



Beyond Set-and-Forget

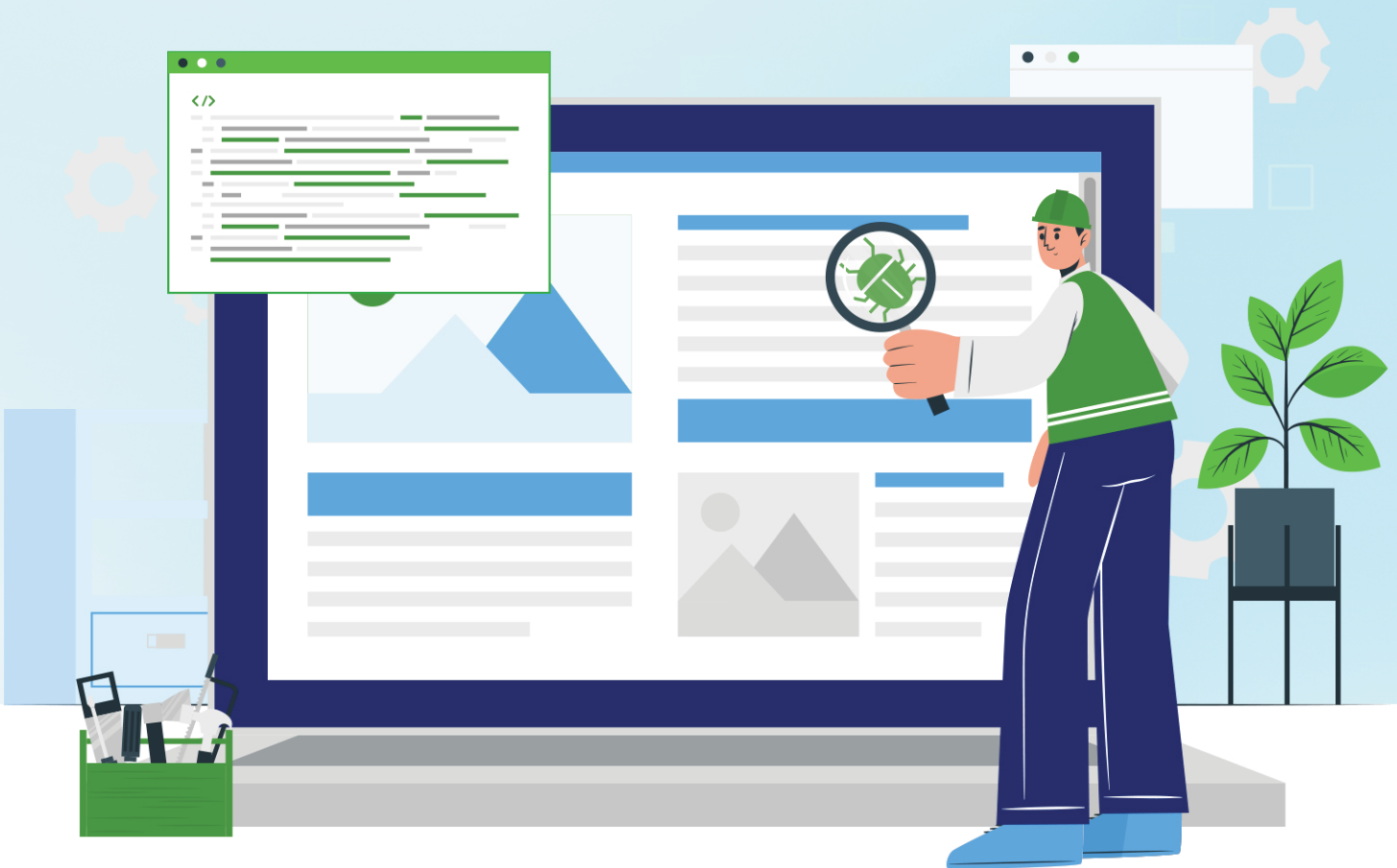
Building a Long-Term Test Automation Strategy



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1. Introduction



Imagine your product is ready to launch, but...

a single overlooked bug leads to a critical failure. The resulting costs, damaged trust, and potential regulatory fallout can significantly impact your bottom line. While this scenario is dramatic, it's unfortunately not rare. The good news is that such failures are avoidable with the right approach to test automation.

Test automation is often seen as a quick fix - a way to speed up testing and get your software to market faster. But here's the truth: Test automation isn't just a one-time investment; it's a strategic investment that evolves alongside your product to deliver value.

This ebook will guide you in building a test automation strategy that not only reduces costs and risks but also meets the stringent standards in healthcare.

2

Understand the Need for Test Automation



Let's say you haven't implemented test automation yet.

Multiple Releases, Tight Schedules

Frequent releases are now the norm, not the exception. As product updates roll out faster than ever, manual testing simply can't keep pace.

Test automation enables you to manage these accelerated cycles, ensuring the speed and scale needed to maintain quality across every iteration.



Disparate Testing Environments

Your software interacts with diverse systems—EHRs, APIs, microservices, etc. A single error can cascade across your entire environment, affecting performance and user experience.

Automated testing allows you to test these complex interactions continuously, identifying issues before they escalate into more significant problems.



Rising Cost of Manual Testing

As your software scales, so do manual testing costs—both in time and resources.

Automation significantly reduces these costs while freeing up your team for higher-value tasks. Since every resource counts, test automation helps protect your investment from market shifts.



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Build a Sustainable Test Automation Mindset



Be strategic, not just tactical!

Too often, companies invest in the latest tools, expecting automation to solve their testing challenges instantly. But here's the reality: testing methodologies, tools, frameworks, etc., will fall short if you don't see test automation as a mindset instead of a tool.

The proper test automation mindset shifts your teams' focus from quick wins to long-term success. It's about helping them understand that automation is not just there to shorten testing time — but to ensure your software remains reliable, adaptable, and scalable.

Most product owners will only focus on testing at the final stage of the development cycle, right before the product is released. **However, organizations that embed test automation early in their development cycle consistently see better outcomes: faster release cycles, fewer last-minute bugs, and lower maintenance costs.** It's not because they have better tools but because they can control their products better by being involved early in the testing process.

Keep the mindset shift in mind, and you'll set your teams up for long-term success.



Choose Flexible Automation Tools That Evolve

A successful automation strategy is built to last. In healthcare, where compliance and feature updates are frequent, you need to select automation tools and frameworks that can scale as your software grows in complexity. Opt for tools that adapt to new clinical features, evolving APIs, and regulatory changes without costly overhauls.

The goal is to ensure your tests are just as effective years down the line as they are today, handling both new features and technical debt.



Regularly Update Test Suites to Reflect Changes

Your test suites are not static—they need to evolve with every product update and new feature. A strong test automation mindset involves regularly revisiting your test suites, incorporating feedback, and adapting to your product and technology stack changes.

By regularly updating your test suites to match these changes, you can make sure your automated tests stay relevant and continue to catch critical bugs before they reach production, safeguarding patient data and workflows.



Focus On Creating Easy-to-Update Tests

Too often, teams rush into automation focused only on short-term gains, such as reducing manual testing time. While speed is important, the real value comes from creating easy-to-maintain and update tests. For healthcare software, this means structuring tests to accommodate changes in clinical workflows, UI, and patient data integrations, reducing time spent on rework. Using clear design patterns like the Page Object Model for healthcare applications ensures that test scripts are easy to update as UIs and workflows evolve.

Well-structured, maintainable tests reduce future technical debt so your team can focus on system reliability rather than constantly rewriting tests.



Embed Test Automation Into Team Collaboration

Test automation shouldn't be a do-it-alone venture. Encourage shared ownership of test automation between the QA and development teams so that test automation is embedded into the development cycle from the get-go.

Low-code or no-code automation tools make it easier for both teams to proactively address issues and update test scripts as you deploy new code.



"Saying test automation slows things down is like saying developers are the reason software takes too long. A sustainable test automation mindset should recognize that testing ensures when code goes live, it doesn't negatively affect your end users—whether they're patients or providers."

- Kaushal Amin, CTO of KMS Healthcare

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Maintain Test Automation Without Slowing Down Development



Automation should be an asset, not a barrier to speed.

Test automation often gets a bad reputation because of the upfront work involved—building scripts, training teams, and initial costs. And many believe that testing slows things down, but with the right approach, it doesn't have to.

Here are some key strategies to help you effectively implement test automation.

Focus On The Right Test

Not all tests are created equal.

Prioritize automating the tests that provide the most value. Critical functionalities, frequently used features, and error-prone areas—these are the ones that directly affect user experience and product stability.

Regularly evaluate and update test cases to avoid wasting resources on redundant or low-value tests.



Use Data-Driven Testing

Data-driven testing allows you to reuse test scripts across different scenarios.

Keep test data separate from test scripts, making it easier to test multiple data sets without rewriting tests.



8 | Maintain Test Automation Without Slowing Down Development

Implement Self-healing Mechanisms

Minor UI or web element changes can break your test scripts.

Self-healing mechanisms automatically handle these changes without requiring a complete rewrite of scripts. To manage these updates efficiently, use tools that offer built-in features, such as AI capabilities.



Use The Three-Pronged Approach



Parallelization

Distributes tests across multiple machines to speed up execution.



Smart Waits

Prevent tests from stalling due to slow-loading elements.

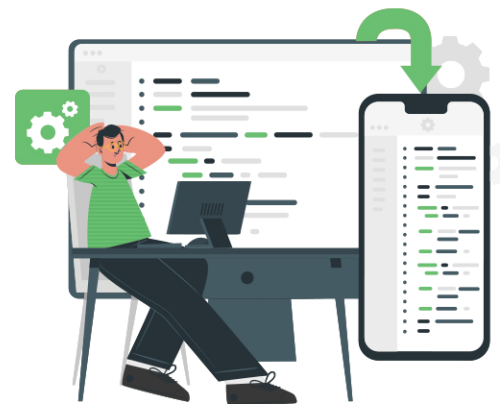


Caching

Leverage build-in browser features to store data and eliminate redundant fetches during test runs.

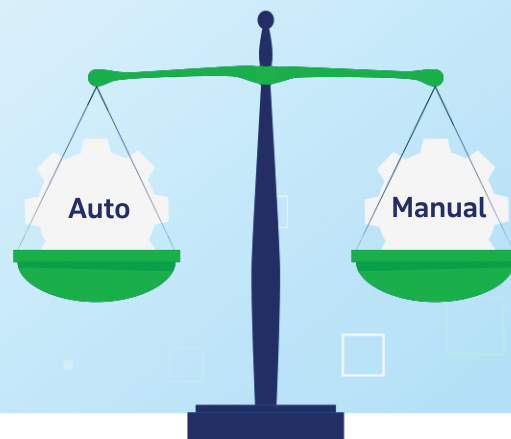
Integrate Into The CI/CD Pipeline

Integrate automation testing into your CI/CD pipeline to ensure that tests are run with every build. Aim to implement continuous testing throughout development, catching issues early and preventing downstream delays.



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The Delicate Balance Between Automated and Manual Testing



Not everything needs to be automated!

While automation handles repetitive tasks, manual testing shines when exploring user experience and uncovering edge cases. The key is to automate what adds the most value—like regression, acceptance, and API tests—and leave exploratory or usability testing to manual testers.

Striking the right balance ensures you cover all bases—delivering a faster, more reliable product while controlling costs and resources.

Decide What to Automate

Automation should be applied where it adds the most value: large data sets, complex architectures, and repetitive tasks.

A general rule of thumb is to automate the most frequently performed tests:



Regression Tests



Acceptance Tests



API Tests

Leave exploratory, usability, and certain edge cases to manual testers who can bring human insights.

Combine Automated And Manual Efforts

Keep your manual and automated test suites updated to ensure complete coverage.

During each sprint, allow manual testers to quickly validate new features while automation engineers focus on automating critical regression tests.

Remember, successful testing efforts must align with business goals.

Know the Difference

	Automated Testing	Manual Testing
Test Coverage	Broad coverage across multiple platforms and environments.	Limited coverage means it is harder to maximize testing time.
Test Execution	Done automatically.	Performed manually by QA testers.
Cost Efficiency	Higher upfront cost but saves resource over time.	Lower upfront cost, but becomes expensive with ongoing testing.
Maintenance	Requires regular updates and adjustments to scripts.	There is no maintenance of scripts, but it requires more manually effort and frequent changes.

Align Testing Strategies with Business Goals

Whether performing automated or manual testing, in the end, you must ensure your testing efforts drive real business value. Here's how to stay on track:

✔ Identify key business priorities

Determine whether speed, performance, or user satisfaction is the primary driver for our current project. Your testing strategy should prioritize areas with the highest business impact.

✔ Optimize for value, not volume

Speed is important, but it should never come at the expense of quality. Automating as many tests as possible might seem efficient, but it often leaves critical gaps in coverage. Manual testing, while time-consuming, is still a must in high-risk and user-focused scenarios.

✔ Track impact through metrics

Don't just measure test coverage—track how testing outcomes impact key business metrics. Monitor testing KPIs that connect directly to business goals, such as defect escape rates, release cycle times, or user-reported issues.

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Avoid These Test Automation Slips



Many teams stumble by falling into common pitfalls when maintaining test automation. Make sure you are not falling into the same trap.

The "Set-and-Forget" Mindset

We've said it before and we'll say it again: automation is not a one-time investment.

Management sometimes assumes that automation eliminates further maintenance once it is in place. They take their focus away from important, long-term goals and hyper-focus on achieving short-term goals. Working with companies from new product development to complex legacy systems, we have seen the beginning, the middle and the later chaos that comes with one-time automation pushes.

✓ Solution: Ongoing Maintenance



Treat test automation as a living process.

Regularly reviewing and updating your test cases will ensure they align with your product's evolving needs. Implement a system for tracking automation performance and dedicate resources to ongoing maintenance.

Testing Against Wrong Data

Running tests on the wrong data is like beginning at the wrong end. If your test data doesn't reflect real-time scenarios or current software versions, you're not getting the right picture of your product needs. Using outdated or irrelevant data wastes time and creates false expectations for your product.

✓ Solution: Improve Data Quality



Keep your test data updated and reflective. Implement data-driven testing, where test data is stored separately from test scripts, making it easy to update without altering the core automation logic.

Fragmented Collaboration

Test automation should be a team effort. Yet, the presence of separate team functions creates communication gaps.

When development, testing, and operations teams work in silos, automation testers are not able to keep up with the sprint level.

✓ **Solution: Embrace DevOps Culture**



DevOps culture promotes shared responsibilities.

Foster a culture of collaboration where testers are involved early in the development process. Ensure testers interact with developers regularly to be aware of any changes and update the test scripts proactively.

Changing Requirements in HealthTech

Patients demand more from HealthTech than ever before. The competition constantly shifts. New and better technology goes live. There are tons of reasons why your product requirements keep changing.

Testing teams often need help to keep up with these shifts. And when tests slow down, development follows suit — opening the door for competitors to gain critical market advantages.

✓ **Solution: Adopt Agile methodologies**



Agile methodology encourages frequent iterations and continuous feedback, which allows testing to stay in sync with development. By breaking down development into short sprints, teams can continuously adjust and refine their automated tests alongside changing requirements.

However, test automation contrasts with agility by nature. Automation requires stable scripts, while Agile thrives on flexibility and rapid change. Many teams struggle with finding a middle ground — too much rigidity can slow progress, while too much flexibility can lead to inefficient testing.

Outsourcing to experienced testing teams can help you strike the right balance. Teams with deep experience in Agile environments know how to implement automation that aligns with rapid development cycles without compromising speed or efficiency.

Partner With Experts In Agile



Agile discipline drives exceptional software and mobile app development. And test automation makes Agile testing—a vital part of the Agile concept—achievable.

Experienced testing teams live and breathe agile:

- + Embrace shorter cycles to align automated tests with the latest requirements quickly.
- + Focus on automating the most impactful tests first to keep development on track.
- + Identify and fix bugs quickly through faster feedback loops.
- + Ensure strong collaboration from idea to launch.

A true Agile testing partner knows how to customize your automation framework to suit the specific needs of your team and product.

But, finding the right partner sometimes is like looking for a needle in a haystack. Discover experts' approaches to selecting reliable testing partners and product-led growth strategies to build your winning outsourcing team in our complete guide:



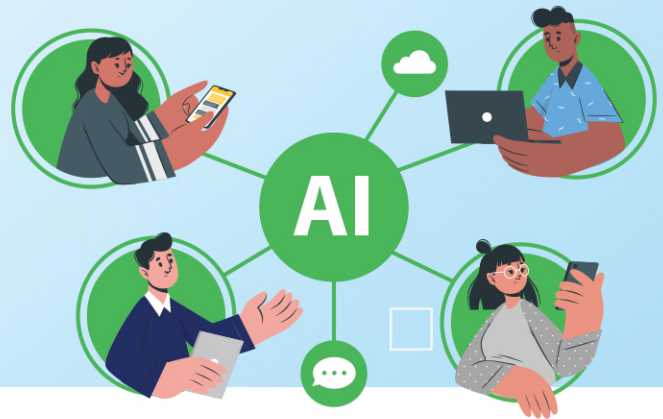
Outsourcing Healthcare Software Development:

The Complete Guide for Doing it Right

Download the eBook 

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Understanding the Wave of AI-Powered Test Automation



Today, consumers are already using artificial intelligence (AI) for healthcare needs, and healthcare leaders have already expressed activity, investment, and plans to implement it:

75% | of leading healthcare companies are already experimenting with AI or attempting to scale across the enterprise.

82% | currently have or plan to implement governance and oversight structures for AI.

92% | of leaders overwhelmingly see promise for AI to improve efficiencies.

65% | of leaders see promises to enable quicker decision-making.

And AI is finding its way to test automation, too. Companies integrating AI into their testing strategies reported that they release software faster, with fewer bugs and more confidence.

How Does AI Advance Test Automation?

In brief, AI makes automation efficient by learning from data, identifying patterns, and making informed decisions. It's an evolving field, but several targeted use cases for AI in test automation have become a reality, including:

- + **Generating test cases** automatically based on user behavior and code changes.
- + **Self-healing test scripts** that adapt to minor UI changes without manual updates.
- + **Predicting defects** by analyzing historical data and prioritizing tests accordingly.
- + **Improving test coverage** by identifying gaps and suggesting additional tests.
- + **Automating test result analysis** to identify trends and root causes faster.

The AI hype train may seem to be smoke and mirrors, but its use will only increase. It moves test automation from running predefined scripts to a more, adaptive approach.



"We're already seeing AI-powered tools that can automatically generate and update test cases as the code evolves. The longstanding challenge of too many test cases or too few test cases will soon find its solution within these tools."

- Kaushal Amin, CTO of KMS Healthcare

Measure The Value of AI

AI must provide a return on your upfront investment. Track these key factors to ensure AI is driving tangible results:

Execution time	Compare how quickly tests are executed using AI versus traditional methods.
Defect detection rate	Evaluate the number and severity of defects found by AI compared to manual testing.
Test coverage	Assess how much of your application's functionality is covered by tests before and after AI integration, both code coverage and functional coverage.
Cost saving	Review differences in direct and indirect costs [like labor, bug-fix efforts, and customer support].

Build An AI-Driven Test Automation Culture

Technology alone doesn't drive success. Even the most advanced AI-powered tools won't deliver results if your team isn't trained to use them effectively.



Involve Leadership from the Get-Go

Adoption can't succeed in silos. Without buy-in from senior leadership, even the best AI strategies will struggle to gain traction.

Getting business leaders involved early ensures they allocate the necessary resources, champion the cultural shift, and keep the long-term goals of AI-driven automation in focus.



Embrace Continuous Learning

Innovation doesn't happen overnight.

The transition to AI-driven test automation will involve successes and setbacks. Offer training sessions, workshops, and resources to keep your team abreast of the latest AI technologies and significant industry shifts.



Get the Right People to Your Team

AI on its own won't deliver value unless it's applied within the context of healthcare. You need a test automation team in place who understand both AI's capabilities and the specific needs of your healthtech product.

However, finding these professionals alone can take weeks — or even months.



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Find the Right Testing Team to Ensure Your Success



People create success.

With an extensive and diverse pool of skilled testers, reliable testing partners help you excel at meeting your business and technical objectives. These teams can quickly ramp up and begin testing without needing extensive onboarding.

Find an outsourced software partner with confident testers who understand the technical complexities of software testing and the regulatory landscape of healthcare.

Your testing partner must be able to create custom testing strategies that ensure your product is reliable, secure, and fully compliant for healthcare management, care delivery, data analytics, interoperability, AI, patient access, and all things healthcare. Whether testing new features, maintaining software quality, or validating mobile apps, a robust testing partner will help you accelerate your testing immediately.

Work With Experts in Healthcare Compliance

Make sure your technology development partners embrace standard operating procedures and in-depth training to ensure compliance with BAAs and HIPAA guidelines governing U.S. healthcare confidentiality regulations.



KMS Healthcare - Your Software Testing Partner of Excellence

At KMS Healthcare, our testing team ensures your product is reliable, secure, and compliant with healthcare regulations. With deep expertise in healthcare software, we help you build and maintain test automation strategies that drive long-term success. Let us help you bring your product to market with confidence:



We offer end-to-end testing services from management, design, execution, and automation to consultation with our global experts.



Our developers, engineers, and testers have deep experience building and maintaining successful products that shatter healthcare industry market expectations.



Leverage AI and advanced automation tools to create smarter, faster, and more accurate testing processes. Get to market faster and stay ahead of your competitors.

Don't let software flaws derail your success. Contact our team today to deliver the highest-quality version of your product.

Learn From Success Stories

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Have A Question? Contact Us



 [\(678\) 813-1567](tel:6788131567)

 kms-healthcare.com

 info@kms-healthcare.com