

Your guide to

AI in IT Quality Assurance and Testing

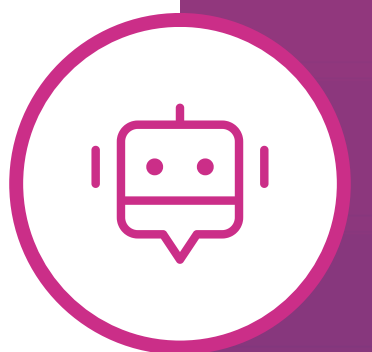


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1. Introduction to AI in IT Quality Assurance and Testing



Artificial intelligence is transforming the field of quality assurance; it is set to play a crucial role in software testing. According to Gartner*, AI can significantly enhance the productivity of testers, offering a new dimension to test automation tools and enabling software engineering teams to bolster software quality while curtailing testing cycle times.

The Future is AI-Driven

*By 2027, a staggering **80%** of enterprises are expected to have AI-augmented testing tools woven into their software engineering toolchain, a leap from the mere **10%** in 2022. This strategic planning assumption underpins the belief that AI is not just a fleeting trend but a foundational element for the future of software testing.

Capabilities Unlocked by AI

AI-augmented tools are not just about automation; they are about intelligent adaptation and self-optimisation. Machine learning, self-healing heuristics, and computer vision are just a few of the technologies revolutionising areas such as test case and data generation, suite optimisation, and defect prediction, setting a new bar for test efficacy and robustness.

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2. AI: What does it mean?

AI is simply a broad term that is used to describe any system or process capable of performing tasks that typically require human intelligence, such as reasoning, learning, or decision making. AI can be used to rapidly produce human like content.

Machine learning

When people talk about machine learning they are referring to a subset of AI that enables systems to learn from data and make predictions or decisions based on it. It uses various techniques, including supervised and unsupervised learning.

Generative AI

This is a branch of Machine Learning that focuses on generating new content or data from existing sources, including images, text, audio, and video. It excels at tasks like document summarisation, text generation and question answering.

This paper looks at how to deliver measurable advantages when using generative AI and how organisations can transform the way they develop, deploy and maintain their software.



3. AI: practical innovations in Quality Assurance

What does transforming quality assurance, software delivery and testing with AI-driven innovations mean in practice?

Organisations need practical applications of AI that will result in the streamlining and acceleration of key workflows and documentation. Also, integration of AI with development lifecycle tools to optimise delivery tasks, enhancing both efficiency and collaboration.



Requirement engineering

AI capabilities in content generation can be employed for requirements engineering.



Test process documentation

AI can be used to populate content into templates for test strategies and test plan documents.



Test stories and scenarios

AI can generate user stories and scenarios that are the basis for development and solution acceptance.



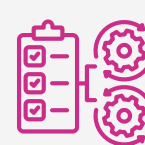
Project and test reporting

AI is good at aggregating diverse data sources to support reporting on project progress and test delivery.



Development tool integration

AI integration with lifecycle management tools can enhance how development and testing tasks are tracked and managed.



Automated test creation

AI can automatically generate the files and assets that are needed to support automated testing.



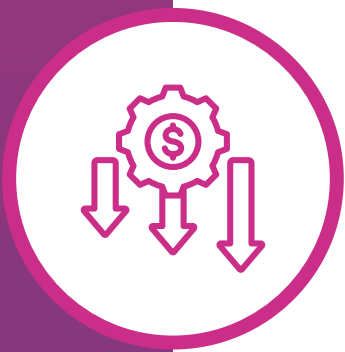
Automation test maintenance

AI can be employed to perform maintenance task for test used within automation frameworks.



Defect analysis

AI can perform analysis past defects raised as well as make predictions on where they can be found.



4. The cost of delaying AI adoption

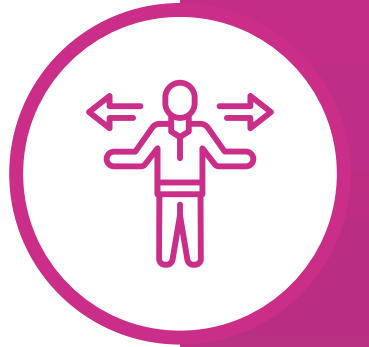
The tide of change

The software testing landscape evolves due to trends that require faster, more flexible, and more comprehensive testing solutions. With the growing complexity of applications and the shift towards agile and DevOps methodologies, the need to make the most of time and expertise becomes crucial to keep up with development demands and maintain high-quality standards. AI-augmented tools have the potential to address this need.

The cost of inertia

A delay in integrating AI into testing processes could result in missed opportunities to better utilise the time and expertise of testing professionals, reduce costs, and speed up time to market. AI has the potential to accelerate the preparation and setup for tests, reducing the cost and effort associated with test maintenance.

In the hands of skilled testers, Gen-AI can assist in preparing test cases based on user requirements, generating test data, scripting automated tests, defining test scenarios, and generating test reports.



5. AI: Pitfalls and uncertainties

Key research bodies, such as Gartner, have been highlighting the crucial role that AI will play in quality assurance and software testing for some time. Knowing the benefits of implementing AI, why then are more organisations not reaping those rewards right now?

There are a range of factors causing organisations to hold back on the adoption of AI for which they need to find the right answers:



Data privacy and security:

Concerns about the security of sensitive data and where it might be stored when used by AI solutions.



Tools

Knowing which generative AI resources and tools are available and deciding which ones to use can be a daunting task.



Transparency and interoperability:

Distrust of complex, opaque AI models due to their lack of transparency, especially in regulated industries.



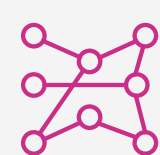
Skills gap:

Unavailability of specialist skills or training required to implement AI technology within current work force.



Regulatory compliance:

Added complexity in AI deployment in regulated industries related to data protection, privacy and fairness.



Robustness and reliability:

Vulnerabilities of AI systems to adversarial attacks, data drift, and other sources of error undermining their performance and reliability.



Quality of data:

Acquiring and managing high-quality data for effective AI system functioning can be complex and time-consuming.



Knowledge and awareness:

Misunderstandings about generative AI's capabilities and uncertainty about where to start.

Safeguard and accelerate your IT and business change

Since its launch in 2002, Acutest has grown to be a market-leading consultancy, specialising in the testing and assurance of IT solutions, business change and digital transformation.

We are continuing to develop our transformative approach to software testing and IT delivery with our latest AI-driven innovations. Our self-healing test automation and clear AI-assisted project articulation streamline workflows and documentation, while our integration with Azure DevOps we can optimise the development lifecycle, increasing rigour, efficiency and collaboration.

In April 2021, Acutest joined Trustmarque, adding to their unrivalled strengths across the IT lifecycle as a solid digital transformation partner.



6. Engage a trusted partner



At Acutest, our approach is to integrate AI in ways that transform, not replace, your team's work. We focus on where AI can make significant improvements, always considering the crucial human expertise that understands the nuances of your business operations. Our role is to support your team, complementing their skills with AI's strengths to create a seamless, efficient workflow and better overall results.

The human factor

At every potential integration point of AI, we emphasise the importance of human expertise. AI can process and analyse data at an incredible scale, but human testers are the ones who provide context, make nuanced judgments, and ensure that the insights AI provides are actionable and relevant.

Expertise amplification

We aim to amplify the talents of your business's experts. By incorporating AI into routine processes, we help free up their time for critical thinking and strategic work, ensuring their skills are utilised where they are most needed.

Committed to our clients

At Acutest, we are committed to a partnership that makes AI accessible and functional for your team. We are ready to guide you through every step of the AI integration process, ensuring it brings clear benefits to your business without added complexity.



7. More than AI expertise alone

Acutest is an IT consultancy specialising in Quality Assurance and Testing. For 20+ years we have supported hundreds of clients, from varied industries and of all sizes, in successfully delivering their IT and business change programmes.

We have and continue to develop AI solutions that enable us to apply our knowledge, expertise and best practice even more effectively to client's quality assurance and testing processes. Our experience tells us that before implementing any new technology the benefits need to be clearly understood. It is the outcomes that are important.



Clarity of project goals

Acutest have harnessed AI for rapid requirements engineering and to ensure that desired outcomes are clear from the start.

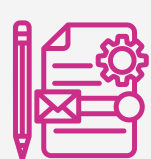
Everyone is quickly on the same page, so costly misunderstandings are avoided.



Simplified test documentation

Using AI we can streamline test plan creation and produce structured, easy-to-understand test documentation.

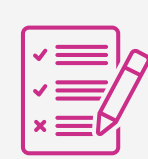
This not only saves time but allows testers to conduct their work with greater precision and ease.



Accelerated test creation

Acutest is using AI to quickly generate preliminary user stories and scenarios, while automatically maintaining full traceability to source documents.

Tests and acceptance criteria are ready for subject matter expert review and risk assessment.



Progress and status reporting

Using AI, we are able to rapidly aggregate diverse data sources into a clear, consistent, and up-to-date single source of the truth.

Quicker and better reports for informed decision making on knowing when to deploy your IT solution.



Azure DevOps integration

Acutest have **integrated AI with Azure DevOps**, enhancing how development and testing tasks are tracked and managed.

This ensures a seamless, efficient workflow from code, through testing, to deployment.



Fast tracked test automation

We are using AI to automatically generate the feature files and acceptance steps that support automated testing.

This accelerates your teams test automation getting them to the point of running tests and finding issues more quickly



Self-healing tests for efficiency

Acutest have incorporated self-healing into test automation frameworks. Broken tests update themselves when there are changes in the software being tested.

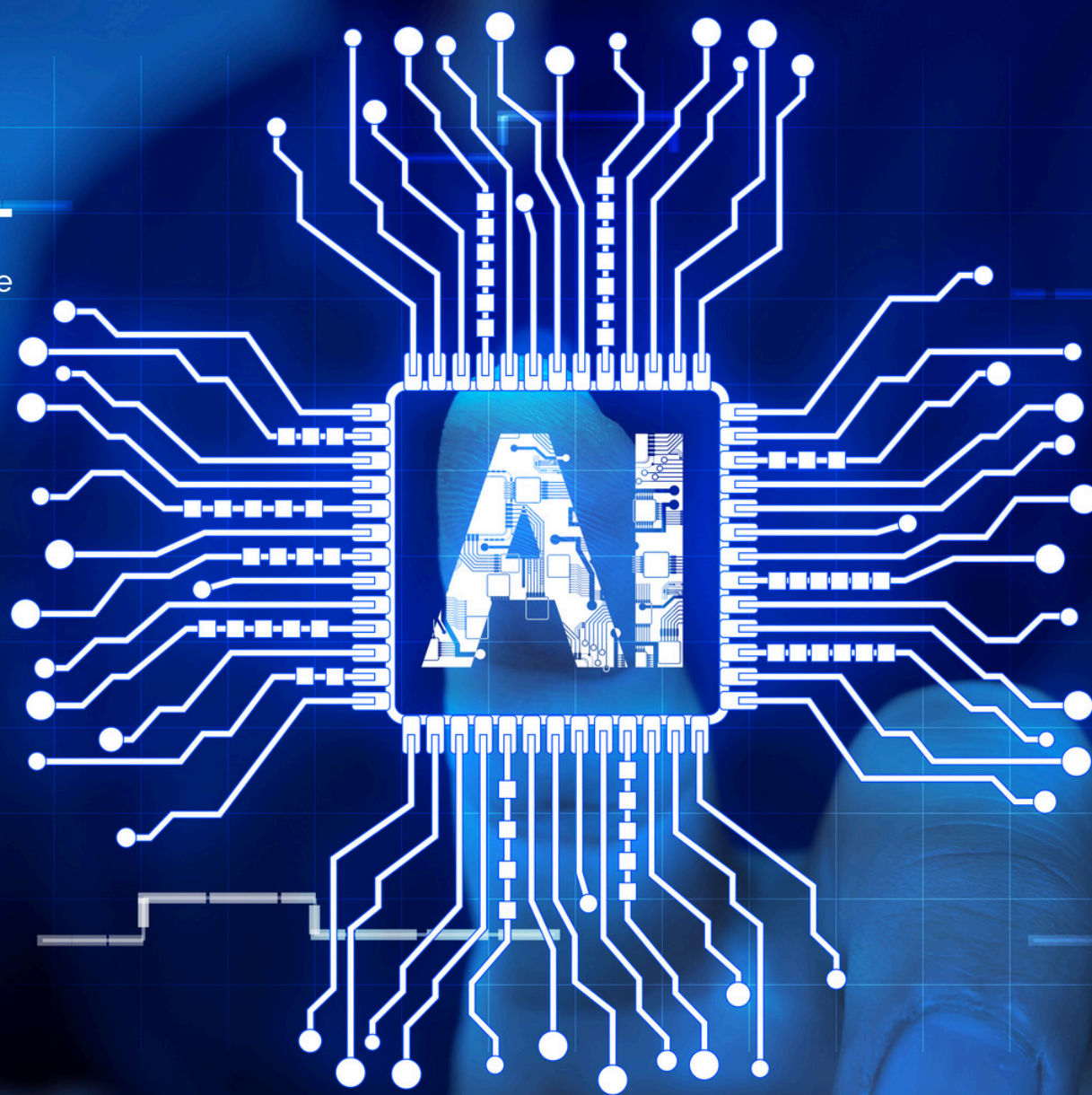
The result is less manual work to keep tests up-to-date and more time for your team to focus on increasing coverage.



Expedite defect root cause analysis

With AI we can support the analysis of the issues found in testing or production so you can identify the reason behind your defects.

Implement preventative solutions for your issues more quickly, saving the time cost associated with rework / retest.



8. Further benefits to your organisation

Sharing our knowledge

Understanding that testing is a critical aspect of any business, our approach is to share our expertise. We do not just provide technology; we equip you with the know-how to leverage AI for smarter, faster decision-making.

AI integration point evaluation

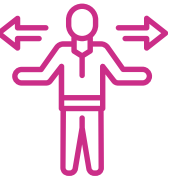
With our prioritisation approach as a guide, we quickly evaluate where and how to integrate AI into the testing process. We look for sweet spots where the benefits are transformative yet the risks remain negligible or moderate, ensuring that the deployment of AI is both advantageous and secure.

Workflows streamlined with AI

Our focus at Acutest is on practical applications of AI that enhance—not replace—the work of your in-house experts. We offer straightforward tools and clear guidance to integrate AI into your existing workflows, making complex tasks simpler and more manageable.



9. Addressing the pitfalls and uncertainties



Leveraging our expertise and that of Trustmarque Group, our parent company, can address key AI concerns:



Data privacy and security:

Trustmarque, our parent company, specialise in Microsoft, Cloud, Data services, and Cyber. We can provide a secured environment or access to our landing zone, which helps you manage consistently and ensure proper governance, compliance, and security.



Knowledge and awareness.

We have experience to enable you to transition easier and quicker onto AI without significant investment and time. We can provide demonstrations and proof of values to show case the capabilities of AI within your organisation,



Tools.

We can help you leverage Microsoft's AI ecosystem which includes Copilot, Azure AI services and OpenAI. Adding open-source AI models like Llama2 will ensure access to a diverse toolkit for successful AI implementation.



Transparency and interoperability:

Leveraging our leadership in Quality Assurance and Testing services, we stand as experts to address this challenge which enables us to mitigate risks by meticulously evaluating different model variations and data prompts before they advance to production,



Skills gap:

We work with our clients in training and development to upskill employees and address concerns about job displacement due to automation. Our ethos is not to replace humans with AI in the workforce, but to enable them to use their time more efficiently.



Regulatory compliance:

Our solution will be managed or hosted through a secure framework “landing zone” that prioritises confidentiality and integrity and adheres to industry best practices. We collaborate with your team to identify regulatory and fairness requirements and establish standard checks for these.



Robustness and reliability:

Implement comprehensive guardrails for AI systems, including Content Filtering, Prompt Engineering Testing, and Red Teaming. This proactive approach ensures security and boosts confidence in AI deployment reliability and performance.



Quality of data:

We help you to review business and technical risks related to data quality. Our approach involves a tactical assessment, collaborating with your team to identify specific business challenges and available data assets for AI integration.



Usage and costs:

Trustmarque, a trusted technology partner, help you set up objectives and KPIs. Their services include specialist monitoring for cloud or on-prem resources, providing visibility, analysis, governance, cost management, and usage monitoring.



Want to learn more about how your projects could benefit from AI?

Book a call with our experts:

enquiries@acutest.com

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(4p p/m plus access charge)



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