Put apps to the test
Use testing as a service to gain a clear competitive edge
# Table of contents

- Review testing as a service .................................................. 3
- Understand TaaS ................................................................. 4
- Learn how it works ............................................................. 4
- Understand the limitations of traditional models .................. 5
- Review metrics, analysis, costs ............................................ 6
- Know what TaaS is not ........................................................ 7
- Know your return on investment ......................................... 7
- See TaaS in action .............................................................. 8
- Improve testing; gain an advantage ...................................... 9
Gain benefits with Testing as a Service

Enterprise applications’ quality and cost-efficiency is more important than ever. Organizations need better, more affordable ways to test performance, functionality, and security. Testing as a Service provides a consumption-based, outsourced delivery model capable of reducing development time and cost, while ensuring optimum software quality in the production environment.

Review testing as a service

Understanding the overall cost of applications testing within any given project is very tricky. A wide variety of metrics and indicators must be very closely tracked, and testing progress must be monitored daily, if not hourly. Then defects, rework, and new or forgotten requirements, which must suddenly be included just prior to release, add multiple layers of complexity into the mix.

On top of these challenges, you must have the appropriate tools to manage the testing. Without a tool to capture the testing effort, the metrics produced will be unreliable and have large error factors. There are many globally accepted best practices to guide the gathering of metrics, analyze the data, and evaluate the overall cost of applications testing. Yet, in many cases, organizations struggle to implement these best practices.

Here’s the good news. There is an increasingly mature solution in the industry that enables a complete, accurate, and in-depth analysis of the overall cost of applications testing. It’s called Testing as a Service (TaaS), and it’s built around a pay-per-use consumption model.

This as-a-service approach incorporates advanced testing tools, services of experienced testing professionals, and a fixed scope of tests delivered at a fixed price for each consumption unit. (Consumption units are defined as fully contained test deliverables such as test planning, test cases, regression suites, or automation runs.)

In this viewpoint paper, DXC Technology examines the rationale for Testing as a Service, requirements and benefits of this approach, and real-world examples of how organizations are currently using the TaaS model.

Understand TaaS

What is Testing as a Service? Very simply, TaaS is a consumption-based outsourced delivery model where an offshore testing team produces standardized applications test deliverables, such as test plans and test cases for a fixed cost.
These fixed costs are represented by test units (TUs) rather than currency, because TUs are universal and do not change due to currency conversions or fluctuations. So, if an organization is based in France and the offshore team in Egypt, this approach lets costs be defined in TUs, rather than converting those expenses into a given currency—the value of which would likely change daily.

**Figure 1**: Enterprise application testing evolves to the as-a-Service model

Actual TaaS execution is provided via public or private cloud, depending on your requirements. A local test manager interfaces with your organization’s application development and testing teams to determine the overall scope and requirements of the TaaS project.

Any required test management software is also provided as a service. This pay-by-the-drink model ensures you pay only for licenses used for the duration of the TaaS effort, rather than purchasing the licenses outright or for long-term durations.

**Learn how it works**

When an organization selects the as-a-service testing approach, a TaaS forecast is created to map the testing demand that is visible at the time—in terms of TUs. The process is quick and simple. Based on that exercise, the projected delivery capacity is made available to your organization. The TaaS forecast can be updated frequently, based on project priority changes, and the delivery capacity will adapt—on demand.

The leveraged-services model enables the TaaS provider to absorb short-term variations from the estimated requirements. When testing volumes are lower than expected, excess capacity, for example, testers, infrastructure, or tools, can be shifted to other ongoing projects across multiple organizations. If testing must be scaled up on short notice, more testers can be quickly rolled into TaaS delivery to meet those needs.
Understand the limitations of traditional models

There are significant differences between the TaaS approach and traditional models for applications testing. Because the scope of many software applications must change to meet shifting market conditions, standard testing models often cannot provide a predictable, cost-effective solution.

As with the TaaS approach described here, traditional testing engagements typically begin with an initial analysis of the required scope of work. The skills and abilities of the testers have to be matched with the testing effort. Senior testers are required to provide leadership and detailed analysis of the testing requirements. Testers with exposure to specific technologies and systems may also be needed.

The cost model for a traditional testing engagement is based on the cost of the testers themselves and the engagement’s duration. There may be extra costs associated with specific skillsets or knowledge requirements, and also hidden costs—desk space, PC rental, software licensing, training, and so on. Not surprisingly, estimating the cost of traditional application testing can be complex, time-consuming, and subject to inaccurate estimates.

Once testing actually begins, however, the traditional fixed-resources model cannot offer the flexibility needed in today’s more dynamic software development environment. When there are peaks and valleys in testing demand, on-premises testing resources cannot easily scale up or down to meet those changing requirements. In the traditional model, organizations expend capital on software tools and infrastructure, and see ongoing costs for support and maintenance—regardless of their actual testing volume requirements.

Traditional testing teams are usually locked in for the duration, along with the attached costs. Changing the structure or size of the team often requires a formal change request, which will generally also impact the project cost. Smaller software development projects often lack the budget to engage full-time testing resources.

Delays in testing, such as those caused by environment problems, code delivery issues, or applications defects can increase the time and cost of the overall development effort. Of course, traditional testing teams must still be paid—even if they are essentially idle during those all-too-common delays.
**Functional Performance Mobile Security**

- Functional testing service
- Test planning
- Test case development
- Test case automation
- Test case execution (manual and automated)
- Test automation framework
- FTU: functional test unit pricing

- Performance testing service
- Test planning
- Test scripting
- Load and stress test execution
- Test reporting (SLAs, baseline, etc.)
- Load controllers/generators
- PTU: performance test unit pricing

- Mobile testing service
- Includes all features from FTaaS and PTaaS
- Mobile Test Accelerator (MTA) for device/OS agnostic automation
- Emulators and Real Devices testing
- FTU and PTU pricing

- Security testing service for mobile and traditional apps
- Application code scanning
- Web penetration testing
- Per application/site pricing

---

**Gain these benefits from the Testing-as-a-Service model**

- Lowers the overall cost of functional, performance and security testing, while improving speed, test coverage, and efficiency
- Enables organizations to see in real time how much is being spent on each testing deliverable—including tools, personnel, and activities
- Encourages identifying and eliminating bottlenecks, and a continual improvement approach to the entire application development lifecycle
- Enables organizations to share and consume TUs across projects and business units
- Is flexible—it’s perfect for smaller projects that lack the budget to justify a dedicated testing team, but also ideal for larger programs as it’s scalable and elastic enough to meet program testing demands

---

**Figure 2:** Consumption-based TaaS addresses key application quality assurance challenges

**Review metrics, analysis, costs**

So how exactly does pricing work in a TaaS model? In a traditional testing approach, charges are typically based on the cost of testing tools and licenses, testing infrastructure, and personnel assigned to the project. Other traditional pricing methods provide a fixed price for overall project delivery.

In the TaaS model, cost is based on actual deliverables. All common testing deliverables produced in any functional, performance, mobile, or security testing are mapped—and each of those deliverables are associated with a fixed number of TUs in a standard catalog.

Required TUs can be calculated for any testing-related activity, including test planning, manual and automated testing, data preparation, and access to specialized testing tools or expertise.

Each TU has a set price, greatly simplifying the task of calculating the cost of each test deliverable and overall testing project. The cost of a TU does not change. Once the number of TUs needed to complete a given project is understood, you and your TaaS provider can focus on getting work done.

Not surprisingly, this TU-based approach gives organizations far greater flexibility in assembling the optimum selection of testing deliverables. Unlike cost projections for traditional testing, organizations using the TaaS model do not need to know who will work on a project, for how long, or their hourly rate of pay. Under the TaaS model, the precise number of TUs needed for any functional, performance, or security test deliverable is well known.
Know what TaaS is not

Given the newness of TaaS as a mainstream approach, the marketplace may not have a common understanding of this delivery model. It may help to clarify a few common buzzwords that do not accurately define TaaS.

- **Cloud-based environment**—While TaaS can be supported by a consumption-based cloud environment, cloud is not a requirement for any TaaS solution. In fact, if an organization already has a cloud provider, or an on-premises infrastructure, TaaS can integrate with those environments—as testing can take place across the applications portfolio.

- **Software-as-a-Service (SaaS)-based testing tools**—Testing toolsets simply offered as a service is not Testing as a Service; it’s Software as a Service. True TaaS encompasses the creation of test cases, test automation, and execution, and where needed, more sophisticated tools are used. TaaS and SaaS are not synonymous.

- **Testing Center of Excellence (TCoE)**—At a high level, a TCoE is a comprehensive set of governance, tools, and processes designed to support efficient and effective testing. TaaS can be an important component of a TCoE; but to deliver quality results, TaaS must be supported by the maturity level reflected in the TCoE approach.

Know your return on investment

The as-a-Service approach to testing offers proven and measurable advantages. Organizations have been consuming TaaS for a number of years, so cost savings and application quality can be measured when compared to traditional testing models.

The Testing-as-a-service model:

- Lowers the overall cost of functional, performance, and security testing, while improving speed, test coverage, and efficiency

- Enables organizations to see, in real time, how much is being spent on each testing deliverable—including tools, personnel, and activities

- Encourages identifying and eliminating bottlenecks, and a continual improvement approach to the entire application development lifecycle

- Enables organizations to share and consume TUs across projects and business units

- Is flexible—it’s perfect for smaller projects that lack the budget to justify a dedicated testing team, but also ideal for larger programs as it’s scalable and elastic enough to meet program testing demands

- Can help minimize change requests and late changes to on-going projects

- Requires no up-front investment or recurring and maintenance fees

- Gives organizations scalable, cost-effective access to industry’s most advanced testing tools, certified testing professionals, automated frameworks, and accelerators

- Enables higher test coverage, which translates directly into fewer defects; reduces risk of performance issues impacting business operations; and provides for greater user satisfaction
• Improves applications-related security by identifying and removing vulnerabilities, eliminating false positives, and supporting more effective remediation

• Combines economies-of-scale, only available from an as-a-service environment, with the flexibility to consume testing resources only as they are needed

See TaaS in action

Perhaps the best way to illustrate the impact of Testing as a Service is by describing real-world deployments of this consumption-based model. The following case study examples are drawn directly from DXC client experiences with the TaaS approach.

Merge technology stacks

After a major acquisition, this organization undertook a large, complex IT project designed to integrate back-end systems of newly joined companies. The multiyear effort would merge enterprise resource planning and custom applications; logistics, payment, and freight management; and other applications across numerous integration points.

This ambitious effort spanned mission-critical manufacturing, packaging, and shipping systems, and would affect thousands of customers and users. This world-class company selected Testing as a Service provided by DXC for this crucial integration effort.

The first critical phase was a 14-month endeavor that spanned more than 300 specific requirements, over 6000 test case executions, and more than 45 third-party interfaces. Test metrics were captured and published automatically, enabling managers to track testing progress against the project schedule, and adjust priorities and assets as needed.

Because the company had previously used TaaS, DXC was able to incorporate previous insights to further reduce costs, improve quality, and accelerate testing delivery. By leveraging advanced TaaS tools and delivery methods, DXC delivered phase one efficiencies that reduced the overall cost of the effort by 39% of the original project estimate.

Continual improvement efforts yielded additional efficiencies in subsequent phases of this extensive and complex integration effort.

Directly impact passengers

When a major airline sought to improve kiosk-based self-service capabilities, executives realized application quality would be critical. This forward-looking airline wanted to streamline the flight check-in process—and make it easier for passengers to change flights, upgrade seat assignments, and receive promotional offers.

To support this major technology overhaul for its terminal kiosks, the airline called on DXC and the Testing-as-a-Service model. The effort faced significant challenges. They included a broad and varied range of ticketing and boarding regulations across multiple countries, a previous reliance on manual testing methods, and the desire to incorporate agile and continuous integration software development methods into the project.
DXC responded with a mature and structured TaaS approach that included test management, manual and automated test cases, and execution of the test suite. The previous manual test process was reengineered to make it repeatable, maintainable, and better aligned with actual business processes. Agile development methods enabled the testing suite to be fully executed once a day.

The results of this as-a-service approach were clear and dramatic. The airline could now automate its own tests using existing, nontechnical skillsets. Automatic documentation and deduplication significantly reduced test maintenance requirements. Testing maturity improved measurably, and far fewer defects leaked out to production or impacted customers.

Time and cost savings were substantial. The airline estimated it was saving 13 months of testing effort every calendar year.

Modernize a travel website

In another travel-sector application, a North American airline used Testing as a Service to streamline and extend its web-based services.

This world-class company sought to improve performance in a customer-facing website that served 2 million users a day across more than 200 nations and territories. The airline wanted on-demand testing to accommodate peaks and valleys in performance testing, and to more accurately define, monitor, and improve the performance of these mission-critical operational and customer service web-based activities.

As part of a multiyear website overhaul, the airline undertook a comprehensive hardware refresh that relocated web activities from a physical to a virtualized infrastructure, hosted in a private cloud model. The underlying website application code was refactored; user interfaces were redesigned; and the mid-tier platform was migrated to the modern WebSphere environment.

Microfocus LoadRunner was used to support code-level root cause analysis, and DXC developed a service-level agreement (SLA) dashboard to automatically compare baseline transaction-level metrics. DXC also provided server resource-level metrics to measure current execution and flag underperforming metrics.

As a result, the airline successfully completed this website upgrade on time and on budget. Performance testing was completed for the full production environment hardware refresh and cloud migration. DXC continues to provide as-a-service performance testing, enabling the airline to pay as it goes for key production release testing.

Improve testing; gain an advantage

Organizations rely more than ever on mission-critical software applications to engage customers, support anywhere and anytime transactions, and pursue globalized business strategies. Yet, many also struggle to ensure those systems are secure, functional, and defect free.

Application testing is now a vital element in any good development lifecycle. In their search for higher quality, forward-looking organizations now rely increasingly on
Learn more at www.dxc.technology/applications

the proven advantages of the Testing-as-a-Service model. By consuming Testing as a Service, your organization can reduce development time and costs, and support the delivery of more secure and reliable enterprise applications.

In today’s increasingly connected and mobile world, improved testing yields better applications, and better applications translate into a clear competitive advantage for you.