



RPA: THE FUTURE OF ENTERPRISE TEST AUTOMATION

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If one word defines the 21st century, it would be speed. Never before has progress happened at such a breakneck pace. We have moved from discrete jumps of innovation to continuous improvement and versioning. The cycle time to production is at an all-time low. In this era of constant innovation where the supreme need is to

stay ahead of the competition and drive exceptional user experiences, product quality deployed in production is paramount to ensure that speed does not derail the product as a whole. A robust testing mechanism ensures quality while allowing faster release and shorter time to market – so essential for that competitive edge.

Today, USD 550bn is spent on testing and validation annually. It is also the second largest IT community in the world. That is a significant investment and effort being put into this space already, but is it delivering results?

The state of testing and validation in the enterprise

In the past five or so years, there has been a push from CXOs, based on recommendations from industry experts and analysts, to go for extreme automation. Companies have been adopting multiple tools, opensource technologies, and building enterprise automation frameworks. This attempt to achieve end-to-end automation has created a mammoth network of tool sets in the organization that may or may not work well with each other.

This is how test automation was done conventionally; it still requires elaborate effort to build test scripts, significant recurring investment for subscription and licensing, and training and knowhow for multiple tools. By some estimates, traditional testing can take up to 40% of total development time – that is untenable in the agile and DevOps modes companies operate in today.

What if this ongoing effort can be eliminated? What if the need for multiple tools can be done away with? Enter Robotic Process Automation (RPA) in testing. While originally not built for testing, RPA tools show great potential to make testing more productive, more efficient, and help get more features to the market faster – giving them an edge over conventional tools (see Fig 1).

Product features	Traditional automation tools	RPA Tools
Coding Knowledge	<ul style="list-style-type: none"> Coding knowledge is essential to develop automated scripts Programming knowledge and effort is needed to build the framework, generic reusable utilities and libraries 	<ul style="list-style-type: none"> These tools offer codeless automation. Developing automated scripts requires some effort for configuration and workflow design. However, coding is minimal compared to traditional tools Generic reusable utilities are available as plug-and-play components
Maintenance	Extensive maintenance effort required	Minimal test maintenance effort required
Cognitive automation	No support for cognitive automation	RPA tools are popular for supporting cognitive automation by leveraging AI
Plugin support	Limited plugins are available for different technologies	Plugins are available for all leading technologies
Orchestration and load distribution	Load distribution during execution requires additional effort to develop the utilities and set up the infrastructure	This feature is available in most RPA tools. For example, feature of a popular RPA tool helps in load distribution during execution without any additional effort aside from configuration
Automation development Productivity	Test development productivity is low since custom coding is required most of the time	Test development productivity is high as most generic activities are available as plug-and-play
OCR for text recognition	This feature is not available	This feature is available in all RPA tools
Advanced image recognition	This feature is not available. Either additional scripting or a third-party tool is needed to support this	This feature is available in all RPA tools
In-built screen and data scarping wizards	This feature is not available and requires integration with other tools	This feature is available in all RPA tools

Fig. 1: Traditional automation tools vs. RPA

RPA – the next natural evolution of testing automation

In the last decade, automation has evolved and matured with time along with changing technologies. As discussed, automation in testing is not new but its effectiveness has been a challenge – especially the associated expense and lack of skill sets. RPA can cut through the maze of tool sets within an enterprise, replacing them with a single tool that can talk to heterogenous technology environments.

From writing stubs to record and playback, to modular and scriptless testing, and now to bots, we are witnessing a natural evolution of test automation. In this 6th Gen testing brought about by

RPA orchestration, an army of bots will drastically change the time, effort, and energy required for testing and validation. We are heading towards test automation that requires no script, no touch, works across heterogenous platforms, creates extreme automation, and allows integration with opensource and other tools.

According to Forrester¹, “RPA brings production environment strengths to the table.” This translates into production level governance, a wide variety of use cases, and orchestration of complex processes via layers of automation. RPA allows companies to democratize automation very rapidly within the testing organization.

RPA has an advantage over traditional tools in that it can be deployed where they fail to deliver results (see Fig 2). For instance, when:

- the testing landscape is heterogenous with complex data flows
- there is a need for attended and unattended process validation
- there is a need to validate digital system needs

An RPA solution can bring in a tremendous amount of simplicity for building out bots quickly and deploying them with the least amount of technical know-how and skills that even business stakeholders can understand.



Challenge Areas	Performance of RPA tools
Test Data Management	Data-driven testing is supported by many traditional tools. RPA can manage data form files like Excel/JSON/XML/DB and use these for testing
Testing in different environments	End-to-end business processes navigate through various environments like mainframe/web/DB/client server applications. RPA tools can easily integrate this process across multiple systems. Thus, RPA tools simplify business orchestration and end-to-end testing compared to other testing tools
Traceability	While RPA tools do not directly provide test script traceability, there are methods to enable this functionality. For instance, user stories/requirements stored in JIRA can be integrated with RPA automation scripts using Excel mappings to create a wrapper that triggers execution
Script versioning	A batch process can be implemented in the RPA tool to address this
CI-CD integration	This is available in most of the RPA Tools
Reporting and defect logging	RFA tools have comprehensive dashboards that showcase defects that can be logged in Excel or JIRA through a suitable wrapper
Error handling	This feature is available in all RPA tools

Fig 2. How RPA tools address traditional testing challenges

However, the challenges in testing are not limited to writing and executing test cases. The automation needs to also handle the periphery of testing activities – validating that all components of the environment are up and running and that test data is available on time. This dependency on the peripheral activities, and the teams running them, could cost valuable time. For instance, for a large banking client, this dependency put a lot of pressure on the testing team to finish a sprint in 5 days. Using RPA, we were able to automate the batch monitoring and batch rendering process. We also automated synthetic test

data creation and data mining processes reducing time to market by 40%.

To really provide value for testing and validation, RPA needs to provide some very testing specific capabilities such as:

A Cohesive Automation Platform:

Enabling enterprises to leverage the full potential of automation with process discovery, process automation (attended, unattended, and UI based), combined with process orchestration capabilities. This should include a test automation interface that can bridge the gap between test management tools and automated test

cases. A workflow-driven test automation approach can make the solution business-centric.

Native AI Capabilities: A cognitive engine can leverage various data sources to deliver pervasive intelligence across process design, management, and execution.

Security and Scalability: The solution should allow running multiple bots on a single virtual machine, have robust access management with a credential vault built into the product, and offer out-of-the-box technology-specific adaptors

AssistEdge for Testing in Action

One of our clients, a large investment company based in Singapore realized the benefits of RPA based testing when it helped them save 60% of testing efforts. They were running legacy modernization as a program using mainframe systems that are notoriously difficult to automate using traditional automation tools. RPA with its AI and OCR capabilities and the ability to traverse through and handle any technology, was easily able to automate 800+ test cases in the mainframe.

In another instance, a large banking client was using package-based applications that used multiple technologies to build different screens. It becomes difficult to integrate multiple tools in this scenario. With RPA, we were able to automate the end-to-end workflow for each application using just one tool. This helped reduce the overall maintenance effort by over 30%.

Another one of our clients was facing a quality assurance (QA) challenge where bots were being deployed without testing. We developed specific QA bots with added exceptional handlers to check whether the bot is actually handling exceptions and if it fails then how it comes back to the original state. By validating the bots, we improved the overall efficiency by 30%.





Take advantage of the Edge

The COVID-19 pandemic has accelerated the organizations' need to be hyper-productive. Companies are realizing that they have to transform to build the capabilities that will prepare them for the future. Companies are thinking of ways to drive efficiency and effectiveness to a level not seen before. There is a strong push for automation to play a central role in making that happen. This is also reflected in the testing domain, where any opportunity for improvement will be welcome.

Realizing the need to drive testing efficiencies and reduce manual effort, organizations want to adopt RPA in testing. We are at a tipping point where the benefits of RPA adoption are clear, what is needed is that first step towards replacing existing frameworks.

Recognizing the potential of RPA in testing, EdgeVerve and Infosys Validation Solutions (IVS) have been helping clients simplify and scale up test automation with AssistEdge for testing. AssistEdge brings the experience of handling tens of thousands of processes with different technologies and environment systems to test automation, helping navigate heterogeneous environments with ease. By building an army of bots for functional, regression, and user acceptance testing, it can help achieve 100% test automation with incredible accuracy. In addition to being faster to build and deploy, AssistEdge reduces the overall time to value and also the investment needed for deploying and managing RPA infrastructure. Infosys Validation Solutions' (IVS) engineering-led QA capabilities enable enterprises to effortlessly scale

up testing in real-time, delivering unprecedented accuracy, flexibility, and speed to market. With its vast experience, IVS enables clients across industry verticals to successfully implement an automated testing strategy, allowing them to move away from tedious and error-prone manual testing, thereby improving performance and software quality while simultaneously resulting in effort- and cost-savings.

The journey to RPA-based test automation has to be implemented. And those that adopt faster will hold a competitive advantage in faster realization of benefits. The question is, are you willing to take the leap?

Want to know more about the potential of RPA in testing? Write to us at askus@infosys.com

About AssistEdge

AssistEdge offers a cohesive automation platform that enables enterprises to scale in their automation journey. It offers enterprises with a comprehensive suite of products enabling them to drive initiatives around process discovery, intelligent automation and digital workforce orchestration. AssistEdge has helped enterprises unlock value in the form of reduced service time, faster sales cycles, better resource allocation, accelerated revenue recognition and improved efficiency among others.

About EdgeVerve

EdgeVerve Systems Limited, a wholly owned subsidiary of Infosys, is a global leader in AI and Automation, assisting clients thrive in their digital transformation journey. Our mission is to create a world where our technology augments human intelligence and creates possibilities for enterprises to thrive. Our comprehensive product portfolio across AI (Infosys Nia), Automation (AssistEdge) and AI enabled Business Applications (TradeEdge, FinXEdge, ProcureEdge) helps businesses develop deeper connections with stakeholders, power continuous innovation and accelerate growth in the digital world. Today EdgeVerve's products are used by global corporations across financial services, insurance, retail, consumer & packaged goods, life sciences, manufacturing telecom and utilities. Visit us to know how enterprises across the world are thriving with the help of our technology.

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About Infosys

Infosys is a global leader in next-generation digital services and consulting. We enable clients in 46 countries to navigate their digital transformation. With over three decades of experience in managing the systems and workings of global enterprises, we expertly steer our clients through their digital journey. We do it by enabling the enterprise with an AI-powered core that helps prioritize the execution of change. We also empower the business with agile digital at scale to deliver unprecedented levels of performance and customer delight. Our always-on learning agenda drives their continuous improvement through building and transferring digital skills, expertise, and ideas from our innovation ecosystem.

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