



End-to-end test  
automation for federal  
digital transformations





# End-to-end test automation for federal digital transformations

## **SUMMARY**

Automated end-to-end tests are widely recognized as being difficult to create, slow to execute, and fast to break as the associated application components evolve. These challenges are exacerbated when digital transformation initiatives accelerate the scope and speed of application changes that require testing. In federal environments, addressing these challenges involves additional concerns of covering specialized custom/legacy systems, ensuring traceability, and optimizing efficiency. This document outlines how Tricentis helps organizations address key challenges associated with automating end-to-end test automation for federal digital transformations.





## OVERVIEW

Tricentis products are regularly used to enable end-to-end test automation in large, complex environments with thousands of applications and a broad mix of technologies. Tricentis is recognized for:

- **Supporting end-to-end test automation across complex enterprise landscapes** including custom applications, mainframes, packaged applications, and data as well as web, mobile, and APIs
- **Making test automation easier** to build, more resilient, and less burdensome to maintain
- **Increasing efficiency** by enabling simple test case reuse, providing real-time requirements traceability, and centralizing reporting across a best-of-breed toolchain.

For example, consider the case of a government-sponsored enterprise focused on housing. Their conventional (manual) testing approach was “time-consuming, inefficient, and unsustainable for E2E testing, where there could be an average of 20 to 30 applications involved.” They recognized that “to keep up with the market demand, advancements in technology, and to improve productivity, efficiency, and sustainability, it is imperative to speed up the entire process of end-to-end testing without sacrificing safety and soundness.”

They now use the Tricentis platform to meet these needs. “What we have found is staggering. It truly is a comprehensive end-to-end test management and execution solution. It is business-friendly, it’s highly configurable, and it does not require any coding. By investing in Tricentis, we are expecting to achieve significant improvement on our current end-to-end testing.” The initial results: 6X efficiency increase and 11X faster testing (88 days to 8 days).

The following sections provide more detail on the challenges faced by large organizations with complex application landscapes, as well as how Tricentis addresses them.



## ENABLING END-TO-END TEST AUTOMATION FOR EXTREMELY COMPLEX HETEROGENEOUS APPLICATIONS

**Problem:** Most test automation tools are designed to cover a specific technology: typically, web interfaces, mobile interfaces, and APIs. However, most transactions through modern business systems also cross mainframes, custom applications, packaged applications, and involve extensive data consumption, integration, and transformation.

**Solution:** Tricentis provides an integrated testing solution for all these technologies. It can even test extremely new/old/specialized technologies as well as remote applications (Citrix, VMWare, etc.) accessed in secure and regulated environments. A single end-to-end test can cross any number of technologies to exercise and validate all aspects of a realistic business process. Beyond functional testing, Tricentis also provides risk-based testing, test case design, service virtualization, and test data management



## REDUCING THE COST AND EFFORT OF CREATING SUSTAINABLE TEST AUTOMATION

**Problem:** Test automation is typically limited and expensive due to the specialized resources required. The [Capgemini World Quality report 2020-2021](#) found that only 15% of testing is automated (and that primarily involves unit testing) and QA activities are consuming 22% of the average IT budget.

**Solution:** Creating and maintaining tests does not require specialized programming resources with Tricentis because model-based test automation enables the user to work at the business abstraction layer. Tests can be built and maintained by business users scanning the application and then mixing and matching reusable test automation “building blocks.” Users can also create resilient tests by exercising the application at the UI level.



## CENTRALIZING VISIBILITY AND CONTROL ACROSS THE ORGANIZATION'S QUALITY EFFORTS AND TOOLS

**Problem:** Large organizations commonly rely on a variety of COTS and open source tools to develop and test software. Consequently, quality data that could help the broader organization make smarter release and process optimization decisions ends up scattered and siloed across discrete teams.

**Solution:** Tricentis collects the organization's quality metrics into a central repository. Results from commercial tools, open source tools, and custom/home-grown tools are analyzed and visualized in custom dashboards. Quality information can also be distributed directly to developer tools as well as requirements management and ALM platforms (with full traceability). This facilitates process improvement while providing more accurate and complete reporting.



## INTEGRATING INTO CI/CD PIPELINES FOR CONSISTENT, EFFICIENT EXECUTION

**Problem:** As development teams implement digital transformation initiatives, they require fast feedback on whether each incremental change negatively impacts existing functionality. This requires stable continuous testing within a CI/CD pipeline. False positives must be kept to a minimum to ensure that results are trusted and actionable while preventing avoidable work “diagnosing” the reported problems.

**Solution:** In addition to integrating with CI/CD tools, Tricentis adds the stability and flexibility required for continuous test execution. Stateful test data management (with extraction/masking as well as synthetic data generation) and orchestrated service virtualization reduce false positives and enable repeated execution of advanced scenarios. Moreover, large-scale test execution can be accelerated for various needs (smoke testing, overnight execution, etc.) by distributing testing across multiple virtual machines, network computers, or in the cloud.

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## ABOUT TRICENTIS

**Tricentis is the global leader in enterprise continuous testing, widely credited for reinventing software testing and delivery for DevOps and agile environments.** The Tricentis AI-based, continuous testing platform provides automated testing and real-time business risk insight across your DevOps pipeline. This enables enterprises to accelerate their digital transformation by dramatically increasing software release speed, reducing costs, and improving software quality. Tricentis has been widely recognized as the leader by all major industry analysts, including being named the leader in Gartner's Magic Quadrant five years in a row. Tricentis has more than 1,800 customers, including the largest brands in the world, such as Accenture, Coca-Cola, Nationwide Insurance, Allianz, Telstra, Dolby, RBS, and Zappos.

To learn more, visit [www.tricentis.com](http://www.tricentis.com) or follow us on LinkedIn, Twitter, and Facebook.

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