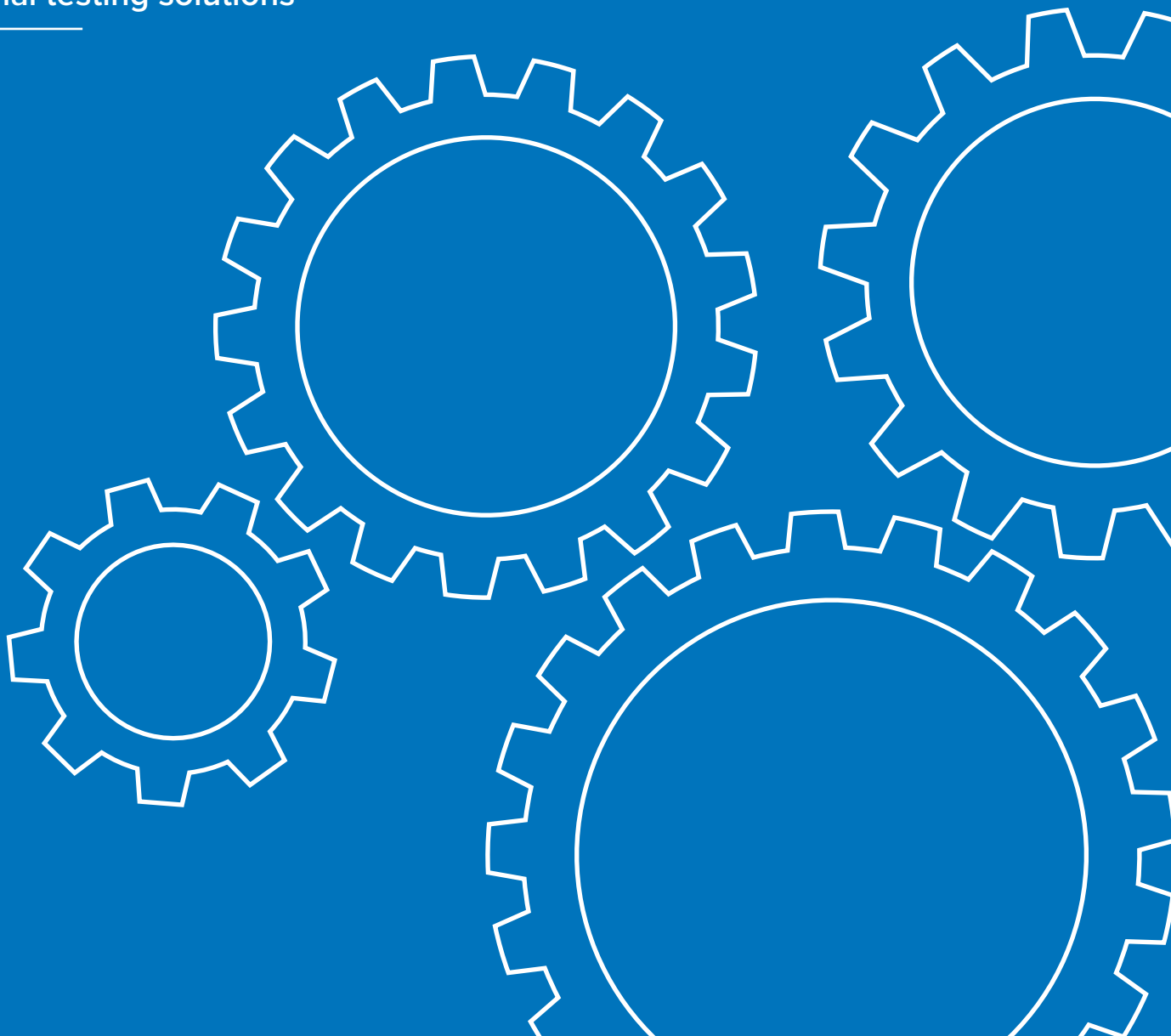


PeerPaper Report

Best Practices for Implementing Smarter Testing in the Enterprise

Based on real user reviews of Micro Focus functional testing solutions

2020



ABSTRACT

Smarter software testing in the enterprise offers DevOps teams a way to keep up with today's faster development timelines and more complex applications. Best practices are emerging for practitioners of smarter testing, as users of Micro Focus functional testing solutions explain in reviews on IT Central Station. These practices include an emphasis on friction-free continuous testing; multi-platform and AI-powered intelligent test automation; and hassle-free mobile device management. Users also recommend adopting intelligent functional test automation tools that enable collaboration among a broad range of testing roles and facilitate shift-left and shift-right testing across the software development life cycle.

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INTRODUCTION

Software development timelines are becoming more compressed as the connectedness and complexity of applications increase. To ensure a high-quality customer experience and to keep software moving efficiently across its lifecycle without slowing down the pace of innovation, companies must make the software testing process smarter.

As users of Micro Focus functional testing solutions explain, best practices

for implementing smarter testing in the enterprise include multi-platform functional test automation and friction-free continuous testing. The best solutions for smarter testing also leverage Artificial Intelligence (AI) to power intelligent test automation and enable collaboration among testing roles across the software development life cycle. They also offer flexible, hassle-free mobile device management.

Smarter Testing Enables 'Shift-Left' Testing

The concept of smarter testing provides new tools and practices that make shift-left testing, which is testing software earlier in the development cycle, possible. It's also about streamlining the testing process and adapting testing to fit within a broader range of development toolsets and production environments. In some cases, smarter testing involves the use of AI to realize these capabilities. Figure 1 depicts some of these forces which drive the need for smarter testing.

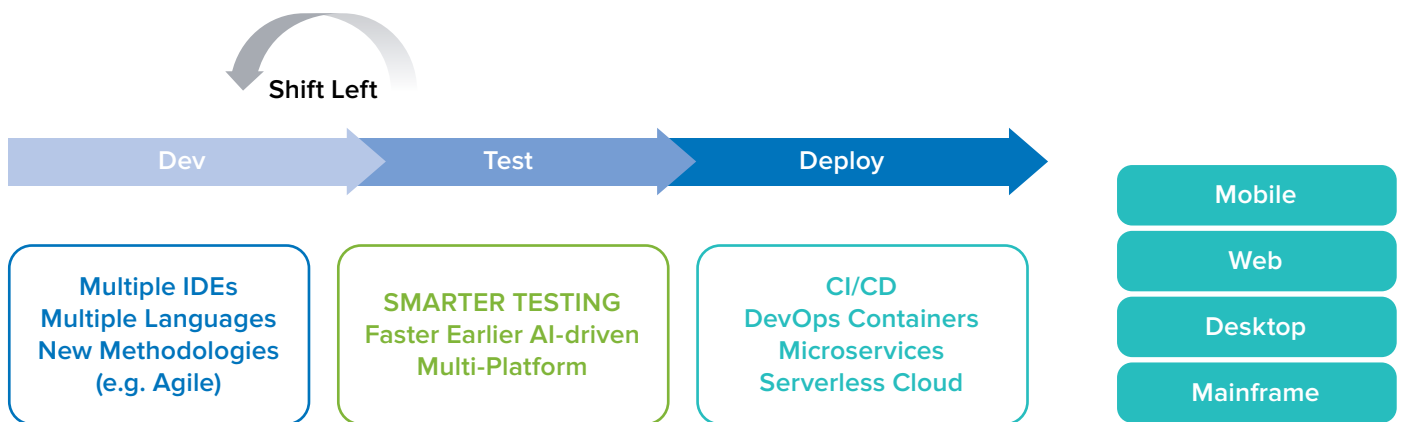


Figure 1 - Factors driving the need for smarter software testing

Micro Focus Functional Testing Use Cases

IT Central Station members who work in a diverse range of testing roles, including developers, test automation engineers, and architects, are deploying Micro Focus functional testing tools across a broad range of use cases. A Software Tester at a tech services company with over 10,000 employees, for example, uses UFT Developer during his team's [application testing process](#). An IT Architect and Test Tool Designer, who uses UFT Developer at a comms service provider with more than 5,000 employees, explained, “We primarily use the solution to enable us to [easily automate tasks](#) on several different applications based on different technologies.”

“We use this solution for [testing a banking ATM](#) application that is written in C#,” said a Developer who uses UFT Developer at a software R&D company with over 10,000 employees. He specified his use case further, sharing that “there is a customer screen that is part of a simulator for physical devices, and different scenarios, such as card and PIN entry, have to be tested. Example test cases can be things like insufficient funds



to dispense or it does not have the required bills. Another might be that the printer raises a hardware error. There are approximately 500 scenarios to test and in some, it will reject the transaction.” A Lead Software Test Engineer who uses UFT One at a small tech services company also alluded to the scale of her use case, saying, “We have [more than 1,700 test cases](#) already.”

Smarter Testing Best Practices

As development and testing teams more effectively collaborate through smarter testing, a set of best practices is emerging. These include an emphasis on tooling that supports multiple platforms and the automation of testing wherever and whenever possible. Leveraging mobile testing capabilities is another recommended practice, as is continuous testing.

Embrace Tooling That Supports Multiple Platforms, Languages, and Frameworks

Software development in DevOps organizations is inherently multi-platform in nature. For this reason, it is now a best practice to embrace automated testing tools that support multiple technologies, platforms, languages, and frameworks. This makes for a high-quality testing experience, and ultimately, a high-quality application. A QA Automation Engineer, who uses UFT One at a consultancy with over 1,000 employees, spoke to this need when he said, “With certainty, the best feature of UFT [One] is its [compatibility with so many products](#), tools, and



technologies. It is a challenge currently to find a single tool on the market besides UFT [One] that will successfully work for so many projects and environments.”

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...the best feature of UFT [One] is its compatibility with so many products, tools, and technologies.

As examples, he cited UFT One’s support for GUI testing of multiple technologies, including Oracle, PeopleSoft, PowerBuilder, SAP, Siebel, Stingray, Terminal Emulator, Putty, and Windows Objects. He also encouraged companies who are seeking further integration to combine both Micro Focus

ALM/QC and UFT One because users can store the test results in ALM/QC. And, as he has seen, ALM/QC has a built-in scheduler that can launch a suite of regression tests initiated by the user, who can schedule a particular date/time to run. This integration also enhances traceability and reporting capabilities.



... the integration with Oracle projects is very simple and easy to use.

“We use UFT [Developer] for [all user testing platforms](#),” said a Research & Development Engineer at an insurance company. He added, “UFT [Developer] will check out the performance of the production environment every 12 minutes to be sure that the entire environment is stable.” A Senior Test Automation Specialist at a financial services firm with over 1,000 employees shared that his team uses UFT Developer because “it [integrates with other tools](#), such as ALM, a test management tool.” For comparison, he also noted, “If you look at other tools that are compatible in the market, such as IBM or smaller, open-source tools, they will fit for us, but they have the issue that they only work with one protocol. They only work with Web.”

A Test Manager, who uses UFT Mobile at a tech services company with over 10,000 employees, commented that “the [integration](#) with Oracle projects is very simple and easy to use.” The Senior Test Automation Specialist echoed this sentiment, remarking that “the most valuable feature for me is [the number of protocols](#) that can be tested. It not only tests Web, but also SAP, Siebel, .NET, and even pdf. That’s a strong point of this tool because open source tools like Selenium can run only one protocol, like Web, for example.” When compared to other tools in the market, he pointed out that many legacy systems do not use Web as their front end, however.

Rather, they use a Windows-built .NET application or something else that is not web-enabled.

Automate Testing for Increased Test Coverage and Test Velocity

Automation is a key element of smarter testing. Micro Focus functional testing tools leverage AI and intelligent automation capabilities. Regarding intelligent capabilities, a Senior Digital Business Consultant comments that UFT One provides “the ability to base test automation on [object recognition](#) with the possibility of managing the object repository.” As a result, his team was able to realize more test automation scenarios, manage the entire DevOps lifecycle, and improve software quality. As he put it, his team was “running test cases along the entire day. The approach to the automation test makes the test activities more interesting and improves the software quality.” Figure 2 depicts how automated and continuous testing process can work across multiple platforms.



This one automated process saved the department sixty hours per week or 3,000 man-hours per year.

A QA Automation Engineer explained the organization-wide benefits of UFT One as [any QA team member](#) can execute a set of tests (i.e., regression suite) stored in ALM/QC, and let the tests run unattended. Regarding intelligent automation’s impact on manual testing, he shared that with UFT One, “if one pre-populated field had a certain code, the script would use logic to programmatically enter the corresponding data into other fields. This saved the company time and resources by not having to hire people

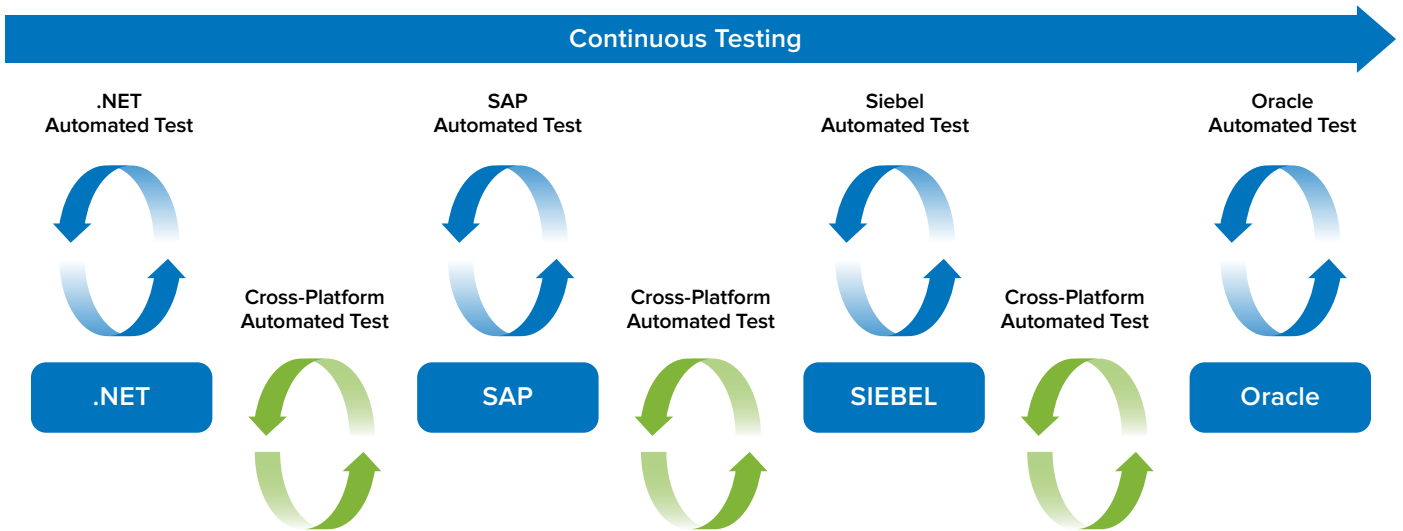


Figure 2 - Automated testing running continuously across multiple platforms

to enter the data manually. This one automated process saved the department sixty hours per week or 3,000 man-hours per year.”

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It’s easy to deploy and automates many C# test scenarios in my hardware simulator.

Other notable comments from developers and testers on test automation include:

- “The most valuable feature is the automation of test cases. It’s easy to deploy and [automates many C# test scenarios](#) in my hardware simulator.”- Developer who uses UFT Developer at a software R&D company with over 10,000 employees
- “The most valuable feature of the solution is the number of plugins for object recognition. The predefined libraries allow us to [automate tasks](#).”- IT Architect and Test Tool Designer who uses UFT Developer at a comms service provider with more than 5,000 employees

- “The ability to [automate testing](#) is the most valuable for me because it is something I need to do every day.”- Developer Automation Tester who uses UFT Mobile at a tech services company with over 10,000 employees

Adopt a Friction-Free, Continuous Testing Integrated Toolset

Smarter testing requires a friction-free continuous testing integrated toolset. Certainly, the software being tested comes out of continuous development processes. Continuous testing should thus start with a developer toolset that integrates seamlessly with multiple Integrated Development Environments (IDEs), languages, frameworks, and operating systems as well as with Continuous Integration/Continuous Deployment (CI/CD) tools.

According to a Director of Information Technology Infrastructure who leverages UFT Developer at a tech services company, the benefits of a friction-

free continuous testing integrated toolset include this: “The most important thing we learned is that it really fits into the [continuous testing model](#). There are many products out there that promise you continuous testing, but it can’t be continuous unless it’s with the developer. If it’s with a developer you can be much more agile, you can be much more continuous, and have faster and shorter delivery times.”

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It’s very easy to use, very easy to deploy, it’s very easy to install and very easy to understand.

The insurance company Research & Development Engineer similarly shared, “We use the platform for [continuous integration](#). We have Docker, which we use for all containers and helps us prepare all our environments in simple ways. It’s very easy to use, very easy to deploy, it’s very easy to install and very easy to understand.” The tech services Director of Information Technology Infrastructure further related, “We have about 40 developers on the solution currently. We use it extensively as part of [continuous testing](#) and we intend to have 100 people for automation testing. This wasn’t possible earlier because it was not at the developer end.”

Make Mobile Device Testing Part of the Continuous Testing Process

Due to the proliferation of devices, mobile device management is growing ever more complex. To maximize test coverage across a broad range of devices, smarter testing requires a streamlined approach to mobile device and emulator management. Testers need the ability to

consume devices any way they want — whether on-premises, hosted remotely, or emulated — including the ability to manage the device lab through SaaS or on-premises.

IT Central Station members also highlighted the importance of mobile software testing in their reviews of the Micro Focus UFT portfolio of functional testing solutions. A Manager who uses UFT Mobile at a consultancy with over 10,000 employees, for example, revealed that his team “evaluated other mobile testing solutions and found [UFT Mobile] to be superior to all of them.” He then added, UFT Mobile “enables users to test on [real mobile devices](#) instead of emulators. The fact that it allows users to test on real mobile devices instead of emulators is something that projects have told us is beyond compare.”

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...it allows users to test on real mobile devices instead of emulators...

He further emphasized that “your app or your website won’t behave on an emulator like it will on a real mobile device, no matter how great the emulator is - even if it’s the one that comes from the OS developer that ships with the development studio. There’s just no substitute for a real mobile device with its hardware constraints and the way it will behave in the hands of a user.”

A Developer Automation Tester who uses UFT Mobile at a tech services company with over 10,000 employees commented, “I use the product to automate mobile application testing and I usually use [UFT Mobile] every day. The company was previously using a different solution. They wanted to switch to working with UFT [Mobile]. We like this product better for EFT configuration. We work with [UFT Mobile] because, with this solution, our testing is more complete.”

Smarter Collaboration and Reporting

Collaboration across multiple teams and locations is another best practice that's essential for success in smarter testing. Because testing is an inherently collaborative process, smarter testing enables teams to work better — and in tandem with other teams across an organization. The software R&D Developer spoke to this need, saying, “All of our test cases run automatically, and this solution is [used by our entire team](#), which is about 15 people.”



We work with [UFT Mobile] because... our testing is more complete.

The testing toolset should support collaboration as well as team optimization, as the tech services Lead Software Test Engineer noted. She said, “UFT has improved our ability to regression test. This frees up the [test team to work](#) on only the new portions of the software without having to worry that we are introducing new errors in other areas without knowing it.”

For a Sr. Test Automation Engineer who uses UFT One at a consultancy with over 1,000

employees, it was important that “the tally of Fail and Warnings in the Results Viewer now [reports a count](#) and percentage of reported Pass results. Users can quickly identify tests with a large count failure from those with single faults, from a high-level standpoint. This greatly addresses the prioritization of maintenance when multiple tests in a test suite have failed.”

The QA Automation Engineer found UFT One's test Combinations Generator makes testing easier by [generating the type of data](#) team members want in useful formats. He said, “You can now quickly generate dates, URLs, passwords, confirmation numbers, shipping numbers, etc., that would be time consuming to do manually.”

The benefit, according to him, was “to help the whole QA team because you can generate data for the manual testers as well, which helps free up their time that they otherwise would be using to get data. The QA team now has more time to focus on testing versus having to generate data. The application we are developing is J2EE (Java Enterprise Edition) and [we will have the information](#) about the functionality.” He then shared, “If we have a problem, we call a team to send issues to them so they will work on this application to correct the problem in production.”

CONCLUSION

Smarter testing demands smarter testing tools. These tools, in turn, must enable multi-platform functional test automation as well as friction-free continuous testing with service virtualization and mobile device management. They also should provide a seamless integration with developer and tester toolsets. As IT Central Station members described, smarter testing begins with intelligent test automation — ideally with the assistance of AI. Smarter testing must also support continuous testing through a streamlined mobile device management solution that allows for hassle-free control. Also, smarter

testing has to support multi-platform support for the greatest test coverage possible.

Ultimately, testing is a team exercise, so testing solutions that enable multi-role and multi-team collaboration are essential for success with smarter testing. Just as the challenges of software testing will never stop evolving, so too will smarter testing inevitably have to reinvent itself many times over in the coming years. Best practices will remain relevant, guiding both testing processes and testing tools as they adapt to these rapidly changing testing requirements.

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