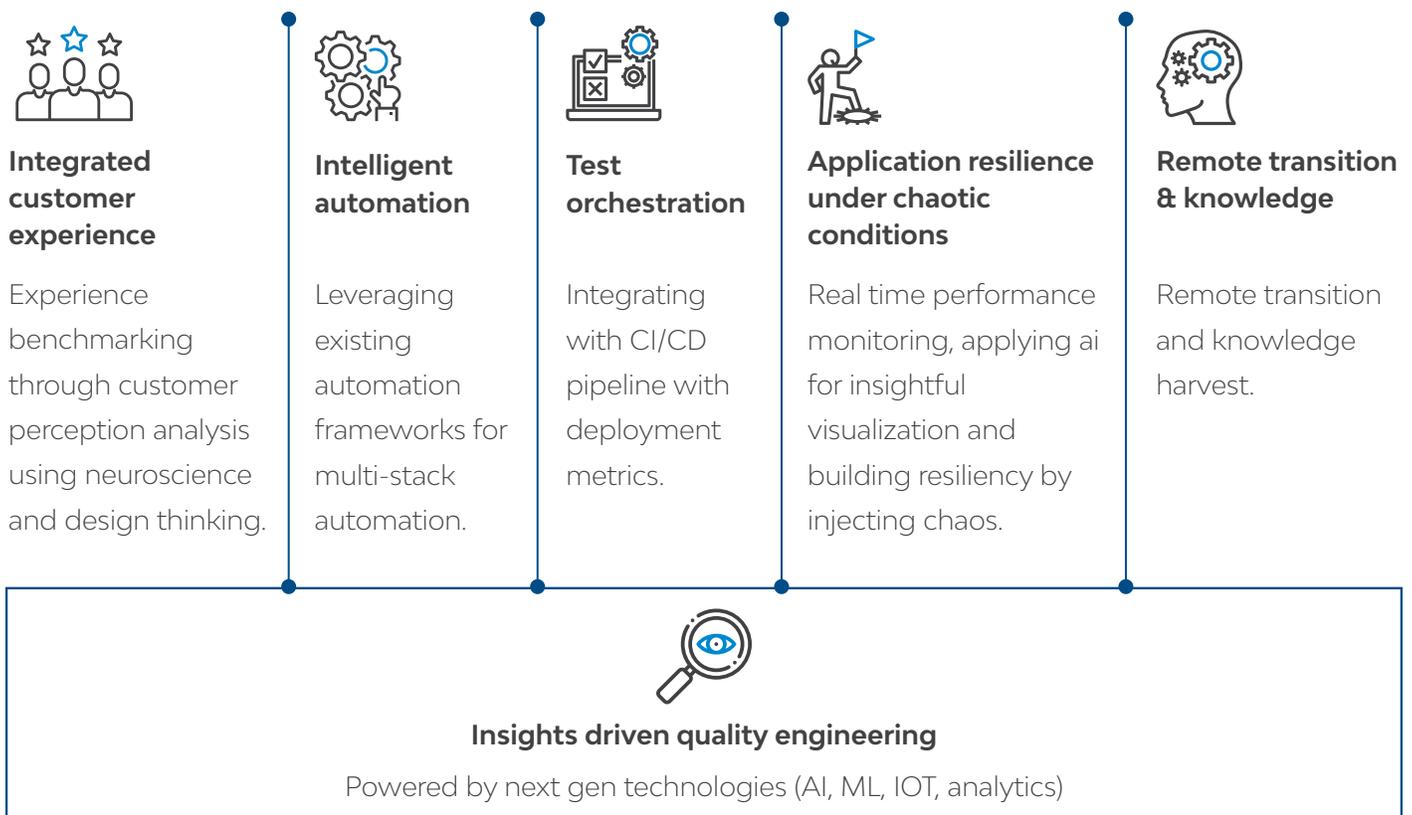


Figure 11: Quality Engineering capabilities of LTIMindtree Canvas platform family

06

Conclusion

Healthcare payers need to keep up with the uncertainties and evolving needs of the increasingly interconnected, data-driven world by building an improved, efficient and resilient healthcare system. Every quality process should aim to build enhanced patient experience, give high priority to usability, improve outcomes, ensure reliability, and comply with healthcare industry regulations. Technology leaders of healthcare payers should consider deploying an intelligent quality framework that helps them achieve these objectives.



Find more at www.Lntinfotech.com or follow us at @LTIMindtree_Global
For more information about LTIMindtree, please contact: info@Lntinfotech.com
For more information about this topic, please reach out to QE-Leads@Lntinfotech.com



Adhip Sengupta

VP and NA Market Leader, Life & Health Insurance, LTIMindtree

Adhip is the North American market leader for LTIMindtree's Life & Health Insurance practice. He has more than 25 years of experience working with global insurers. He has a blend of client relationship, consulting, technology and insurance domain expertise and has helped several leading insurance carriers in defining and executing their IT transformation & digital roadmap.



Manish Potdar

Head of Assurance and Quality Engineering, LTIMindtree

Manish leads LTIMindtree's Assurance and Quality Engineering CoE. He has more than 20 years of cross-industry experience working within Quality Engineering domain across the globe. He has a blend of delivery and consulting expertise that has helped clients defining future of Quality for their organizations and set-up a transformation roadmap.



Divya Cinto

Senior Manager (Business Analysis), Assurance and Quality Engineering, LTIMindtree

Divya leads LTIMindtree's Assurance and Quality Engineering Pre-sales Team. She has more than 12 years of experience in building and designing solutions for clients across industry within Quality Engineering domain. She has a blend of pre-sales and solutioning expertise that helps in applying the right value of offerings strategically to create real business outcomes.



LTIMindtree is a global technology consulting and digital solutions company that enables enterprises across industries to reimagine business models, accelerate innovation, and maximize growth by harnessing digital technologies. As a digital transformation partner to more than 700 clients, LTIMindtree brings extensive domain and technology expertise to help drive superior competitive differentiation, customer experiences, and business outcomes in a converging world. Powered by 84,000+ talented and entrepreneurial professionals across more than 30 countries, LTIMindtree – a Larsen & Toubro Group company – combines the industry-acclaimed strengths of erstwhile Larsen and Toubro Infotech and Mindtree in solving the most complex business challenges and delivering transformation at scale. For more information, please visit <https://www.ltimindtree.com/>