CLOUD COMPUTING
FOR TRANSFORMATION

Think Ahead.

APPLICATION TESTING IS FUNDAMENTAL FOR MODERN SERVICES

FUNCTIONAL TESTING AS A SERVICE THAT ACCELERATES BUSINESS AND PROTECTS YOUR PROFITABILITY

Modern app development solutions from Performance

- Enable transformation
- Boost "time to market"
- For continuous delivery
- Deal with complexity
- Increase efficiency

Maybe you want your transformation strategy to be successful. Or you may simply wish to quickly deliver digital products that your users will be happy with. Finally, perhaps you are looking to keep your –scarce– engineers happy and productive.

No matter the objective, you will find that the modern engineering paradigms and practices that help you get there rely on frequent, comprehensive, and automated testing. In fact, automated testing is a necessary precondition for the continuous delivery of value.

Performance Technologies can help you achieve this coveted competitive edge, and we can also help make it less of an operational and financial burden by offering functional testing "as-a-service" custom-tailored to your needs.

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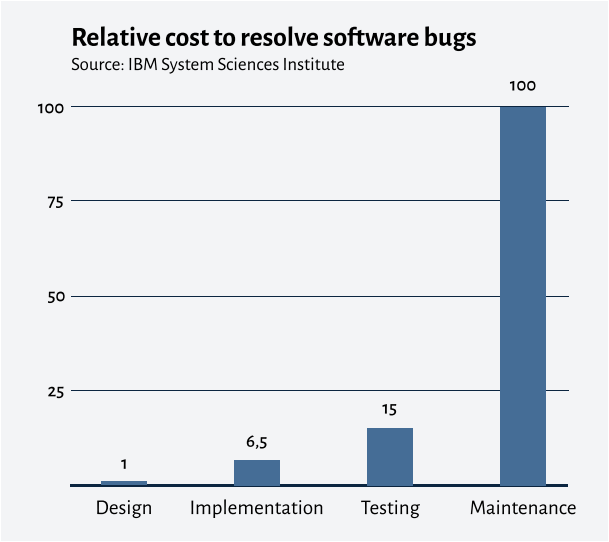


Why is automated application testing so important for transformation journeys

The graph on the left implies, without a doubt, that it pays off to deliver well-functioning software from the outset rather than "fix it later." Here are three main reasons:

- It can be up to 7x **more costly** to fix a problem in software after it enters production.
- You increase the chance that your users run into issues and that you **lose customers** because of it.
- You are also opening your business to more security and other **compliance-related risks.**

Automated testing is essential for cloud strategy and, hence, for transformation

Your transformation path almost certainly includes cloud-related destinations. And, automated application testing is essential to your cloud strategy.

The cloud is a crucial frontier for almost any digital transformation project, and cloud-native software architectures are perhaps the most acceptable way to get the most out of it in terms of agility, scalability, and adaptability. And while not every "cloud-hosted" application design has to be cloud-native, there is a definite trend toward splitting and distributing services and moving away from rigid software architectures.

So, it's easy to see how much more demanding testing has become in an era where an end-service will increasingly consist of many interde-pendent or autonomous software components, which are updated independently by different development teams and third parties. In a nutshell, app testing is inherently tricky, and it is becoming increasingly complex and time-consuming as a result of cloud-related trends.

Transformation is most often about continuous and swift delivery of value

Automated testing is a necessary precondition for continuous delivery of value.

We're all aware of the pressure to provide better value to clients more often, at a higher level of quality and reliability. However, we also know that achieving this "agile" state requires more than just adopting new technology and a set of practices. Continuous delivery of value is an essential organizational and cultural feature of the majority of successful transformation efforts, and -in a way- automated testing is at the heart of it all.

Furthermore, enterprises and other highly regulated organizations cannot sustain a culture based on the "move quickly and break things" mantra. In short, today's businesses are trying to cope with the seemingly impossible task of delivering new value frequently and swiftly while also adhering to increasingly stringent regulations and customer demands for quality, dependability, and performance.

IN A NUTSHELL: AUTOMATED TESTING IS A CORE LEVER FOR CLOUD AND FOR CONTINUOUS DELIVERY

Testing automation shines in this context of complexity and increasing demand because it combines the definite advantages of traditional quality assurance with the disruptive speed and consistency of automation to give businesses that adopt this approach a next-level competitive advantage in the marketplace.

Focus: The “human cost”

Manual testing has a double-edged human cost as it can be an inefficient use of your talent pool, and it is also often a demotivator for engineers and other skilled employees.

Testing code manually means that the process will inevitably be slower and time-consuming for your teams and the people doing it.

Also, manual testing is usually a dull and error-prone task, leading to increased stress and decreased job satisfaction.

So, a significant benefit of automating the application testing process is that you can boost productivity and employee satisfaction.

And this is a benefit that is no small feat in today’s ultra-competitive talent market.

Why do we need automated testing?

Application testing used to be a largely manual process performed by different testers. However, **today's sophisticated software environments and cloud deployments require the use of a new testing approach** that focuses on automated continuous discovery and monitoring of software services.

Here are some critical reasons why automated application testing has become so essential:

Increased complexity – Modern software and deployment architectures tend to be more distributed and interdependent and "run" on disparate and ever-shifting infrastructure and platforms. As a result, when attempting to integrate new features or alter existing ones, the operation of one or more end-user services is frequently disrupted. Again, **automated testing, and detection, can help considerably with this.**

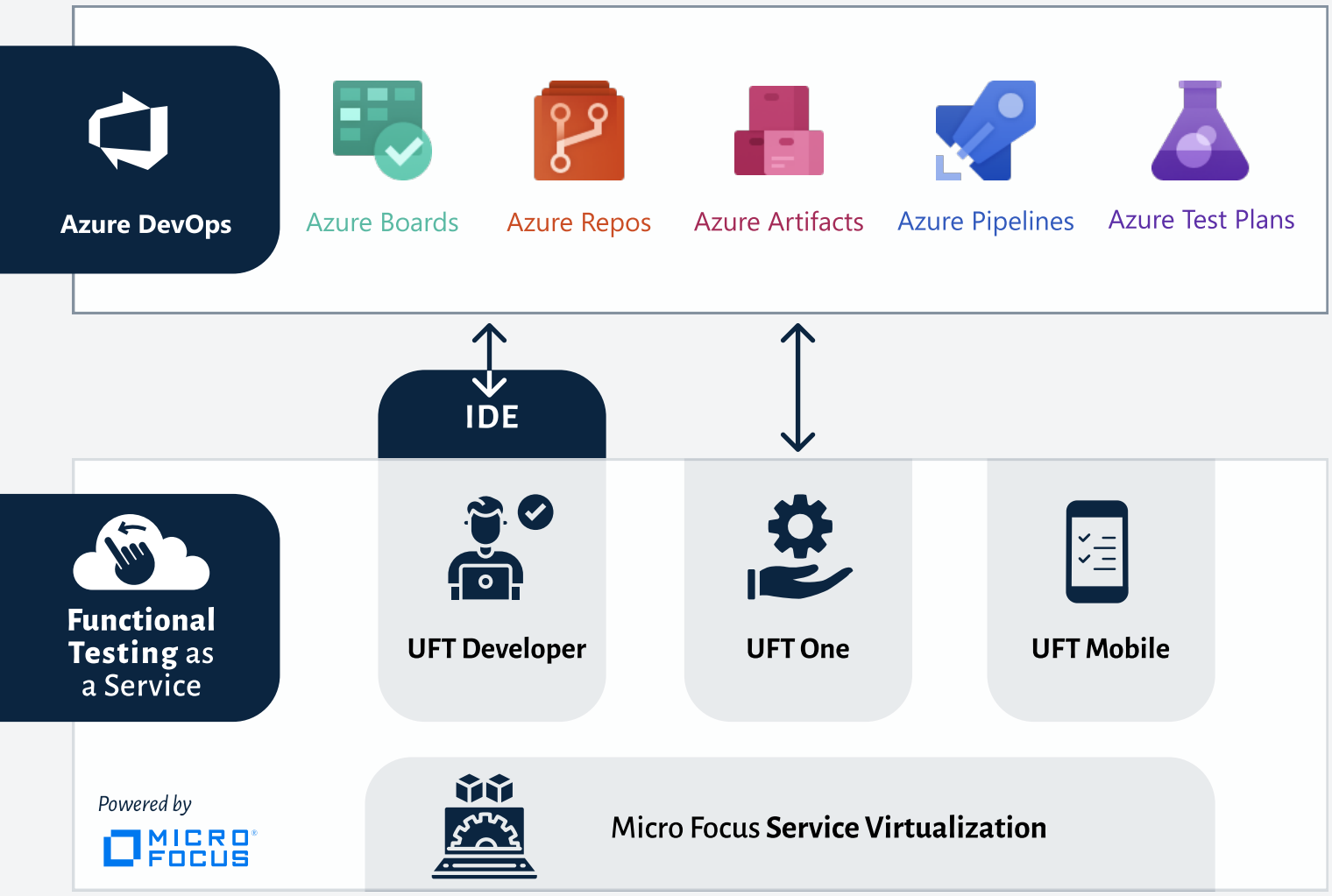
Shorter release cycles - Business is demanding increasingly quicker delivery of features and value for customers and other end-users, which implies that application releases cycles also become faster. In this light, an application team that can speed up testing while maintaining high quality, dependability, and security, creates a competitive edge in the market. Testing automation, as you would expect, is the **primary lever for increasing release velocity.**

Engineering focus – Perhaps the most significant disadvantage of manual application testing is that it drains an engineering team of talent, adding more overhead for developers, team leaders, product managers, and other team members. The proper testing automation solution and procedure will enable your engineers to develop new features and improve end-user services while **freeing up time for product managers and leaders** to create and plan items that customers value.

Governance requirements - In today's DevOps-obsessed world, the phrase "change management" often evokes negative reactions. However, that doesn't mean change management and DevOps are mutually exclusive. In reality, they should work in tandem because both procedures are beneficial for updating systems. Furthermore, as we saw earlier, automated testing is key to successful continuous delivery implementations. And it can also serve as **common ground between "the need for speed" and the rigorous compliance** requirements of the modern enterprise. In this context, testing automation delivers outstanding transparency and visibility, higher consistency, and quicker results.

Autonomous interdependency – Moving toward "cloud-native" software designs entails teams and third-party service providers being able to develop and release features and updates independently, with minimal cross-team communication and decision-making overhead. Achieving this becomes a far more feasible goal when engineers and other team members can trust an automated testing system that **warns of potential issues** long before code gets deployed.

High level overview of functional testing as a service solution



Major components of our FTaaS solution

Micro Focus UFT Developer — Allows your team to rapidly create and debug tests using the tools they already know.

The developer tools allow QA and DevOps engineers to create and run tests quickly while the developers work on the application under testing. Furthermore, it enables them to do this in the IDEs, languages, and frameworks they already use and in one place.

UFT One — An intelligent, end-to-end, functional testing automation engine for the modern enterprise.

UFT One offers the capability to automate testing for everything (from "API to UI"), anywhere (servers and containers, as well as desktop, web, and mobile apps), and by employing testing methodologies from a broad array of choices.

UFT Mobile — Test mobile UX thoroughly via services simulation and network virtualization on real and emulated mobile devices.

UFT Mobile allows your engineers to thoroughly test the mobile user experience by using services simulations and network virtualization. It does this by providing an enterprise-level, end-to-end lab and gateway of distributed real mobile devices and emulators that allows teams to create, develop, debug, test, monitor, and optimize their omnichannel mobile applications.

Service Virtualization — Accelerate testing and development via simulation of APIs and services that are difficult to access or unavailable.

With service virtualization, your developers and testers can begin testing immediately, even when the actual services are not accessible, when data access is restricted, when data is difficult to gather, or when the services are unsuitable for the test.

Fundamental attributes

Automated functional testing tools without a framework can't scale in today's ever-changing development environment. So here are the essential features and functions of a successful testing automation framework:

Componentization

A testing framework must list which tests use a given component and warn you if updating, deleting or creating them has unwanted or unexpected consequences.

Testing Methodologies

Multiple time-proven and modern testing methodologies such as the following must be supported:

- Data-Driven Testing
- Keyword-Driven Testing
- Hybrid Test Automation
- Modular Testing

Parameter injection

Parameter injection allows software testing frameworks to link multiple sets of data with each parameter. This ability can significantly increase test coverage for your application because it allows you to run various scenarios using one test definition.

End–to–end process

Some tests have only one or two parts, while other complex tasks require many pieces in order to function properly across various systems, and you need to be able to perform end-to-end tests on those.

Supports mutiple technologies

Modern applications are often developed using several technologies, operate on various infrastructure stacks, and tend to be of a distributed nature. So it would be best if you had a testing framework that supports this complexity.

Works for various personae

Many different people, like developers, technical test engineers, and business experts, can be on an application team. So, a functional test framework needs to include different persona types so everyone can participate effectively and efficiently in testing development.

Complete and easy maintenance

Software is constantly changing, which means that tests need to be updated. A testing framework should help by finding the parts that need to be updated and allow testers to make modi-fications with as little work as possible. The framework should also tell which tests rely on a specific component. Finally, if there is an issue, the framework should automatically identify necessary changes so that test cases can continue running.

Why Testing as a Service

Next-level productivity — Choosing to use a Testing-as-a Service solution will free up even more engineering resources for the essential work you need to do for your customers and your bottom line. Your employees will no longer have to handle routine support and operations, nor will they need to spend time researching new features and capabilities.

Full-spectrum support — As mentioned earlier, you won't have to worry about software or system maintenance and support. You will also receive timely operational and user support from our experts. In addition, we can tailor the exact support and training services to meet your requirements and your budgetary constraints.

Enterprise-grade service — Our solution will typically be deployed on Microsoft Azure and will therefore offer the performance, reliability, and resiliency that a modern enterprise has come to expect. The testing automation software will be constantly monitored, updated, and improved by certified and experienced experts to maintain everything running effectively.

Mobile app testing lab

Our Testing-as-a-Service solution can optionally provide a fully managed remote-access lab that will allow your teams to develop, debug and test mobile apps on a cluster of actual devices that you choose. A fully managed mobile app lab means that you will receive all the benefits of testing on real instead of emulated devices while not setting up and maintaining the relevant infrastructure.

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