THE State of Software Quality 2025 REPORT

PRESENTED BY

Katalon

p. 22

20% are **very concerned** that AI could take their jobs.

82% see **AI as critical** to the future of quality assurance.

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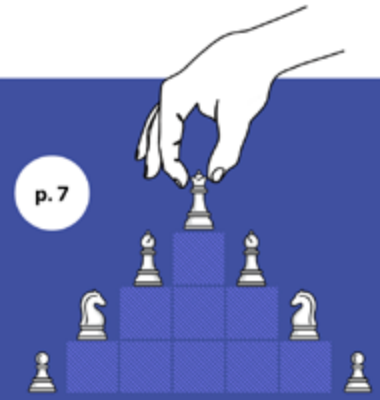

Only 11% of teams have reached the **highest level of QA maturity,** with fully optimized processes in place.

p. 9

82% of organizations still rely primarily on **manual testing.**

p. 24

55% of QA pros report that **insufficient time for testing** is their biggest challenge.

50% of organizations **struggle to fund** the automation tools they need.

p. 27

Happy testers are **1.9x more** likely to consider **attention to detail** to be a critical skill.

p. 18

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43% of teams cite **short release cycles** as a bottleneck.

Just 26% of teams adopt **shift-left testing** despite high automation rates.

p. 33

28% of QA pros trying to advance their careers struggle with a **lack of mentorship** or guidance.

p. 43

32% of organizations see an **increase in customer satisfaction** with a strong QA strategy.

p. 46

Learning-focused teams **scale 3x better** than automation-only teams.

p. 50

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INTRODUCTION

The state of quality assurance in 2025

As we release the 4th annual State of Software Quality Report, we stand at a pivotal moment in software testing. Over 1,500 quality engineering professionals — from QA engineers to senior executives — have shared insights into the challenges and innovations reshaping how organizations achieve quality at scale.

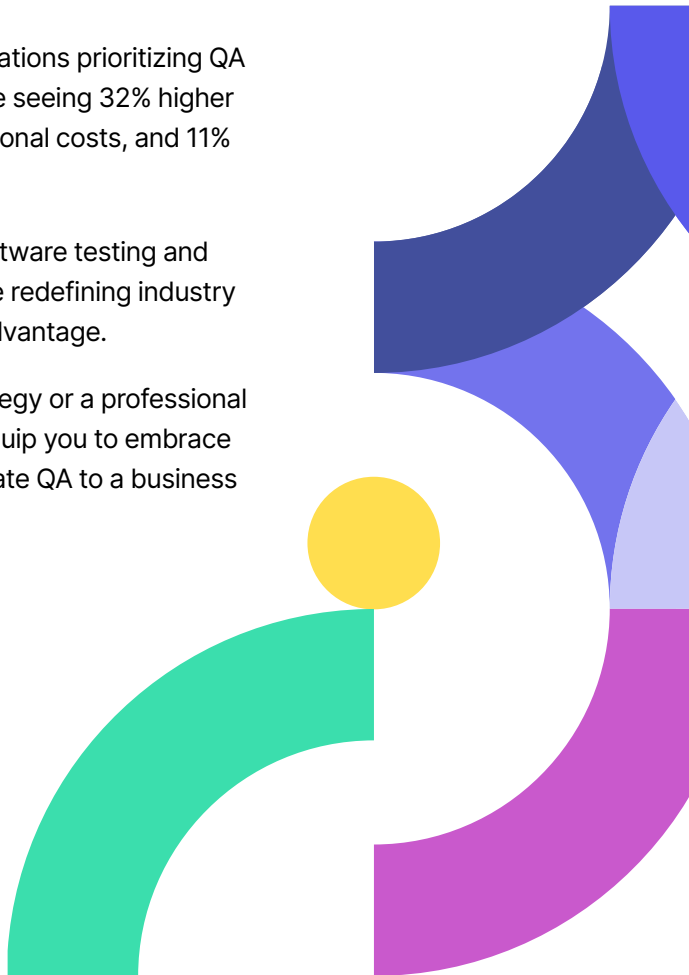
What you'll read about in this report

- **The rise of the hybrid tester:** Discover how professionals blending manual, automated, and AI-driven testing are redefining software quality.
- **The happiness quotient:** Happier testing pros were 1.4 times more likely to have implemented advanced automation solutions. For this first time, we explore more indicators of what makes happier vs. grumpier testing teams.
- **The role of AI in QA:** With 82% of respondents seeing AI as critical to the future of testing, we explore its impact and the challenges teams face in adoption.
- **Scaling QA effectively:** See how teams are overcoming resource constraints through automation, AI, and cross-functional collaboration.
- **Balancing speed and quality:** High-maturity teams are making smart use of continuous testing (40%) and CI/CD integration (48%) to deliver faster without compromising reliability.
- **Leadership and future skills:** Learn why mentorship and structured career growth are key, with mentorship leading to 25% faster career progression.
- **Strategic drivers in modern QA:** Organizations prioritizing QA maturity, automation, and AI adoption are seeing 32% higher customer satisfaction, 24% lower operational costs, and 11% report faster time to market.

This report reflects the current state of software testing and reveals how high-performing QA teams are redefining industry standards, making quality a competitive advantage.

Whether you are a QA leader shaping strategy or a professional advancing your skills, these insights will equip you to embrace innovation, lead with confidence, and elevate QA to a business enabler.

Vu Lam
CEO, Katalon



CHAPTER 1

The rise of the hybrid tester

THE State of Software Quality 2025 REPORT

QA's new frontier

The landscape of software testing is evolving rapidly, and hybrid testers are at the forefront of this transformation. Unlike traditional testers who focus solely on manual or automated testing, hybrid testers blend human expertise with AI-driven automation to ensure quality keeps pace with modern software development.

Hybrid testing is more than just a methodology — it's a shift in how testing is managed in an AI-driven world. Testers now use AI-powered tools to optimize test creation, execution, and maintenance while applying human judgment to validate AI-generated tests. By focusing on strategic quality engineering, they allow automation and AI to handle routine tasks while ensuring coverage aligns with real user behavior.

As organizations push for faster releases and higher-quality applications, hybrid testers have become essential. They bridge the gap between human oversight and machine-driven optimization, ensuring software quality evolves alongside AI-accelerated development. With Katalon leading the hybrid testing movement, enterprises can equip their teams with AI-native solutions to scale software quality more effectively than ever before.

Why hybrid testers matter

Our research found that high-maturity QA teams prioritize automation, with 45% implementing automated regression testing and 37% focusing on API testing as key components of their testing strategy. This mix of testing approaches enables hybrid testers to accelerate defect detection, optimize test coverage, and drive continuous improvement.

Key traits of a hybrid tester

- **Adaptability:** Hybrid testers must be flexible, adjusting their methods to suit various project needs and technological advancements.
- **Continuous learning:** Staying updated with the latest tools and methodologies is crucial for hybrid testers to remain effective.
- **Versatility:** Hybrid testers must balance manual, automated, and AI-powered testing to adapt to any development cycle.
- **Strategic thinking:** Testers need to understand and apply different testing methodologies for maximum impact throughout the project lifecycle.
- **Technical expertise:** Successful hybrid testers must master automation scripting, CI/CD, and AI-driven tools to enhance testing efficiency.
- **Collaboration:** Hybrid testers should work cross-functionally with developers, product teams, and leadership to embed quality at every stage.

The hybrid tester's competitive edge

Hybrid testers play a critical role in fostering strong communication and collaboration across various teams, ensuring quality is maintained throughout the development process. Our survey reveals that high-maturity QA teams leveraging hybrid testers are 1.3 times more likely to adopt AI-augmented test optimization and 1.8 times more likely to implement AI-augmented intelligent test maintenance (e.g., self-healing tests) compared to lower-maturity teams. By combining human intuition with automation, these professionals strike a balance between speed, scalability, and software quality.

The future of QA is hybrid

Hybrid testers are not just a trend; they are the next evolution of software testing. Organizations that invest in these multi-skilled professionals will be better equipped to navigate the complexities of modern development.

As software testing continues to evolve, the role of the hybrid tester will become even more critical — blending human expertise with cutting-edge automation and AI-powered tools to drive QA success.

Maturity as the foundation for the hybrid tester

QA teams vary in maturity, and the hybrid tester is uniquely equipped to drive progress at every stage. For early-stage teams, they standardize processes and introduce essential automation. For advanced teams, they leverage strategic thinking and technical expertise to implement AI tools and enhance continuous improvement.

By integrating manual, automated, and AI-driven testing, hybrid testers are pivotal in scaling and optimizing quality assurance, empowering teams to advance maturity and meet modern software development demands.

The journey to maturity

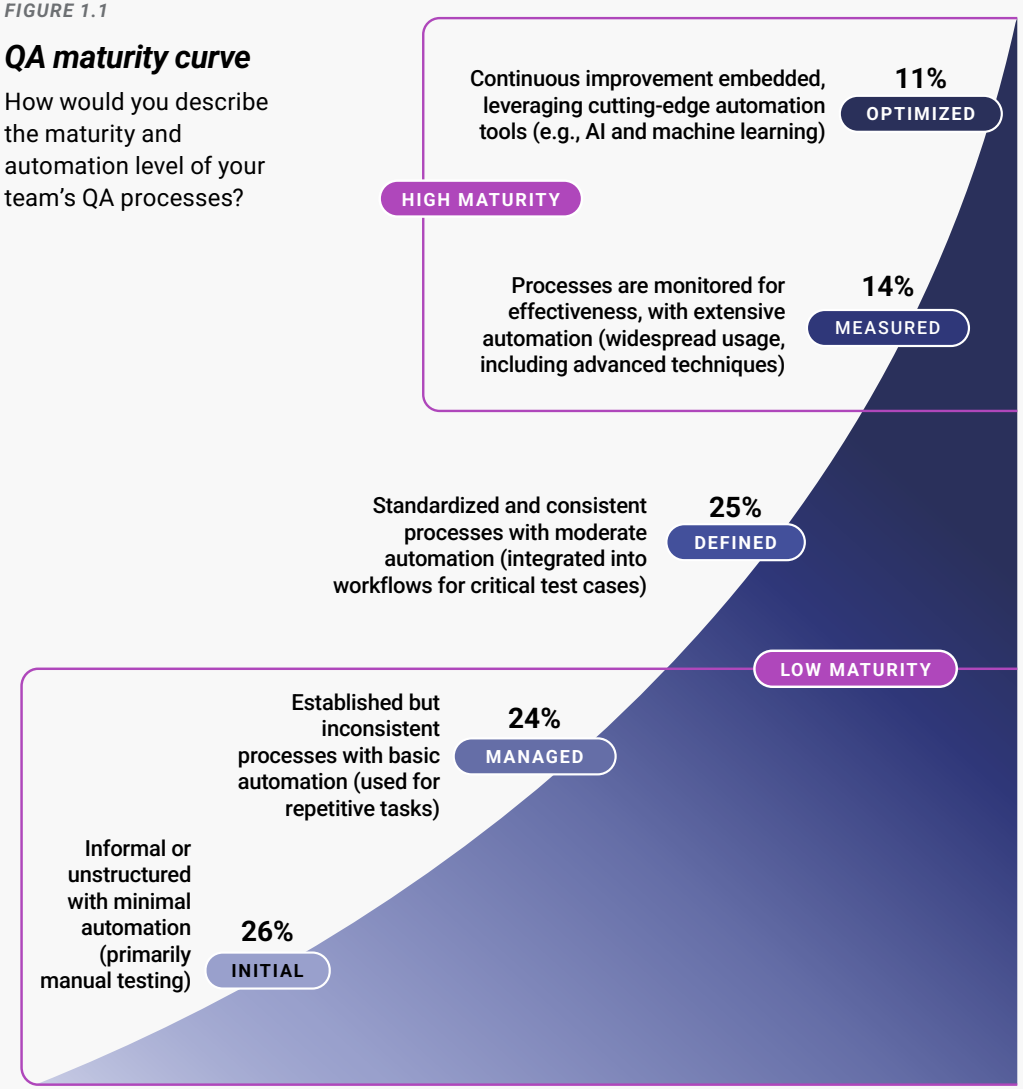
The progression of QA processes sets the stage for the hybrid tester's rise. According to the survey:

- 26% of teams are in the **"Initial"** stage, heavily reliant on manual testing with minimal automation.
- 24% have **"Managed"** processes, using basic automation for repetitive tasks but lacking consistency.

FIGURE 1.1

QA maturity curve

How would you describe the maturity and automation level of your team's QA processes?



- 25% report having **"Defined"** processes, where moderate automation supports critical workflows.
- Only 14% and 11% have reached **"Measured"** or **"Optimized"** stages, integrating advanced automation or leveraging cutting-edge tools like AI.

Of note, larger enterprises (>1,000 employees) demonstrate more advanced QA maturity compared to the broader industry, with only 36% in early stages versus 50% overall. While the largest segment (30%) has achieved standardized processes at the "Defined" level, a significant portion (34%) has progressed to advanced testing practices with extensive automation and AI integration — notably higher than small companies, where 20% reached the highest levels. This suggests that larger organizations are making substantial investments in moving beyond manual testing toward more sophisticated quality assurance approaches.

Why it matters

- **QA teams face growing demands:** With over half of teams in the "Initial" or "Managed" stages, there's significant untapped potential to improve efficiency and quality.
- **Hybrid testers accelerate transformation:** By blending manual expertise with automation and AI, hybrid testers address skill gaps, streamline processes, and help teams evolve toward advanced maturity.
- **Innovation is essential:** As organizations aim for faster, higher-quality releases, hybrid testers enable the adoption of cutting-edge tools and practices, ensuring QA remains a strategic advantage.

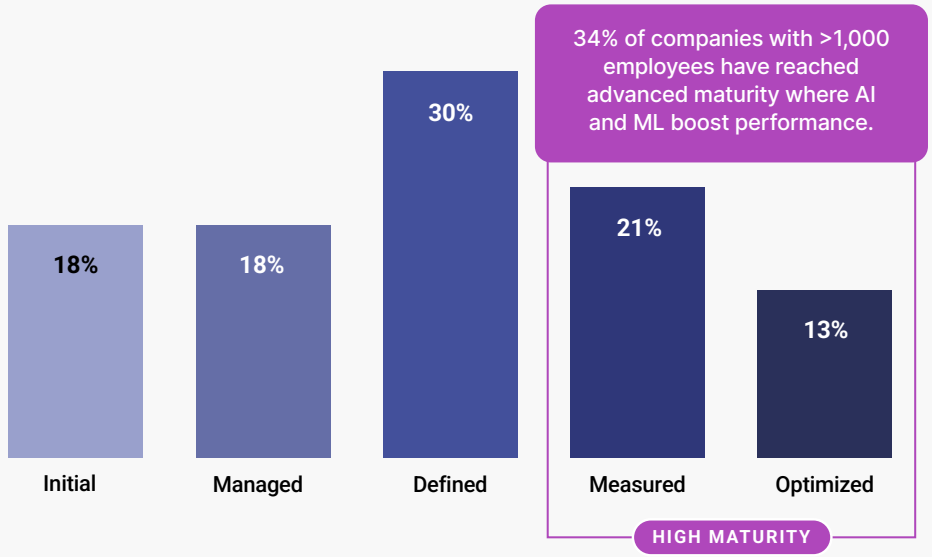
QA techniques that define the hybrid tester

Hybrid testers are redefining the approach to software quality assurance by seamlessly combining diverse techniques to meet the demands of modern development. As organizations seek to deliver high-quality software faster, hybrid testers emerge as key players who adapt to project needs by employing a broad range of methodologies — from manual testing to advanced automation.

FIGURE 1.2

QA process maturity and automation levels in organizations with more than 1,000 employees

How would you describe the maturity and automation level of your team's QA processes? *segmented by* What is the approximate size of your organization?



The need for diversity

The complexity of modern software demands a diverse range of testing techniques to ensure thorough quality assurance. Hybrid testers thrive in this environment by combining strengths across methodologies:

- Manual testing for exploratory and human-centric judgment calls.
- Automated testing to handle repetitive tasks and scale test coverage.
- Specialized techniques like API and regression testing to address the unique demands of Agile and DevOps workflows.

The 2025 survey findings emphasize this diversity. While manual testing remains the cornerstone of QA, used by 82% of all respondents, automation has become increasingly essential for efficiency and coverage. Techniques like automated regression testing (45%), automated API testing (37%), and automated unit testing (37%) are now integral to QA processes. Exploratory testing, valued for its ability to uncover unique issues, also ranks high at 44%, underscoring the balance hybrid testers bring to their workflows.

Interestingly, organizations at the Measured and Optimized maturity levels (33% of surveyed organizations) — characterized by monitored processes, advanced automation usage, and continuous improvement practices — demonstrated distinct testing patterns: they are 1.5 times more likely to use automated API testing and 1.5 times more likely to implement automated UI testing, while actually reducing their reliance on manual testing compared to industry averages. This reveals a clear shift toward comprehensive automation across both service and interface layers.

This diversity in techniques allows hybrid testers to adapt to varying project requirements, ensuring a robust, flexible approach to quality assurance.

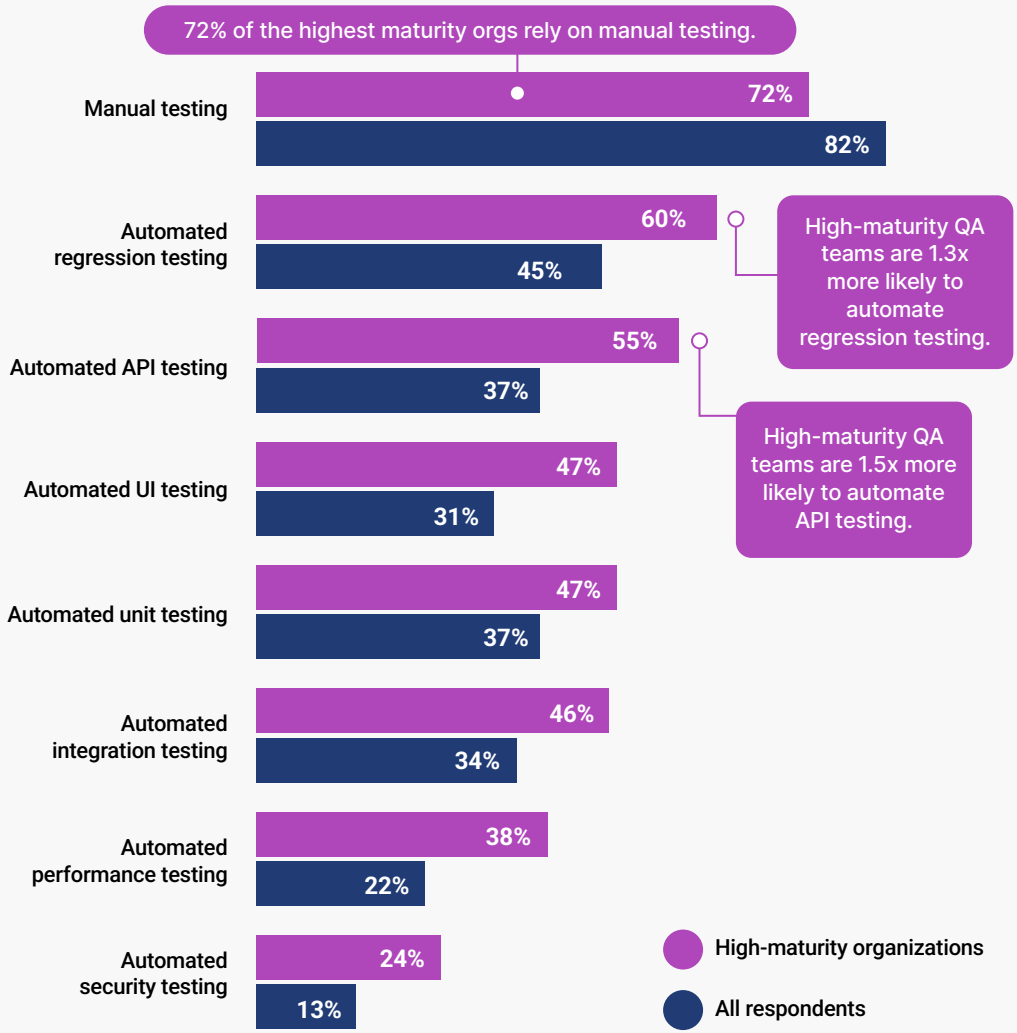
The skills that set hybrid testers apart

Hybrid testers are the backbone of modern QA teams, blending technical expertise with soft skills that make them indispensable. As the demands on software quality evolve, hybrid testers stand out for their adaptability, collaboration, and ability to leverage cutting-edge tools to tackle diverse challenges.

FIGURE 1.3

Breakdown of testing approaches in organizations with the highest maturity levels

Which quality assurance techniques does your team use during development? *segmented by* How would you describe the maturity and automation level of your team's QA processes?



Our survey results from 2025 highlight the skills QA pros identify as most critical today. Automation scripting and programming top the list, valued by 68% of testing teams, underscoring the essential role of automation in today's workflows. API and web services testing follows at 43%, reflecting the rising importance of microservices and connected systems. But it's not just about technical know-how — problem-solving and analytical skills (42%) enable hybrid testers to pinpoint root causes and tackle complex issues head-on.

Our research found that hybrid testers are 1.4 times more likely to prioritize AI and machine learning in QA but 24% less likely to emphasize attention to detail than the average QA professional. This shift indicates a growing reliance on AI for test maintenance, optimization, and defect detection — tasks once dependent on manual scrutiny. By automating detailed analysis, hybrid testers can focus on higher-level problem-solving and strategy, reflecting a broader trend where AI proficiency is becoming more critical than meticulous manual verification.

The hybrid tester's strengths

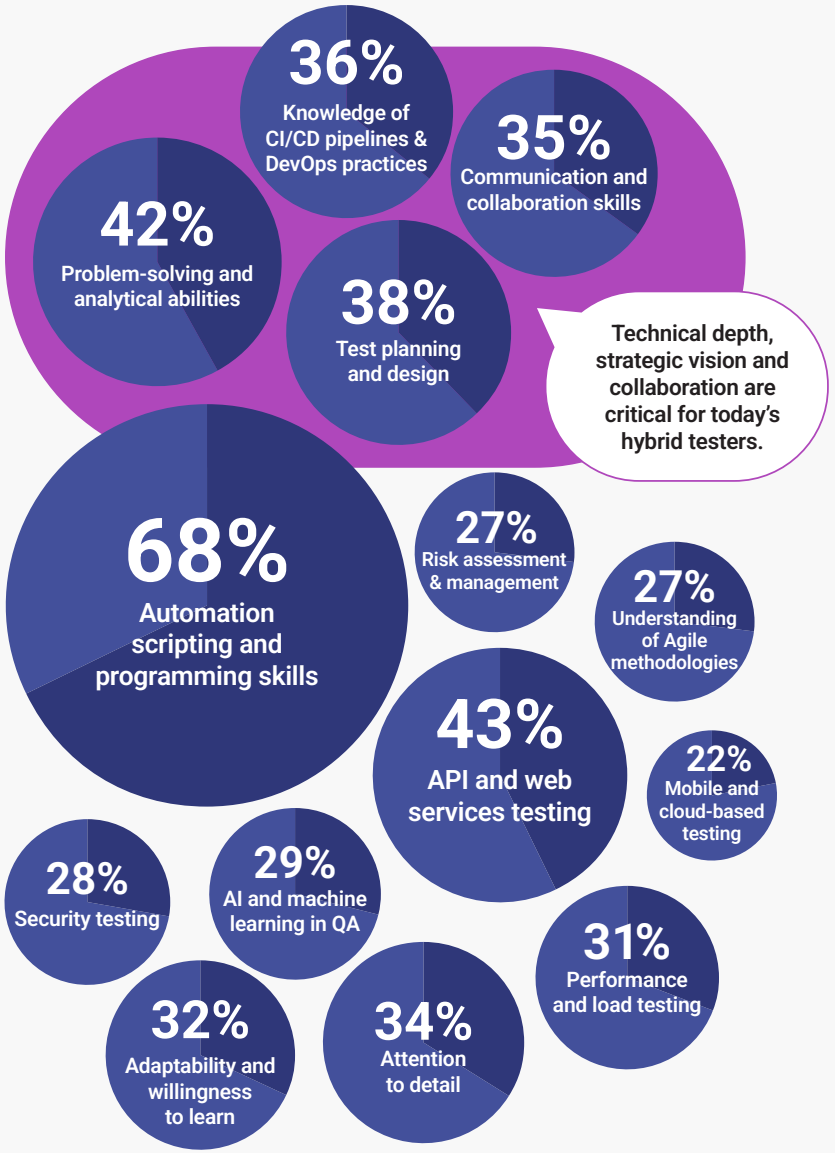
Hybrid testers thrive in fast-paced environments, seamlessly adapting to evolving technologies and project needs. Their expertise extends beyond traditional testing, combining technical proficiency with strategic thinking and cross-team collaboration. Key strengths include:

- **Technical mastery:** Proficient in automation scripting and API testing, hybrid testers tackle complex scenarios with efficiency and precision.
- **Strategic insight:** Equipped with problem-solving skills and a deep understanding of test planning, they design effective quality assurance strategies.

FIGURE 1.4

Top skills for QA success in 2025

What do you consider the most critical skills for success in QA currently? (Select three)



- **Collaborative agility:** Exceptional communication skills enable them to align QA efforts with development and operations, ensuring quality remains a shared priority.

By leveraging these strengths, hybrid testers drive innovation in Agile and DevOps ecosystems, ensuring software quality keeps pace with modern development demands.

The time-saving advantage of hybrid testing

Time is the ultimate currency in modern software development, and hybrid testers are proving to be exceptional time optimizers. By blending AI tools with traditional testing methods, they streamline processes, elevate QA quality, and ensure thorough coverage — all while saving valuable time.

The data highlights key differences between teams that use AI and those that don't. Both groups spend about the same amount of time on manual testing, but AI-driven teams are 1.2 times more likely to invest heavily in automation (28% spend more than half their time on it vs. 24% for non-AI teams). They are also 1.2 times more likely to focus on reporting and documentation (30% dedicate over 30% of their time vs. 25% for non-AI teams).

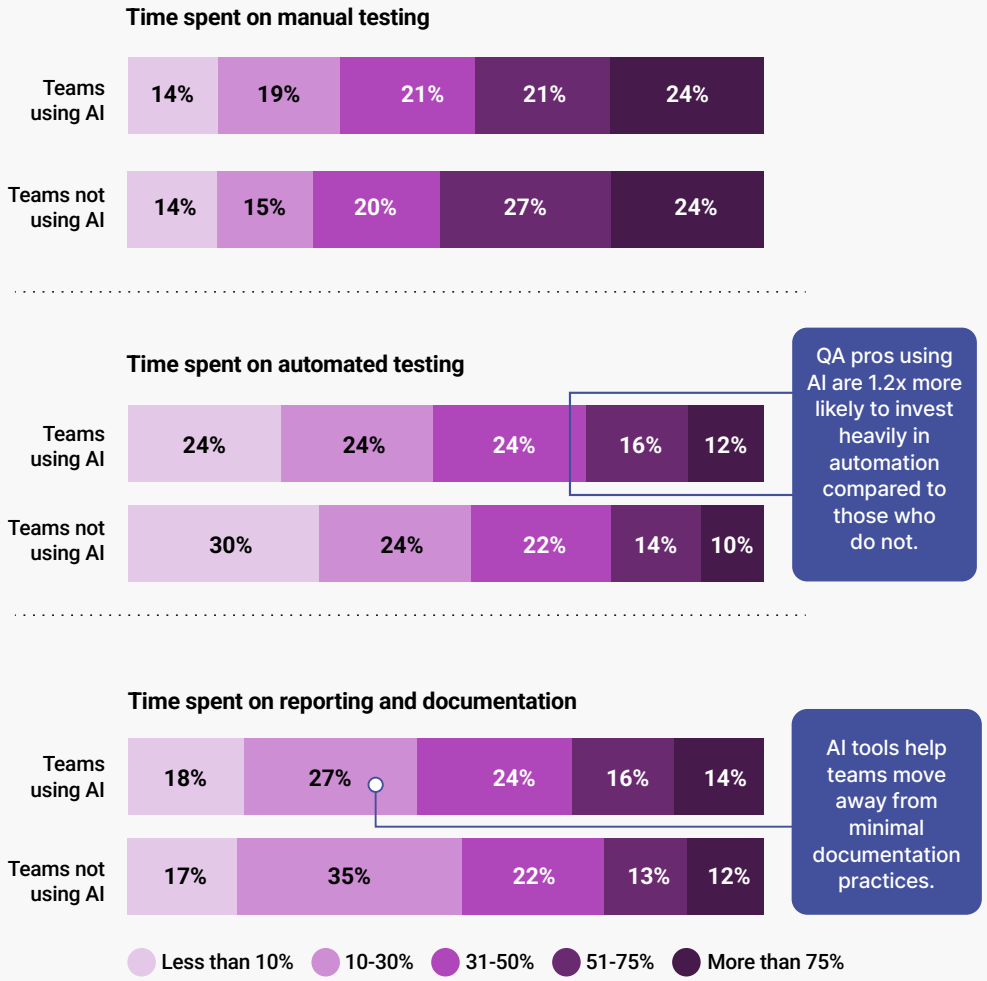
The most striking difference is how teams using AI show a more balanced distribution in their documentation efforts, while non-AI teams are heavily concentrated (35%) in the 10-30% range. This suggests AI tools are helping teams move away from minimal documentation practices toward a more comprehensive, evenly distributed approach to documentation.

The key contrast is stark: Teams not using AI cluster their documentation time in the low-effort range, while AI users spread their documentation work more evenly across all time ranges, potentially indicating that AI tools are making thorough documentation more achievable.

FIGURE 1.5

AI adoption in QA: Impact on manual testing, automation, and documentation

How much time do you typically spend on QA activities? *segmented by* Do you currently use any AI-powered tools (e.g., ChatGPT or similar) in your software testing activities?



Hybrid testers are strategic

Hybrid testers aren't just automating tasks — they're fundamentally reshaping how QA time is invested. They're shifting from sporadic, manual-heavy workflows to systematic, comprehensive testing approaches by leveraging AI. The result is more thorough coverage with a more balanced effort, enabling QA teams to meet the intense demands of modern software development without sacrificing quality or documentation. This strategic reallocation of time — rather than just raw time savings — is what makes hybrid testers so valuable in today's fast-paced development landscape. ■

> What excites me most about QA is the constant learning and problem-solving it requires. The variety of tools, testing strategies, and methodologies keeps things interesting, while the ability to collaborate with cross-functional teams to enhance product performance is incredibly rewarding.
>
> ***Ultimately, being a QA professional means I'm contributing to a product's success by ensuring it's polished, reliable, and ready to deliver value to its users.***

Abhishek Singh Bhadauria
QA Engineer, Mirabel Technologies