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World Quality Report

17th Edition | 2025-26

Adapting to emerging worlds

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World Quality Report

2025-26

Contents

Introduction

Welcome to the 17th edition of the World Quality Report, which is recognized as the industry's largest research study to provide a comprehensive assessment of the current state of Quality Engineering (QE) practices from around the world and across different industries. This year's report has tracked and examined the latest trends and developments in Quality Engineering and Testing (QE&T) by surveying 2,000 executives across multiple sectors and regions. It's a great honor for us here at Capgemini and Sogeti to publish this report, along with our strategic technology partner OpenText. We have ensured the topics covered are as wide and far-reaching as possible to give you forward-looking view of the latest trends, challenges, transformative initiatives, and disruptions shaping the industry. In this report, you will see our key findings and recommendations for several key focus areas: QE and AI, QE Automation, Data Quality, QE Governance/ Agile QE, Enterprise QE, and Shifting Quality Right. The expert findings are further accentuated with commentary, examples, and best practices from 5 senior executives from various Fortune 500 organizations, who participated in deep-dive interviews around these topics.

A note on our theme - *Adapting to emerging worlds*

Imagine standing at the edge of mirrored worlds. One known, one unknown. The horizon bends, revealing shifting realities where certainty fades and adaptability reigns. In this mirrored multiverse, certainty disappears, and adapting to emerging worlds becomes the ultimate challenge.

The World Quality Report 2025 is your guide through this terrain—helping QE professionals stay ahead, anticipate the unexpected, and turn ambiguity into advantage. Because in emerging worlds, those who adapt don't just follow change, they define it.

Mark Buenen

Global Leader, Quality Engineering & Testing, Capgemini & Sogeti

Sathish Natarajan

Group Vice President, Head of Practices & Portfolio, Sogeti, North America

All hands in

This report wouldn't have been possible without the significant contributions of many people. If you are one of the 2,000 executives across 23 countries who took part in this year's survey, we would like to thank you for your time and contribution in helping us gauge the prevailing moods and trends. We also have a special callout to the industry expert panel, whose insights have been valuable in illustrating the broader themes. We thank our partners at OpenText, and our lead authors and sector subject matter experts (SMEs) at Capgemini and Sogeti, who together analyzed, interpreted, and provided expert commentary on the research data and interviews to build this report.

In addition, we thank the report's production team: much work takes place behind the scenes to ensure this annual exercise bears fruit.

Finally, we thank you, our readers. It's your own experience and interest that gives the World Quality Report its reason for being. As ever, we hope this year's edition makes a rewarding contribution to your continuing efforts in software quality assurance (SQA), and that you can take advantage of these findings and recommendations to shape your QE strategy, and perhaps even to challenge some of your current thinking.

A special note of thanks to the steering committee

Client perspectives have always been a defining feature of our reports. This year, that tradition was taken a step further with the formation of a steering committee comprising of experts from our client organizations. Their guidance and support proved invaluable in shaping and validating the key findings and recommendations.

We extend our sincere thanks for their time, insight, and effort in helping make this report the valuable resource it is today.

Mamatha Pathipati

Head of Quality Engineering, LPL Financial

Albert Arulanandasamy

IT Director, Tech Quality and Automation, Medica

Johan Lasson

Head of Software Requirement and Testing, Euroclear Sweden

John Bertens

Change Agent & SAFe® Practice Consultant, Achmea

Joost van Lieshout

Test Manager & Process Manager Test, Achmea

World Quality Report 2025: Adapting to emerging worlds

Artificial intelligence (AI) has without doubt sparked a remarkable transformation in Quality Engineering (QE), ushering in new opportunities to reimagine work. However, it also brings with it uncertainty. QE teams are cautious, finding the road to AI adoption difficult.

At OpenText, we're proud to once again partner with Capgemini and Sogeti to explore this further and deliver the 17th edition of the World Quality Report 2025: Adapting to emerging worlds. Backed by more than 35 years of trusted expertise, this year's findings unearth the urgent need for QE recalibration to better support enterprises where enthusiasm for transformation conflicts with the practical realities of AI integration and innovation.

Our research highlights both momentum and hesitation across many facets of the QE ecosystem. Most notably, AI non-adopters rose from 4% in 2024 to 11% in 2025, with many organizations still in an experimentation phase. Only 15% have successfully scaled AI across the enterprise.

Other key findings include:

- Generative AI (Gen AI) is gaining traction by supporting smaller, project-based activities rather than being leveraged as a strategic partner.
- Automation is at a crossroads with nearly 50% organizations still in the planning stage and coverage averaging only a third of test cases. Gen AI is influencing how automation is built and executed. Nonetheless, deeper integration into enterprise workflows remains rare.
- In Test Data Management (TDM) and Enterprise Resource Planning (ERP) testing, almost all (95%) organizations now use Gen AI to generate test data, but only 10% have fully embedded it into their development lifecycles.
- Synthetic data adoption is growing (35%) and supplies more than a quarter of test data, but tooling maturity remains low, and ownership fragmented.
- Only 6% of enterprises use Gen AI in ERP testing, as analysts and developers juggle broader QE responsibilities. This widening of the traditional QE role is prompting leaders to ask whether it's time to redefine responsibilities, frameworks, and strategies via an AI-powered lens.

This report also reveals that although Gen AI offers vast potential to encourage new and innovative ways of working, true value is realized only when balanced with foundational QE excellence, clear ownership, and measured by tangible outcomes - regardless of whether it's QE specific or across an entire enterprise. For this to be effectively managed, hesitation toward AI implementation needs to be eradicated and confidence restored.

So how do we trigger a change in perception? The report paints a clear picture that by investing in skills, governance and alignment – as evidenced by the 15% that have succeeded – organizations can connect information across the software delivery lifecycle to provide visibility and the knowledge foundation that empowers AI agents, thereby increasing confidence and reducing that perceived risk.

We are all living on the two dimensions of data and AI. The future is AI. It's already here. I hope today's findings encourage QE leaders to embrace AI's limitless capabilities rather than fear them. Leverage automation into test design and when mastered, scale it. Learn to redefine success metrics and align tooling strategies with business outcomes. Upskill a workforce to work smarter – not harder.

Only then can machines do the work and empower organizations to focus on what truly matters: Innovation and business growth.

Tal Levi-Joseph

Vice President, Engineering, Application Development Modernization, OpenText

Executive summary

The impact of generative AI and agentic solutions on Quality Engineering

Over the last year, we have seen the exponential impact of generative AI (Gen AI) and agentic technologies across industries, transforming how software is designed, developed, and delivered by organizations. Of all enterprise functions, Quality Engineering (QE) is a field with huge transformative potential.

The theme of this year's World Quality Report, adapting to emerging worlds, speaks directly to the transformation underway. In a world that keeps changing, the ability to adapt becomes the key to staying resilient. With global challenges redefining how we live, learn, and are tested, adaptability has become the truest measure of growth and leadership. In QE, this equates to rethinking roles, reimagining processes, and reshaping how quality itself is defined. The organizations that are most capable of adapting are the ones driving this next generation of smart, autonomous, and reliable engineering.

Two years into Gen AI adoption, maturity remains bifurcated: 15% achieved enterprise-wide scale, 30% reached operational deployment, while 43% remain in experimentation. Notably, non-adopters increased from 4% (2024) to 11% (2025), signaling heightened market caution.

Despite this, early results are encouraging; organizations are seeing average productivity improvements of 19%, largely through quicker test generation, more intelligent automation, and better test coverage.

From manual bottlenecks to AI-powered acceleration

Quality Engineering and Testing (QE&T) are still two of the most manual and time-consuming phases in the software lifecycle. As code generation and integration speed up with the help of Artificial Intelligence (AI), there is a greater need for validation. In most organizations, testing is still considered a bottleneck, which limits release velocity and time-to-market.

But QE has always been a rich field for innovation, and Gen AI is now rewriting the rules of what is possible, from smart test design and requirements evolution to AI copilots and self-correcting tests. The revolution is no longer theoretical; it's in motion.

That said, scaling AI in QE is not without challenges. Integration complexity (56%), data privacy, skill gaps, and ill-defined governance are the major challenges. Organizations achieving scale establish clear AI roadmaps with defined milestones, ownership, and ROI metrics, while upskilling their workforce and infusing governance across the QE lifecycle.

Key Insights from the 2025 World Quality Report

This year's World Quality Report interviewed 2,000 executives globally to discover how Gen AI and agentic solutions are transforming the QE field. Our study aimed to answer the most urgent questions that QE leaders have today:

- To what degree have QE teams adopted Gen AI in their testing practices?
- How are Gen AI and agentic technologies shaping strategy, test design, automation, data management, and shift-right strategies?
- What are the success factors for scaling AI adoption in QE?
- How must human capabilities evolve to thrive in an Artificial Intelligence (AI)-enhanced world?

Key highlights

- **AI in QE:** Two years after adoption, 15% have scaled enterprise-wide, 43% are piloting, and 30% are running. Average productivity gains are 19%, although one-third see little effect due to skill and governance issues.
- **Automation:** Still fragmented. Just one-third of test cases are automated on average. More than 60% leverage AI for autonomous script creation and data generation, but integration and ownership limits strategic value.
- **Test Data Management (TDM):** 95% leverage AI for test data generation, yet only 10% enjoy full lifecycle integration. Almost 50% do not have centralized TDM ownership, and this creates fragmentation and risk.
- **Agile QE:** AI and Agile delivery require hybrid skills such as AI fluency, QE depth, and domain expertise. However, QE is integrated into just 20% of Agile teams, and only 25% tie metrics to business results.
- **Enterprise QE:** Aligning legacy systems with AI innovation is still hard—integration complexity (56%) and AI validation (53%) are the highest challenges.
- **Shift-Right Practices:** Though 94% examine production data, 45% are not effective in taking action. Combining continuous feedback loops and resilience testing is essential for long-term impact.

These insights reinforce that while AI in QE adoption continues, governance, integration, and skills are the key levers for scale and long-term value.

The expert in the loop: Redefining the role of the quality engineer

With AI copilots, agentic systems, and self-healing frameworks becoming part of quality processes, the function of human quality engineers is being redefined. Future-ready QE experts will have to complement automation with critical thinking, ethical sense, domain expertise, and AI collaboration abilities.

This transition requires a new paradigm of Collaborative Intelligence, one that combines human know-how with machine accuracy. To realize the full value of AI, organizations need to concentrate on three imperatives:

- Strategic alignment of business objectives and QE efforts.
- Strong data security and governance models.
- Ongoing learning and upskilling to enable teams to collaborate efficiently with AI systems and tools.

The future of QE

Quality remains the cornerstone of trust in the digital enterprise. While Gen AI and agentic solutions redefine every aspect of software engineering, QE is evolving from a gatekeeping function to a strategic accelerator of speed, innovation, and reliability.

The 17th edition of World Quality Report gives the most comprehensive picture yet of where we are in the industry, and where we're going. We'd like to invite you to discover the insights, learn from the frontrunners, and think afresh about how your organization can use Gen AI to build not only higher quality software, but higher quality systems of quality itself.

Wishing you an insightful read.

Lead authors

Kanchan Bhonde

Head of Quality Engineering & Testing Center of Excellence, Sogeti India

Antoine Aymer

Global CTO, Quality Engineering and Testing, Sogeti

Jeba Abraham

US Business Line Leader, Quality Engineering & Testing, Sogeti USA

Jeff Spevacek

Head of Quality Engineering, Financial Services, Capgemini Americas

Key recommendations

Chapter 1 : Quality Engineering in AI

- **Set realistic expectations while securing strategic positioning:** Recognize that Gen AI productivity gains are incremental but create competitive advantage. Demonstrate how QE's AI initiatives connect to business outcomes—reduced defects, faster releases, lower incidents, moving beyond efficiency to show revenue impact and risk reduction.
- **Fast-track upskilling through structured training with validation:** As use cases expand into test case design, requirements analysis, and self-healing automation, organizations must accelerate specialized training programs. Verify teams can challenge AI outputs, not just operate tools—test this competency before and after training. Introduce new AI-focused roles, create clear professional development pathways, and partner with external experts to bridge immediate capability gaps.
- **Establish clear AI ownership and governance:** Create dedicated AI-QE roles with specific accountability, budget, and authority. Implement governance frameworks to ensure ethical usage, monitor performance, and maintain strategic alignment. These roles must own initiatives end-to-end, solving the problem where AI becomes everyone's yet no one's responsibility.
- **Ensure high-quality data inputs:** Accurate, complete, clear and relevant input data is non-negotiable. Garbage in, garbage out applies doubly to AI.
- **Treat AI instructions as technical specifications:** Success depends on instruction completeness, vague requests guarantee rework. Time invested upfront returns multiples in avoided revisions. Develop three core competencies: writing precise specifications, evaluating outputs critically, and iterating systematically. Use AI as an instruction improver and output validator, creating a self-reinforcing quality cycle.
- **Invest in knowledge management systems:** Enable AI to reference both internal context (testing patterns, project constraints, defect histories) and external requirements (compliance, industry standards) through secure queries. Ground AI responses in your actual documented practices using Retrieval Augmented Generation (RAG) or similar tools. This prevents hallucination and delivers accurate, context-aware outputs the first time, while maintaining data security.
- **Bridge the pilot-to-enterprise gap:** Address the disconnect between operational enthusiasm and leadership priorities that keeps organizations stuck in experimentation. Ensure AI initiatives align with broader business goals by demonstrating value beyond operational metrics.
- **Focus metrics on transformation impact:** Select key measures showing real QE improvement, overall QE&T productivity (effectiveness factored by efficiency), team collaboration scores and even business metrics. Link these directly to performance reviews and advancement rather than adding more KPIs.
- **Leverage strategic partnerships for capability building:** Partner with service providers to accelerate adoption, share best practices across implementations and prepare for agentic AI adoption. Ensure external experts enable knowledge transfer to internal teams, building capability rather than dependency.
- **Strengthen data privacy and compliance protocols:** As Gen AI tools increasingly interact with sensitive data, organizations must implement privacy safeguards and ensure compliance with evolving regulatory standards. This includes anonymizing training data, selecting enterprise-appropriate large language models (LLMs) that align with security policies and use case requirements, and establishing clear audit trails for Gen AI outputs.

Chapter 2 : QE Automation

- **Move from planning to action:** Shift gears from prolonged strategizing to outcome-linked execution. Pilot, iterate, and scale with measures tied to release predictability and risk reduction. Strategy without execution remains largely theoretical.
- **Redefine success metrics:** Replace "% of tests automated" with indicators that matter—customer impact, release velocity, and defect containment.
- **Integrate test design and automation:** Treat automation as integral to test design, not an isolated scripting task. This alignment reduces rework and strengthens delivery resilience.
- **Adopt a balanced tooling strategy:** Blend open-source and commercial-off-the-shelf (COTS) solutions pragmatically, prioritizing governance, scalability, and long-term maintainability over tool hype.
- **Harness Gen AI with guardrails:** Acknowledge the reported 25% AI-generated baseline but avoid over-reliance. Validate outputs rigorously, appoint AI champions, and embed structured adoption practices with compliance oversight.
- **Tackle persistent challenges head-on:** Invest in enterprise-wide frameworks, synthetic test data solutions, and cultural levers to overcome decade-old barriers that still constrain scalability.
- **Shift AI toward business value:** Focus AI on high-impact use cases tied to measurable business outcomes—dynamic test selection, analytics, and user flow optimization—rather than technical conveniences.

Chapter 3 : Data Quality

- **Standardize definitions and metrics:** Establish what makes up Gen AI in Test Data Management(TDM) to enable accurate measurement and benchmarking.
- **Centralize test data ownership:** Move away from federated, ad-hoc data creation towards an enterprise-wide TDM ability.
- **Align synthetic data with compliance and accuracy:** Utilize the strength of Gen AI in scenario-based data generation to address regulatory requirements as well as improve defect detection in non-production environments.
- **Advance tooling maturity:** Progress from simple scripts to single platforms where Gen AI, automation, and compliance controls can be combined.
- **Shift cultural mindsets:** Promote test data from a help task to a QE strategic pillar.
- **Expand automation across the lifecycle:** Grow automation coverage in provisioning, masking, and validation to reduce manual dependency and shorten test cycles.

Chapter 4 : QE in Agile

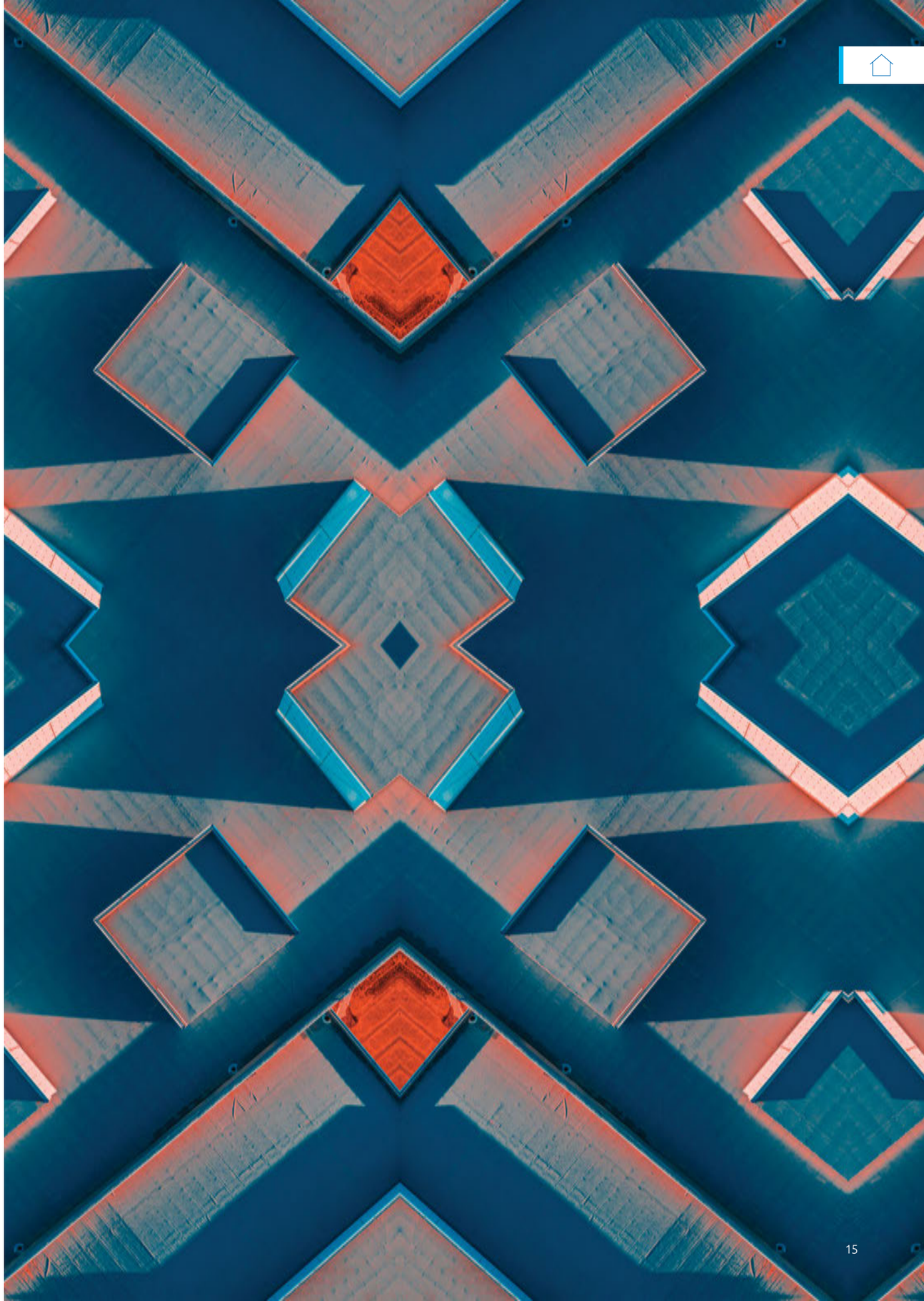
- **Reposition QE as a strategic function -** Align QE metrics with business outcomes to elevate its role from support to strategic enabler.
- **Invest in Gen AI and domain expertise -** Prioritize training in Gen AI and contextual knowledge to enhance automation and relevance.
- **Shift toward embedded and hybrid models -** Gradually move away from centralized QE structures toward embedded or federated models that support Agile collaboration.
- **Strengthen cross-functional collaboration -** Foster deeper integration between developers, testers, and analysts. 61% of respondents cite this as the top enabler of quality and speed.
- **Modernize governance and culture -** Clarify QE roles within Agile teams and challenge outdated narratives about QE being replaceable or purely technical.
- **Support continuous learning and communication skills -** Encourage ongoing skill development, especially in communication and team collaboration, to support Agile maturity.

Chapter 5 : Enterprise QE

- **Rebalance testing teams -** Introduce more dedicated QE professionals into teams currently dominated by business analysts and developers.
- **Invest in AI-ready QE capabilities -** Build internal capabilities to validate AI components, including training on model behavior, bias detection, and explainability.
- **Modernize automation frameworks -** Replace outdated automation tools with modern, scalable solutions like Playwright. Focus on speed, maintainability, and integration with Continuous Integration and Continuous Delivery/Deployment (CI/CD) pipelines.
- **Adopt sector-specific strategies -** Tailor QE approaches to industry needs (e.g., financial services vs. public sector).
- **Embrace the crossroad strategy -** Maintain traditional QE for core systems while leapfrogging into AI-driven testing for edge applications.
- **Redefine QE roles for the future -** Prepare for the evolution of QE roles. Focus on upskilling in Gen AI, automation, and platform-specific testing. QE will not disappear; it will transform.

Chapter 6 : Shifting Quality Right

- **Strategize beyond tools:** Tools are essential enablers, but not the solution. To truly embrace shift-right, organizations must embed these practices into a broader quality governance framework that seamlessly connects production monitoring with pre-production testing, decision-making and continuous improvement.
- **Prioritize resilience over visibility:** Enhanced monitoring is valuable, but resilience ensures reliability. True system quality demands resilience testing, including controlled failure and chaos experiments, to validate stability under stress.
- **Leverage real user insights:** Shift-right must go beyond system telemetry. Incorporating feedback from real users via focus groups, feature flags, and in-production experiments offers a richer, more authentic view of quality in action and helps align engineering efforts with user expectations.
- **Balance proactive and reactive quality:** Monitoring production incidents is important. We recommend organizations invest in continuous telemetry collection and predictive analytics. This enables teams to anticipate and prevent issues before they impact customers, shifting the approach from reactive firefighting to proactive assurance and strengthening overall system reliability.
- **Bridge the quality lifecycle:** Integrate shift-right practices with shift-left approaches ensure that lessons from production environment directly inform design, development, and early testing, creating a closed-loop system of learning and improvement.



Current trends in Quality Engineering & Testing

Quality Engineering in AI

Antoine Aymer
Kanchan Bhonde
Jeba Abraham
Jeff Spevacek

Reviewing SMEs

Sai Grandhi

Divisional Practice Leader,
Quality Engineering & Testing, Sogeti US

Okan Baysan

Senior Test Manager, Quality Engineering & Testing, Capgemini UK

Boby Jose

Senior Test Manager, Quality Engineering & Testing, Capgemini UK

Vaideshwaran V.

Automation CoE Lead, Quality Engineering & Testing, Sogeti India

Quality Engineering and AI: Navigating the adoption curve

Two years after generative AI (Gen AI) entered mainstream availability, Quality Engineering (QE) organizations report dramatically different experiences with its adoption.

Today, QE is adapting to emerging worlds, where purposeful execution must align with evolving technological landscapes. Progress now depends on how organizations approach technology, talent, and transformation together rather than in isolation. Organizations must determine what to measure beyond speed and where human expertise remains irreplaceable.

Last year's report examined QE-development collaboration alongside early Artificial Intelligence (AI) enthusiasm. That initial excitement has now evolved into practical challenges, including building capabilities, establishing governance, and securing strategic alignment.

Current findings capture a field navigating both opportunities and obstacles. A select few organizations achieve scaled implementation, while the majority remain in various stages of experimentation and limited deployment. These findings offer crucial insight into both the current state of Gen AI adoption and the obstacles that lie ahead, offering guidance to new and *emerging worlds*.

Gen AI in QE: Adoption and impact

To what extent is your organization using Gen AI for QE&T ?

Fig. 1 Use of Gen AI for QE&T — WQR 2025 - Global Results

11%	43%	30%	15%	2%
Not adopted - No current use or exploration of Gen AI in QE and no immediate plans to start	Experimental - Early Gen AI pilots or proofs of concept are under way in limited QE areas	Operational - Gen AI is in routine use across several QE projects, though not yet enterprise wide	Scaling - Gen AI practices are expanding organization wide with coordinated governance and metrics	Not applicable / Unsure - None of the above accurately describes our situation

Note percentages may not add up to 100% due to rounding

Base: All respondents = 2,000

Single Code question

The adoption distribution reveals both momentum and recalibration. After the dramatic collapse of non-adopters from 31% to 4% between 2023 and 2024, this year's rise to 11% suggests a more complex reality. The initial rush has given way to a more grounded and complex strategy about readiness and value.

The 43% experimental cohort exposes a bottleneck: organizations recognize AI adoption as essential but struggle to move beyond proof-of-concept. Trust, accuracy concerns, integration complexity, and unclear ROI create legitimate barriers between pilot and production.

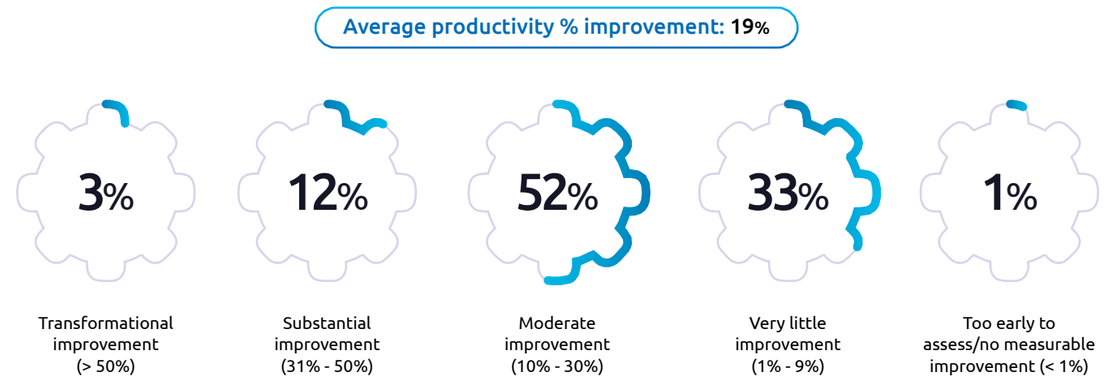
The operational tier at 30% demonstrates successful deployment within boundaries. Teams have found specific use cases where AI delivers value but haven't achieved enterprise-wide transformation. Only 15% have reached true scale, suggesting that full enterprise deployment remains elusive for most.

Perhaps most telling is the compression at both ends of the spectrum. The dramatic reduction in non-adopters since 2023 confirms AI's inevitability in QE, while the small scaling segment reveals how few have mastered enterprise-wide implementation. The bulk of organizations cluster in the experimental and operational middle—engaged but not yet transformed.

The distribution's shape tells the story: while sitting out AI is no longer viable, the journey from experimentation to scaled execution remains more challenging than the industry anticipated.

When considering both effectiveness and efficiency, how much overall improvement in testing productivity has generative AI delivered in your QA projects so far?

Fig. 2 Improvement in testing productivity from Gen AI — WQR 2025 - Global Results



Note percentages may not add up to 100% due to rounding

Base: Testing Manager or Quality Engineer who have used AI = 316

Single Code question

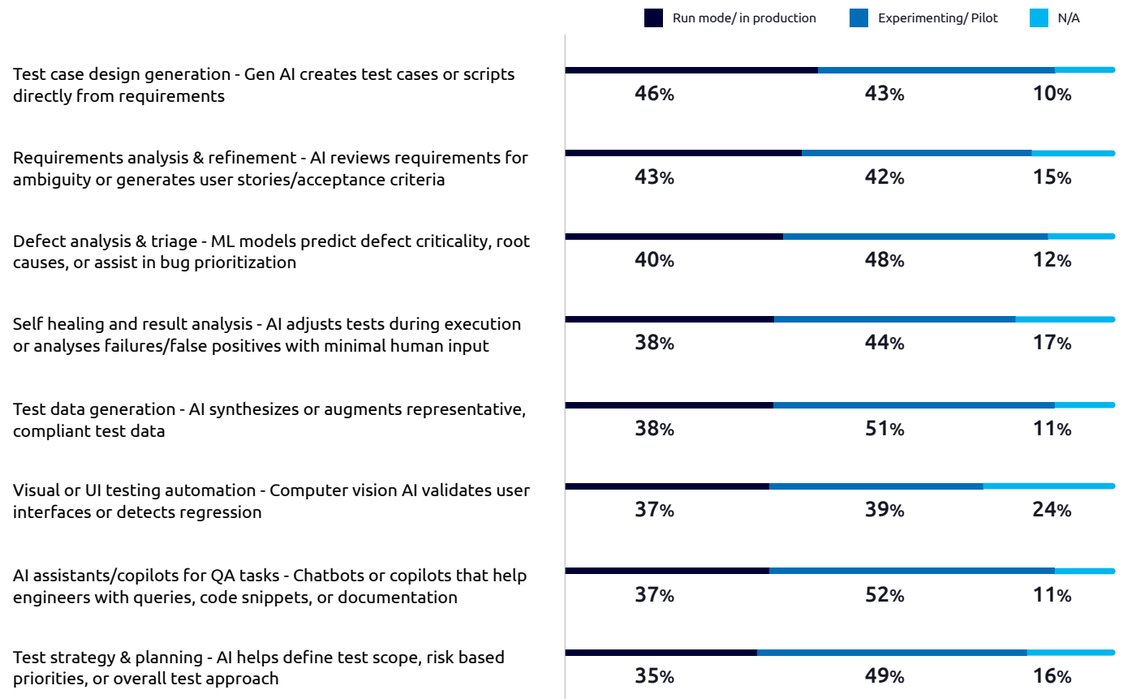
Despite the hype, the reality of Gen AI in QE is more nuanced. While organizations report an average productivity boost of 19%, a striking one-third have seen minimal gains even after operational deployment. This gap between expectation and execution highlights key needs: realistic benchmarks and smarter integration strategies that align Gen AI with existing QE workflows rather than disrupting them.

The distribution also hints at varying perspectives across the organization. Those closest to daily QE operations are actively exploring AI potential, while those responsible for enterprise strategy prioritize stability and governance, both valid viewpoints. Organizations achieving breakthrough results have bridged this divide, transforming natural tension into productive balance. The lesson: exceptional gains require not just technology adoption but alignment between operational innovation and strategic oversight.

Shifting use cases and emerging capabilities

Which generative AI use cases are currently under pilot or deployed in production in your testing lifecycle?

Fig. 3 Gen AI use cases in pilot or production — WQR 2025 - Global Results



*Note percentages may not add up to 100% due to rounding

Base: CIO/IT Director, QA / Testing Manager or Quality Engineer, VP Applications who have used AI = 1,300

Single Code per row question

Interestingly, Gen AI use cases in QE have taken a noticeable turn this year. Last year centered on documentation and analysis—test reporting (56%), defect analysis (53%), and knowledge management (54%). This year, organizations prioritize shift-left activities: test case design (46% production, 43% pilot) and requirements refinement (43% production, 42% pilot) now lead adoption, moving AI from analyzing outputs to shaping inputs.

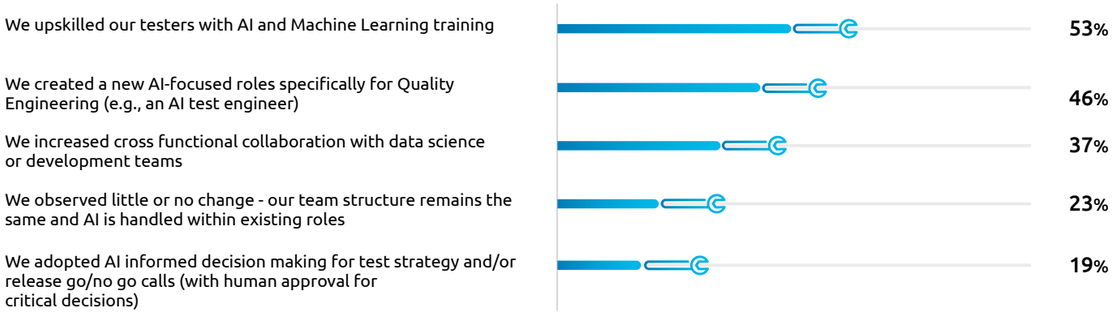
The emergence of AI copilots signals particular momentum. With 37% in production and 52% piloting, nearly 90% of organizations actively pursue AI-augmented workflows, remarkable for technology that barely existed in QE two years ago. Combined with self-healing tests (38% production, 44% pilot), these applications demonstrate growing confidence in AI's operational reliability.

This transition from insight-driven to proactive, design-oriented capabilities reveals that organizations are systematically identifying where Gen AI creates genuine value. Each phase builds on proven success, with teams pursuing practical augmentation rather than premature autonomy.

Skills, structures, and cross-functional collaboration

In what ways has introducing generative AI into QE&T impacted your team's structure, skill requirements, or how testing decisions are made?

Fig. 4 Impact of Gen AI into QE&T — WQR 2025 - Global Results



Base: All respondents who have used AI = 1,758

Multicode question

This year's survey reveals a widening gap between organizational interest in Gen AI and actual readiness to adopt it effectively within QE. While enthusiasm runs high, only 53% have upskilled testers in Artificial Intelligence/ Machine Learning (AI/ML) fundamentals, meaning nearly half of QE teams lack the foundational knowledge required to work confidently with Gen AI tools. This gap risks inefficient usage, misinterpretation of outputs, and resistance to adoption.

Furthermore, just 46% have introduced AI-specific roles, suggesting Gen AI is still often treated as an add-on rather than a core capability. These roles typically emerge during the scaling phase of Gen AI adoption and are expected to evolve into default AI-enabled functions over time. Without clear ownership and accountability, organizations face fragmented execution and slower innovation. The data points to a growing divide between Gen AI's potential and what QE teams can actually deliver; an imbalance threatening scalability, ROI, and increasing dependence on external expertise.

Cross-functional collaboration offers hope, with 37% reporting active partnerships between QE, data science, and development teams. However, many Gen AI initiatives are still led by specialized AI teams rather than QE teams, raising questions about ownership, integration, and QE's long-term role in driving AI-enabled transformation.

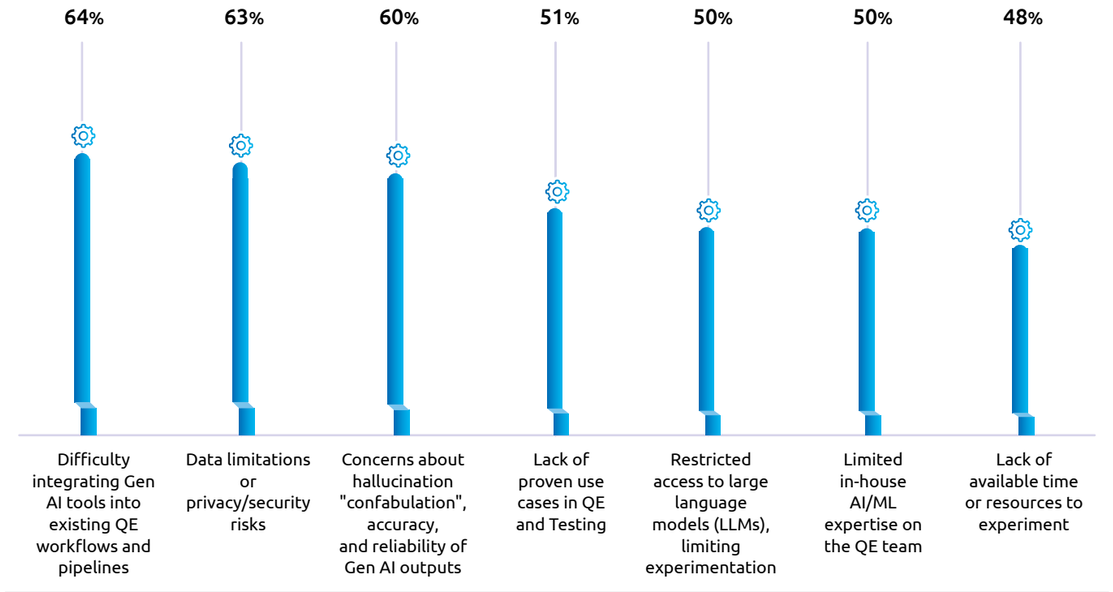
In the retraining and reskilling of the workforce for Gen AI adoption, a significant challenge lies in the need to unlearn traditional, human-centric approaches and develop the ability to think and work in ways that leverage Gen AI's unique strengths. For instance, when designing prompts or workflows for complex scenarios, teams often default to processes that mirror human reasoning, even though Gen AI may excel in different areas.

To achieve optimal results, it is essential to consciously move away from established human methods and adopt approaches more suitable for Gen AI. This nuanced skill of adapting mindsets and methodologies for Gen AI needs to be prioritized or systematically addressed.

Recalibration in Gen AI adoption: A reality check!

What challenges does your organization face when adopting generative AI for QE&T?

Fig. 5 Challenges in adopting Gen AI for QE&T — WQR 2025 - Global Results



Base: All respondents = 2,000

Ranking question

As organizations move beyond initial enthusiasm into deeper experimentation with Gen AI in QE, a clearer picture of the challenges is emerging. Last year's top concerns centered on strategic gaps: lack of validation strategy (50%), insufficient AI skills (42%), and undefined QE organization (41%)—essentially asking *how do we start?*

This year's challenges reveal organizations grappling with execution realities. Integration difficulty leads at 64%, as Gen AI tools don't naturally fit existing QE workflows and pipelines built for deterministic testing. Data limitations and privacy risks (63%) expose a paradox: AI needs rich data to function, but QE data often contains sensitive information that governance forbids sharing.

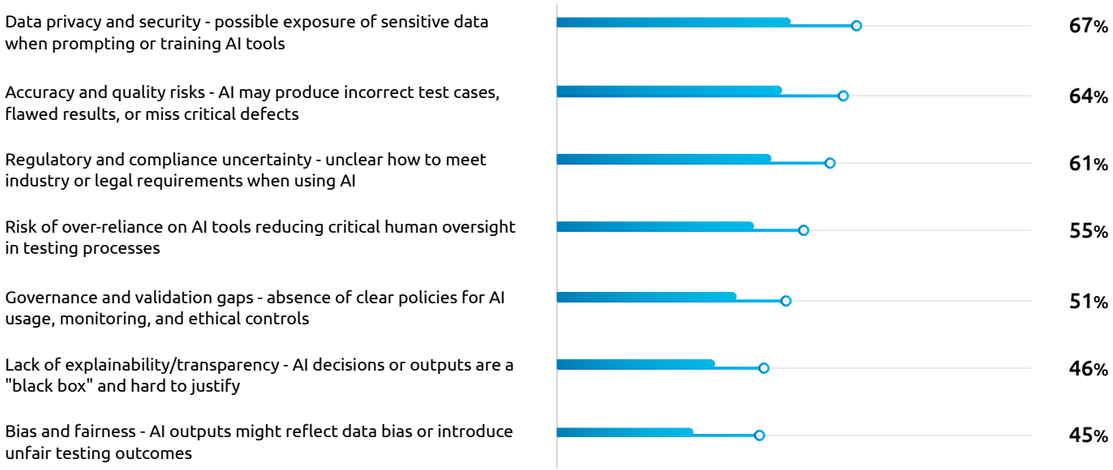
The 60% citing hallucination and reliability concerns highlights QE's key responsibility. Teams remain fully accountable for the quality of their work; every test case generated, every defect analysis, every decision. This accountability requires mastery, not just competence. Teams must possess the expertise to critically evaluate and challenge AI outputs rather than defaulting to acceptance. This is particularly important given AI's tendency to produce plausible-sounding content that may be flawed.

With 50% lacking AI/ML expertise and 51% seeking proven use cases, organizations increasingly restrict large language model (LLM) access, limiting experimentation precisely when learning is most important. The underlying theme remains unchanged from last year: trust, control, and operational readiness remain central to successful Gen AI adoption in QE.

Gen AI in QE: Innovation at the risk of exposure

What concerns does your organization have regarding the use of generative AI in Testing?

Fig. 6 Concerns about using Gen AI in Testing — WQR 2025 - Global Results



Base: All respondents = 2,000 — Ranking question

Data privacy at 67% exposes a fundamental tension: effective testing requires vast data inputs such as documentation, requirements, architecture designs, proprietary instructions, production-realistic data. Yet feeding AI this comprehensive knowledge base risks unintended leakage where sensitive assets could be repurposed beyond their original intent. Organizations must balance full AI empowerment with strict governance—a difficult equilibrium.

Accuracy and quality risks at 64% compound with regulatory uncertainty (61%): organizations fear Gen AI may generate flawed test cases, overlook defects, or produce unreliable results. These issues directly threaten product quality, and teams remain accountable for AI outputs.

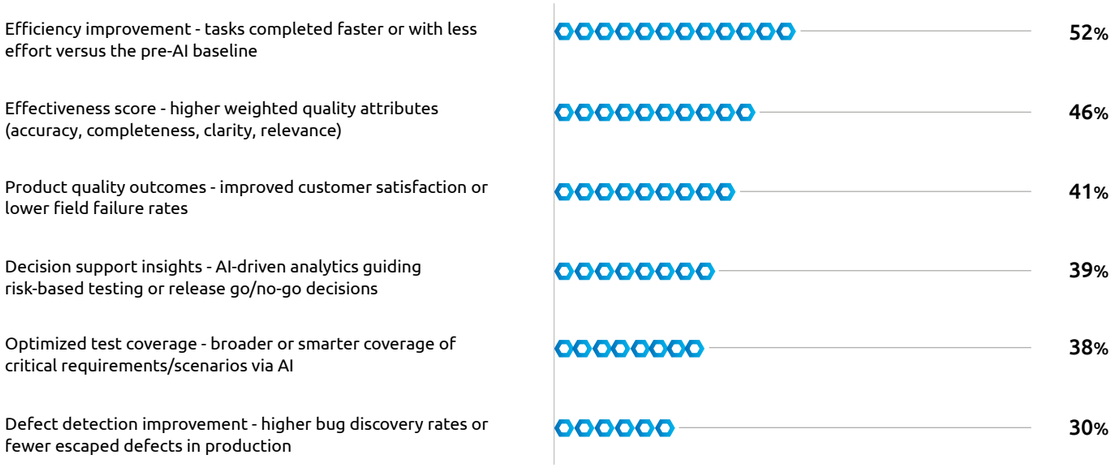
The compressed range (45-67%) reveals interconnected barriers rather than isolated concerns. Explainability gaps (46%) and over-reliance risks (55%) mean organizations face simultaneous challenges that compound in practice. This explains why only 15% achieve enterprise deployment, as success demands coordinated solutions across all dimensions.

Gen AI offers significant potential, but adoption requires deliberate safeguards, clear accountability, and continuous oversight to ensure innovation does not outpace responsibility.

Beyond the hype

Which metrics or KPIs does your organization use to evaluate the success of generative AI initiatives in QE&T?

Fig. 7 Metrics used to evaluate Gen AI in QE&T — WQR 2025 - Global Results



Base: All respondents who have used AI = 1,758 — Multicode question

Current metrics (Fig. 1) reflect early-stage adoption. Organizations prioritize efficiency gains (52%) as their primary AI metric. This dominance of time-based metrics, typically the first KPIs established in any automation initiative, aligns with 43% remaining in experimentation and only 15% achieving scale. Year-over-year metric consistency suggests this conservative approach hasn't evolved despite advancing AI capabilities. This consistency reflects that expectations from Gen AI haven't shifted significantly over the past year.

Defect detection improvement at 30% remains the lowest priority, reinforcing the view of Gen AI as more of an efficiency driver than a quality enhancer. The middle tier metrics—effectiveness score (46%), product quality outcomes (41%), decision support insights (39%), and optimized coverage (38%), show organizations are tracking various aspects but without clear prioritization or breakthrough focus on quality transformation.

As Gen AI adoption matures, the focus is moving from broad expectations to practical implementation questions: what to implement, how to implement it, and which tools deliver the most value. This signals a transition from hype to hands-on decision-making, where success will depend on clear metrics, validated outcomes, and a realistic understanding of Gen AI's role in the QE ecosystem.

Key challenges in Gen AI adoption within QE

- **Lack of strategic positioning for QE:** 56% of organizations don't view QE as a strategic function. This results in underfunded AI initiatives and explains why 43% remain stuck in experimentation despite recognizing AI's importance.
- **Misalignment with Agile workflows:** 53% report that QE processes don't align with Agile methodologies. This prevents the iterative deployment Gen AI requires and contributes to the 64% experiencing integration difficulties.
- **Insufficient AI readiness and capabilities:** Only 53% of testers have AI/ML skills, and organizations don't measure training effectiveness. Combined with just 46% having defined AI-specific roles, teams lack both the expertise to evaluate AI outputs and clear ownership—AI becomes everyone's responsibility and therefore no one's.
- **Data privacy and compliance concerns:** 67% cite privacy risks as their top concern. Testing requires comprehensive data inputs such as documentation, requirements, proprietary instructions that governance frameworks restrict. Organizations must balance full AI empowerment with strict governance, a difficult equilibrium to achieve.
- **Trust and accountability issues:** Accuracy concerns (64%) and regulatory uncertainty (61%) combined with a deceptive simplicity problem. AI interfaces look easy, but effective QE&T requires extensive preparation, context, clean input, and a detailed test basis. The natural tendency to prioritize speed, combined with skill gaps in AI prompting, might lead teams to accept inadequate outputs without proper verification, while remaining accountable for the quality issues that result.

Emerging trends and the road ahead

Which statement best describes your organization's current outlook on adopting autonomous AI agents for testing over the next few years (by 2030)?

Fig. 8 **Outlook on adopting autonomous AI agents for testing by 2030** WQR 2025 - Global Results

Note percentages may not add up to 100% due to rounding

Base: All respondents = 2,000

Single Code question

This adoption journey follows a familiar maturity curve, with early optimism giving way to recalibration before sustainable progress.

Currently, 10% of organizations consider autonomous AI a high-priority initiative while 31% are optimistic about its potential. The cautious majority (34% monitoring) awaits proof points before committing resources, particularly given the rise in Gen AI non-adopters from 4% to 11% this year. Combined with 18% skeptical, over half question the 2030 timeline's achievability. Only 7% dismiss autonomous agents, also more in terms of timeline than concept.

Overall, momentum continues building. The expectation is that autonomous agents will evolve from supportive tools to independent task execution, potentially replacing certain human activities.

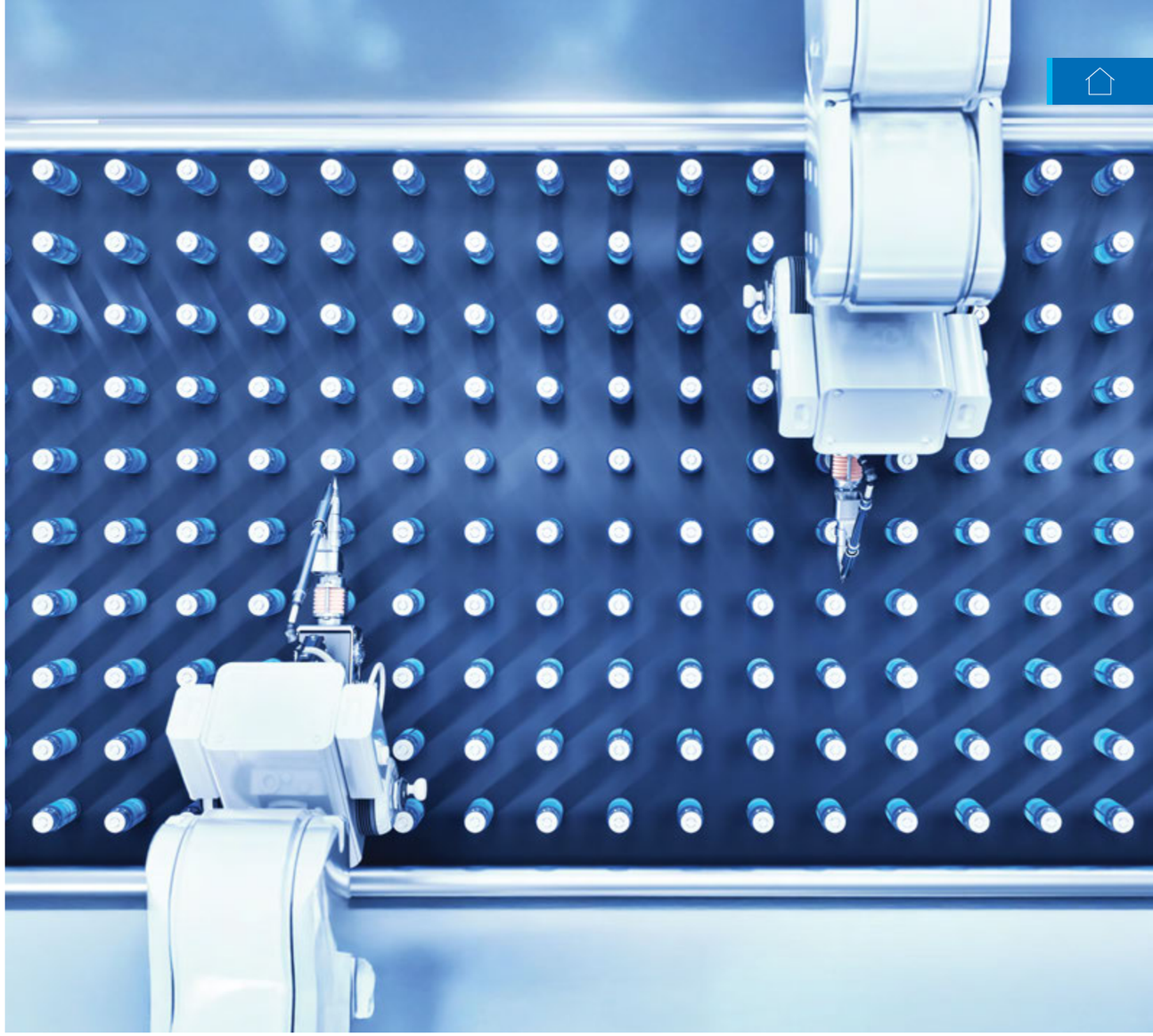
The concept of Collaborative Intelligence is emerging as a practical path forward. Organizations are structuring hybrid teams that combine human expertise with AI capabilities, recognizing that human-in-the-loop systems remain important for near-term oversight and validation. This approach creates integrated workflows that enhance productivity while redefining team dynamics and roles within QE.

The platform landscape is still exploratory, from chatbots to GenAI-enabled QE tools, no dominant approach has emerged as SAP, Salesforce, and others build competing solutions. These developments signal a shift toward more intelligent and collaborative models in QE.

The data supporting the trends appear consistent across geographies and industries, a uniformity that enables cross-industry learning as organizations navigate similar challenges regardless of location or sector.

Our key recommendations

- **Set realistic expectations while securing strategic positioning:** Recognize that Gen AI productivity gains are incremental but create competitive advantage. Demonstrate how QE's AI initiatives connect to business outcomes—reduced defects, faster releases, lower incidents, moving beyond efficiency to show revenue impact and risk reduction.
- **Fast-track upskilling through structured training with validation:** As use cases expand into test case design, requirements analysis, and self-healing automation, organizations must accelerate specialized training programs. Verify teams can challenge AI outputs, not just operate tools—test this competency before and after training. Introduce new AI-focused roles, create clear professional development pathways, and partner with external experts to bridge immediate capability gaps.
- **Establish clear AI ownership and governance:** Create dedicated AI-QE roles with specific accountability, budget, and authority. Implement governance frameworks to ensure ethical usage, monitor performance, and maintain strategic alignment. These roles must own initiatives end-to-end, solving the problem where AI becomes everyone's yet no one's responsibility.
- **Ensure high-quality data inputs:** Accurate, complete, clear and relevant input data is non-negotiable. Garbage in, garbage out applies doubly to AI.
- **Treat AI instructions as technical specifications:** Success depends on instruction completeness, vague requests guarantee rework. Time invested upfront returns multiples in avoided revisions. Develop three core competencies: writing precise specifications, evaluating outputs critically, and iterating systematically. Use AI as an instruction improver and output validator, creating a self-reinforcing quality cycle.
- **Invest in knowledge management systems:** Enable AI to reference both internal context (testing patterns, project constraints, defect histories) and external requirements (compliance, industry standards) through secure queries. Ground AI responses in your actual documented practices using RAG or similar tools. This prevents hallucination and delivers accurate, context-aware outputs the first time, while maintaining data security.
- **Bridge the pilot-to-enterprise gap:** Address the disconnect between operational enthusiasm and leadership priorities that keeps organizations stuck in experimentation. Ensure AI initiatives align with broader business goals by demonstrating value beyond operational metrics.
- **Focus metrics on transformation impact:** Select key measures showing real QE improvement, overall QET productivity (effectiveness factored by efficiency), team collaboration scores and even business metrics. Link these directly to performance reviews and advancement rather than adding more KPIs.
- **Leverage strategic partnerships for capability building:** Partner with service providers to accelerate adoption, share best practices across implementations and prepare for agentic AI adoption. Ensure external experts enable knowledge transfer to internal teams, building capability rather than dependency.
- **Strengthen data privacy and compliance protocols:** As Gen AI tools increasingly interact with sensitive data, organizations must implement privacy safeguards and ensure compliance with evolving regulatory standards. This includes anonymizing training data, selecting enterprise-appropriate LLMs that align with security policies and use case requirements, and establishing clear audit trails for Gen AI outputs.



What's next for QE & AI?

The industry continues navigating the adoption curve, moving from experimentation to implementation. AI technologies offer immense potential, but success depends on organizational readiness—strategic alignment, skilled teams that validate outputs, AI-integrated workflows. The 15% achieving scale invested in capabilities beyond technology, proving this approach works.

The path to emerging worlds requires clear implementation: strengthen QE fundamentals with targeted AI augmentation, measure business value not just activity metrics. AI amplifies capability but cannot substitute for it, excellence in QE fundamentals determines AI success, not the reverse. Organizations must focus on tangible outcomes: better quality, faster delivery, smarter collaboration.

Client perspectives

Reimagine quality with Achmea

At Achmea, we are reimagining our approach to Quality Engineering to meet the demands of a faster, more agile, and increasingly AI-enabled world. As one of the largest insurers in the Netherlands, with over 13 million customers and 17,360 colleagues, our scale demands precision, speed, and adaptability. Over the past few years, we have made the shift from traditional Waterfall models to Agile DevOps, enabling faster releases and continuous value delivery.

We recommend organizations make testing a team-owned responsibility, embedded within each agile unit. Equipping teams with dedicated testers—supported by system teams and collaborative communities, fosters shared learning, accelerates feedback, and ensures quality is built into every stage of delivery. Our strategy emphasizes lean regression suites and purposeful automation, focusing on areas where it adds value. We have partnered with Tricentis® and adopted tools like Tosca®, Axini, Selenium and Reqnroll, aligning them with our testing pyramid to ensure coverage across all layers.

We are also making steady progress in test data management, especially across enterprise systems like SAP® and data warehouses. While front-end teams operate efficiently with current tooling, more complex environments involving historical dependencies and multi-system chains require tailored solutions. We have implemented strict data ownership rules and are exploring service virtualization to reduce dependencies. Our data experts play a crucial role in navigating these complexities, especially given the sensitivity of insurance data.

Generative AI is one of our core focus areas. We have moved from curiosity to experimentation, exploring use cases like intelligent translation, test case design, and documentation review. One standout success has been using AI tools like Microsoft Copilot® and ChatGPT to overcome language and documentation barriers across our European teams. While some applications show immediate ROI, others require deeper exploration. We are cautious but optimistic, balancing innovation with governance and data security.

Looking ahead, we see the role of quality engineers evolving. Testing may become invisible, embedded within automated pipelines. The focus will shift to quality advocacy, process checks, and strategic oversight. Skills in AI, systems thinking, and critical analysis will be essential. We anticipate a future where testers guide teams, monitor AI-driven processes, and validate outcomes without direct execution.

We don't expect AI to replace people, but to empower them. We feel this freed capacity and bandwidth will fuel innovation, enabling teams to take on more strategic work, and unlock new opportunities. As a cooperative and sustainable organization with €265 billion in invested assets, operations in 8 countries, and a strong AA ESG rating, our goal is to deliver better products, faster, while staying true to our values, purpose and role in the larger community.

John Bertens
Change Agent & SAFe®
Practice Consultant, Achmea

Joost van Lieshout
Test Manager &
Process Manager Test, Achmea

QE Automation

Antoine Aymer
Kanchan Bhonde
Jeff Spevacek
Jeba Abraham

From fragmentation to focus: The new era of Quality Engineering test automation

Test automation has been central to modern Quality Engineering (QE) for several decades, yet its journey has been non-linear. Many organizations struggle to translate frameworks, tooling, and practices into repeatable, scalable outcomes across UI, API, data, and pipeline integration. Progress is visible, yet execution gaps persist, with fragmentation of automation strategies and tooling portfolios. Limited automation coverage, and ambiguous success measures—rather than outcome-linked indicators—remaining common.

As Gen AI and agentic systems gain traction, automation is being redefined. It's no longer just about efficiency, it's about aligning quality with business outcomes in increasingly complex tech environments. This chapter explores current adoption patterns, contradictions in execution, and the shift from fragmented efforts to enterprise-wide automation.

The emphasis is on meaningful AI integration, agentic approaches, targeted skill development, and deeper collaboration with automation tools to drive sustained value.

Reviewing SMEs

Rajesh Natarajan
Divisional Practice Leader,
Quality Engineering & Testing, Sogeti US

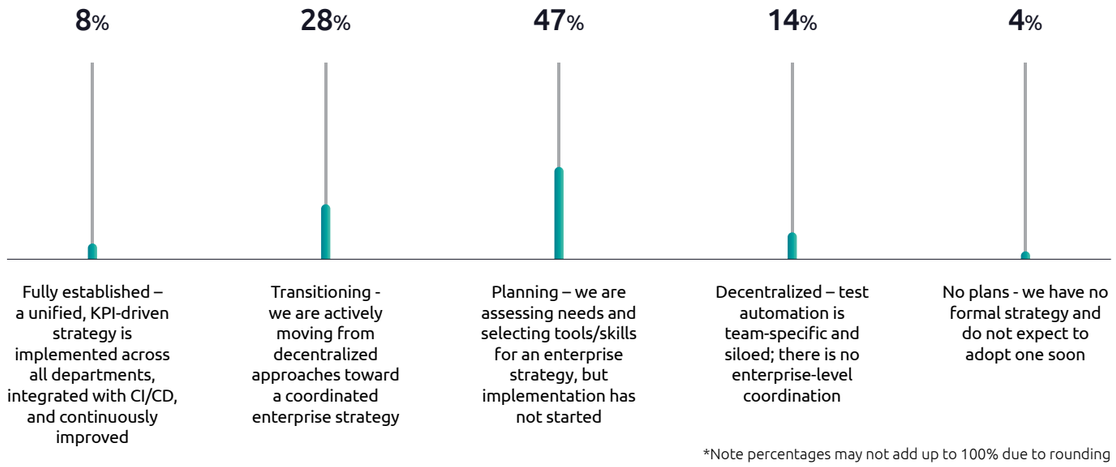
Vijaya Ramireddy
Automation QE Lead, Director, ANZ Managed Environment and Testing Service (METS), Financial Services, Capgemini Australia

Vaideshwaran V.
Automation CoE Lead, Quality Engineering & Testing, Sogeti India

Automation at a crossroads: Planning dominates, execution lags

How would you characterize your organization's approach to establishing an enterprise-wide test automation strategy?

Fig. 9 Approach to establishing a test automation strategy — WQR 2025 - Global Results



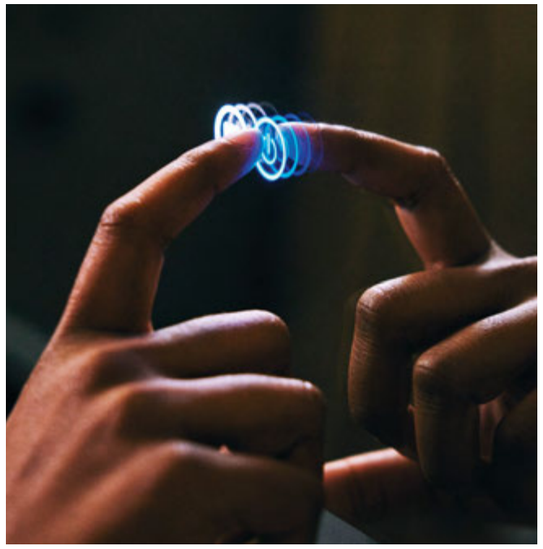
*Note percentages may not add up to 100% due to rounding

Base: All respondents = 2,000

Single Code question

Survey data indicates nearly half of organizations remain in the planning phase, evaluating tools and capabilities but not moving to implementation. This persistent gap between intent and action suggests that, despite years of advocacy, strategic alignment in test automation remains difficult to achieve. A small proportion report an enterprise-wide strategy, while a notable minority report siloed approaches or no plans at all—underscoring the persistence of fragmentation. Incremental improvement is visible compared to previous years, yet progress remains slow and uneven.

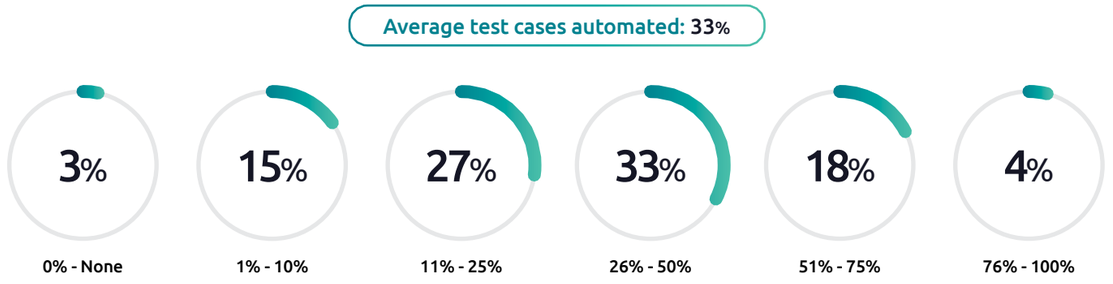
As Gen AI and agentic systems begin to influence the field, organizations unable to move beyond fragmented efforts may find it increasingly difficult to realize the potential benefits of automation. In this context, leaders should ask: Which structural barriers are holding us back, and which actions are most likely to close the gap?



Test automation's stalled progress

What percentage of your test cases are currently automated?

Fig. 10 Test cases currently automated — WQR 2025 - Global Results



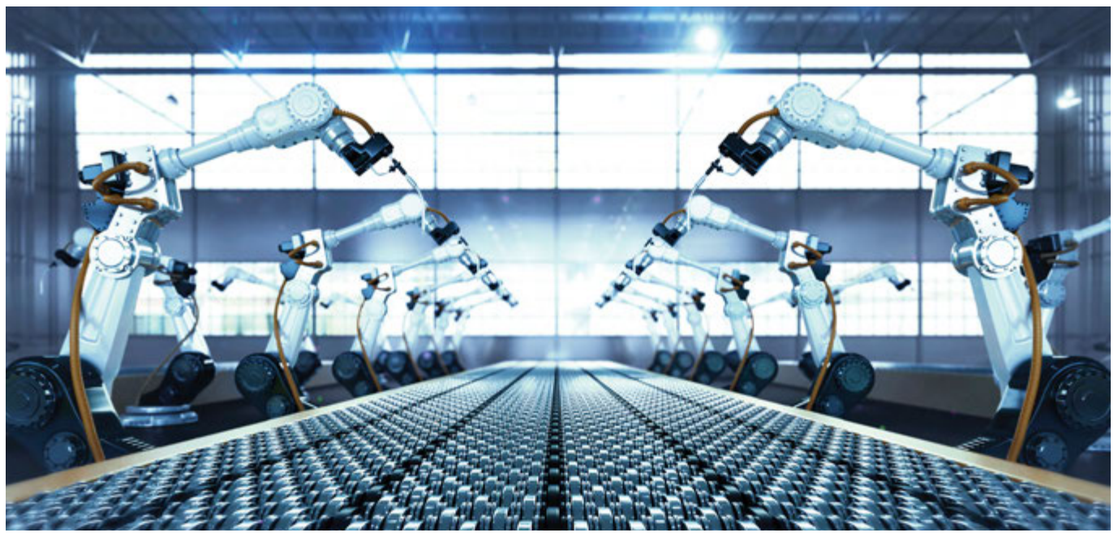
*Note percentages may not add up to 100% due to rounding

Base: IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner = 994

Single Code question

Test automation continues to expose a gap between strategic intent and embedded practice. Despite its long-standing role, automation remains weakly integrated into test design and delivery, with many teams still reliant on manual execution. The struggle to evolve automation in line with modern engineering reflects a deeper disconnect between ambition and operational reality.

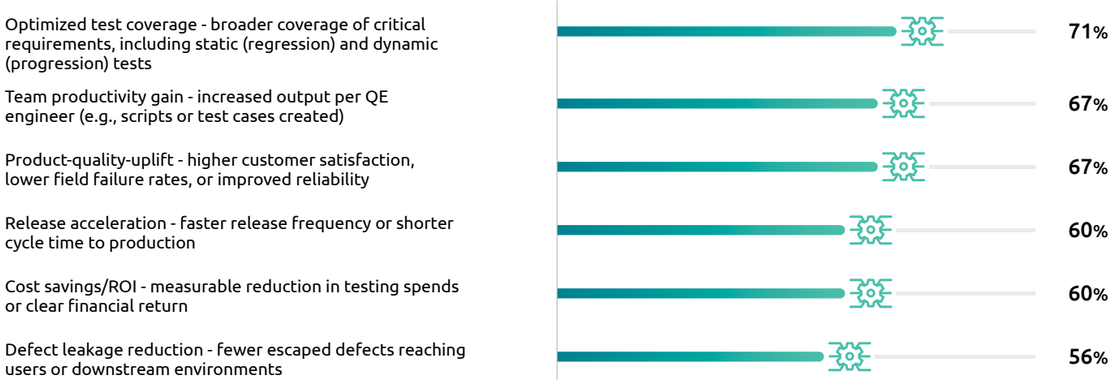
Several factors contribute to this lag, cloud transitions, tooling shifts, and emerging trends like Gen AI. But the root cause often lies in structural misalignment: automation efforts are frequently siloed from enterprise testing frameworks and release processes. To progress, organizations must prioritize embedding over tool churn. Without structural alignment, even advanced technologies won't meaningfully reduce test debt or release risk.



The illusion of planning: Why action lags

Which metrics or KPIs does your organization rely on most to measure the success of its test automation initiatives?

Fig. 11 Key metrics used to measure test automation success — WQR 2025 - Global Results



Base: All who have test case automation = 1,971

Ranking question

Organizations continue to assess automation progress against familiar outcomes: optimized test coverage, team productivity gains, and product quality uplift. Even with varying metrics, the focus remains broadly consistent—broader coverage, faster delivery, and improved customer satisfaction. Additional indicators such as release acceleration, cost efficiency, and defect reduction also feature, reflecting expectations around speed, efficiency, and reliability.

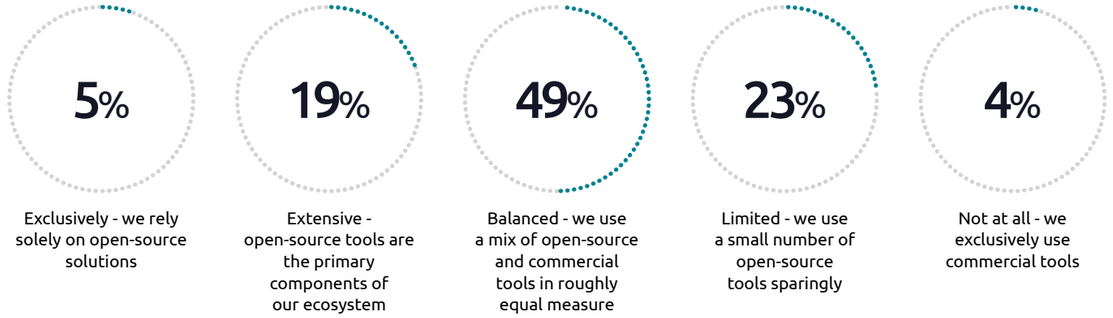
Despite this apparent clarity of purpose, adoption remains slow in reported programs. The persistent gap between strategic intent and execution is often more about governance and accountability than tooling. Planning often becomes a default state, signaling risk aversion and unclear decision rights rather than readiness for action. Intent also fragments across stakeholders, with business, QE, and operations optimizing for different outcomes. Meanwhile, tool-led churn—pursuit of new capabilities—diverts attention from embedding automation into operating models.

Until incentives shift, teams remain rewarded for delivery speed or defect counts, with limited recognition for automation outcomes, leaving execution stalled, despite broad understanding of what should be automated and why.

The open source–COTS equation

To what degree do you integrate open-source tools into your test automation ecosystem?

Fig. 12 Integration of open-source tools in test automation — WQR 2025 - Global Results



*Note percentages may not add up to 100% due to rounding

Base: IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner who have test case automation = 965

Single Code question

Reported data suggests a bell-shaped distribution in how organizations integrate open-source tools into their test automation ecosystems. Nearly half report a balanced approach, blending open-source with commercial off-the-shelf (COTS) solutions. Exclusive reliance on either remains uncommon. This distribution suggests a pragmatic shift: many enterprises recognize it is seldom about a single solution, and more about contextual choices. Organizations are increasingly moving towards flexible, enterprise-level hybrids that combine open-source and COTS capabilities.

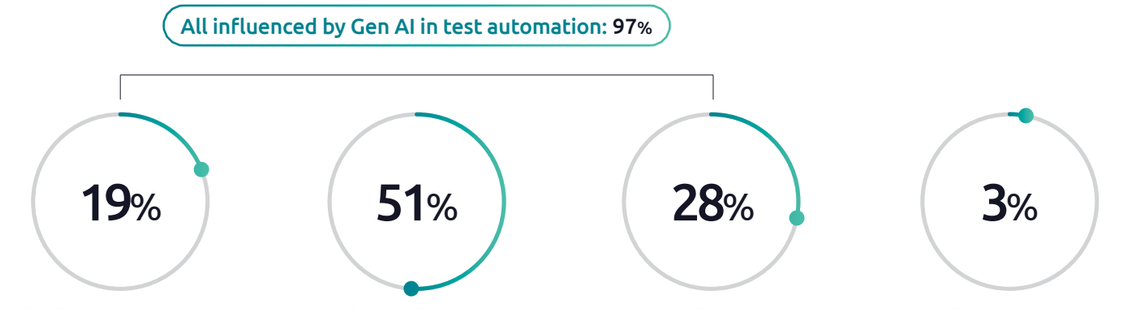
This apparent equilibrium can mask deeper risks. Hybrid strategies often introduce lifecycle fragility from asynchronous component evolution. Integration and sustainment challenges follow. Governance blind spots often persist, particularly around compliance and vulnerability management when open-source adoption bypasses formal controls. These ecosystems also demand polyglot skills—tool-agnostic Quality Engineering & Testing (QE&T) expertise that remains difficult to scale. Vendor lock-in risk may resurface as COTS vendors embed Gen AI features into proprietary orchestration layers.

Enterprise-grade large language model (LLM) services for public models are designed not to use customer data for training or retraining. However, governance should still address risks from misconfigured or experimental usage. It should also ensure clarity on IP governance—ownership of generated artefacts and integrated frameworks—and licensing compliance for open-source components, COTS terms, and Gen AI outputs.

Gen AI: Hype, hope, and hard reality

How have recent advancements in generative AI influenced your overall test automation strategy?

Fig. 13 Impact of Gen AI advancements on test automation strategy — WQR 2025 - Global Results



*Note percentages may not add up to 100% due to rounding

Base: All who have used AI and have test case automation = 1,752

Single Code question

Most respondents report Gen AI influencing their test automation strategies, though the extent varies widely. 51% describe a moderate impact, where Gen AI begins to reshape tool investments and testing approaches. A smaller group reports notable transformation, with autonomous testing observed in limited contexts. Others indicate only limited influence, with experimentation underway but minimal impact observed.

This uneven adoption highlights a key tension: potential is widely acknowledged, yet meaningful value depends on more than pilots or tool acquisition. Barriers such as scaling challenges, immature skill sets, and gaps in essential tooling keep initiatives isolated, restricting strategic impact. Beyond these, deeper risks are emerging. Model drift—as providers update models—can alter behavior and break automation flows, creating lifecycle fragility without strong governance.

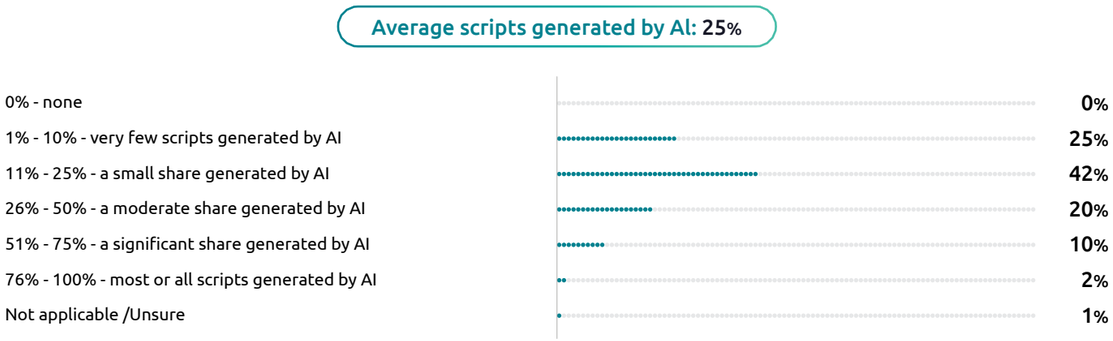
Contextualization remains critical: generic models struggle without domain-specific prompts or fine-tuning, leading to fragile outputs. Gen AI adoption often resembles a J-curve: early productivity gains are offset by validation overhead and process adaptation before efficiency improves. Meanwhile, bias in generated tests—driven by gaps in training data—can embed blind spots, particularly in regulated domains, undermining trust and compliance.

Finally, as Gen AI adoption scales, its energy footprint raises sustainability concerns that are likely to feature increasingly in enterprise risk and Environmental, Social, and Governance (ESG) agendas.

From pilots to practice: AI scripts gain ground

Approximately what percentage of your new automated test scripts were generated with Gen AI - driven tools in the past 12 months?

Fig. 14 New automated test scripts generated by Gen AI — WQR 2025 - Global Results



*Note percentages may not add up to 100% due to rounding

Base: QA / Testing Manager or Quality Engineer who have used AI and have test case automation = 314 — Single Code question

AI (Gen AI and agentic systems) is increasingly positioned as a catalyst for test automation, with most reported innovations aiming to link quality to business outcomes. Adoption patterns show strong interest in AI-powered flow discovery and dynamic test selection, alongside autonomous script generation and test data creation—each reported by more than 60% of respondents. These choices reflect a focus on efficiency and analytics rather than deeper architectural change, creating a potential efficiency trap: incremental gains that appear innovative yet fail to deliver resilience.

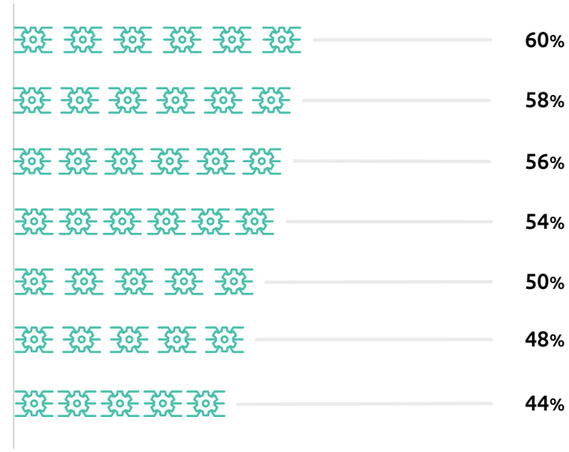
Meanwhile, adaptive capabilities such as self-healing scripts remain underused in reported practices, signaling short-termism that leaves teams with fragile pipelines and rising maintenance costs. This pattern indicates that many teams prioritize lower-risk, operationally straightforward AI applications while underutilizing more resilient capabilities. The shift towards open-source frameworks, reported by just over half of organizations, suggests a drive for flexibility but introduces lifecycle fragility and dependency risks without strong governance.

To fully realize AI's potential, organizations should move beyond analytics and flow discovery towards self-sustaining, scalable automation architectures capable of evolving with the systems they support. This requires more than tools alone: outcome-linked measures tied to risk reduction and release predictability, accountable controls for AI-generated artefacts, and governance to manage model behavior and compliance. Without these, AI in test automation risks becoming an activity metric rather than a strategic enabler—risking prolonged pilots without meaningful impact.

The same old roadblocks, plus AI integration

What challenges (if any) does your organization face in test automation?

Fig. 15 Challenges faced in test automation — WQR 2025 - Global Results



*Note percentages may not add up to 100% due to rounding

Base: QA / Testing Manager or Quality Engineer who have used AI and have test case automation = 314 — Ranking question

Despite years of methodological evolution and the emergence of Gen AI, core barriers continue to challenge progress in test automation (UI, API, data, pipeline integration). In our survey, top reported issues include securing scalable test data (60%), integrating and trusting Gen AI and agentic systems within existing pipelines (58%), and fragmented strategies with skill gaps (56%) as federated teams often operate with local autonomy over centralized frameworks.

Beyond these headline blockers, strategic test selection for outcome-linked ROI remains difficult. Reported: maintenance effort rises with unstable or flaky scripts (50%). Scaling automation across cloud, microservices, and legacy estates is complex; CI/CD and legacy integration further complicate delivery, particularly where mainframe workflows persist.

A paradox emerges: AI is often expected to simplify automation, yet its integration has become a barrier—exposing gaps in validation, governance, and decision rights rather than tool capability alone. Many teams operate in silos, outside enterprise-wide frameworks, and this fragmentation continues to impede progress. Progress will likely depend on resolving key structural issues, such as defining outcome-linked measures for what and when to automate and setting accountable controls for AI-generated artefacts within pipelines. It's also important to align incentives so that enterprise-wide frameworks and shared tooling are adopted where they clearly reduce risk and speed up releases.

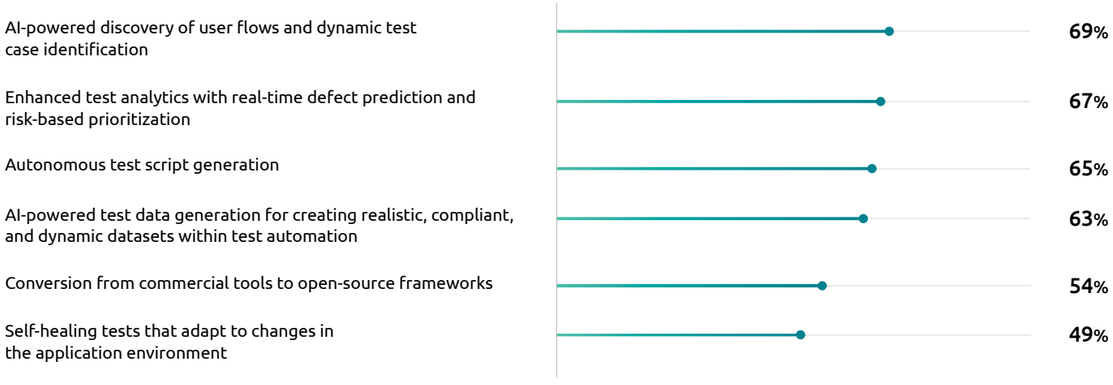
Key challenges hindering scalable QE test automation

1. **Strategy stagnation reflects governance gaps:** Survey data indicates nearly half remain in planning—signaling unclear decision rights and risk-averse governance. Without linking automation goals to funding and release gates, planning becomes a default state rather than a launchpad.
2. **Coverage metrics can obscure real value:** Automation coverage averages around one-third of test cases, yet teams often optimize for volume over impact—neglecting defect containment, release predictability, and business outcomes.
3. **Fragmentation stems from structural misalignment:** Federated teams resist shared frameworks due to local incentives. Without enterprise-wide accountability and capability models, fragmentation persists—limiting scalability and complicating AI integration.
4. **AI adoption stalls at trust and scale:** Gen AI's potential is widely acknowledged, yet pilots linger. Validation frameworks, compliance controls, and model governance are missing—exposing a socio-technical gap rather than a tooling issue.
5. **Test data bottlenecks undermine maturity:** Scalable, compliant test data remains elusive. Synthetic data can help but is costly without automation in provisioning and masking—making "shift-left" ambitions hollow.
6. **A two-speed future may emerge:** Organizations addressing governance, data, and integration challenges are likely to accelerate. Others may remain stuck in fragmented pilots—widening gaps in release velocity and QE maturity.

AI navigating new frontiers in test automation

What new opportunities enabled by general AI innovations have you already implemented in your test automation practices?

Fig. 16 New opportunities enabled by AI innovations in test automation — WQR 2025 - Global Results



Base: All respondents = 2,000

Ranking question

Gen AI and agentic systems are increasingly positioned as a catalyst for test automation, with most reported innovations aiming to link quality to business outcomes. Adoption patterns show strong interest in AI-powered flow discovery and dynamic test selection, alongside autonomous script generation and test data creation—each reported by more than 60% of respondents. These choices reflect a focus on efficiency and analytics rather than deeper architectural change, creating a potential efficiency trap: incremental gains that appear innovative yet fail to deliver resilience.

Meanwhile, adaptive capabilities such as self-healing scripts remain underused in reported practices, signaling short-termism that leaves teams with fragile pipelines and rising maintenance costs. This pattern indicates that many teams prioritize lower-risk, operationally straightforward AI applications while underutilizing more resilient capabilities. The shift towards open-source frameworks, reported by just over half of organizations, suggests a drive for flexibility but introduces lifecycle fragility and dependency risks without strong governance.

To fully realize AI's potential, organizations should move beyond analytics and flow discovery towards self-sustaining, scalable automation architectures capable of evolving with the systems they support. This requires more than tools alone: outcome-linked measures tied to risk reduction and release predictability, accountable controls for AI-generated artefacts, and governance to manage model behavior and compliance. Without these, AI in test automation risks becoming an activity metric rather than a strategic enabler—risking prolonged pilots without meaningful scale.

Shaping the future of test automation with AI

The test automation journey is undergoing a notable shift, moving from fragmented, script-heavy practices towards enterprise strategies increasingly shaped by AI. Survey data from diverse sectors indicates adoption patterns—around one in four new scripts is reported as AI-generated. Yet these signals coexist with structural contradictions: technology alone rarely resolves governance gaps or entrenched organizational barriers.

Future QE maturity is likely to favor organizations that act with clarity, embed AI under accountable controls, and align automation with measurable business outcomes. Teams that remain in prolonged planning, clinging to fragmented strategies, may risk lagging in maturity as integration complexity increases.

Our key recommendations

- **Move from planning to action:** Shift gears from prolonged strategizing to outcome-linked execution. Pilot, iterate, and scale with measures tied to release predictability and risk reduction. Strategy without execution remains largely theoretical.
- **Redefine success metrics:** Replace "% of tests automated" with indicators that matter—customer impact, release velocity, and defect containment.
- **Integrate test design and automation:** Treat automation as integral to test design, not an isolated scripting task. This alignment reduces rework and strengthens delivery resilience.
- **Adopt a balanced tooling strategy:** Blend open-source and COTS solutions pragmatically, prioritising governance, scalability, and long-term maintainability over tool hype.
- **Harness Gen AI with guardrails:** Acknowledge the reported 25% AI-generated baseline but avoid over-reliance. Validate outputs rigorously, appoint AI champions, and embed structured adoption practices with compliance oversight.
- **Tackle persistent challenges head-on:** Invest in enterprise-wide frameworks, synthetic test data solutions, and cultural levers to overcome decade-old barriers that still constrain scalability.
- **Shift AI toward business value:** Focus AI on high-impact use cases tied to measurable business outcomes—dynamic test selection, analytics, and user flow optimization—rather than technical conveniences.

Client perspectives

Driving tech quality and automation at Medica

Medica has proudly been a nonprofit health plan serving members in the Midwest for more than 50 years. Today, we provide health care coverage to 1.4 million members across nine states for individual and family plans, commercial, Medicare, and Medicaid. We continue to grow while remaining deeply committed to the communities we serve and improving health care access and outcomes.

One of our key focuses in Medica Tech is quality and automation. In the past six years, we've transformed our integration of Quality Engineering (QE) across our delivery practices and agile team structure. As part of this, we decentralized our QE team two years ago and directly deployed quality engineers to various product teams. While this improved collaboration with developers and accelerated decision-making, it also compromised consistency and standardization.

We understand that both centralized and decentralized approaches have their pros and cons. Centralized teams can provide strong governance and alignment over processes while filtering and screening available resources, but they run the risk of being a staffing service. On the other hand, a decentralized setup can empower teams but also lead to fragmentation and gaps in accountability. That's why we are now moving toward a hybrid model — combining the rigor of a center of excellence (CoE) with the domain knowledge and agility of embedded teams. This balance will allow us to deliver consistent quality while keeping teams close to the business.

Equally fundamental is culture. We believe that genuine transformation cannot be imposed from the top down, rather, it must be embraced together. In the interest of understanding our teams better, we surveyed all quality engineers about their roles, the challenges they face, their objectives, and the kind of support they need. This feedback will inform how we integrate people, processes, and technology to foster a culture in which quality is a shared responsibility.

On the skills front, our priority is shifting from a manual- to automation-first mindset. We no longer expect engineers to first create manual test cases to be automated later. Instead, we encourage them to think component-wise and data-driven from the start. By designing tests for scale and combinations, we can maximize coverage and reduce cycle time. This not only speeds up delivery but also elevates the role of testers to strategic enablers.

We are also updating our automation frameworks — shifting from legacy solutions to modular, scriptless, and AI-powered platforms. Already, our automation has saved tens of thousands of hours, touched more than a million claims, and enabled synthetic data generation that enhances reliability and accelerates testing.

But technology alone is not sufficient. The health care industry is inherently risk-averse due to regulatory and security demands, and we need to keep embracing innovation responsibly. AI will enhance but never substitute human beings. Great testers who can harness AI successfully will be our key to success.

Our long-term vision at Medica is definitive: Create a culture built on responsibility and follow-through, while fostering collaboration that embraces continuous improvement and celebrates success. For us, this is fueled by automation, rooted in compliance, and led by individuals who embody curiosity and commitment.

Albert Arulanandasamy
IT Director, Tech Quality and Automation, Medica

Data Quality

Jeff Spevacek
Kanchan Bhonde
Jeba Abraham
Antoine Aymer

Reviewing SMEs

Sai Grandhi
Divisional Practice Leader,
Quality Engineering & Testing, Sogeti US

Okan Baysan
Senior Test Manager, Quality Engineering & Testing, Capgemini UK

Boby Jose
Senior Test Manager, Quality Engineering & Testing, Capgemini UK

Rajesh Natarajan
Divisional Practice Leader, Quality Engineering & Testing, Sogeti US

Quality Engineering and data: Cutting through the noise in Test Data Management

Gen AI has stepped into the world of Test Data Management (TDM), ushering in a new era where synthetic data takes center stage. As organizations adapt to emerging worlds, the focus is shifting toward refining data retrieval, accuracy, and compliance. These evolving realities are transforming how test data is created, governed, and scaled, making TDM more dynamic and future-ready than ever before.

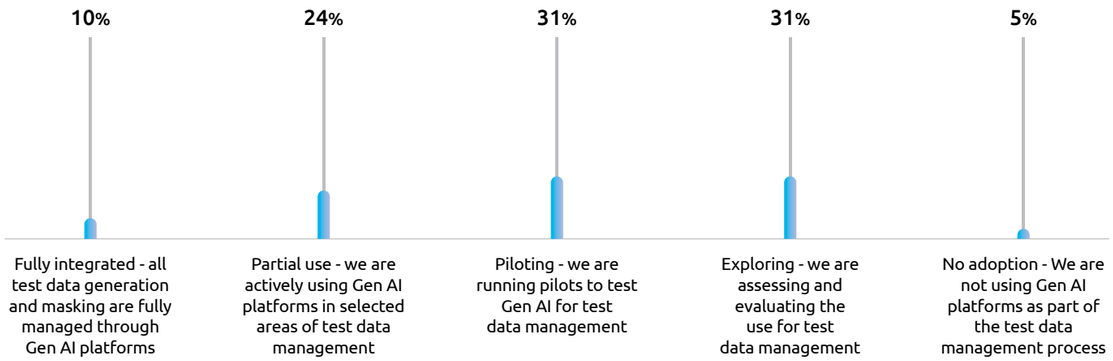
This year's report indicates that more organizations are weaving Gen AI into their test data strategies, with early adopters already experiencing significant gains. But the reality is more complex. Progress is hampered by fragmented responsibility, poor governance frameworks, and inconsistent tools are keeping many from unlocking Gen AI's full potential.

Let's find out how organizations are increasingly embracing Gen AI and synthetic data in TDM, where the greatest wins are being generated, and why governance loopholes continue to block scaling success.

Gen AI adoption in test data: Encouraging growth, lingering ambiguity

Are you currently using generative AI platform(s) as part of your test data lifecycle?

Fig. 17 Use of Gen AI platform in the test data lifecycle — WQR 2025 - Global Results



*Note percentages may not add up to 100% due to rounding

Base: All respondents = 2,000

Single Code question

The adoption of Gen AI in test automation has accelerated notably. Last year, 11% of organizations had not yet begun using Gen AI; this year, that number has dropped to just 5%. Currently, 34% of organizations are actively applying Gen AI in their testing practices, while 62% remain in the pilot or exploration phase. Notably, 95% of respondents report using Gen AI for test data generation in some capacity, highlighting its growing ubiquity across the industry.

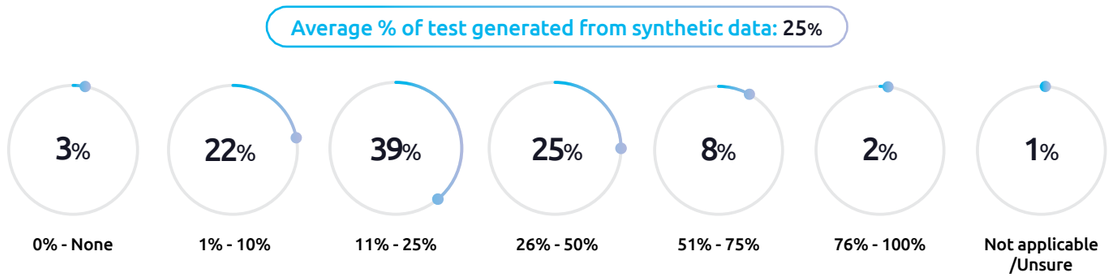
However, only 10% of organizations report full integration of Gen AI into their test data lifecycle, revealing a gap between experimentation and enterprise-scale adoption. This widespread usage comes with definitional ambiguity. Some organizations classify any AI-powered tool, such as data masking software, under Gen AI, while others reserve the term for more advanced technologies like large language models (LLMs) and generative engines. Examples include standalone test data tooling platforms, as well as prompt engineering or chatbot-style Gen AI platforms. This inconsistency contributes to variability in survey responses and perceived adoption levels.

Note: Variance between 43% (Figure 20) and 10% (Figure 17) reflects different question framing. Figure 20 inquires about the use of Gen AI in TDM; Figure 17 specifically asks about full lifecycle integration. See methodology appendix.

The emergence of synthetic data

What percentage of your test data is generated from synthetic data?

Fig. 18 Test data generated from synthetic data — WQR 2025 - Global Results



*Note percentages may not add up to 100% due to rounding

Base: CDO/IT Director, QA / Testing Manager or Quality Engineer, VP Applications = 1,046 — Single Code question

The upward trend in synthetic data creation reflects increased test coverage. This year, 35% of organizations generate more than a quarter of their test data synthetically, up from 24% last year, a clear sign of growing adoption. However, the majority still operate below that threshold: 39% generate between 11%–25%, and 22% generate only 1%–10%, indicating that while interest is rising, deep adoption remains limited. Only 10% of organizations report generating more than half of their test data synthetically, and 3% do not use synthetic data at all.

The average synthetic data usage across respondents stands at 25%, reflecting a steady but cautious shift. This growth is closely tied to the rise of Gen AI, which has dramatically simplified the process. What once required extensive coding can now be achieved through prompt-based, model-driven approaches, making synthetic data creation more accessible across sectors and regions.

While definitions and usage levels may vary, the consistent uptake across industries suggests a strategic alignment toward synthetic data as a scalable, efficient solution for modern testing needs.

What do you use synthetic data for in your test data management process?

Fig. 19 Uses of synthetic data in test data management — WQR 2025 - Global Results

Base: CDO/QA / Testing Manager or Quality Engineer who use synthetic data = 387 — Multicode question

Synthetic data is being increasingly adopted across test data management, driven by a range of strategic priorities. The top driver is improving the accuracy of test results (51%), particularly through better edge-case coverage. This is also the top pain point in TDM, showing a direct correlation between challenge and solution.

Ensuring compliance with data privacy regulations (48%) has seen a sharp rise, up from 22% last year, reflecting growing regulatory pressure from GDPR, HIPAA, and proposed AI legislation.

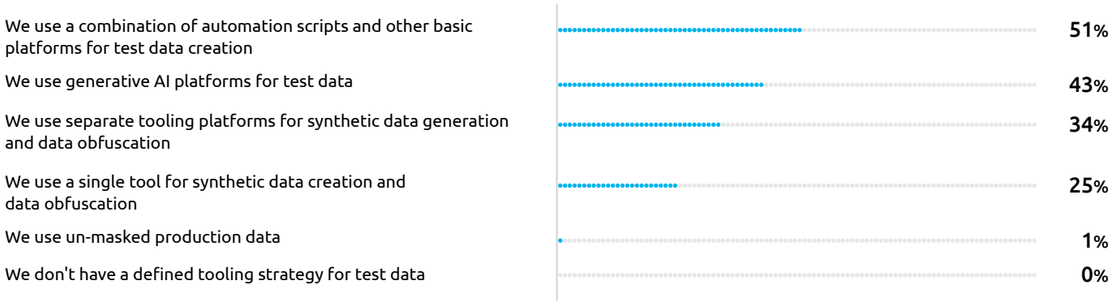
Additionally, organizations are focused on reducing dependency on production data (41%) and replacing sensitive production data (41%), both of which support greater control, repeatability, and privacy in non-production environments.

Other notable uses include enhancing the diversity of test data (37%), creating large datasets for performance testing (32%), facilitating continuous testing in CI/CD pipelines (27%), and simulating edge cases and rare scenarios (26%). These patterns and the understanding that 89% of organizations are either piloting or actively using Gen AI platforms for test data (reference to Gen AI Chapter 1, Quality Engineering in AI) reflect the growing challenges organizations are facing in both keeping up with the pace and volume of projects as well as the difficulty in quickly finding data sets that align with their testing objectives. This data demonstrates a strategic shift toward synthetic data as a scalable, privacy-compliant, and efficiency-driven solution for modern testing environments.

Test data tooling strategy: Progressing towards maturity

Which of the following best describes your test data tooling strategy?

Fig. 20 **Test data tooling strategy** WQR 2025 - Global Results



Base: All respondents = 2,000

Multicode question

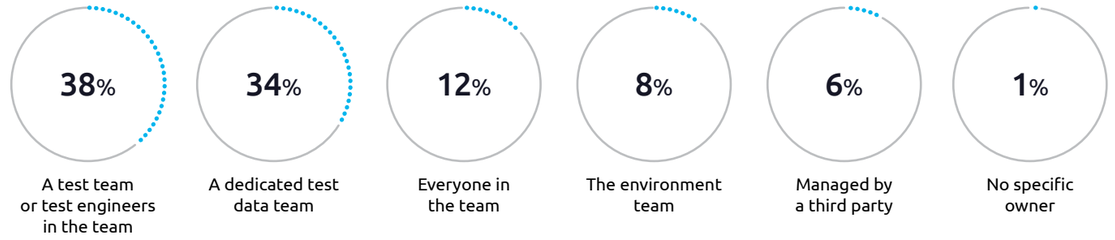
Even with growing interest in synthetic data and Gen AI, tooling maturity in TDM remains low. Most organizations (51%) still rely on a combination of automation scripts and basic platforms, a pattern that has persisted for several years. While 43% have adopted Gen AI platforms for test data creation, the continued dominance of traditional methods suggests that many teams are still relying on trial-and-error approaches rather than rethinking their processes, workflows, or engineering foundations.

Additionally, 34% use separate tooling platforms for synthetic data generation and data obfuscation, while only 25% have consolidated these capabilities into a single tool. Alarmingly, 1% still use unmasked production data, and some respondents indicated they lack a defined tooling strategy altogether, highlighting the fragmented state of TDM tooling across the industry.

Who owns test data – and why it matters?

Who is primarily responsible for test data in your organization?

Fig. 21 **Primary responsibility for test data** WQR 2025 - Global Results



*Note percentages may not add up to 100% due to rounding

Base: All respondents = 2,000

Single Code question

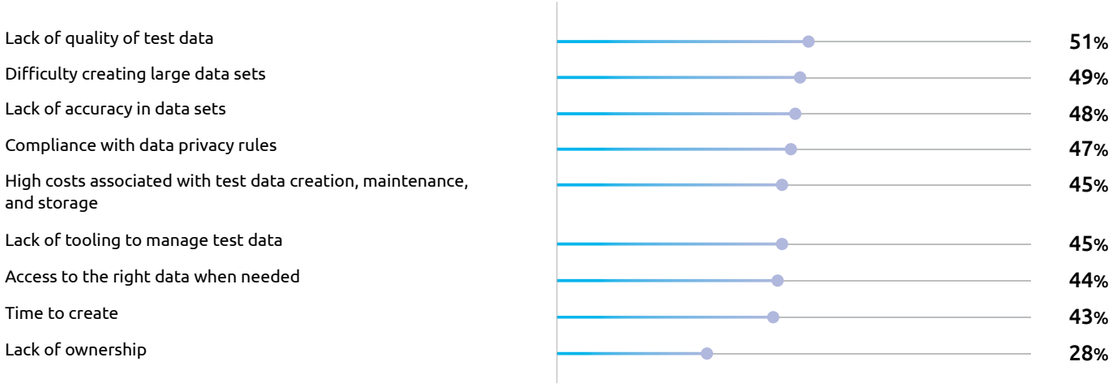
An aggregate of 50% of organizations (38% test teams + 12% everyone) function without a centralized TDM ownership. This "every team for itself" way of working isn't just slowing down the adoption of modern tools, but it also keeps perpetuating quality risks, particularly if it's combined with low automation in provisioning. While 38% allocate TDM responsibility to dedicated teams, and 12% rely on collective ownership (up from 7% last year), centralized governance remains rare. This federated approach often results in fragmented tool usage and limited reuse. Even where AI platforms are permitted, use cases are defined at the team level, not enterprise-wide, reducing overall efficiency.

On a positive note, the use of unmasked production data has declined to 1% this year from 34% last year. While this still may reflect changes in survey design, the data points indicate the increasing focus on compliance.

The persistent pain points in test data management

What are the top five pain points your organization experiences with regards to test data?

Fig. 22 Top 5 test data pain points — WQR 2025 - Global Results

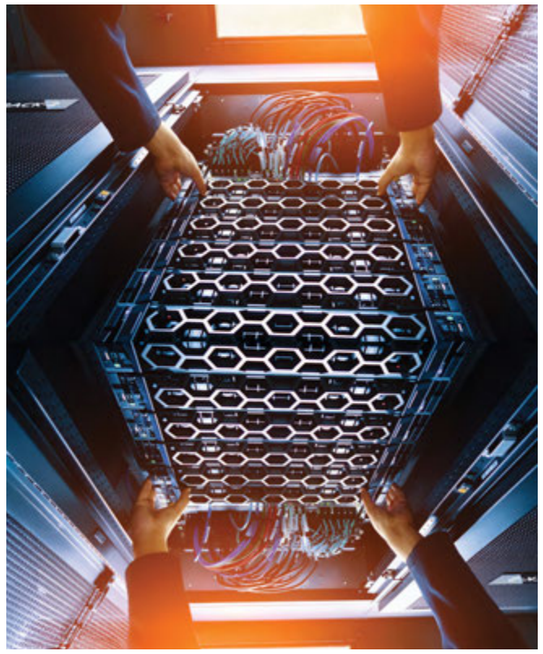


Base: CDO/IT Director, QA / Testing Manager or Quality Engineer, VP Applications = 1,046 — Ranking question

The top five most common recurring issues remain:

1. **Lack of quality of test data –** cited by 51% of respondents, impacting reliability and outcomes.
2. **Difficulty creating large data sets –** noted by 49%, slowing down scalability and coverage.
3. **Lack of accuracy in data sets –** reported by 48%, affecting the precision of test results.
4. **Compliance with data privacy rules –** a concern for 47%, especially under evolving regulations.
5. **High costs of test data creation, maintenance, and storage –** highlighted by 45%, increasing.

Despite technological advancements, these persistent challenges highlight a clear disconnect between the promise of innovation and the reality of implementation in test data management.



Test data deserves a seat at the strategy table

In your opinion, what is your organization's attitude towards quality data?

Fig. 23 Organization's attitude towards quality data — WQR 2025 - Global Results

*Note percentages may not add up to 100% due to rounding

Base: All respondents = 2,000 — Single Code question

Only 34% of respondents currently treat TDM as a strategic initiative. While Gen AI pilots and breakthroughs in synthetic data are promising, they haven't yet shifted the broader cultural and operational mindset around TDM. Regulatory compliance remains the most compelling driver of transformation, closely followed by the need to improve accuracy.

Organizations understand the problem and the solution, but lack of centralized ownership and strategic alignment continues to block progress. True transformation will require organizations to reframe test data not just as a compliance necessity, but as a core enabler of quality, reliability, and innovation across the software lifecycle.

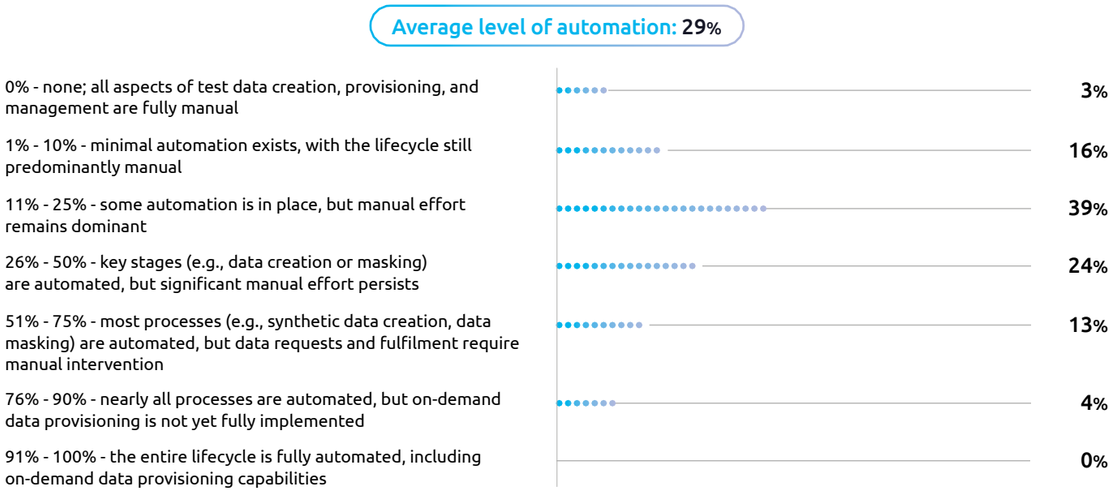
Our key challenges

- **Inconsistent definitions of Gen AI:** Varying interpretations cause conflicting usage statistics.
- **Low tooling maturity:** 51% still rely on basic automation; manual validation remains common.
- **Fragmented ownership:** 50% lack centralized TDM governance, leading to inefficiencies and quality risks.
- **Recurring data issues:** Poor quality (51%), inaccurate data (48%), and difficulty scaling datasets (49%).
- **Compliance pressures:** Rising regulatory demands (GDPR, HIPAA, AI Act) drive synthetic data adoption.
- **High costs:** Test data creation, maintenance, and storage remain expensive (45%).
- **Limited strategic focus:** Only 34% treat TDM as strategic; cultural shift still lagging.
- **Partial automation:** 80% automate some TDM aspects, but none are fully automated.

TDM automation: Widespread adoption, shallow integration

What level of automation is currently in place for your test data management lifecycle?

Fig. 24 **Level of automation in test data management lifecycle** WQR 2025 - Global Results



*Note percentages may not add up to 100% due to rounding

Base: IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner = 994 Single Code question

80% of organizations have automated aspects of their TDM lifecycle, with 17% automating more than half. However, 3% are still completely manual, and none are fully automated. Automation is often limited to initial steps like data generation and provisioning, while validation and tuning remain manual.

Although synthetic data generation and provisioning are widespread, validation and tuning are still largely a matter of manual effort, showing suboptimal or inconsistent tool usage. Despite the growth in Gen AI, TDM maturity has remained static year by year, highlighting the importance of strategic investments in automation and AI-powered solutions to enhance efficiency, mitigate risk, and enhance data quality.

The path forward

Over the next 12 to 24 months, organizations that elevate test data to a strategic priority, backed by centralized ownership, advanced tooling, and AI-driven synthetic generation, will see measurable gains in speed, quality, and compliance.

The technology is already within reach. What remains is the commitment: operational discipline, cultural alignment, and cross-functional consensus to make compliant, high-quality test data the standard rather than the exception.

Our key recommendations

- **Standardize definitions and metrics:** Establish what makes up Gen AI in TDM to enable accurate measurement and benchmarking.
- **Centralize test data ownership:** Move away from federated, ad-hoc data creation towards an enterprise-wide TDM ability.
- **Align synthetic data with compliance and accuracy:** Utilize the strength of Gen AI in scenario-based data generation to address regulatory requirements as well as improve defect detection in non-production environments.
- **Advance tooling maturity:** Progress from simple scripts to single platforms where Gen AI, automation, and compliance controls can be combined.
- **Shift cultural mindsets:** Promote test data from a help task to a QE strategic pillar.
- **Expand automation across the lifecycle:** Grow automation coverage in provisioning, masking, and validation to reduce manual dependency and shorten test cycles.

Client perspectives

Driving Quality Engineering at Euroclear Sweden

At Euroclear Sweden, we believe Quality Engineering and Testing (QE&T) is an integrated discipline across the full development lifecycle; it does not function only in isolation. By blending process rigor with agility, emerging technologies, and a forward-looking mindset, we have been shaping this vision over the past year.

We are a central securities depository (CSD) and a financial market infrastructure company, with core services include clearing, settlement, and securities management, with additional offerings in local markets. The group employs close to 6,000 people across the world, but Euroclear Sweden has a much smaller workforce; it is operated with around 250 employees and consultants. Every day in Sweden, we facilitate transactions exceeding SEK 590 billion, truly making us the heart of the Swedish financial market. Here, within our IT organization we have a line organization team that spans testers to business analysts, covering the full spectrum from requirement analysis to end-to-end testing. Business analysts constitute nearly half of the workforce, responsible for translating high-level needs into detailed specifications. This dual expertise enables us to view quality holistically, from requirements to testing.

To stay ahead of the curve, we are prioritising a shift from project-oriented delivery to agile squads. Each squad is product-centric and has embedded testers to ensure quality is built in, not bolted on. We also follow a “guild” model, where competencies are centralized to share knowledge and drive innovation. Enabling teams further support with infrastructure and tooling. For example, advancing GitHub adoption or modernizing COBOL environments. This hybrid model balances squad autonomy with organizational alignment.

In recent years, two key skill bundles have emerged. First is technical versatility—an engineer’s ability to use any tools and technologies, including Artificial Intelligence (AI). Second is process competence—structured test design techniques and the use of the ISTQB framework, which are essential in regulated environments for process and test design to ensure systematic test coverage.

Automation is a fundamental priority, but in this case, we have taken a more pragmatic stance. Early on, initiatives were halted due to the undefined regression cases because what is unstructured cannot be automated. We are currently constructing a Playwright automation framework, focused on high-frequency, high-business impact scenarios. Our approach prioritizes functional testing and mocks while controlling expensive end-to-end automation.

As a tech-forward organization, we are taking steps in fully leveraging the potential of generative AI (Gen AI). With the use of Microsoft Copilot and GitHub Copilot, test case skeletons and scripts are produced by engineers at a quicker pace. Adoption is still gradual, as the core business services is heavily regulated. AI can accelerate delivery; however, the outcomes need to be evaluated with a keen eye. We are also noticing how the role of a tester is gradually transforming from a manually skilled tester and creator to more technical test role and a revisor, which is in turn raising the bar for expertise and fostering curiosity and adaptability in the next generation.

Test data management (TDM) is still time-consuming; however, we are looking into centralizing it due to a transition to a new data platform. On the shift-right side, production tracking continues to be a strong capability under manual control; however, squad feedback loops are still partially manual. All of these are linked; however, manually linking these is part of our five-year roadmap to modernize a 40-year-old mainframe and replace it with off-the-shelf applications.

We remain focused on the collective ownership of quality, where business analysts, developers, testers, and operations work together, supported by automation and AI, but always under human monitoring. This highlights the challenge of balancing regulatory rigor with technological agility and ensuring that the next generation of quality engineers thrives in an evolving profession.

Johan Lasson
Head of Software Requirement and Testing, Euroclear Sweden

QE in Agile

Jeff Spevacek
Kanchan Bhonde
Jeba Abraham
Antoine Aymer

Reviewing SMEs

Emna Ayadi

Senior Testing Consultant and Quality Coach, Sogeti France

Kavitha Velchal

Solutions Architect, Quality Engineering & Testing, Financial Services, Capgemini India

Ankur Tandon

Solution Strategist, Quality Engineering & Testing, Capgemini & Sogeti

Amit Khodke

Director, Quality Engineering and Testing, Sogeti USA

Quality Engineering in Agile: Building synergy across people, platforms, and purpose

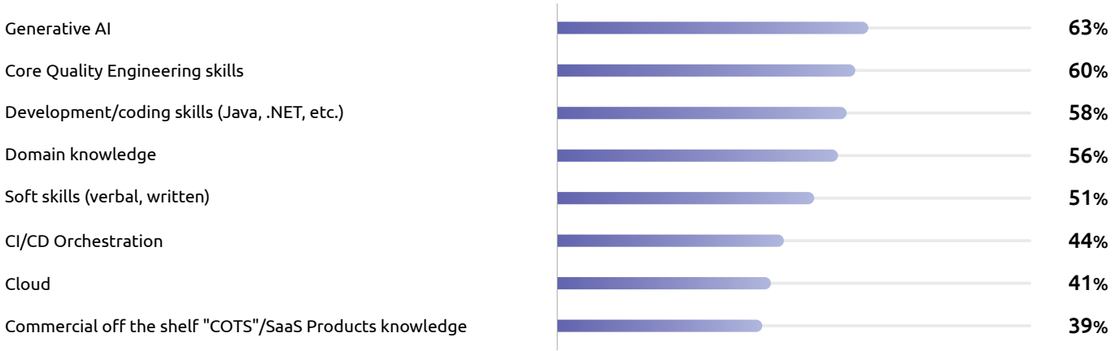
This chapter brings together insights and fresh data showing how Quality Engineering (QE) is being reshaped in Agile delivery by generative AI (Gen AI). As organizations adapt to emerging worlds, where speed, intelligence, and resilience define success, QE teams remain firmly accountable for quality. But thriving in this new reality demands more than technical rigor; it requires a fusion of AI fluency, deep testing expertise, and strategic adaptability.

Innovation is accelerating, yet foundational discipline remains non-negotiable. Human judgment and domain knowledge continue to anchor quality outcomes, even as organizational structures and metrics struggle to keep pace. Centralized models still dominate, embedding is uneven, and measurement often reflects activity rather than impact. This creates a paradox: enterprises chase the velocity of Agile yet cling to the comfort of traditional control. The future of QE will belong to those who confront this tension, shifting from support to strategy, and delivering quality at speed with clarity and purpose.

Skills in flux: Gen AI takes priority over foundations

What are the most important skills for your Quality Engineers?

Fig. 25 **Most important skills for Quality Engineers** WQR 2025 - Global Results



Base: IT Director, QA / Testing Manager or Quality Engineer = 695 Ranking question

QE is being reshaped by the twin forces of Agile delivery and Gen AI, with the 2025 survey revealing rapid priority shifts. Gen AI at 63% edges past core QE skills at 60%, a slim 3-point lead showing both are essential and becoming inseparable. Notably, Dev/Coding skills at 58% are nearly tied with Core QE, signaling that Software Development Engineer in Test and foundational testers remain central. The most effective path forward is for Core QE and SDETs to embed Gen AI techniques into their Software Testing Life Cycle workflows, making Gen AI not just a top priority but a daily practice for quality engineers.

Organizations understand they need both capabilities working in tandem. Teams remain fully accountable for the quality of their work, organizing and performing QE and testing activities, regardless of Gen AI output quality. Without core testing expertise, teams can't challenge AI outputs. Without AI knowledge, teams can't accelerate testing activities. This dual requirement helps explain why Chapter 1 found only 15% achieving scaled AI implementation, as success demands both foundations and innovation working together.

Domain knowledge jumped from sixth to fourth place at 56%, and this rise correlates with AI adoption challenges. Effective AI demands deep contextual understanding: business domains, regulations, and workflows. Early experiments taught organizations that AI amplifies existing expertise rather than replacing it. Without this context, teams struggle to generate meaningful test assets. The 56% reflects this hard-earned lesson.

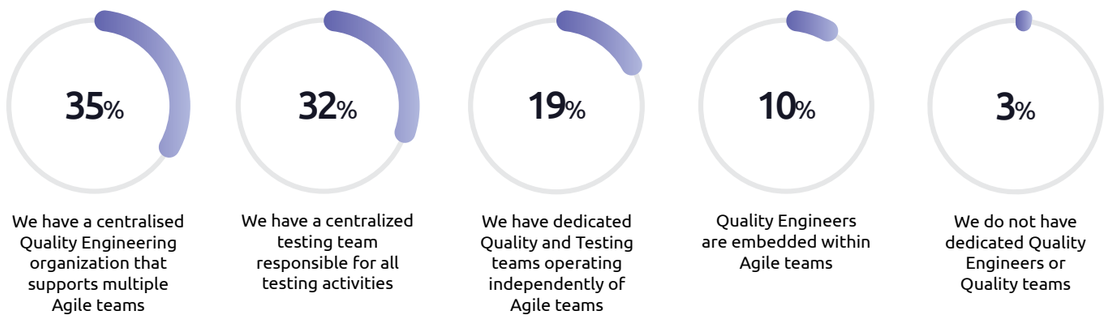
Meanwhile, cloud skills dropped from third place to 41%, signaling commoditization. These capabilities are becoming baseline expectations, absorbed into broader engineering roles. CI/CD at 44% shows similar patterns. Yet Chapter 1 found 64% struggling with integration, suggesting these "commodity" skills remain challenging in practice.

COTS and SaaS product knowledge sits at 39%, increasingly bundled into domain expertise rather than standalone skills. Soft skills, maintaining 51%, confirms human judgement remains critical. The message is clear: QE professionals must evolve beyond traditional technical skills and embrace a blend of AI fluency, domain depth, and strategic thinking to stay relevant.

Agile integration: Centralized models persist

How is your Quality Engineering function currently structured to support Agile projects today?

Fig. 26 Current QE structure supporting agile projects — WQR 2025 - Global Results



*Note percentages may not add up to 100% due to rounding

Base: IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner = 994 — Single Code question

Despite widespread Agile adoption, centralized QE models remain common. 35% of organizations run centralized QE teams supporting multiple agile squads, and 32% still rely on traditional testing teams, suggesting that Testing Centres of Excellence (TCoE) continue to play a role. Together, these approaches account for 67% of respondents, showing a preference for consistent standards, specialized skills, and resource efficiency.

Only 10% of organizations have fully embedded QE within Agile teams, the model most aligned with agile principles. This low adoption highlights a gap between Agile ambitions and operational reality.

Meanwhile, 19% operate QE teams separately from Agile squads. These independent structures offer clearer accountability but create greater distance between testing and development. They often handle specialized testing, such as performance, security, or regulatory validation, that does not fit sprint timelines.

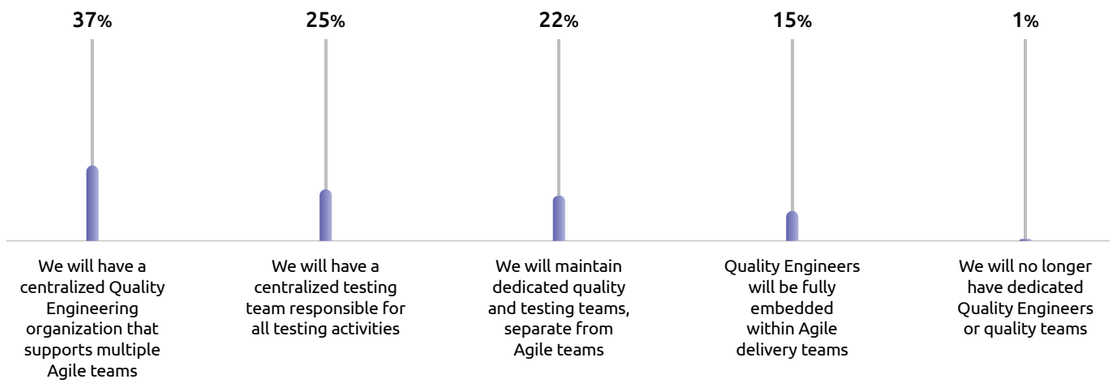
Just 3% report having no dedicated QE structure, indicating that testing remains a distinct discipline in nearly all organizations.

Overall, these results reflect organizational models in flux. The persistence of centralized governance points to a tension, as organizations want the speed of Agile but remain cautious about losing oversight of quality, something current structures may constrain.

QE in motion: Incremental adjustments planned

How do you expect your Quality Engineering function to be structured in your organization two years from now?

Fig. 27 Structure of Quality Engineering function in 2 years — WQR 2025 - Global Results



*Note percentages may not add up to 100% due to rounding

Base: IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner = 994 — Single Code question

Organizations plan only marginal shifts in QE structures over the next two years, with the largest shift being a modest 7 percentage points. Path dependency constrains evolution, as structures embedded in budgets, reporting lines, and workflows slow transformation to maintain operational continuity.

Centralized testing teams are expected to drop from 32% to 25%, while embedded QE in Agile teams is projected to grow from 10% to 15%. Despite this 50% relative increase in embedding, overall centralized approaches declined only modestly from 67% to 62%. The vast majority maintain dedicated QE structures in some form.

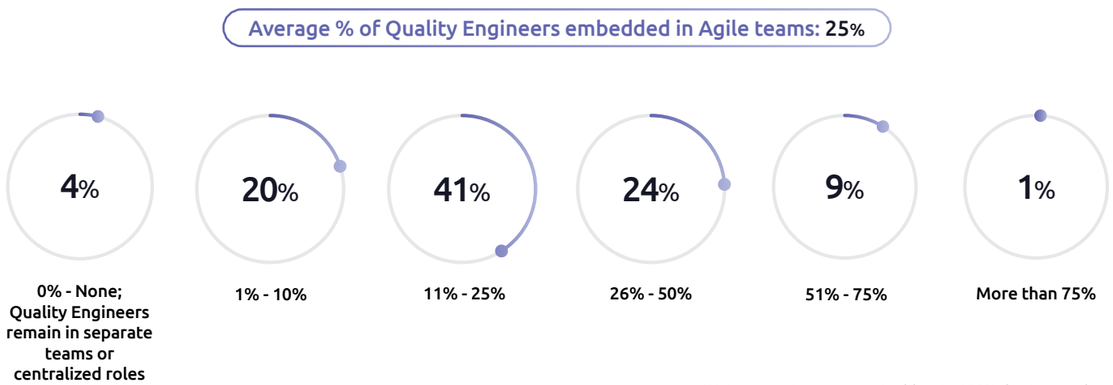
This persistence reveals the value organizations find in specialized QE expertise. Different models centralized, embedded, independent serve different risk tolerances and governance requirements.

The two-year outlook shows enterprises adapting Agile to fit their reality, rather than reshaping themselves to fit Agile doctrine. Growth in embedded QE, alongside persistent centralized models, creates hybrid approaches. Organizations are building from where they are, not from theoretical ideals, favoring pragmatism over prescription.

Agile integration: Selective embedding becomes the norm

What percentage of your Quality Engineers are embedded within Agile teams?

Fig. 28 Percentage of Quality Engineers embedded in Agile teams — WQR 2025 - Global Results



*Note percentages may not add up to 100% due to rounding

Base: IT Director, QA / Testing Manager or Quality Engineer = 695

Single Code question

Agile integration increasingly reflects selective QE embedding as the dominant model. Organizations concentrate QE at minimal levels, with 65% embedding QE in no more than 25% of their teams, and 41% operating at just 11% to 25%.

This decline reflects broader respondent inclusion, with 695 participants this year versus 465 last year, now including test managers alongside senior leaders. Year-over-year shifts show the 26 to 50% bracket dropped from 43% to 24%, high embedding above 75% fell from 6% to 1%, and zero embedding emerged at 4% after none reported last year. Only 10% of organizations operate above 50% coverage.

The steep decline may reflect practical constraints, whether economic, operational, or strategic, that make broader embedding difficult. On average, organizations embed QE in roughly 20% of teams, where specific conditions justify dedicated resources. Embedding appears targeted to high-risk areas, regulatory-mandated functions as required by NASA's IV&V, ISO 26262, and IEC 62304, and customer-critical paths. Elsewhere, organizations rely on coaching, shared services, or developer ownership.

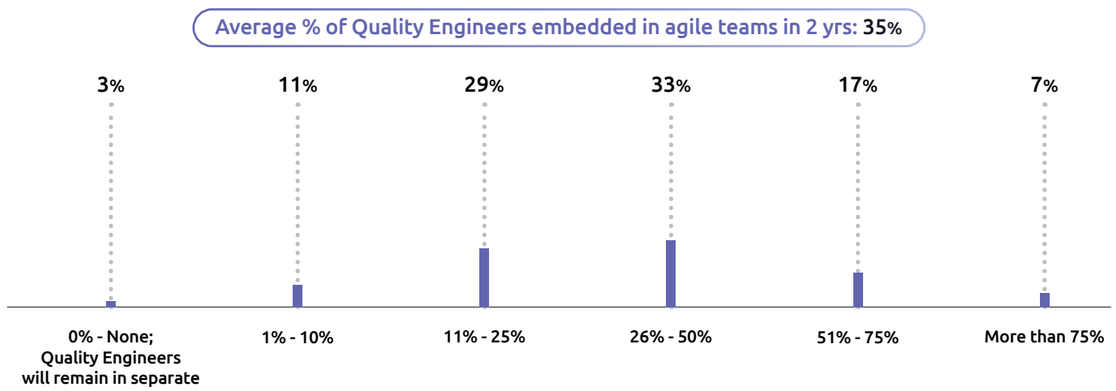
In regulated sectors, independence requirements actively require separation. Banks often centralize QE into TCoE, while safety-critical domains maintain strict role boundaries. The trend may indicate a plateau in Agile adoption. Many modernization programs have reached completion, with some organizations returning to legacy approaches. Where consistent results proved difficult to sustain, independent QE teams are being reintroduced for oversight.

This distribution increasingly appears stable, with organizations aligning QE models to their delivery contexts rather than pursuing universal methodology.

Future embedding: Measured expansion planned

What percentage of your Quality Engineers will be embedded within Agile teams 2 years from now?

Fig. 29 Percentage of Quality Engineers to be embedded in Agile teams in 2 years — WQR 2025 - Global Results



*Note percentages may not add up to 100% due to rounding

Base: IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner = 994

Single Code question

Organizations project an average of 35% QE embedding within Agile teams over the next two years, 15 points above current levels, indicating measured growth rather than transformation.

The largest group (33%) targets 26-50% coverage, shifting from today's 11-25% concentration. Yet 29% plan to remain at minimal levels (below 25%), while only 7% aim for over 75% embedding.

Planning data reveals limited appetite for extensive embedding. Only 24% of organizations plan to exceed 50% coverage, despite two years to implement, which is barely up from today's 10%. Meanwhile, 14% will maintain minimal or no embedding, indicating a long-term shift toward alternative models.

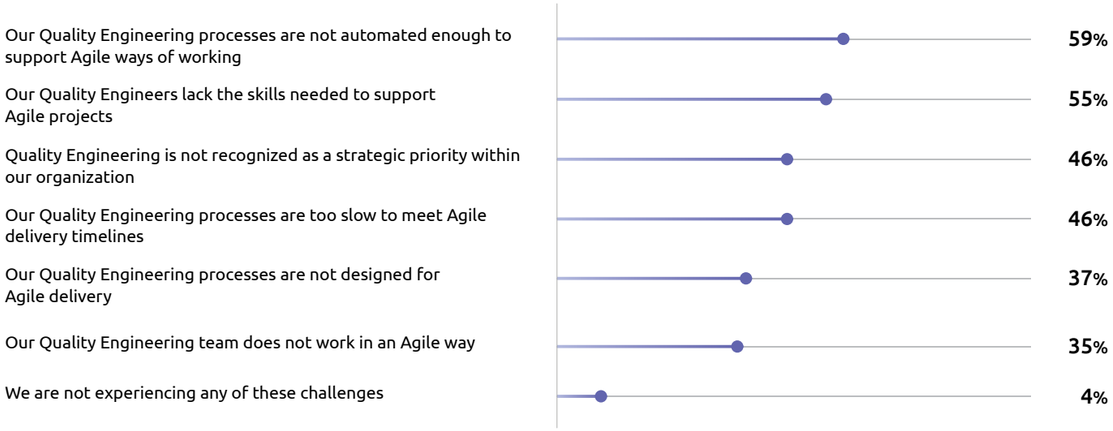
The conservative growth pace (7-8% points annually) suggests learned caution. Organizations are expanding only where embedding has proven valuable. The gap between what's possible in two years and what's planned reveals deliberate restraint.

The 35% target represents equilibrium, not transition. This partial coverage, embedding one-third while maintaining alternatives for the remaining two-thirds, appears to be the destination organizations are actively pursuing. Future plans confirm hybrid models as the preferred outcome, with selective deployment based on value rather than methodology.

Embedding QE into Agile remains structurally constrained

What challenges (if any) does your organization face when embedding Quality Engineering into the Agile lifecycle?

Fig. 30 **Challenges embedding QE into the Agile lifecycle** WQR 2025 - Global Results



Base: IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner = 994 Ranking question

Survey data reveal three interlocking barriers to embedding QE in Agile teams: lack of automation (59%), insufficient skills (55%), and weak strategic recognition (46%). Without a clear mandate, investment in tools or training stalls, leaving QE underpowered for Agile delivery. Process misalignment compounds the issue: nearly half report that QE is too slow (46%) or not designed for Agile delivery (37%). These reflect QE's origins in waterfall governance, built around phase-gate approvals and defect metrics, systems optimized for predictability, not Agile adaptability or flow.

Retrofitting such legacy processes rarely delivers integration at scale. Redesign is required, but most organizations avoid the cost. Only 4% report no obstacles, confirming that challenges are widespread.

Selective embedding is not a temporary phase but a practical ceiling. With structural inertia and limited investment appetite, organizations embed QE only where the benefits justify the effort. The result is a stable equilibrium, one where hybrid models prevail, balancing embedded QE with centralized or independent approaches based on context and value.

From testing to impact: Aligning QE with outcomes

How does your organization currently align Quality Engineering (QE) metrics to business outcomes?

Fig. 31 **Alignment of QE metrics to business outcomes** WQR 2025 - Global Results

*Note percentages may not add up to 100% due to rounding

Base: CIO/IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner = 1,469 Single Code question

QE metrics remain misaligned with business value. This year's survey data shows that only 25% of organizations link QE metrics directly to business outcomes, positioning QE as a strategic partner. Another 38% include some strategic measures but still treat QE mainly as a delivery support function. The remaining 37% rely on basic testing indicators such as defect counts, automation coverage, and schedule deviation.

This pattern reflects a deeper measurement gap. Legacy metrics are easy to capture yet fail to demonstrate QE's role in driving customer value, retention, or growth. As a result, QE is seen as operational rather than strategic. Until organizations redesign their frameworks around outcomes and impact, QE will remain under-recognized and underleveraged. It may be acknowledged as critical in principle, but seldom measured in ways that influence business decisions.

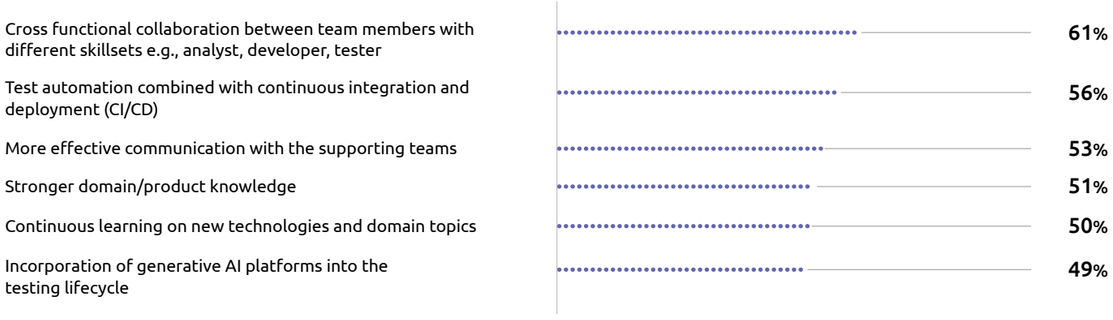
Key challenges in QE within Agile

1. **Declining QE embedding in Agile teams -** QE embedding within Agile teams has dropped significantly: Only 1% of organizations now embed more than 75% of their QEs, down from 6% last year.
2. **Skill gaps and misaligned priorities -** While 63% of organizations prioritize Gen AI skills, many QE professionals lack the expertise to apply them effectively.
3. **Legacy structures and centralized models -** Despite Agile adoption, centralized QE models still dominate, with 35–37% of organizations relying on Testing Centers of Excellence (TCOEs).
4. **Strategic misalignment -** Just 25% of organizations align QE metrics with business outcomes. A large portion still views QE as a delivery support or defect-catching function, limiting its strategic impact.
5. **Cultural and organizational lag -** Agile delivery models are evolving, but organizational mindsets and governance structures are slow to adapt.

Collaboration and automation remain the cornerstones of Agile quality

For your organization, what are the most critical aspects for Agile teams to deliver better quality, and faster?

Fig. 32 **Critical aspects for Agile teams to deliver better quality and faster** WQR 2025 - Global Results



Base: CIO/IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner = 1,469 Ranking question

WQR 2025 survey results show that the most important factor for Agile teams is cross-functional collaboration between diverse roles (61%), underscoring that quality is a shared responsibility across analysts, developers, and testers. Test automation combined with CI/CD pipelines follows closely (56%), reinforcing its role as a foundational capability. Yet automation delivers real strategic value only when integrated into broader team practices rather than treated as a siloed efficiency tool.

Other enablers such as effective communication (53%), domain knowledge (51%), and continuous learning (50%) highlight the balance between technical execution and business alignment. Incorporation of Gen AI platforms into the testing lifecycle ranks lowest (49%), but this should not be mistaken for irrelevance. Gen AI's transformative potential is clear, though adoption is still in its early stages as organizations test practical applications.

The data points to a consistent conclusion: agile quality is achieved not by tools alone, but by teams that pair engineering rigor with shared responsibility and a culture of learning and trust.

Our key recommendations

1. **Reposition QE as a strategic function -** Align QE metrics with business outcomes to elevate its role from support to strategic enabler.
2. **Invest in Gen AI and domain expertise -** Prioritize training in Gen AI and contextual knowledge to enhance automation and relevance.
3. **Shift toward embedded and hybrid models -** Gradually move away from centralized QE structures toward embedded or federated models that support Agile collaboration.
4. **Strengthen cross-functional collaboration -** Foster deeper integration between developers, testers, and analysts, 61% of respondents cite this as the top enabler of quality and speed.
5. **Modernize governance and culture -** Clarify QE roles within Agile teams and challenge outdated narratives about QE being replaceable or purely technical.
6. **Support continuous learning and communication skills -** Encourage ongoing skill development, especially in communication and team collaboration, to support Agile maturity.

A sector in recalibration

QE is not being replaced, it is being redefined. Gen AI reshapes skill priorities, Agile demands deeper integration, yet legacy structures and metrics persist. The shift is visible: from centralized control to embedded intelligence, from defect detection to business impact, and from execution to enablement. WQR 2025 shows selective embedding and centralized models endure, not as transition but as equilibrium. A new vision is emerging: QE adaptive, intelligent, outcome-driven. For those ready to embrace it, QE can evolve from support function to strategic discipline and from practice to transformation.

Enterprise QE

Jeba Abraham
Kanchan Bhonde
Jeff Spevacek
Antoine Aymer

Reviewing SMEs

Laurent Esnault
Head of Automation, Sogeti France

Hitesh Patel
Division Practice Manager, Quality Engineering & Testing, Sogeti

Paweł Wróbel
Quality and Test Manager, Financial Services, Capgemini Poland

Enterprise Quality Engineering reimagined: Balancing legacy and the modern

Enterprise platforms have entered a new era of influence. Once relegated to the back office, systems like SAP, Salesforce, and Guidewire now drive core business operations, customer experience, and competitive advantage. But as these platforms become smarter and more interconnected, the question of quality becomes more complex, and more important.

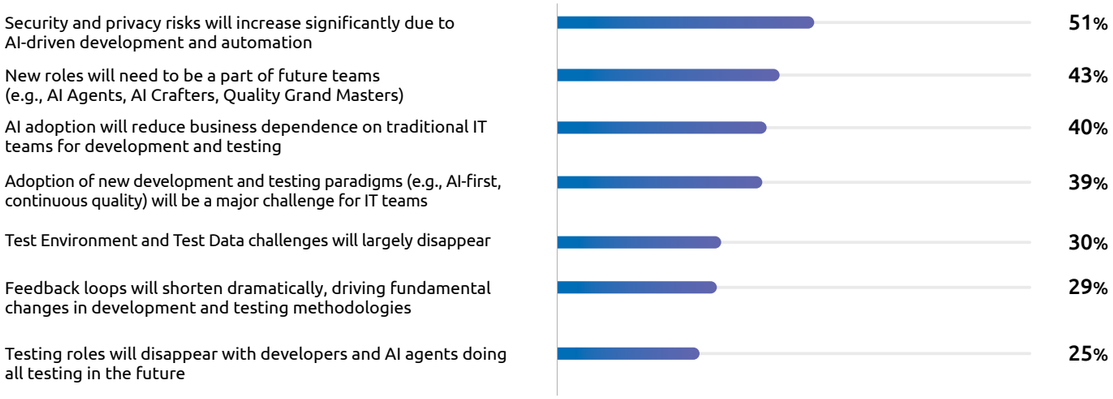
This chapter explores how Enterprise Quality Engineering is *adapting to emerging worlds* shaped by generative AI (Gen AI), shifting ownership, and evolving delivery models. It examines the tensions between optimism and caution, centralized control and business-led testing, technical depth and domain expertise.

While some see a future led by Artificial Intelligence (AI) agents and developer-driven testing, most are somewhere between experimenting, adapting, and trying to make sense of the chaos. But one thing is clear: *the future of quality won't be inherited. It will be engineered.*

Emerging trends and industry divergence

How do you think emerging technology trends will impact development and testing of enterprise digital solutions (ERP)?

Fig. 33 **Impact of emerging technology trends on ERP development and testing** WQR 2025 - Global Results



Base: Chief Digital Officer, Chief Information Officer, Chief Marketing Officer, VP Applications / Product Owner = 904 Ranking question

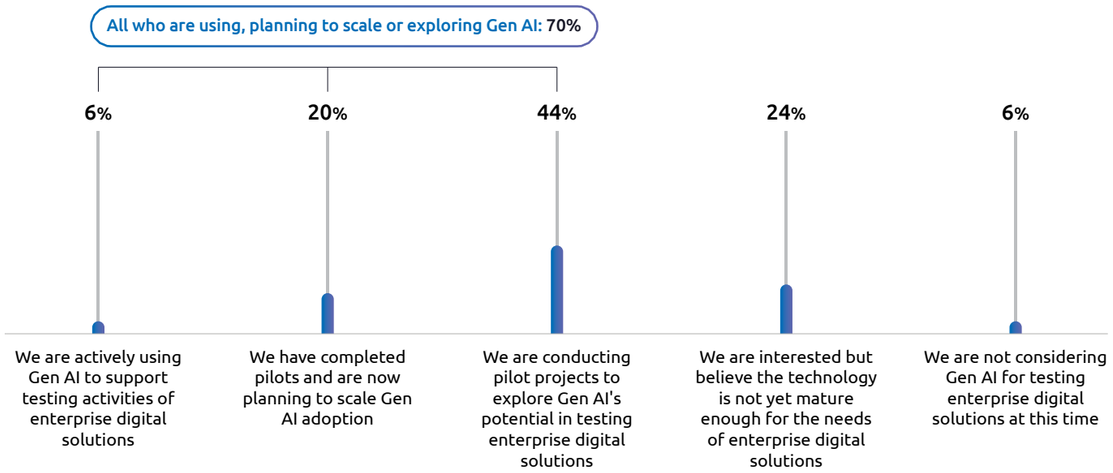
Enterprise digital platforms, especially Enterprise Resource Planning (ERP) systems, stand at a pivotal crossroads. On one hand, 43% of organizations foresee the rise of new roles like AI Agents, AI Crafters, and Quality Grandmasters. On the other, 25% believe traditional Quality Engineering (QE) roles may disappear entirely, replaced by developers and AI agents handling all testing. ERP testing is also seeing a shift in ownership: 40% expect business teams to take over development and testing from IT, signaling a fundamental change in accountability.

This isn't just divergence, it's dissonance. The future of QE is being imagined in radically different ways, with no clear consensus. Security and privacy risks top the list of concerns, with 51% citing them as the most significant impact of AI-driven development and automation. This is followed by the need to redefine roles and responsibilities, and the challenge of adopting new paradigms like AI-first continuous quality.

Gen AI adoption: Cautious optimism or strategic hesitation?

How is your organization currently utilising generative AI in the testing process for enterprise digital solutions (ERP)?

Fig. 34 Use of Gen AI in ERP testing today — WQR 2025 - Global Results



Base: IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner = 994 — Single Code question

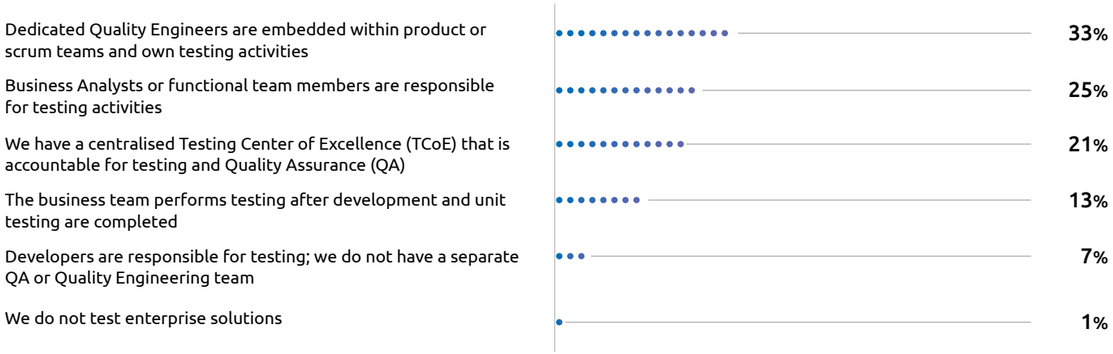
Gen AI is making inroads into ERP testing, but with deliberate caution. While 70% of organizations are either using, scaling, or exploring its potential, only 6% are actively using it, and 20% have completed pilots with plans to scale. A significant 44% are still conducting pilots, indicating a strategic, exploratory mindset.

Meanwhile, 24% believe the technology isn't mature enough, and 6% aren't considering Gen AI for testing at all. These figures reflect not resistance, but prudence. ERP systems are mission-critical and testing them with immature AI tools could introduce risks that outweigh the benefits. Organizations are intrigued, but they're also aware that Gen AI's promise must be matched by reliability, maturity, and trust.

The shifting structure of testing roles

How is testing for enterprise digital solutions primarily structured in your organization?

Fig. 35 Testing structure for enterprise digital solutions — WQR 2025 - Global Results



Base: Chief Digital Officer, Chief Information Officer, Chief Marketing Officer = 605 — Single Code question

The survey results reveal a diverse and fragmented approach to testing enterprise digital solutions. While dedicated quality engineers embedded in scrum teams represent the largest group at 33%, a significant portion of testing is handled by roles outside traditional QE functions.

- 25% of organizations rely on business analysts or functional teams to manage testing.
- 21% use a centralized Testing Center of Excellence (TCoE).
- Others delegate testing to business teams' post-development or even developers, with 7% reporting no separate Quality Assurance (QA) function at all.
- A small minority (1%) claim they do not test enterprise solutions at all.

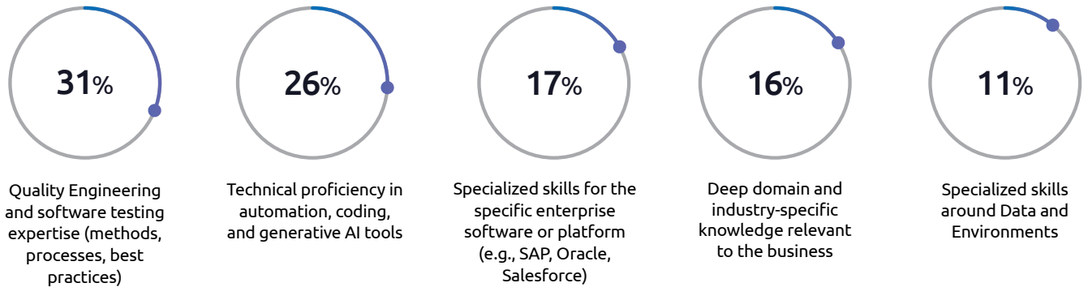
This distribution suggests that while quality remains a priority, ownership of testing is increasingly decentralized. The challenge for organizations is to ensure that this diversity in structure doesn't compromise consistency, depth, or accountability in QE.

Interestingly, despite nearly half of testing being done by non-QE roles, QE and software testing expertise was still ranked as the most critical skill, suggesting a recognition of the need for deeper QE capabilities even among business-led teams.

Skill gaps in focus: From domain to depth

What are the most critical skillsets required for testing enterprise digital solutions in your organization?

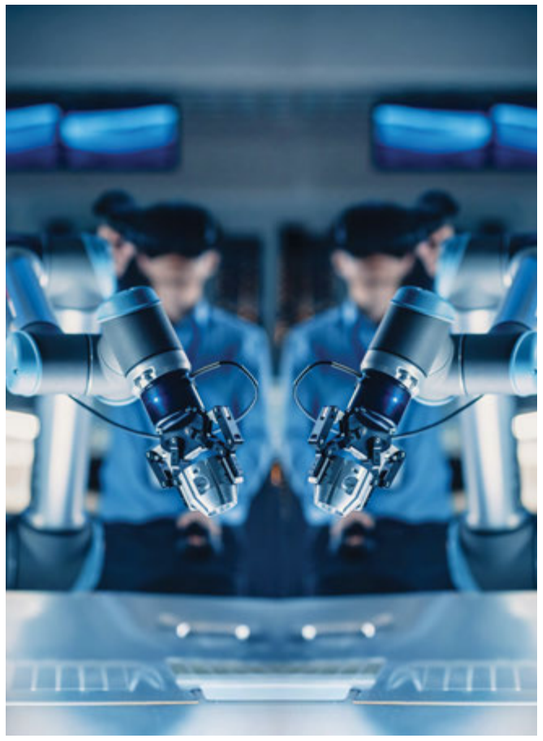
Fig. 36 **Critical skillsets for testing enterprise digital solutions** WQR 2025 - Global Results



*Note percentages may not add up to 100% due to rounding

Base: Chief Digital Officer, Chief Information Officer, Chief Marketing Officer who test enterprise digital solutions = 597

Single Code question



The survey highlights a clear prioritization of technical and QE-centric skills in enterprise testing. The top three skillsets identified are:

- **QE and software testing expertise –** cited by 31% of respondents, this includes methods, processes, and best practices.
- **Technical proficiency –** including automation, coding, and Gen AI tools, selected by 26%.
- **Platform-specific expertise –** such as SAP, Oracle, or Salesforce, noted by 17%.

Interestingly, domain and industry-specific knowledge, often associated with business-side testers, ranked second lowest at 16%, despite many current testers being domain experts. This may suggest that organizations feel domain knowledge is already well-covered and are now focused on strengthening QE depth and technical capabilities. The lowest-ranked skillset was data and environment specialization at 11%, indicating that while important, it's not seen as a top priority compared to broader testing and automation skills.

The takeaway: as testing responsibilities diversify, organizations are doubling down on technical rigor and structured QE practices to ensure quality doesn't get diluted.

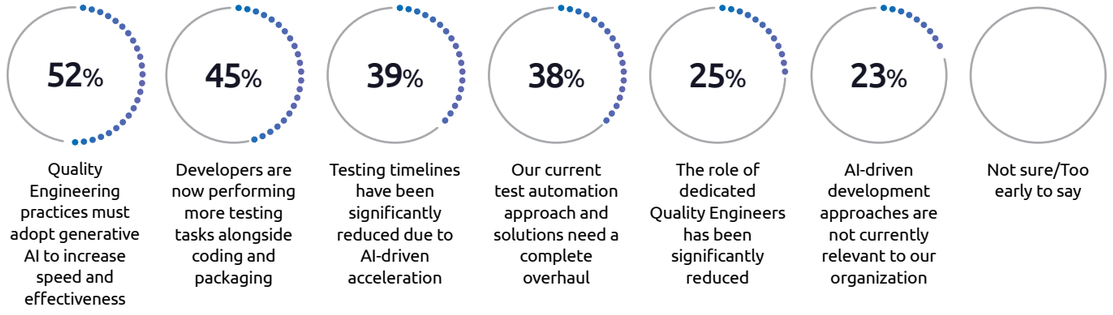
Key challenges

1. **Integration complexity -** Validating integrations with legacy systems remains the top challenge, especially as platforms move to cloud-based architectures. The coexistence of mainframes, APIs, and microservices creates a tangled web of dependencies.
2. **Testing AI components -** As AI becomes embedded in enterprise platforms, organizations struggle to validate non-deterministic outputs. Issues like model drift, hallucinations, and lack of explainability make AI testing uniquely difficult.
3. **Low automation maturity -** Despite years of investment, effective test automation remains elusive. Many organizations report automation coverage below 33%, especially in ERP and enterprise digital solutions.
4. **Environment mismatches -** Differences between development, test, and production environments continue to cause delays and defects, particularly in highly customized enterprise systems.
5. **Technology debt -** Legacy systems and outdated tools slow down innovation and complicate AI adoption.
6. **Skill gaps and role confusion -** Nearly half of testing is performed by non-QE roles, yet QE expertise is ranked as the most important skill.

The impact of AI agents

What impact will AI agents have on your organization?

Fig. 37 **Impact of AI agents on the organization** WQR 2025 - Global Results



Base: All respondents = 2,000

Multicode question

AI agents are reshaping how organizations approach QE. According to the survey, 52% believe QE practices must adopt Gen AI to improve speed and effectiveness. This isn't just a trend, it's a mandate.

Developers are increasingly taking on testing tasks alongside coding and packaging, with 45% of respondents confirming this shift. AI tools are democratizing testing, blurring the lines between development and QA. The result? 39% report significantly reduced testing timelines.

But acceleration brings disruption.

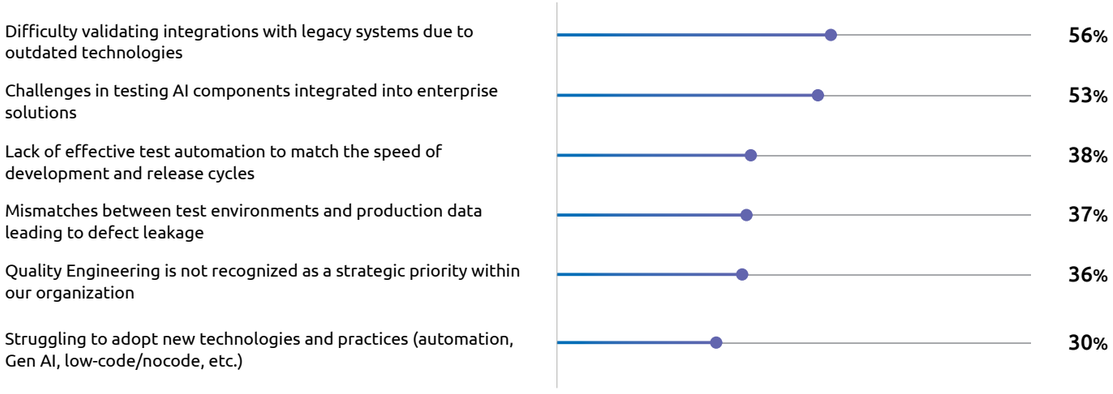
- 38% say their current automation frameworks need a complete overhaul.
- 25% report a significant reduction in dedicated QE roles.
- And 23% say AI-driven development approaches are not currently relevant to their organization, highlighting the uneven pace of adoption across the industry.

This raises a key question: the issue isn't whether QE will change, it's how fast, and how deeply. As AI agents become more embedded in delivery pipelines, we recommend organizations must rethink not just tools and timelines, but roles, ownership, and accountability.

Technology debt and AI testing: A collision of complexity

What are the most challenging aspects of Quality Engineering (QE) for enterprise digital solutions in your organization?

Fig. 38 **Top challenges QE for enterprise digital solutions** WQR 2025 - Global Results



Base: Chief Digital Officer, Chief Information Officer, Chief Marketing Officer who test enterprise digital solutions = 597 Ranking question

The industry is grappling with a mounting technology debt crisis. A full 56% of organizations report difficulty validating integrations with legacy systems. At the same time, 53% cite challenges in testing AI components. AI-generated outputs require rigorous validation, but using AI to test AI introduces risks: bias, drift, hallucination, and lack of explainability.

Although only a small fraction currently uses AI in production, the volume of AI-generated content is expanding rapidly. Validation demands are outpacing traditional methods. Large language models (LLMs) may become necessary, but human oversight remains critical.

The message is clear: QE teams must evolve to handle both legacy complexity and AI uncertainty, without compromising trust or reliability.

Our key recommendations

1. **Rebalance testing teams -** Introduce more dedicated QE professionals into teams currently dominated by business analysts and developers.
2. **Invest in AI-ready QE capabilities -** Build internal capabilities to validate AI components, including training on model behavior, bias detection, and explainability.
3. **Modernize automation frameworks -** Replace outdated automation tools with modern, scalable solutions like Playwright. Focus on speed, maintainability, and integration with Continuous Integration and Continuous Delivery/ Deployment (CI/CD) pipelines.
4. **Adopt sector-specific strategies -** Tailor QE approaches to industry needs (e.g., financial services vs. public sector).
5. **Embrace the crossroad strategy -** Maintain traditional QE for core systems while leapfrogging into AI-driven testing for edge applications.
6. **Redefine QE roles for the future -** Prepare for the evolution of QE roles. Focus on upskilling in Gen AI, automation, and platform-specific testing. QE will not disappear; it will transform.

Conclusion: A crossroads for enterprise QE

The industry stands at a crossroad. Two paths are emerging:

- One leads to traditional QE, still vital for legacy systems, complex integrations, and regulatory-heavy environments.
- The other embraces AI-powered QE, where platform vendors like SAP, Oracle, Salesforce, and ServiceNow are embedding intelligence directly into their ecosystems.

And here's the truth: both paths will coexist. Enterprises will likely maintain rigorous QE for core systems while adopting AI for edge applications. The challenge is not choosing one over the other; it's learning to navigate both.

As organizations move forward, one thing is clear: QE will remain a cornerstone of enterprise success. It may look different, operate differently, and be staffed differently—but its value will endure.

LPL Financial's strategic take on Quality Engineering

At LPL Financial, we see things a little differently. To us, Quality Engineering is more than just a function, it's a strategic capability that underpins every change we make to production, whether in infrastructure, applications, or security. Over the years we've shifted our focus to move beyond system stability to delivering meaningful outcomes for our customers. And all of this germinates from the one question we keep asking ourselves: how do we ensure quality is felt, not just measured?

One of the answers lies in how we manage test data. We treat it as a dynamic asset, not a static one. Our hybrid approach blends obfuscated production data with synthetic datasets, allowing us to support diverse testing needs across both legacy and cloud-native platforms. While generative AI isn't yet part of our synthetic data strategy, it's on our roadmap. For now, we rely on third-party tools for both masking and generation, and our test data management model reflects the complexity of our environment. A centralized team works closely with product teams to design data solutions that reflect real-world relationships, ensuring relevance and integrity.

Of course, data alone doesn't drive quality. Telemetry plays a strategic role in shaping our test strategy. Through tools like Dynatrace, we monitor browser platforms, operating systems, and device usage to guide coverage decisions. But we go further, analyzing user behavior, identifying frustration points, drop-offs, and error spikes. These insights help us refine test scenarios and improve customer experience. While we are still expanding telemetry to include production data usage patterns, the signals we already gather are instrumental in closing the loop between production and pre-production environments.

This data-driven approach is reinforced by our production testing practices. With over 5,000 regression scripts executed per release and more than 1,000 automated scripts run daily to monitor P0 functionalities, we maintain a proactive stance on stability and reliability. These efforts allow us to catch issues early and ensure consistent performance in live environments.

But quality isn't just about systems, it's about outcomes. Over the past three and a half years, our bug introduction rate, measured per thousand story points, has dropped by 60%. This reduction has directly contributed to lower contact volumes and fewer customer-reported issues. We also track adoption metrics and change success rates to understand how quality improvements translate into customer satisfaction and operational efficiency. That's it – there's no magic pill. It's all about simplicity, clarity, and seamlessly leveraging new technologies into our processes.

As we look ahead, we are often asked: will generative AI redefine the role of the test engineer? The answer is yes, but not by replacing core skills. Prompt engineering, agent orchestration, and multi-agent coordination platforms are becoming essential. We are investing in training, building prompt libraries, and creating contextual validation frameworks to help engineers work smarter. Our agentic solutions already span requirement validation, test case generation, automation, and defect detection. For example, our API automation prototype can generate over 300 scripts in under 30 minutes, work that would take an engineer 10 days.

But even as AI accelerates delivery, human testers remain irreplaceable. They bring judgment, domain knowledge, and the ability to spot gaps that AI can't. And as we build customer-facing agents, we're also developing frameworks to test the AI itself, ensuring reliability, fairness, and readiness for production.

With a balanced approach to data, a commitment to training, and a roadmap that includes testing AI itself, we are committed to shaping a future where quality is not just engineered, it's intelligently orchestrated.

Mamatha Pathipati
Head of Quality Engineering,
LPL Financial

Shifting Quality Right

Jeba Abraham
Kanchan Bhonde
Jeff Spevacek
Antoine Aymer

Reviewing SMEs

Padmaja Alapati
Director, Quality Engineering & Testing, Capgemini & Sogeti

Neeladri Madhab Nath
Director, TES, Financial Services, Capgemini, India

Bibhupada Amarjeet
Director, TES, Financial Services, Capgemini NA

Steve Judd
Director, Quality Engineering & Testing, Capgemini & Sogeti, Americas

Shifting quality right: Closing the loop on quality

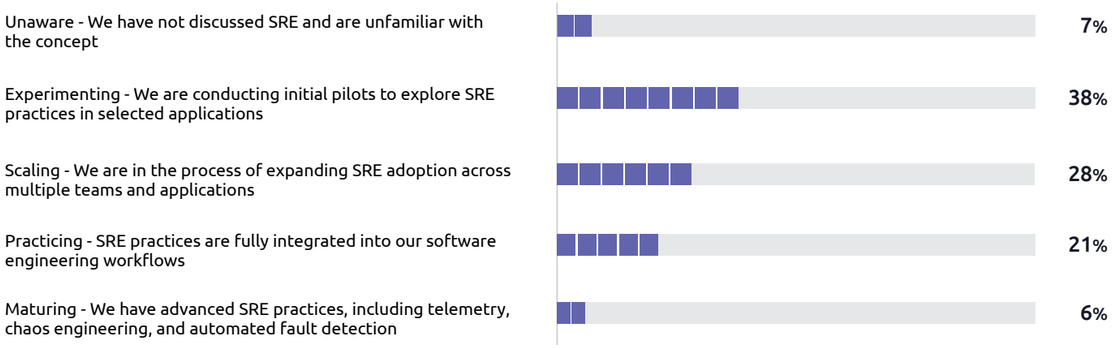
Shifting quality right is fast becoming a strategic priority as organizations aim to extend Quality Engineering (QE) into production through monitoring, telemetry, and fault detection. The data reveals that most organizations have already adopted some form of shift-right practices, whether through commercial monitoring tools, SaaS solutions, or cloud-native services.

However, the prevailing approach tends to be tool-centric, where simply deploying a platform is often seen as sufficient. What's often missing is a more comprehensive view of quality; one that connects production insights with governance, resilience, and proactive feedback loops. As organizations navigate increasingly complex environments, adapting to emerging worlds becomes essential. This shift demands more than just visibility; it calls for a culture of continuous improvement, where systems are not only observed but actively refined based on real-world performance.

SRE adoption, stuck between experimentation and scale

Which statement best describes your organization's adoption of Site Reliability Engineering (SRE) practices for continuous application monitoring and fault detection in production?

Fig. 39 **Adoption of Site Reliability Engineering (SRE) practices** WQR 2025 - Global Results



Base: CTO, IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner = 1,194 Ranking question

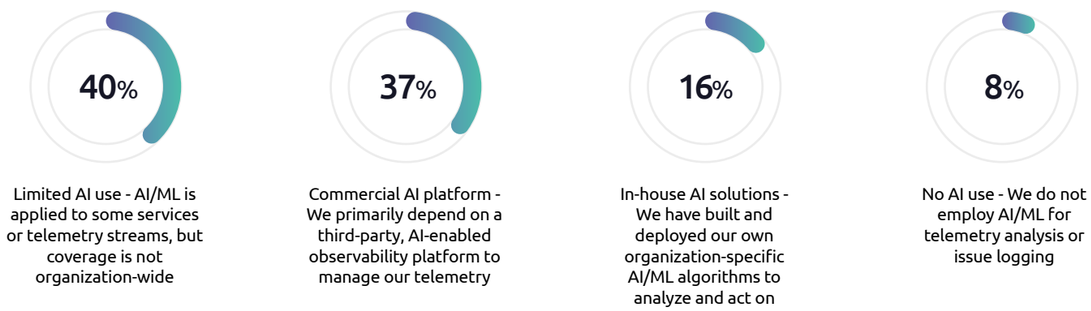
With the increasing complexity of digital ecosystems, the role of Site Reliability Engineering (SRE) is emerging as a core component of "shifting quality" practices, although adoption is still inconsistent. Research suggests that most organizations, globally, are still grappling with the early stages. A notable 38% are experimenting at the pilot stage of testing SRE practices with select applications. Another 28% are in the scaling phase across teams and applications, while 21% report that SRE is practiced and fully embedded in their engineering workflows. Only 6% practice SRE at a mature stage where advanced practices like telemetry, chaos engineering, and automated fault detection are integrated into operations. Conversely, 7% of respondents are unaware of SRE altogether.

The conclusions are quite illuminating. Awareness, coupled with slack in institutionalization and execution of SRE practices is the norm. While experimentation dominates, fewer organizations can translate pilots into fully embedded, scalable practices. The road to maturity, for them, seems especially long, slowed not by tooling but by governance, process alignment, and the lack of clear ROI. SRE has intent but not institutionalization; it is recognized in theory but rarely operationalized in practice. Those lacking mature practices stand to benefit from better governance, better integration of production insights into the software lifecycle, and a strategic elevation of SRE as a core discipline for resilience and brand reputation.

AI in telemetry: Widespread interest, limited depth

Which statement best describes how your organization uses Artificial Intelligence/Machine Learning (AI/ML) to monitor, analyze, and act on operational telemetry?

Fig. 40 Use of AI/ML for operational telemetry — WQR 2025 - Global Results



Base: CTO, IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner = 1,194 — Ranking question

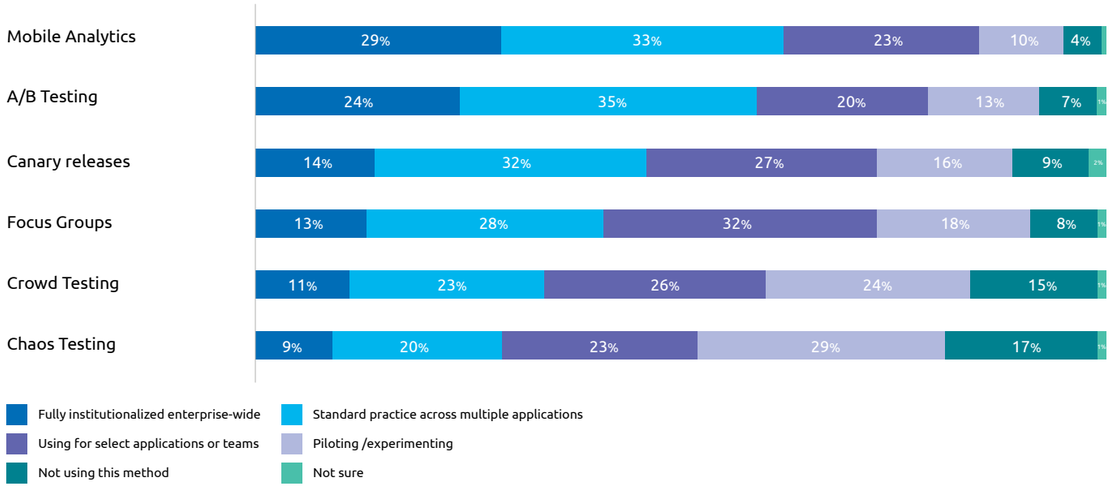
Applying AI at scale to analyze and act on operational telemetry requires commitment, maturity and agility. It also requires investment and the data shows that there may not always be a case to invest. The largest group of respondents, 40%, stated that AI is applied to targeted services or streams of telemetry, but is not used across the organization. Closely following are the 37% of respondents that utilize commercial AI platform solutions, which largely rely on third-party telemetry management. There may be an overlap between these two categories. In-house AI solutions are much more tailored and specific to the organization, offering stronger AI ownership to 16%, compared to the rest of the organizations.

The data suggests that while almost every organization is experimenting with some form of AI or ML, few have scaled their learnings beyond pilots across the organization. The overreliance on external solutions and the lack of in-house development suggests that there may be a gap in developed skills, governance, and the ability to operationalize telemetry insights. Adoption today is largely limited to basic KPI reporting, with resilience and reliability still out of reach. The few building their own telemetry intelligence hold the strategic edge, avoiding vendor lock-in and strengthening future AI maturity. The ability to strengthen testing and feedback loops for business value showcases the remaining untapped opportunities.

Testing in production focuses on experience, lags on resilience

How is your organization currently using the following methods to test in production?

Fig. 41 Use of methods for testing in production — WQR 2025 - Global Results



Base: CTO, IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner = 1,194 — Ranking question

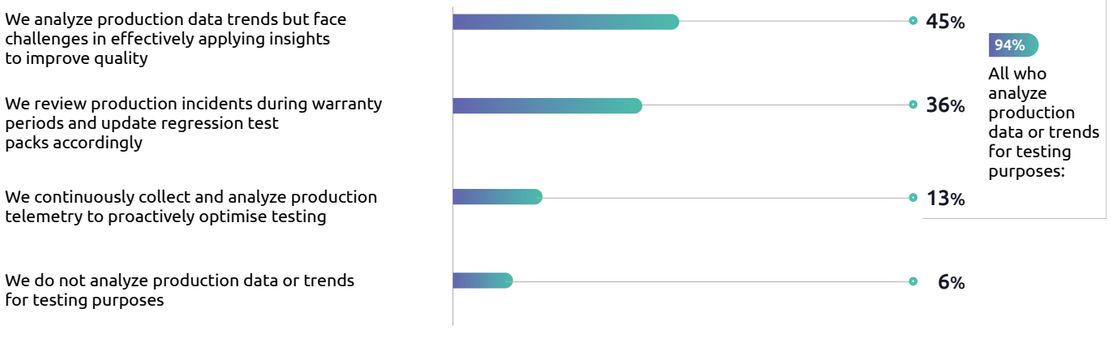
The statistics for production testing show a strong organizational preference for approaches that measure user experience directly, with mobile analytics and A/B testing being the most used practices. These methods, aided by tools such as Firebase and app store analytics, give customer feedback and allow measurement of product performance in real time. Other practices like canary releases, focus groups, and crowd testing are used moderately, while chaos testing is the least utilized despite increasing industry adoption. Chaos testing is only utilized regularly by around 29% of organizations, and a smaller number (23%) intend to implement it in the next 24 months. This seems to be directly related to broader issues in observability, reliability engineering, and governance; domains where most organizations are still in a developing phase, as we have seen in some of the other charts in this chapter.

In addition, while customer-facing applications rightfully take precedence in testing priorities, the interdependent characteristics of contemporary application environments imply that limited scoping in modes such as chaos testing may create vulnerabilities. With the evolution of the industry, a more integrated approach that aligns direct customer feedback with more extensive reliability and resilience practices will be necessary.

Quality insights collected in plenty, applied in part

Does your organization use quality insights from production to improve and optimise testing strategies?

Fig. 42 Use of quality insights to improve testing strategies — WQR 2025 - Global Results

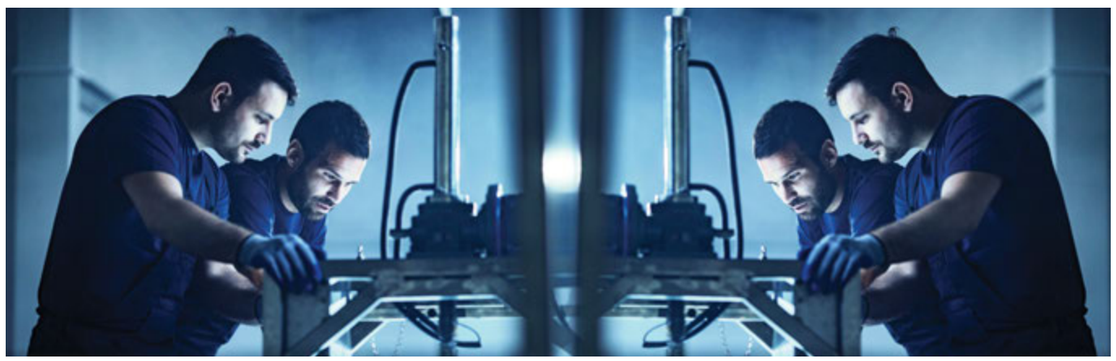


Base: CTO, IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner = 1,194 — Ranking question

Almost every organization today (94%) reports analyzing production data or trends for test purposes, yet transforming these insights into real quality improvements is still a challenge. Nearly half (45%) say that although they analyze production data, they fail to apply the insights effectively toward improved results. 36% confess that their use is limited to analyzing production problems during the warranty period to revise test regression test packs, a reactive approach. A small minority (13%) claim to continuously collect and analyze production telemetry to proactively optimize testing strategies. Meanwhile, 6% admit to not using production data for testing purposes at all.

The data is clear. There is more than enough data, *but not enough value extracted from the data*. There are still too many teams and organizations that are in reactive loops, applying insights only during specific times and outside of the more holistic or wider workflows. The problem is not about more sophisticated tools but about governance, accountability, and the routine application of these insights to the core engineering decisions.

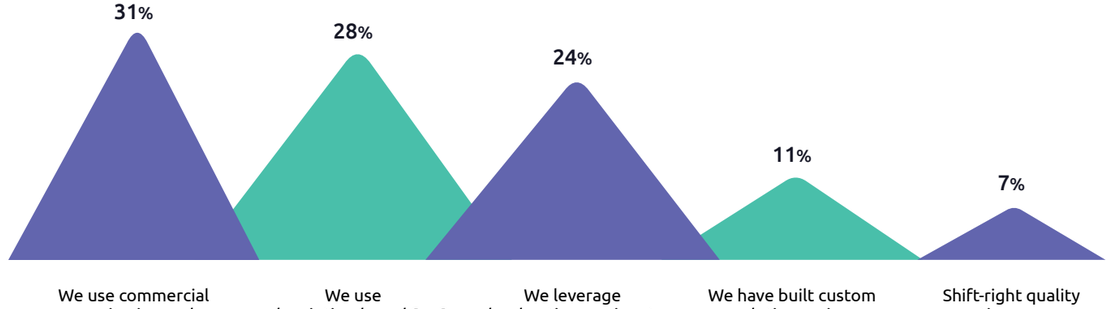
Until such gaps are closed, production telemetry is and will remain a forgotten stream of data which, regardless of its volume, will not be transformed into better testing strategies that increase efficiency, coverage, and release confidence.



Shifting quality right: Tools first, transformation later

Which of the following best describe your organization's approach to 'shifting quality right' through production monitoring and fault detection?

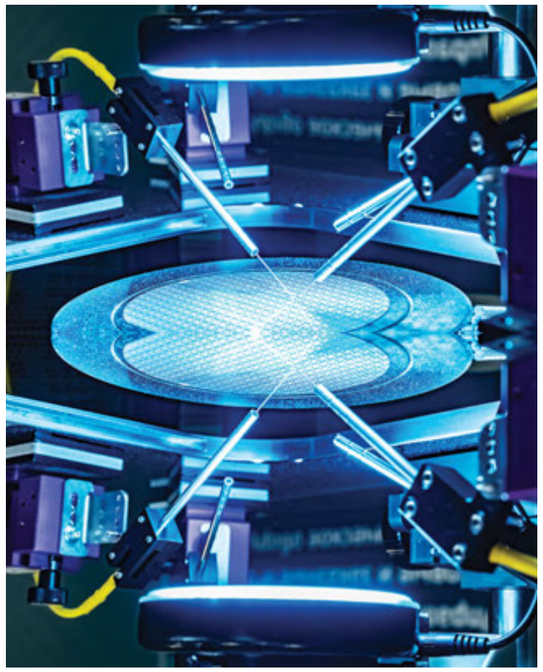
Fig. 43 Approach to 'shifting quality right' — WQR 2025 - Global Results



Base: CTO, IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner = 1,194 — Ranking question

When it concerns shifting quality right, organizations are mostly depending on tools and platforms instead of establishing strongly ingrained practices. Commercial monitoring and fault detection platforms (31%) and subscription-based, Software as a Service (SaaS) solution for production quality monitoring (28%) are the most frequent methods. Another 24% are using cloud-native services in support of shift-right practices, and only 11% have invested in creating custom solutions based on open-source tools. Notably, only 7% say shift-right quality practices don't apply to their organization, meaning although adoption is prevalent, the focus is arguably still more tactical than transformational.

The data indicates that for most, shift-right is still a checkbox exercise; acquiring a tool, installing it, and calling it a day, versus reframing quality as an end-to-end discipline that integrates monitoring, governance, resilience, and pre-emptive user input.



Our key challenges

- **Fragmented adoption and tactical tilt**

  Organizations remain stuck between experimentation and scale, with shift-right practices often limited to observability and user feedback. Chaos engineering and resilience testing are underused, curbing transformational impact.

- **Lack of governance and strategic clarity**

  Site Reliability Engineering (SRE) is often treated tactically, not strategically. Missing ROI models, weak governance, and limited executive sponsorship slow down enterprise-wide adoption.

- **Tool-first, practice-later mindset**

  Heavy reliance on commercial platforms without embedding practices into engineering culture leads to shallow adoption. Tools are prioritized over sustainable quality practices.

- **Telemetry underutilization and AI integration gaps**

  Production telemetry is collected but not operationalized. AI integration remains shallow due to skill gaps and dependence on external tools, limiting proactive QE.

- **Disconnected feedback loops**

  Feedback mechanisms exist (e.g., focus groups, analytics), but they're siloed and poorly integrated into engineering decisions, hindering continuous improvement.

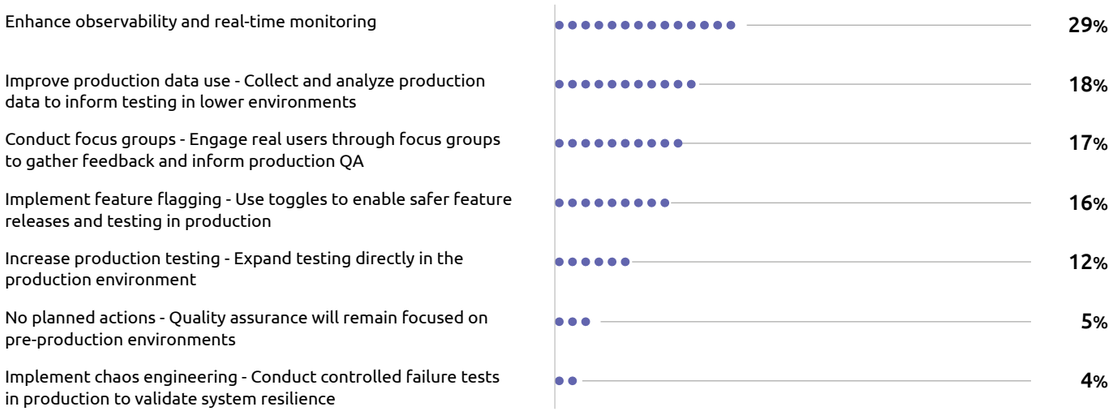
- **Tunnel vision on user experience**

  Testing in production focuses on user experience, often at the expense of systemic resilience. Reliability gaps persist due to lack of robust resilience engineering.

The tactical tilt of shift-right practices

What do you plan to do in the next 24 months to 'shift quality right' for your organization?

Fig. 44 **Plans for 'shifting quality right' in the next 24 months** WQR 2025 - Global Results



Base: CTO, IT Director, QA / Testing Manager or Quality Engineer, VP Applications / Product Owner = 1,194 Ranking question

The data reveals that organizations are most concerned with tactical enhancements, rather than transformational practices when it comes to production testing. Setting the tone is a strong focus on augmenting observability and real-time monitoring, closely followed by enhancing the collection and analysis of production data, with 18% citing this as an area of focus for the future.

Involving actual users using focus groups ranks as a leading priority, reflecting increasing awareness of disconnects between pre-production testing and real customer expectations. Yet at the other end, techniques such as chaos engineering remain marginal, with only 4% usage, while 5% of organizations prefer to remain steadfast in pre-production environments. This trend indicates a conservative industry attitude, where safer experiments and incremental feedback loops are prioritized over aggressive, resilience-fueled changes.

Although the obsession with customer experience is warranted, a more holistic approach is needed that encompasses systemic resilience and continuous feedback loops into the engineering process will help organizations reap richer benefits and stay competitive in the marketplace.

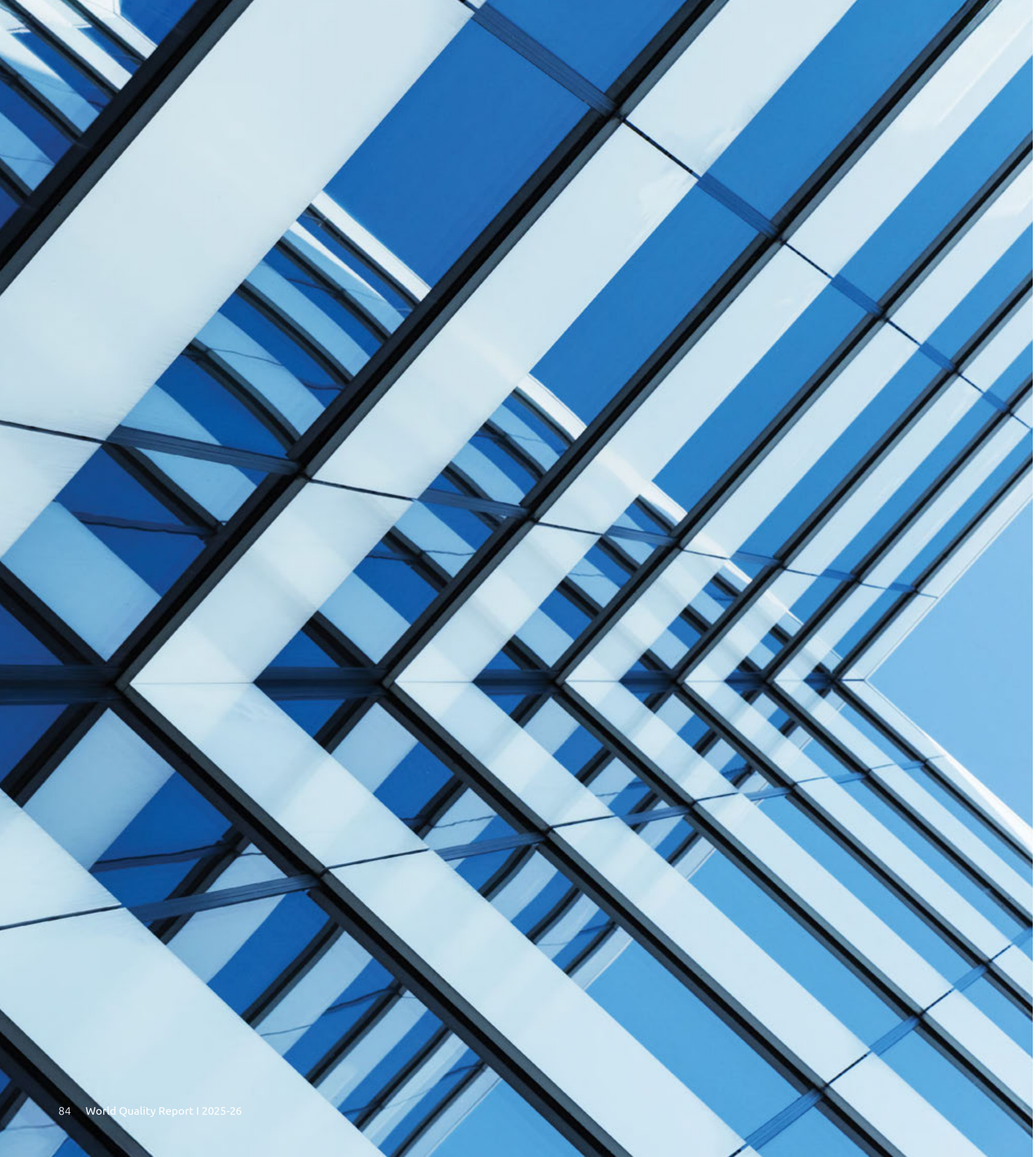
Our key recommendations

- **Strategize beyond tools:** Tools are essential enablers, but not the solution. We recommend organizations embed shift-right practices into a broader quality governance framework—one that connects production monitoring with pre-production testing, decision-making, and continuous improvement.
- **Prioritize resilience over visibility:** Enhanced monitoring is valuable, but resilience ensures reliability. True system quality demands resilience testing, including controlled failure and chaos experiments, to validate stability under stress.
- **Leverage real user insights:** Shift-right must go beyond system telemetry. Incorporating feedback from real users via focus groups, feature flags, and in-production experiments offers a richer, more authentic view of quality in action and helps align engineering efforts with user expectations.
- **Balance proactive and reactive quality:** Monitoring production incidents is important. Organizations must invest in continuous telemetry collection and predictive analytics to anticipate and prevent issues before they impact customers. Without this, teams risk falling into a cycle of reactive firefighting, where problems are addressed only after they cause disruption—undermining customer trust and system stability.
- **Bridge the quality lifecycle:** Integrate shift-right practices with shift-left approaches ensure that lessons from production environment directly inform design, development, and early testing, creating a closed-loop system of learning and improvement.

The strategic future of shift-right quality

The next wave of shift-right adoption will require more than just new tools; it demands a fundamental shift in mindset. Moving from tactical adoption of monitoring tools to strategic transformation, QE must evolve to treat production data as a continuous feedback mechanism. Organizations that thrive in this phase will harness real-time insights not just to detect issues, but to proactively enhance resilience and elevate user experience.

The journey forward involves scaling real-time observability, embracing chaos engineering to validate system reliability under pressure, and integrating user-driven feedback into testing strategies. Ultimately, the future of shift-right quality lies not in tools and technology alone, but in creating an adaptive quality culture, one that balances speed, reliability, and customer trust through continuous learning and improvement.



Sector analysis

The next frontier of *Automotive* engineering

Axel Schönwald
Head of Automotive, Sogeti Germany

Reinventing the automotive world from the ground up

The challenges confronting the automotive sector are among the most significant it has ever faced. For decades, the story was about powertrains, production efficiency, and brand loyalty. Now the primary concern is mobility ecosystems consisting of software-defined vehicles and data-driven experiences.

Throughout Europe, and especially Germany, automakers such as BMW, Volkswagen, and Mercedes-Benz are facing a two-part challenge: moving away from internal combustion to electric vehicles (EVs), and from dealer-based sales to direct, digitally controlled relationships. Electric cars, the industry's golden promise not so many years ago, are now facing a reality check. Consumers are hesitant, the infrastructure is patchy, and Original Equipment Manufacturers (OEMs) are up against competition not from other automakers, but from software-based disruptors such as Tesla and BYD.

At the same time, the economics of the transition are intimidating. EVs use up to 25% fewer parts than traditional cars, reducing the profit pie for suppliers. What is developing is a radical reshaping of the auto value chain; one that combines technology, customer interaction, and sustainability in ways the industry has never seen before.

Breaking down the car: Less metal, more code

E-vehicles are smartphones with wheels. They're smart, networked, and meant to evolve over-the-air. But this revolution has precipitated a culture conflict between the agile approach of software engineers and the process-oriented tradition of carmakers.

To bridge that gap, most OEMs are reassessing their approach to software ownership. While some are moving toward building their own automotive operating systems, buying "dumb parts" and layering proprietary software across them, others are opting for complete, ready-to-integrate systems from players like Google (Android Automotive) or Meta. This dual shift opens significant opportunities for IT service providers to support integration, testing, and platform engineering across both custom and commercial software stacks.

Who owns the customer? The battle behind automotive's new sales model

There is a shift in sales models. BMW, Mercedes, and Volkswagen are moving from a dealer-driven system to a direct sales system where OEMs own the prices, marketing, and customer data, and dealers serve as middlemen, receiving commissions but sacrificing control of sales terms.

This change gives automakers greater brand consistency and customer insight but introduces new tensions. The large dealerships are now the ones negotiating, rather than selling, the cars. The conversation has shifted from "take it or leave it" to "let's negotiate how many cars I'll sell for you."

Digitization is at the heart of this model. Dealer-led, fragmented systems are being replaced by centralized pricing engines, customer analytics, and AI-driven configurators. For IT companies, it is a major chance to upgrade legacy sales platforms, bring Customer Relationship Management (CRM) and Enterprise Resource Planning (ERP) systems together, and make data flow easily between OEMs and agents.

Generative AI and the future of Quality Engineering

Despite all the excitement, the use of generative AI (Gen AI) across the automotive industry is still cautious. Many OEMs are still in the testing phase but haven't yet got clear directions. The hesitation stems from both data sensitivity and the need for explainable AI; companies want full control over how their models learn and what insights they share.

Nonetheless, there are some early use cases with great potential. At a leading automotive company, Gen AI is being used not to generate test cases but to automate requirement specification, extracting information from team meetings, emails, and documents to create improved acceptance criteria and test coverage.

Another highlight innovation is Artificial Intelligence (AI)-powered test data generation. By automating the production of synthetic Vehicle Identification Numbers (VINs), Capgemini teams assisted in scaling from 1,000 VINs per month to more than 20,000 and forecasted future test data demand patterns. This anticipatory data generation accelerates quicker, more intelligent test cycles, transforming what was previously a manual, reactive process into a predictive capability.

Simulation, digital twins, and the future of testing

Hardware-intensive testing is being replaced by simulation-led engineering. Audi, for example, produces thousands of test cars every year and then systematically destroys them afterward. With AI-powered digital twins, those physical prototypes can be substituted by simulated models that mimic actual performance, allowing automakers to test software patches and configurations without physical production.

Just like virtual Electronic Control Units (ECUs) and Other Control Units (OCUs) as well as simulated hardware units using AI, enable developers to execute and verify software much sooner in the production process. Even saving 30–40% of hardware expenses by simulation amounts to tens of millions of dollars saved each year.

As testing is increasingly virtualized, Quality Engineering (QE) and AI intersect. The vehicle becomes both a product and a digital platform—tested, monitored, and optimized constantly by using real-world data.

Software quality as the new vehicle safety standard

When a car drives autonomously, who's liable for a crash? The brake supplier? The sensor maker? The OEM?

In a world of shared software and distributed supply chains, the answer is not straightforward. Unlike in the U.S., where software can be tested in the field and companies can face litigation afterward, OEMs in Europe must demonstrate software reliability upfront, due to strict safety regulations.

This legal and regulatory context makes QE a strategic differentiator, and one of the most risk-sensitive functions in the European automotive landscape.

Driving revenue with AI

Most automotive AI investments focus on cost reduction by automating testing, optimizing operations, or reducing rework. But the real opportunity lies in using AI to generate new revenue streams.

Automotive quality will reach the next level when predictive maintenance, and personalized in-car services, become available. Quality will be measured not in defects prevented, but in value created.

The automotive industry's future depends on one question: can carmakers reinvent themselves not just as builders of vehicles, but as architects of connected, intelligent ecosystems that move people and data with equal precision?

The race is on. And this time, it's not about horsepower. It's about mind power.

Survey watch

44% Organizations say that they have some automation in place, but manual effort remains dormant.

42% Feel that QE metrics include some strategic measures of team productivity and effectiveness but are still mainly viewed as a delivery support function.

63% Feel that generative AI is the most important skill for quality engineers.

45% Focus on analyzing production data trends but face challenges in effectively applying insights to improve quality.

30% Respondents say that they have a centralized QE organization that supports multiple Agile teams.

Where *Manufacturing* meets intelligence

Abhishek Dhir
Market Unit Leader, Manufacturing, Aero & Defence, Capgemini Americas

Atul Jadhav
Senior Director, QE Leader, ER&D, Capgemini India

Tom van de Ven
Principal Technology Advisor, High Tech Test Expert, Capgemini Engineering NL

Smart manufacturing, smarter testing: The era of digital twins and agentic AI

Quality Engineering (QE) is defined by practical impact, where generative AI (Gen AI), automation, and digital transformation redefine how we deliver value to our clients. Our teams are actively integrating Gen AI tools, including Copilot, into agile workflows to accelerate development and testing, while maintaining a strong commitment to data privacy and security.

We are already seeing tangible benefits through:

- Automated code reviews that improve consistency and reduce manual effort.
- Refactoring suggestions based on static code analysis and enhancing maintainability.
- Reasoning models for root cause analysis, helping teams resolve defects faster.
- AI-driven defect categorization, which is replacing traditional Change Control Board (CCB) meetings with more dynamic, data-informed decision-making.
- Agentic AI agents creating test cases, test scripts, test data in evolving requirements environment

Our focus remains on secure, efficient, and measurable outcomes, solutions that matter.

Tackling complexity in enterprise application testing

Testing enterprise digital applications such as SAP brings its own set of challenges, particularly around test data and environment management. While these platforms are mature, the real complexity lies in adapting testing strategies to each client's unique use cases and data flows. Constraints with production data and repeated testing are common, but support ecosystems and knowledge-sharing communities help us overcome these hurdles. Our approach is to leverage best practices, collaborate with tool providers, and tap into the broader community to resolve issues quickly and efficiently.

IT/OT convergence and dual modeling

The challenge intensifies when Information Technology (IT) and Operational Technology (OT) systems converge. End-to-end testing in such environments introduces a new dimension of complexity, requiring us to model not just digital processes but also physical behaviors. Digital twins offer a promising approach—allowing us to simulate the physical world—and we are now extending this by modeling IT behavior as well. While still relatively simple,

this dual modeling approach is gaining traction rapidly and proving to be a powerful enabler for comprehensive, integrated testing.

Shift-right testing and real-world feedback

A significant trend we are seeing is the industry's shift toward "shift-right" testing, bringing Quality Assurance (QA) closer to production and using real-world feedback to improve design and development. In manufacturing and other sectors, this means carefully planned production testing, security checks, and a proactive approach to incident management. Our clients take production feedback seriously, not just reacting to issues but using insights to drive continuous improvement.

Model-based diagnostics and augmented engineering

With model-based diagnostics, part of our augmented engineering approach, we're already identifying where and how to measure performance, using targeted sensors to capture meaningful data from production processes and product usage. This enables faster root cause analysis and more effective service engineering. By modeling both the physical world (via digital twins) and IT behavior, we're building a powerful foundation for predictive diagnostics and smarter operational decisions. While still evolving, this combined modeling approach is gaining momentum rapidly and proving to be a game-changer in shift-right testing.

Digital Twins: Design, operation, and maintenance

Beyond Gen AI, digital twin technology is emerging as a game-changer in manufacturing. Clients are combining digital twins with Gen AI to simulate production scenarios, optimize changeovers, and accelerate problem-solving. What once seemed like science fiction, real-time what-if analysis and 3D simulations, is now a practical reality across the industry.

This evolution aligns closely with the shift-right testing paradigm. We see three distinct types of digital twins shaping this space:

- **Digital twin as designed** – used during the product design phase to simulate and validate performance.
- **Digital twin as operated** – captures real-world operational data, allowing us to adjust and refine system behavior based on actual usage.
- **Digital twin as maintained** – supports service engineering and predictive maintenance by modeling how systems evolve over time.

By bringing real-world data into the test environment, especially through the "as operated" twin, we can validate new versions against actual usage patterns—minimizing risk and preventing major issues in the field. This convergence of design, operation, and maintenance modeling is rapidly becoming a cornerstone of modern QE.

Agile at scale and engineering acceleration

Within our agile teams, we have embraced the "scrum of scrums" model, enabling seamless collaboration across global, distributed teams. This structure, combined with frameworks like Scaled Agile Framework (SAFe), DevOps helps quality deliverables faster, reliable and at scale.

On the technology front, we're leveraging agentic AI, intelligent agents that autonomously gather, correlate, and generate synthetic data from diverse sources, enhancing both test coverage and data quality. Alongside this, we are advancing Augmented Engineering: a convergence of technologies designed to accelerate the engineering process. By combining digital twins with Artificial Intelligence (AI), we can simulate future scenarios and proactively prevent issues before they arise.

Model-based diagnostics play a key role here, not only in using diagnostic data during testing, but also in designing the right measurement points and defining the sensors needed to capture them. This data feeds into reasoning models that dramatically speed up root cause analysis. Augmented Engineering is proving to be a powerful accelerator, with use cases across the engineering lifecycle and the potential to increase development velocity by up to five times.

One Capgemini: Driving responsible innovation

Our focus is on responsible innovation, continuous improvement, and seamless collaboration. Together, as One Capgemini, we are committed to shaping the future of QE for our clients and the industry.

Survey watch

42% Manufacturing organizations are in the "Experimental" stage, where early Gen AI pilots or proofs of concept are underway in limited QA areas.

41% Responded that between 26% and 50% of their test cases are currently automated.

64% Believe that cross-functional collaboration between team members with different skillsets is the most critical factor for agile teams to deliver better quality, faster.

61% Responded that the lack of quality test data is their top pain point.

35% Use subscription-based SaaS solutions for production quality monitoring, making it the most adopted shift-right approach.

Making AI work in the real world of *CPRD*

Sharmila Senthilraja
Industry Platform Leader, Consumer Products & Retail, Capgemini India

Maddy Iyer
Quality Engineering and Testing Leader, Capgemini Americas

How the Consumer Products, Retail, and Distribution sector is redefining AI, data, and trust

The Consumer Products, Retail, and Distribution (CPRD) industry has always survived on thin margins (luxury being the exception) and fast cycles, where each improvement process influences profitability and customer experience. In the current scenario, quality isn't merely about avoiding defects; it's about being consistent, fast, and trusted in every digital touchpoint. The emergence of generative AI (Gen AI) and smart automation is now redefining that equation, but like anything in CPRD, transformation is coupled with realism.

Turning AI intent into intelligent impact

The CPRD industry is experiencing an intriguing paradox. On one hand, there's a strong intent as boardrooms are abuzz with discussions on AI-driven productivity and emerging customer experiences.

Walmart's recent partnership with OpenAI highlights how AI is finding its first large-scale footholds in commerce, signaling both the relevance and urgency of Gen AI in the CPRD space. Yet, organizations are realizing that while such collaborations validate the potential of AI, measurable success will depend on how effectively intent is translated into implementation.

At the same time, the "shop floor," where the systems are developed, tested, and operated, is struggling to translate these ambitions into reality. Global adoption of Gen AI in Quality Engineering (QE) is expanding, and CPRD is progressing at a strategic pace. The reason is not lack of desire, but a peculiarly grounded business culture. Retailers, FMCG operators, and logistics providers work on tight margins. Each technology investment must prove its worth within a short, definitive timeframe. That pragmatism is guiding the first wave of Gen AI adoption.

The early adopters are trying things out and selectively applying Artificial Intelligence (AI) to automate low-value tasks, speed up test case creation, and enhance efficiency throughout their software development lifecycle (SDLC). Full-scale, end-to-end deployments remain the exception.

How AI elevates quality without the chaos

The hope of AI in CPRD is not about massive disruption, but deliberate change. Many organizations are looking at applications where AI can achieve quantifiable value without operational risk.

Across e-commerce, retail, and hospitality, especially industries heavy on customer-facing applications, AI is simplifying quality procedures. By automating tasks like test case generation, documentation, and defect triage, organizations are reducing development cycles by weeks. AI is transforming the SDLC by supercharging testing workflows, infusing compute power and intelligent automation into processes that were once entirely human-driven.

But this savings curve is not uniform. The biggest efficiency gains are achieved by automating low-value work. Once those are streamlined, the effect tapers off in higher-order work where complexity, data dependencies, and domain knowledge still need human intervention.

Conversely, industries such as travel, logistics, and professional services are characterized by leaner margins and legacy infrastructures. In these segments, the lack of customer-facing applications constrains the volume and visibility of AI-driven quality use cases.

Considering these contrasts, the direction of travel is clear: AI is no longer an experimental tool but an amplifier of efficiency. It is only for CPRD organizations to complete the loop between strategic intent and operational practice; to bring the top-floor imagination into agreement with shop-floor realities.

The next leap in AI-driven quality

If AI is the spark, then data is the fuel, and in CPRD, it's both a differentiator and challenge.

Retail and consumer businesses have vast amounts of customer and product data, but most exists in a fractured state across systems: operational databases, data lakes, warehouses, and transactional stores. Without a unifying thread, data fails to connect meaningfully. A call center may identify a customer, but often lacks visibility into their behavior or purchase history. This disconnect presents a compelling opportunity: to build true 360° customer insight. While still uncommon across the industry, it's increasingly within reach, and Gen AI is beginning to make that possibility more practical.

This fragmentation then cascades into testing. To develop and test realistic applications, organizations require test data that simulates real-world environments. But generating synthetic data that accurately represents messy, incomplete, or skewed production data still proves challenging. Your data must be as broken as production. Not as clean as you want it to be. That realism running against flawed, noisy data is essential to obtaining robust systems, at least along the quality-rich path leading toward the nirvana of true data hygiene

Although CPRD firms see the necessity to decrease reliance on real-time production data, particularly in the face of increasing privacy and regulatory attention, uptake of synthetic data is below global norms. For some, tooling and process sophistication are catching up; for others, maturity is already advancing rapidly.

This is also where QE intersects with enterprise architecture. AI can generate localized test data, for example, for a specific SKU or customer profile, but cannot yet simulate the full, end-to-end customer journey across multiple systems. True progress will come when data architecture, governance, and test strategy evolve together, creating data that recognizes data.

Personalization and the expanding edge of quality

The next horizon for quality in CPRD is hyper-personalization, creating digital experiences that are personalized, predictive, and dynamic. Leading consumer technology and lifestyle brands already are the prototypes for this, employing data to predict what customers want and provide contextual interaction.

But hyper-personalization testing brings a new level of complexity. Every customer path is distinct, with varying data triggers and habits. The challenge for quality teams is to create tests that can adapt dynamically, not just testing if an application functions, but if it feels correct to each individual user.

As personalization with AI increases, testing also needs to become AI-fortified, continuously learning from customer information, anticipating edge cases, and adapting to changing behaviors. This necessitates a rich understanding of the domain, clean and connected data, and a redefinition of what coverage in a world of personalization means.

The future of quality in motion

In an industry defined by pragmatism, CPRD's response to AI and quality is data-driven, measured, and cautious. The C-suite enthusiasm is genuine, but success rests on translating aspiration into action that can be measured.

The initial benefits include quicker SDLC cycles, greater productivity in routine tasks, and improved data insight are encouraging indicators. But the giant stride ahead will be made only when organizations define firm operational models and measurement criteria to track the effectiveness of AI across the SDLC, from requirements and test design to defect analysis and release management.

In short, the future of quality in CPRD will not be found in pursuing the coolest AI use cases. It will be found in executing the basics such as data cohesion, pragmatic automation, and measurable value.

Because in this industry, quality is not about perfection; it's about precision, speed, trust and timing.

Survey watch

18% Organizations have yet to embrace Gen AI for QE&T.

30% Respondents indicate a boost in testing productivity with small-scale pilots.

04% Respondents say they want to use synthetic data generation to help with regulatory.

35% Organizations say that the overall testing is currently automated.

What's next for
Healthcare and Life Sciences

Brain Eden
Vice President, Global Life Sciences Technical Operations,
Capgemini Americas

Quality Engineering in healthcare and life sciences: Balancing innovation and integrity

Generative AI (Gen AI) is rapidly becoming part of the conversation in life sciences, especially in Quality Engineering (QE), and the enthusiasm is understandable. Like the internet, cloud computing, and advanced analytics before it, Gen AI promises to reshape how work gets done. But unlike those earlier waves, this one is moving faster, and with less clarity.

We have seen growing interest across organizations, from senior leaders to hands-on teams. There's a shared sense that Gen AI could unlock new efficiencies and improve decision-making, and that optimism is well-founded. However, it must be matched with restraint, especially in areas where safety, compliance, and validation are non-negotiable.

First step toward responsible use: Clarity

One of the biggest hurdles isn't technical; it's conceptual. There's still confusion across teams and organizations about what Gen AI is, how it differs from machine learning, what constitutes an agent, and where statistical analysis ends, and AI begins. This lack of clarity can lead to misaligned expectations and poor implementation choices.

We have spoken with leaders who are eager to lead the change but are unsure where to start. That's a good sign because it shows momentum. But when Gen AI is introduced into core processes like product release or compliance workflows, the stakes rise. Without a shared understanding of what Gen AI can and cannot do, teams risk applying it in ways that are inefficient or even unsafe.

Speed is a double-edged sword

Gen AI's ability to accelerate change is both its strength and its risk. Manual process changes take time, and that time acts as a natural buffer against poor decisions. Gen AI, on the other hand, can rewrite testing protocols or generate new workflows instantly. That's powerful, but if done without proper validation, it can be dangerous.

This reminds us of the Lean Six Sigma era, when nearly every initiative was labeled a Six Sigma project, regardless of its relevance. With Gen AI, the temptation to over-label is even stronger, and more expensive. The cost of misapplication isn't just financial; it can disrupt workflows, confuse teams, and compromise quality.

Real-time release isn't the ultimate win

In life sciences, real-time release is often seen as a high-value target for Gen AI. But reality is more complex. Regulatory requirements, validation protocols, and safety concerns make this area difficult to automate meaningfully. While the concept is attractive, the practical benefits remain limited, at least for now.

We believe Gen AI is better suited to supporting adjacent functions: documentation, deviation management, and non-GMP workflows. These areas offer room to experiment without compromising patient safety or regulatory compliance. They also provide a proving ground for Gen AI capabilities, allowing teams to build confidence before tackling more sensitive domains.

Human judgment anchors quality decisions

Gen AI's ease of use can create a false sense of reliability. Its outputs are often well-structured and visually convincing, which can lead users, especially those unfamiliar with its underlying logic, to assume correctness without verification. Unlike traditional analytics, where the reasoning from input to output is transparent, Gen AI often obscures the decision path. This lack of visibility increases the risk of over-reliance and *underscores* the need for evaluation of its results.

This shift in user behavior raises questions about accountability. If a system produces an answer, who owns the decision? The answer must remain: human. Gen AI can assist, but it cannot replace judgment. Teams must be trained not just in how to use Gen AI, but in how to question it.

Curiosity is good, governance is better

Progressive companies are pushing Gen AI adoption publicly, which can be motivating. But it can also be distracting. The pressure to "do something with AI" can lead to rushed implementations and fragmented strategies. It can also leave less experienced teams behind.

There's growing interest across teams to engage with Gen AI, even when familiarity with the technology is limited. This curiosity is a healthy starting point, especially for low-risk, small-scale initiatives that allow experimentation without regulatory exposure. But when it comes to core quality processes, enthusiasm must be matched with education, governance, and a clear understanding of risk.

Moving forward with purpose, not just pace

Gen AI has the potential to transform QE in life sciences. But transformation must be earned. It requires discipline, structure, and a willingness to say, not yet, when the risks outweigh the rewards.

While we are optimistic, we cannot afford to be naive. The goal isn't just to adopt Gen AI. It's to adopt it wisely, in ways that enhance safety, improve efficiency, and build trust. That means starting small, validating rigorously, and ensuring that every Gen AI initiative is grounded in business need, not novelty.

Survey watch

65% Believe integrating Gen AI into existing QA workflows is their biggest challenge.

59% Respondents say their QE processes aren't automated enough to support agile delivery.

39% Respondents use commercial platforms for production monitoring and fault detection.

52% Use a balanced mix of open-source and commercial tools for test automation.

52% Rely on automation scripts and basic platforms for test data creation.

Leading change in the *Public Sector*

Marc Reinhardt
Public Sector Global Industry Leader, Capgemini

Bastiaan Minnee
Head of Sales, Public Sector, Sogeti NL

Shashank Gopalakrishna
Senior Director, Public Sector - Modernization and Cloud SME, Capgemini India

Public sector transformation: From legacy to leadership

Citizens' expectations are changing. Influenced by their experiences in the private sector, people want public services to be joined-up, intuitive and mobile-friendly, for digital channels to make their overall experience of interacting with government easier. This is driving governments to rethink how they deliver value: faster, smarter, and more transparently.

At Capgemini, we work closely with civil servants in a wide range of public sector organizations at different levels of government who are navigating this transformation. We see a sector at a turning point, caught between legacy systems and the promise of intelligent, adaptive platforms.

Beyond cloud: New platforms, new priorities

The ambition to modernize is not new, but the approach is evolving. Cloud is the foundation of a modern digital government. Some countries still need to do their migration, for all others, the journey does not end there. Our approach is to enable government entities to modernize their systems, transitioning from legacy infrastructure to modern digital platforms, by harnessing cloud and AI technologies. This reflects a broader transformation in how public sector organizations operate, with a focus on resilience, adaptability, and responsiveness to evolving citizen needs and policy mandates.

Across Europe, geopolitical instability has sparked discussion about the need for sovereignty in the digital domain. Governments are now seeking flexibility over ownership, exploring sovereign LLMs and hybrid architectures to reduce dependency on hyperscalers while retaining agility.

Gen AI: Promise meets prudence

Generative AI (Gen AI) is emerging as a powerful catalyst for change. Our report *Everything You Wished For?* reveals that 61% of software leaders in the public sector see Gen AI as enabling innovative work, while 49% expect it to improve the quality of software. But the excitement is tempered by caution. Public sector leaders ask important questions: Who validates the code? Who ensures business rules are correctly automated? How much human oversight is needed?

The human in the loop remains essential, especially for systems that directly impact citizens, such as those in welfare or taxation. In the Middle East, adoption is faster. Agencies like TAMM in Abu Dhabi are already integrating Gen AI into citizen-facing services, enabled by centralized decision-making and better data foundations.

In Europe, progress continues at a steady pace. Germany has begun leveraging Capgemini's innovative AI agent tool in software development. Core testing activities, such as unit testing, integration testing, and automated execution of test cases, are already achievable. Other aspects, like User Acceptance Testing (UAT) and testing across QA environments, present challenges that are actively being addressed.

Quality Engineering: The quiet enabler

While Gen AI's potential in QE is clear, scaling it across public sector environments is complex. Governments are exploring its use in test case generation, synthetic data creation, and documentation automation. Full autonomy, however, remains rare. Test automation is gaining traction, particularly in development environments where risks are lower, and productivity gains are more tangible.

We have also seen how combining AI with human oversight creates amplified testers, professionals who maintain control while accelerating delivery. Security, compliance, and sovereignty remain top concerns. In right-shore delivery models, staging and production environments are strictly separated from development and testing, regardless of the number of shores. Onshore teams manage staging and production, while nearshore and offshore teams operate under additional security controls during development and QA. AI tools play a key role here, generating synthetic data for testing and supporting the entire Software Development Lifecycle (SDLC) with code generation, test data creation, documentation, and content generation.

Data foundations: The bedrock of transformation

A recent Capgemini report, *Data Foundations for Government,* reveals a sobering truth: less than 25% of public sector organizations report high maturity in any data readiness dimension. Fragmented data, siloed systems, and weak governance continue to stall progress. Without strong data foundations, even the most advanced AI initiatives will struggle to scale.

Key barriers include ownership and management of data, data security, trust in AI outputs, budget constraints, and environmental concerns. Governments must invest in scalable infrastructure, foster a data-driven culture, and modernize gradually. Appointing empowered CDOs and CAIOs, and promoting cross-functional collaboration, are essential steps forward.

Bias, accessibility, and explainability: The non-negotiables

Bias is one of the most serious risks in public sector AI. Fairness, transparency, and digital accessibility are not just technical requirements; they are moral imperatives for civil servants who must uphold the state's duty to equality. Citizens expect clarity. Explainability is especially important in personalized services. People want to understand how their entitlement has been calculated or why they've received a particular message. Without transparency, trust erodes.

Best practices: Where AI meets accountability

Across regions, best practices are emerging. Germany's public employment agency is using agentic AI for ticketing and task processing. ERP modernization projects in the UK and Middle East are leveraging DevOps pipelines to streamline quality assurance. These examples show that AI can be safely and effectively integrated into public sector workflows, provided the right guardrails are in place.

A shared vision for what comes next

Modernization in the public sector isn't about chasing trends; it's about aligning innovation with purpose, policy, and people. Whether it's increasing sovereignty, navigating legacy constraints, or piloting Gen AI, the journey must be deliberate, inclusive, and grounded in trust.

Together, with our clients, partners, and teams, we are shaping a future that's more agile, transparent, and intelligent.

Survey watch

69% Respondents flagged accuracy and quality risks as their top concern when using Gen AI in testing.

62% Believe securing realistic, privacy-compliant test data is their biggest challenge in test automation.

37% Respondents expect only 11–25% of their quality engineers to be embedded in agile teams within two years.

55% Believe QE practices must adopt Gen AI to improve speed and effectiveness.

37% Respondents plan to enhance observability and real-time monitoring over the next 24 months.

Role of generative AI in *Financial Services*

Lisha Rakesh

Head of Insurance Testing, Financial Services, Capgemini Americas

Nilesh Yeola

Global Capability Unit Leader, Quality Engineering & Testing, Financial Services, Capgemini India

Sagar Chitre

Solutions Lead, Quality Engineering & Testing, Financial Services, Capgemini UK

The generative AI journey in Quality Engineering

The financial sector is leading the way in implementing generative AI (Gen AI) in Quality Engineering (QE). With complex and high-volume transaction systems, along with multiple other contributing systems which require comprehensive supervision, regulatory scrutiny, and greater resilience and customer trust, the financial institutions including banks, clients, and financial infrastructures need to improve AI to enhance productivity and mitigate the risk involved.

These institutions are transitioning from pilot programs to large-scale deployments, utilizing Artificial Intelligence (AI) to automate test case designs for insurance & payments systems, accelerate compliance checks, and streamline validation and data integrity checks with audits, control, and transparency.

From hype to hands-on results

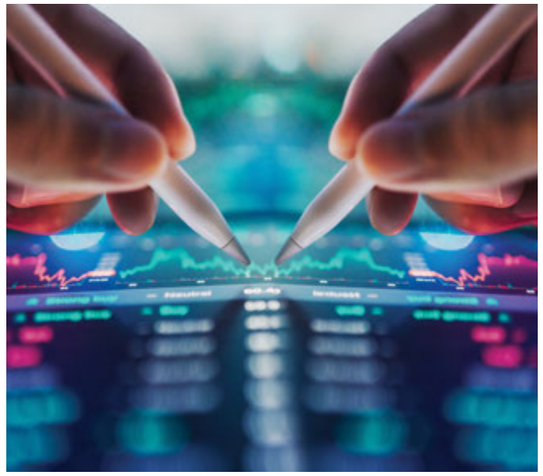
Over the last 18-24 months, discussions with clients on Gen AI in QE have been largely centered on productivity. Gen AI technology has moved from the theoretical phase to the practical phase in which measurable productivity gains have been achieved. The most prevalent use cases are manual test case generation and the automation script generation, both of which have been the focus of pilots and proofs of concept. Test data generation is also an important use case, but adoption is limited given concerns about security, end-to-end data integrity, and the challenges of scaling these solutions.

Making AI part of the delivery DNA

Many organizations are still in the experimental stage. Only 15–20% of clients are transitioning to industrialization, whereas 60–70% are piloting Gen AI. When AI is integrated into various testing phases rather than remaining in isolated experiments, it becomes a part of the delivery model during industrialization. New scenarios, such as defect prediction, AI-powered chatbots for test environments, and speeding up accessibility testing, are gaining traction in addition to common use cases. In some advanced organizations, testers are even starting to validate AI-generated code, indicating how deeply AI will permeate the software lifecycle.

When AI changes how work gets done

Efficiency invariably brings up the subject of headcount. When RFPs mention 30%-40% efficiency gains, the client's first question is: What does this mean for my workforce?



Gen AI will undoubtedly alter the way effort is allocated, even though it might not significantly reduce headcount on its own. Agentic AI, which automates low-value, high-effort tasks, is the true turning point. This might tip the scales in favor of structural workforce reductions within the next year.

AI agents arrive soon

The goal of agentic AI is not far off. Within four to six months, experts anticipate its deployment in testing. The role of the tester will change quickly as AI agents start to create scenarios, generate data, and even execute them. Testers will increasingly oversee the work AI does rather than doing it themselves.

Empowering AI, elevating human expertise

Testers are evolving into hybrid professionals rather than going extinct. They are becoming orchestrators, directing AI agents, and making sure that results align with business objectives.

- Validators, protecting standards for quality, security, and compliance.
- Trainers, adding contextual and domain knowledge to AI models.

This change increases the value of human judgment. Complementing machine scale will require the tester's ability to understand context, business logic, and regulatory constraints. As machines scale execution, testers bring the nuances - understanding context, interpreting business logic, and navigating regulatory landscapes.

Skills in transition

Technical skills like Python, machine learning (ML), data science, and prompt engineering are in high demand today. However, within a year, success will depend on a different balance:

- Architecture awareness — comprehending data flows, APIs, and the behavior of large language models.
- Domain knowledge — incorporating the background that artificial intelligence cannot duplicate.
- Soft skills — communication, cooperation, and critical thinking, particularly in cross-functional product teams.

In other words, while technical skills will continue to be important, differentiation will be defined by contextual and interpretive abilities.

Organizational shifts: Hybrid structures take hold

Organizations that conduct enterprise testing are also changing. Testing Centers of Excellence (TCOEs) that are solely centralized are becoming less common. Rather, hybrid structures are becoming more prevalent:

- Federated execution, where testers are directly integrated into teams that are agile and focused on the product.
- Cross-cutting tasks like automation governance, integration testing, performance, and security are handled by shared services.

Agility and consistency are both made possible by this balance, which guarantees that testing innovation can grow without compromising enterprise-level standards.

Automation is mature, yet incomplete

Although there are issues, test automation has advanced significantly. Although execution skills are strong, self-healing automation and true pipeline integration are still elusive. Resources are continually being depleted by maintenance. The reported test coverage varies greatly; industry averages are closer to 33–50% overall, while some organizations report 80–90% coverage in regression testing. Manual testing will remain relevant for some time to come because complex systems, such as mainframes, APIs, and legacy integrations, continue to resist automation.

AI as the maestro of modern testing

Will third-party testing tools be replaced by AI? That's unlikely. Rather, Gen AI capabilities are being embedded into open-source frameworks and commercial tools, resulting in more cohesive ecosystems. AI as an orchestrator—integrating tools, frameworks, and scripts into unified, self-healing automation stacks is the way of the future, not AI against tools.

Survey watch

47% Organizations have upskilled their teams with AI and Machine Learning training.

38% Respondents say their test cases are currently automated.

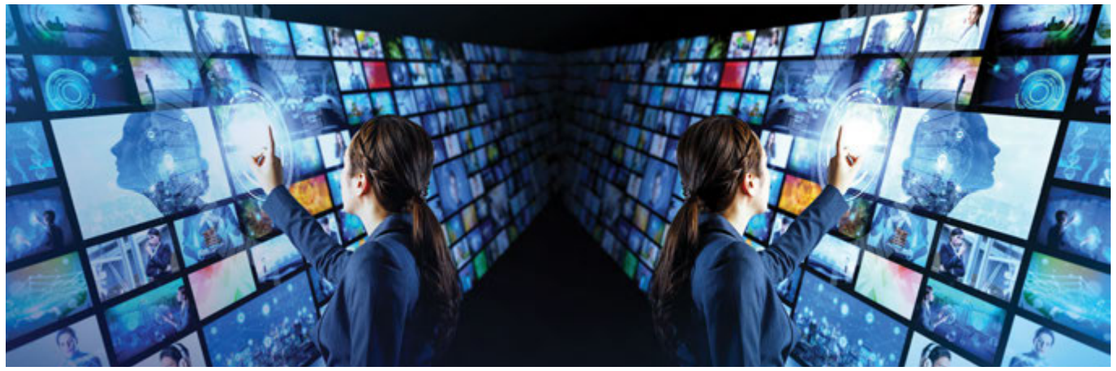
63% Believe that generative AI is the most important skill for Quality Engineers.

50% Respondents say their Quality Engineering practices must adopt generative AI to increase speed and effectiveness.

23% are already leveraging in-house AI/ML solutions for operational telemetry.

Reshaping *Technology, Media, and Telecommunications* strategy and software quality with AI

Sid Kapila
COO, TMT,
Capgemini Americas



The TMT transformation through AI and agility

The Technology, Media, and Telecommunications (TMT) sector is at a transformative phase, where consolidation meets innovation, and AI is the centerpiece to every strategy. The technology sector is also witnessing a wave of consolidation through mergers and acquisitions primarily for scale, synergy, and speed. There is a race both outward and inward, from geopolitical driven investments in semiconductors to software modernization efforts to make it AI ready.

High-tech companies are digitally transformative enterprises. Salesforce and ServiceNow are deploying their own Artificial Intelligence (AI)-enabled platforms internally to demonstrate business value before taking them to market. This "build-and-prove" model, not only reinforces credibility but also accelerates innovation. The subscription economy and servitization models, now mature, continue to reshape hardware-software business combinations, while AI captures the next competitive frontier.

AI is fast becoming the core of the enterprise

With regards to TMT, AI is not an afterthought; it is being embedded into enterprise DNA with true integration into systems structure. Case studies including Cox, Warner Bros, and other leaders are embedding Centers of Excellence (CoEs) frameworks to integrate and govern AI and measuring outcomes.

Customer service is the most evolved use case, with supply chain optimization coming in second, where companies like Apple have gone from curiosity to commitment, progressing from exploratory conversations to proactive use of AI in the business. Remarkably, the trend towards adoption is business-driven, not driven by IT. Business units now come to IT with clear, outcomes-based proposals, so AI adoption becomes more practical and ROI-centric.

Company-wide, entities are employing a combination of internal and partner-based AI methods. Meta builds in-house models like Llama, while workflow vendors like ServiceNow incorporate third-party large language models (LLMs) within their own frameworks, reflecting hybrid innovation at scale.

Engineering a smarter, human-AI software future

The TMT sector is redefining the software lifecycle. CIOs are budgeting for 10–15% annual productivity gains, embedded directly into their operating models. AI is prevalent in software development and Quality Engineering (QE), automating test generation, shortening coding cycles, and identifying undocumented tests in legacy systems, like SAP, among other tasks.

QE has transitioned from centralized control to distributed accountability. In agile frameworks, quality is embedded within the cross-functional squads alongside business testers, developers, and quality engineers. For some, the fully decentralized model proved counterproductive, and even highly trained quality engineers are being given hybrid roles that include business analysis. It is widely understood that quality must evolve alongside agility and that it cannot be diminished in the process.

Redefining efficiency in the age of AI

There has been a significant change in how quality efficiency is conceptualized. Common indicators such as test coverage and cost per test case do not suffice in an environment where cycle times are quickening. Business adoption becomes the foremost indicator of quality. The fundamental question is no longer "How much did we test?" but "Were the business solutions adopted smoothly?"

Due to compressed timeframes for releases, organizations are using AI-analyzed automation, and the QE test cycle has changed to a continuous assurance model. With the new pace, QE teams must find a new equilibrium, the appropriate ratio of automation and human oversight. This ensures that the demand for speed does not make automation unreliable.

The rise of data governance as a strategic discipline

As AI technology becomes more prevalent, the importance of data quality has become important. Enterprises are establishing dedicated data governance teams, focused on data labelling, validation, and maintenance processes. These teams take charge of both operational and analytical data and ensure that the information used in decision-making processes is reliable—be it for sustainability reporting or supply chain management.

Apple demonstrates this trend with their recent move to bolster data governance pertaining to their sustainability commitments. The company's method combines data tools and governance frameworks with new roles in the organization, including Data Product Managers, who supervise data domains, for example, customer 360 or logistics datasets. This approach illustrates a broader recognition in the industry that data governance is a managed process, and that data has become a product.

Turning observability into continuous quality

The concept of *shift right,* ongoing monitoring of production quality has taken hold across mature TMT organizations. Application of tools such as AppDynamics and other observability platforms is facilitating real-time monitoring from business workflows to network infrastructure, detecting problems before they affect end users.

This forward-thinking mindset guarantees that high-priority transactions, including premium customer transactions, are marked and addressed urgently. In modern service-oriented architectures, observability is not a convenience; it's a requirement for operations. Continuous monitoring feeds insights directly into agile development cycles, closing the loop between production performance and subsequent test strategies.

Agentic AI is rewriting the rules of work and quality

The next frontier includes agentic AI; intelligent agents that will be able to independently test, oversee, and improve software systems. Initial research indicates that there could be a 30–40% reduction in QE manual efforts, but companies are wary of striking a balance between automation benefits and human oversight.

On the other hand, the workforce itself is evolving. AI will not replace human experts, but will support them by capturing valuable institutional knowledge, documenting workflows, and assisting in requirements gathering. This will ensure continuity and consistency, and more importantly, rapid onboarding will be possible at scale as younger, AI-fluent teams join the tech workforce.

Quality in the age of acceleration

The TMT industry exemplifies the paradox of progress, where unprecedented speed must coexist with uncompromising quality. As companies move from agile to AI-native operations, QE re-emerges not as a gatekeeper, but as an enabler, ensuring that innovation scales responsibly.

The message is clear: software titans, streaming platforms, telecom providers, and semiconductor giants believe that to be future-ready, you must be AI-ready, and to be AI-ready, you need QE.

Survey watch

50% Organizations have upskilled their testers with AI and Machine Learning training.

07% Organizations say that "shift right" quality practices are not relevant to them.

27% Respondents say that the role of dedicated quality engineers has been significantly reduced.

47% Organizations are conducting pilot projects to explore Gen AI's potential in testing enterprise digital solutions.

The future of *Energy & Utilities* is in motion

Claire Gauthier
EVP, Global Industry Leader, Energy and Utilities, Capgemini

Bragadesh Damodaran
Vice President, Head Global E&U Industry Platform, Capgemini

From volatility to vision: Rewiring energy with Gen AI

Over the past year, we have witnessed the energy and utilities sector undergo major shifts, driven not just by market forces, but by geopolitical factors and technological breakthroughs. The volatility has been palpable. Global polarization, tensions in the Middle East, and tariff announcements from the US have all contributed to a climate of uncertainty. These events have created ripple effects across oil and gas pricing, investment decisions, and supply chain stability.

Geopolitical tensions have led to volatile LNG prices, while the US IRA's de-averaged impact has protected grid modernization investments (~$250B for 2025). Electricity market reforms and nuclear policy shifts in Europe, along with grid construction challenges in APAC, add further complexity.

In a sector where uncertainty is now the norm, resilience alone isn't enough. What's required is strategic reinvention: a shift in how we invest, operate, and innovate across the energy and utilities landscape.

Technology as a strategic lever

Our investment strategies are evolving in response. We are prioritizing markets with real growth potential. Mergers and acquisitions have surged, prompting restructurings and a renewed focus on efficiency across the value chain. Technology, especially AI, is playing a pivotal role in this optimization. Historically, value chain improvements were confined to trading interfaces. Today, AI empowers us to make smarter, faster decisions. This kind of agility, once unimaginable, is now central to profitability in oil and gas, and increasingly relevant in power markets where dynamic pricing and flexible distribution are key.

Convergence and complexity

We are also seeing a convergence between oil, gas, and power. While oil and gas operate in global markets with standardized benchmarks like Brent, power remains localized, albeit with increasing cross-border exchanges in Europe. The integration is accelerating, with natural gas now a preferred method for power generation due to its lower CO_2 emissions compared to coal or oil. This shift is not just environmental, it's strategic.

Renewables and the balancing act

Renewables are gaining ground, reshaping the energy mix. Solar and wind are no longer fringe technologies. Texas, for example, has overtaken California in large-scale solar installations, signaling that renewable adoption is transcending political divides. While offshore wind power purchase agreements (PPAs) have faced competitiveness issues, onshore renewables remain robust. Natural gas plays a key role in supporting renewables by filling in gaps when solar or wind generation drops. For instance, gas-fired power plants can quickly ramp up to stabilize supply during cloudy or calm periods.

Renewables now represent ~40% of global growth in power production, with natural gas contributing ~30%. Rising demand for baseload and flexible power is driven by data centers and electric vehicles (EVs). Flexibility markets are peaking, pushed by rising Levelized Cost of Energy (LCOEs).

Gen AI: From experimentation to impact

AI's role in the sector is still largely experimental, but the momentum is building. Many companies are adopting a "second first mover" approach, observing early adopters before committing. One of the biggest hurdles is data. Our industry has struggled with data and knowledge management for a long time, especially when compared to sectors like financial services. Energy is asset-heavy, and that complexity makes data management a formidable challenge.

Quality Engineering in transition

While Gen AI hasn't yet entered mainstream QE workflows in energy, we're seeing early signs of change. Some organizations are using Gen AI to generate test strategies and test cases from requirement documents. Full agentic testing is still under development, but the journey has begun. The potential is clear, and the early signals are promising.

The data dilemma

The biggest challenge remains how we leverage data. Cleanup is essential, and culturally, many teams believe their portfolios are too unique for standardized solutions. We feel that this mindset must evolve. Gen AI's strength lies in reconciling disparate data and adapting to asset-specific nuances. Trust in AI agents and their training is crucial. Smaller companies often wait for larger players to lead, and utilities remain conservative, though retailers within the chain are more open to AI.

Automation: Uneven but advancing

Test automation presents a mixed picture. In oil and gas operations, automation has matured significantly. The sector had no choice; falling prices in 2015–16 forced companies to reduce offshore staffing and centralize operations. In contrast, power utilities have progressed more slowly. Regulation and fragmentation, especially in the US, make standardization difficult.

The road ahead for QE and Gen AI

Project development is emerging as a fertile ground for Gen AI. By leveraging historical data before assets are built, companies can lay strong foundations for future operations and maintenance. Standardization is another opportunity; Gen AI can help benchmark solutions and reduce redundant engineering. If engineers gain real-time access to historical data—what French engineering firms call REX (retour d'expérience)—problem-solving will accelerate. We have seen this in oil and gas and medical plant turnarounds, where lookback data helped resolve production issues. With Gen AI, this becomes faster, smarter, and more scalable.

As we look ahead, the convergence of Gen AI, automation, and QE presents a powerful opportunity. The sector may be conservative, but the foundations are shifting. With the right data, mindset, and leadership, we can unlock new efficiencies, reduce risk, and elevate the role of QE in energy transformation.

Survey watch

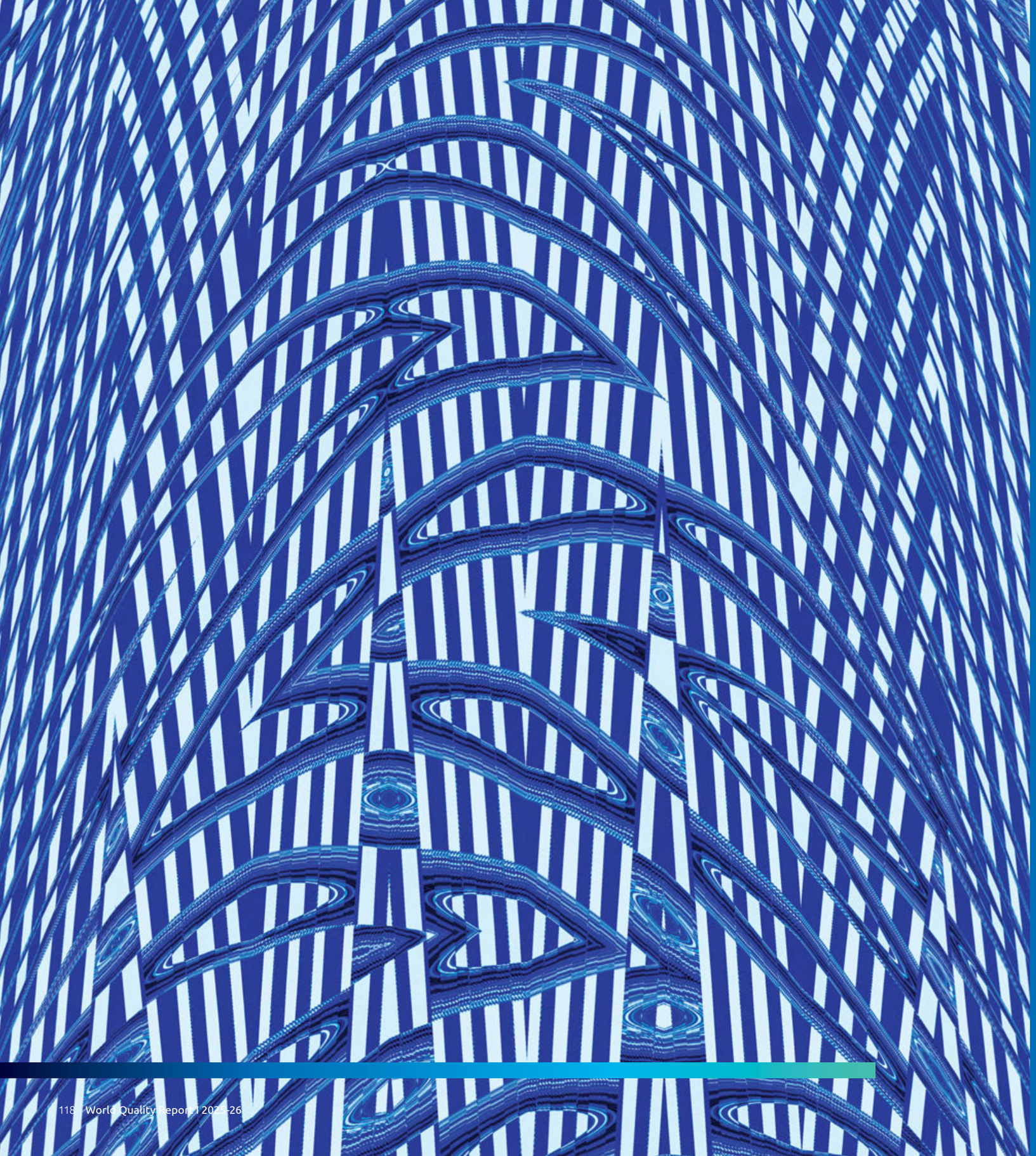
55% Organizations have upskilled their testers with AI and Machine Learning training.

33% Organizations use subscription-based SaaS solutions for production quality monitoring.

44% Organizations use a balanced mix of open-source and commercial tools in their test automation ecosystems.

46% Respondents cite poor test data quality, difficulty creating large datasets, and time to create as their top pain points.

62% Identified cross-functional collaboration as the most critical factor for agile teams to deliver better quality and faster.



About the survey

World Quality Report 2025-26

The World Quality Report 2025-26 is based on research findings from 2,000 interviews carried out during June and July 2025 by Coleman Parkes Research. The average length of each interview was 30 minutes and the interviewees were all senior executives in corporate IT management functions, working for companies and Public Sector organizations across 23 countries.

The interviews this year were based on a questionnaire of 44 questions, with the actual interview consisting of a subset of these questions depending on the interviewee's role in the organization. The quantitative research study was complemented by additional in-depth interviews to provide greater insight into certain subject areas and to inform the analysis and commentary. The main themes for all survey questions remained the same, though a few objective responses were also added for the first time this year. Quality measures were put in place to ensure the questionnaire was understood, answered accurately and completed in a timely manner by the interviewee.

Research participants were selected to ensure sufficient coverage of different regions and vertical markets to provide industry-specific insight into the quality assurance and testing issues within each sector.

To ensure a robust and substantive market research study, the recruited sample must be statistically representative of the population in terms of its size and demographic profile.

The required sample size varies depending on the population it represents – usually expressed as a ratio or incidence rate. In a business-to-business (B2B) market research study, the average recommended sample size is 100 companies. This is lower than the average sample size used for business-to-consumer (B2C) market research because whole organizations are being researched, rather than individuals.

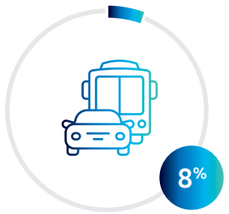
As mentioned above, the B2B market research conducted for the World Quality Report 2025-26 is based on a sample of 2,000 interviews from enterprises with more than 1,000 employees (20%), organizations with more than 5,000 employees (31%) and companies with more than 10,000 employees (36%).

During the interviews, the research questions asked of each participant were linked to the respondent's job title and the answers he/she provided to previous questions where applicable. For this reason, the base number of respondents for each survey question shown in the graphs is not always the full 2,000 sample size.

The survey questionnaire was devised by Quality Engineering experts in Capgemini, Sogeti, and OpenText (sponsors of the research study), in consultation with Coleman Parkes Research. The 44-question survey covered a range of software Quality Engineering and digital assurance subjects. The analysis of the survey results was enriched by qualitative data obtained from the additional in-depth interviews.

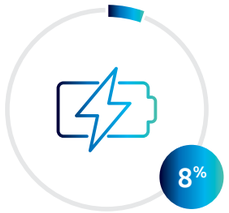
Interviews by sectors

19% HI Tech including start ups, hardware vendors + Aerospace & Defense



8% Transportation

13% Financial Services industry, including Capital Markets, Banking and Insurance



8% Energy, Utilities, and Chemicals

11% Consumer goods & retail/ Distribution & Logistics

8% Manufacturing

10% Telecommunications, Media & Entertainment

8% Healthcare & Life Sciences

10% Public Sector/ Government

8% Automotive

Interviews by job titles

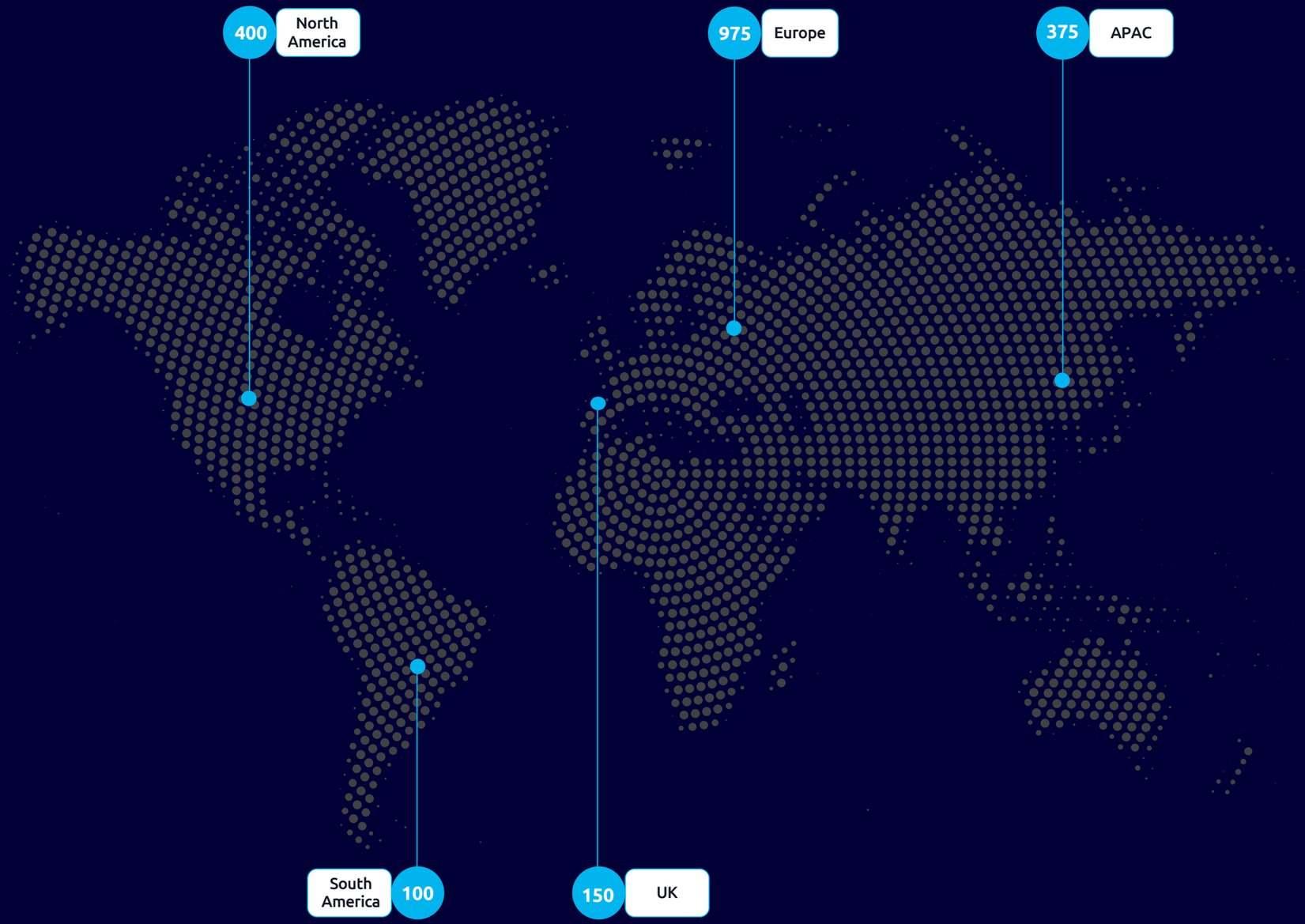
CIO	24%
QA Testing Manager or Testing Manager or Quality Engineers or VP/Test Manager or Automation Lead/Architect	18%
IT Directors	17%
VP Applications/Product Owner	15%
VP or Director of Research & Development/Engineering	10%
CTO/Product Head	10%
CMO	4%
CDO	3%

Interviews by Company size

Less than 1000 employees	13%
1000 - 4999	20%
5000 - 10000	31%
10000+	36%

Note: Percentages may not add up to 100% due to rounding

Interviews by country



23 Countries

USA	16%
France	8%
Germany	8%
UK	8%
Netherlands	6%
Sweden	5%
Brazil	5%
Australia	5%
China	5%
India	5%
Canada	4%
Japan	3%
Italy	3%
Belgium & Luxembourg	3%
Ireland	3%
Spain	3%
Portugal	3%
Norway	2%
Denmark	2%
Finland	2%
Hungary	2%
Poland	2%

About the sponsors

World Quality Report 2025-26

About Capgemini and Sogeti

Capgemini is an AI-powered global business and technology transformation partner, delivering tangible business value. We imagine the future of organizations and make it real with AI, technology and people. With our strong heritage of nearly 60 years, we are a responsible and diverse group of 420,000 team members in more than 50 countries. We deliver end-to-end services and solutions with our deep industry expertise and strong partner ecosystem, leveraging our capabilities across strategy, technology, design, engineering and business operations. The Group reported 2024 global revenues of €22.1 billion.

Part of the Capgemini Group, Sogeti makes business value through technology for organizations that need to implement innovation at speed and want a local partner with global scale. With a hands-on culture and close proximity to its clients, Sogeti implements solutions that will help organizations work faster, better, and smarter. By combining its agility and speed of implementation through a DevOps approach, Sogeti delivers innovative solutions in quality engineering, cloud and application development, all driven by AI, data and automation.

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Thank you

Capgemini, Sogeti, and OpenText would like to thank

The 2,000 IT executives who took part in the research study this year for their time and contribution to the report. In accordance with the UK Market Research Society (MRS) Code of Conduct (under which this survey was carried out), the identity of the participants in the research study and their responses remain confidential and are not available to the sponsors.

All the business leaders and subject matter experts who provided valuable insight into their respective areas of expertise and market experience, including the authors of the country and industry sections and subject-matter experts from Capgemini, Sogeti and OpenText.

www.sogeti.com/research-and-insight/world-quality-report-2025-2026/

Main Report Authors
Kanchan Bhonde, Antoine Aymer, Jeff Spevacek, Jeba Abraham

Program Management
Dennis John

Creative Director
Sujoy Karmakar

Content Strategist
Arijit Sen

Design Team (MACS Agile)
Partha Pal, Soumya Ghosh

Writing and Editorial
Anakims Varghese, Sparkle Jane Fernandes, Arshbir Kaur

Marketing & Comms. (Capgemini)
Dennis John

Marketing & Comms. (OpenText)
Decio Alemanni

Project Management
Indranil Bhattacharya

Market Research
*Coleman Parkes Research**

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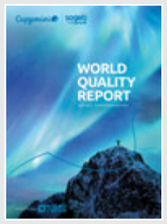
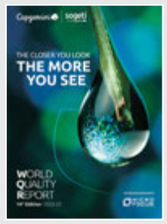
12th edition

2021-22



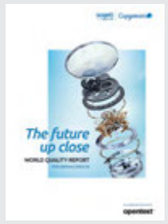
13th edition

2022-23



14th edition

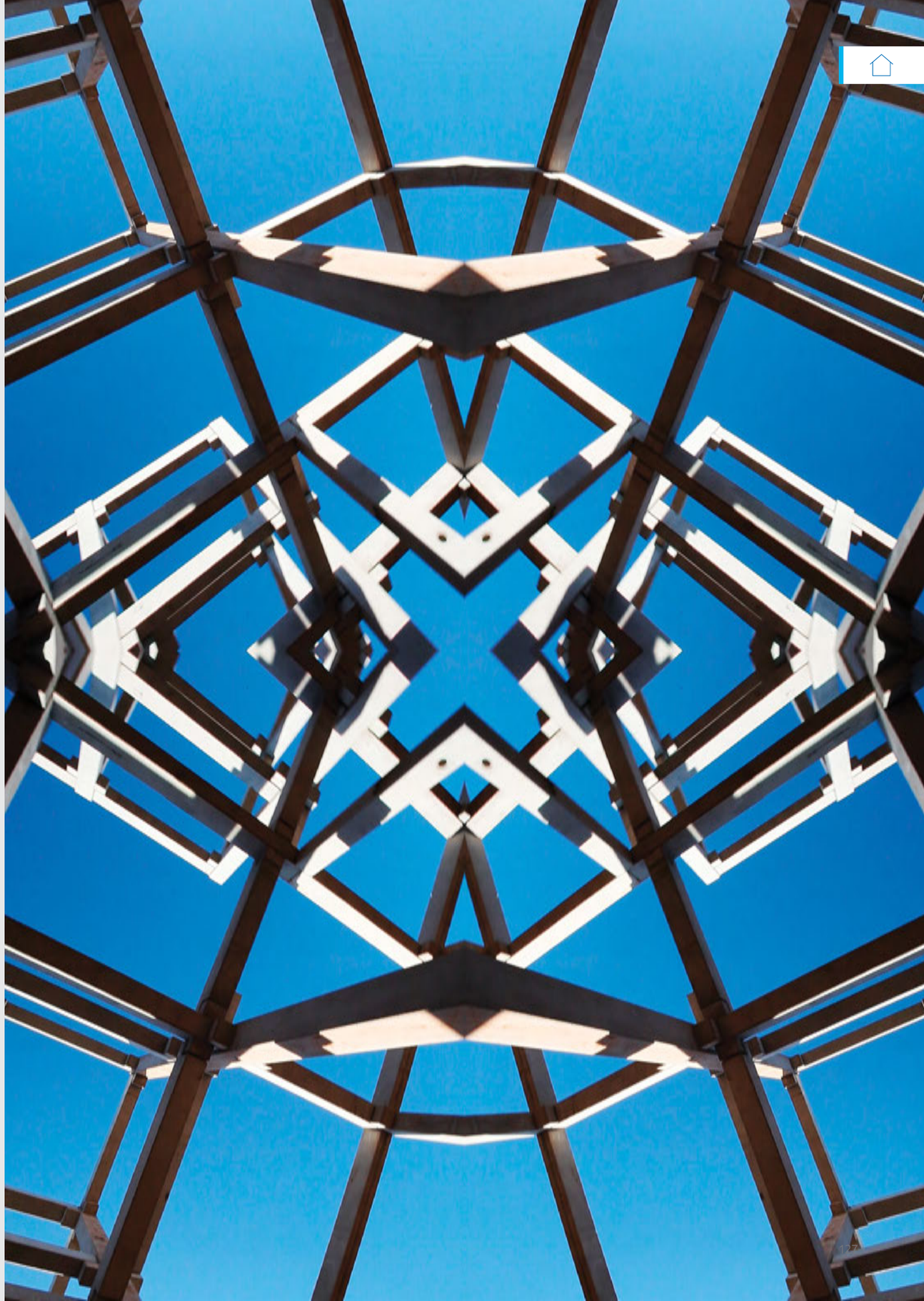
2023-24



15th edition

2024-25

16th edition



OpenText

Richard Wrbanek
VP GSI Ecosystem, OpenText
rwrbanek@opentext.com

Decio Alemanni
Sr. Channel Marketing Manager, OpenText
dalemann@opentext.com

Sogeti

Mark Buenen
Global Leader, Quality Engineering &
Testing, Capgemini & Sogeti
mark.buenen@sogeti.com

Sathish Natarajan
Group Vice President, Quality Engineering
& Testing, Capgemini & Sogeti, Americas
sathish.n@capgemini.com

Sameer Ranade
Vice President, Quality Engineering & Testing,
Sogeti India
sameer.ranade@capgemini.com

Capgemini

Anand Moorthy
Vice President & Global Head, Quality Engineering
& Testing, Financial Services, Capgemini
anand.moorthy@capgemini.com

Hariprasad Sirivaram
Vice President & Head of Quality Engineering
& Testing, Capgemini Americas
hariprasad.sirivaram@capgemini.com

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