

How to Improve Test Automation Effectiveness and ROI



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How to Improve Test Automation Effectiveness and ROI

Innovation at digital speed is a key competitive advantage in today's world. The ability to develop, test and launch digital products and services quickly and consistently has become critical to success. As business stakeholders cry out for greater speed and agility, modern approaches such as "agile" plus Continuous Delivery and DevOps have finally become main stream.

But, delivery speed and agility is no good if it comes at the cost of quality, security and compliance. Business and IT management must ensure that quality assurance, and particularly testing, is appropriately enabled as a key aspect of every activity through the modern, iterative software delivery cycle-via a Continuous Delivery framework with a strong focus on automation.

Test Automation- A Key Enabler for Continuous Delivery

Several IT solution providers are now kicking the tires on Test Automation, as a critical enabler of Continuous Delivery and agile software development. Bringing test automation into the fold of development and rollout processes provides a set of repeatable checks which are run on an ongoing basis before any package gets shipped. With automated checks being carried out regularly around your regression, performance and acceptance scenarios, you can reduce the number of escaped bugs- and rev up the delivery of new applications, improving your relationship with customers.

Greater automation coverage gives stakeholders more accurate information around risk to high-value features, ensuring they are able to make more informed decisions at the business level. In general, it allows for better management of, among other things, the release of software updates, the porting of new code, and the overall processing environment.

Many organizations that were "born digital" are now extensively leveraging test automation in order to roll back failures in a matter of seconds, enabling fixes to be made on a constant basis, and significantly mitigating business risk. Many market leading companies even choose not to release features unless at least 80 percent of the code is covered by automated testing, according to Mckinsey. Product teams can thus understand and make decisions quickly based on automation results that impact performance and customer experience.

When it comes to testing leaders among traditional enterprises, customer-facing systems such as e-commerce websites or mobile applications usually represent the greatest priority for automated testing. Since these systems go through frequent innovation, it becomes important to streamline the product testing through sophisticated automation- aiming, for instance, to verify an end-to-end customer journey as part of a larger initiative to digitize customer processes.

So, it is now established that test automation improves the software delivery process significantly and conveys a number of critical advantages in taking your large-scale software delivery to the next level. Well, not really.

Not all test automation projects are able to deliver expected success and ROI. While a range of companies have adopted Test Automation, only few, regardless of industry, have been able to capture its full value. A survey by Logigear reveals more than 43% of respondents still do not have a successful test automation solution.

Test Automation Considerations to Boost ROI

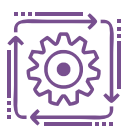
It is important to carefully analyze the ROI of the entire automation effort. An ROI report is typically based on inputs like the number of releases planned per year, number of regression test cases, size of manual testing team, etc. and helps to:

- ➔ Analyze the cost that will be incurred for automation

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- ➔ Compare the efforts and cost for both manual testing and test automation
- ➔ Calculate the break-even period
- ➔ Work out the saving in percentage

It takes time, a well-planned strategy and a commitment to ensure that your automation testing efforts hold ground and keep delivering accurate, reliable results. Here are some considerations that can help you make the most of test automation investments and boost ROI:



Defining the Scope of Automation

When embarking on an automation initiative, you need to identify the right test scenarios for automation first. Anything less than a thorough automation feasibility analysis would result in automation of test scenarios which cannot be executed during later test cycles, making it difficult to achieve the desired output of the project. It is necessary to consider different factors like the functional aspects of the application under test, the environment, dependencies on hardware, potential impacts and more while deciding what to automate.

The most popular use of automation is for those tests cases that need a lot of human intervention and are repetitive in nature. It can also be used beyond regression test cases, for instance, for an ecommerce application that is being used in various languages, automated testing can be used to check if the most crucial user scenarios work in all the languages, and also verify if the translation is correct for every single word in the solution.

However, some aspects of testing such as exploratory testing do not render themselves to automation well, and pushing the envelope too far may prove to be a recipe for disaster.



The Right Focus on Test Design

Test design plays an extremely important role in boosting the ROI of test automation. A robust test design aims to provide comprehensive code coverage with the help of minimal number of tests within the shortest timeframe.

Once the scope of automation is defined, one needs to thoroughly review all the functional and non-functional requirements of the software under production in order to ensure maximum test coverage. Creating comprehensive test cases beforehand helps to identify the test execution time as well as likely defects. Plus, you can identify other scenarios and workflows that can be automated, which may otherwise have been missed.



Test Data

Since new development methodologies call for quicker and more iterative software release cycles, access to quality test data becomes extremely critical. Data size needs to be optimal and consist of comprehensive information and components that are relevant for application testing requirements. Plus, different data sets must be combined and categorized as valid data, invalid data, boundary condition, etc. To ensure that the data that is utilized for testing does not get outdated, it becomes essential to review your test data on a regular basis to ensure its validity for tests.

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Test Maintainability

To ensure the durability of the automation solution, it is necessary to take product evolution into account.

The demands for frequent product iterations and upgrades necessitate the use of a test automation solution that has reusable test cases and test plans, with smaller and more independent test cases in place of a monolithic testing architecture. It is important to build test suites that enable frequent change for regularly assessing the maintenance needs of the testing suite.



Test Automation Execution

Only if the test automation scripts are executed by the functional testing team on an ongoing basis will test automation be successful. Functional knowledge is extremely crucial to evaluate the correctness of the automation scripts. There is no point in creating thousands of scripts that are not able to identify a critical bug in the system. Initially training or hand-holding by the experts may be needed, as this proves to be the best way to succeed in test automation.



Cloud Based Test Automation

With the growing complexity in handling and managing a wide variety of browsers and platforms, cloud infrastructure can play an important role in successful testing and boosting the ROI of test automation efforts. The cloud provider can take the overhead of maintaining multiple platforms/browsers/devices for updates, security patches and upgrading OS while reducing the unit cost of testing and boosting testing effectiveness.



Use of the right automation framework

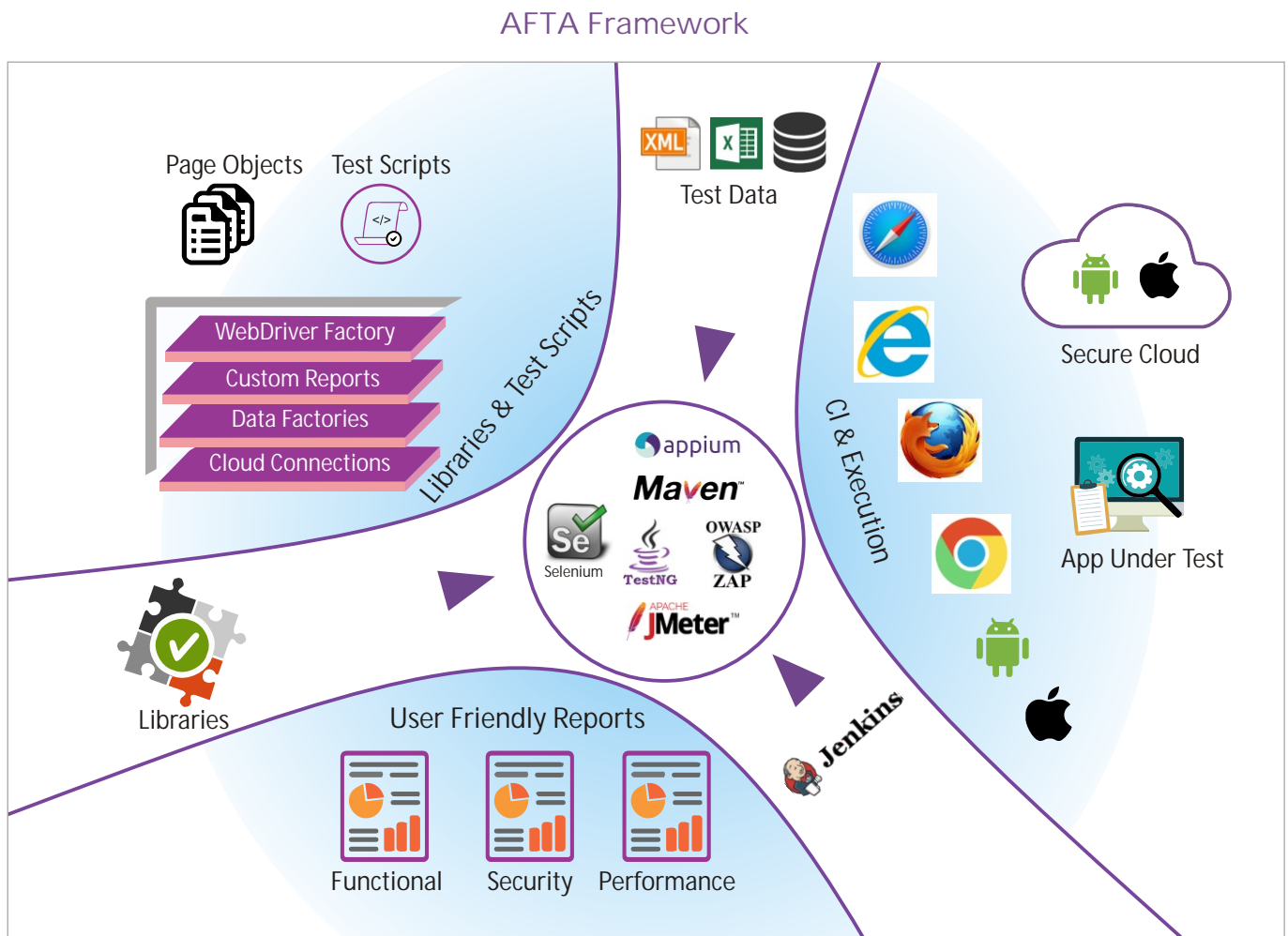
An automation framework provides a predefined set of automation testing guidelines, protocols, rules and standards, which when followed, improve a team's test speed and efficiency, enhance test accuracy, slash test maintenance costs and also reduce risks. The guidelines may include coding standards, test-data handling methods, processes for storing test results, object repositories, alongside information on accessing external resources. The idea is to provide for parameterization of test scripts and test data to boost long-term usability and efficiency. The framework should include everything an automation solution needs, other than the test script itself.

Using the right automation framework can go a long way in enhancing the overall productivity besides saving effort and time from the testing perspective. In a digitally mature ecosystem, where application changes and code deployments happen on a frequent basis, the testing framework must fit in with the latest software development approaches, and enable seamless integration into the Continuous Integration/Continuous Deployment pipeline.

AFTA (Aspire's Framework for Test Automation)

Over the years, Aspire has built a market leading expertise in Test Automation, by providing robust and stable Test Automation solutions to several top players in Banking, Retail and content management industries. By imparting the experience and knowledge gained from such solutions we have come up with our in-house testing accelerator, AFTA. It is specifically designed to make the most effective use of test automation by significantly cutting down testing efforts while offering no compromise on quality, and has helped several CIOs boost return on their technology investment.

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It helps you stay ahead of competition by:

- ➔ Enabling seamless testing across disparate environments
- ➔ Enhancing test coverage
- ➔ Reducing test cycle times, resulting in huge cost savings and faster ROI.
- ➔ Improving resource utilization and productivity
- ➔ Providing modular reusability and flexibility
- ➔ Accelerating speed-to-market
- ➔ Reducing automation overhead
- ➔ Improving application stability
- ➔ Ensuring the quality of core and regulatory functions to ensure a good customer experience

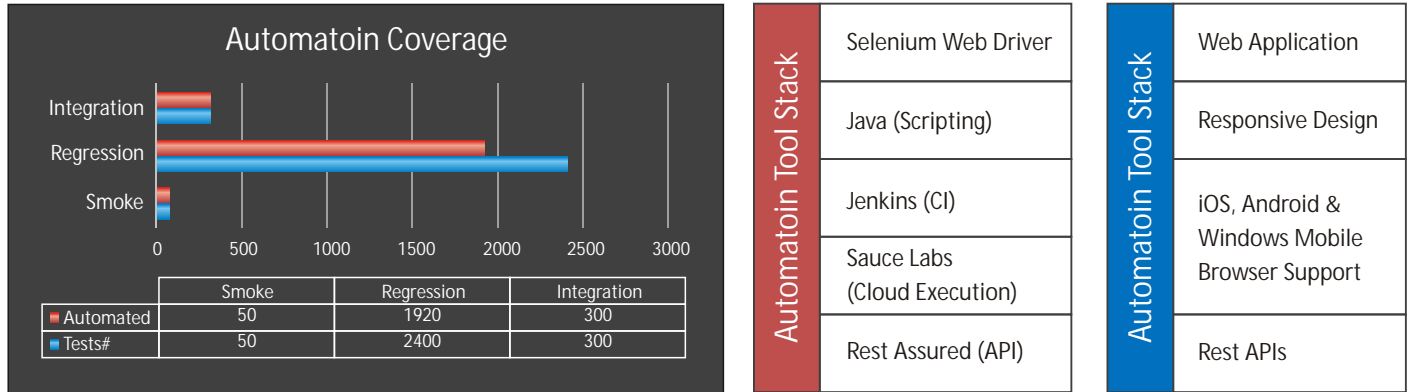
AFTA supports integration with popular cloud environments like SauceLabs, AWS – device farm and BrowserStack to enable seamless device & browser coverage across hundreds of commonly used end-user platforms. Through this, Aspire has successfully executed many cloud automation testing projects across supported cloud environments in various domains.

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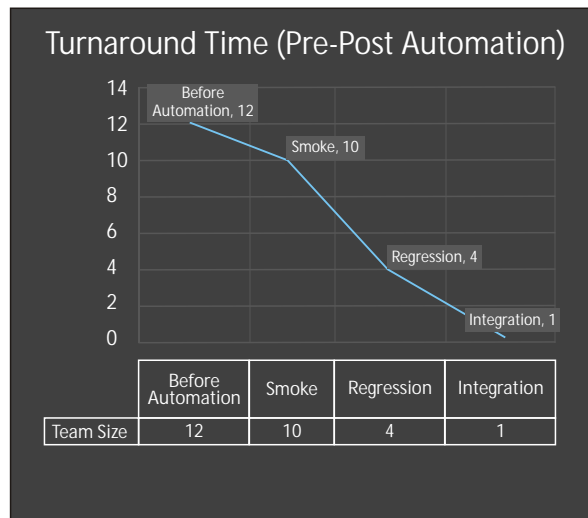
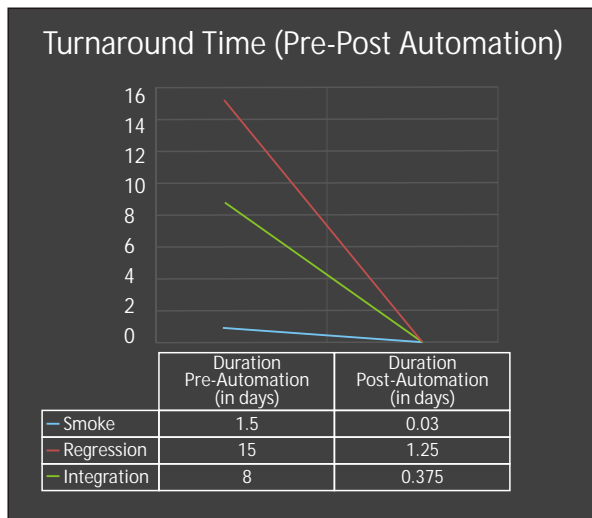
Given below is a snapshot of some of our customer success stories.

Case 1: Online Assessment Solution

Our customer is the world's largest learning company with 40K employees in more than 70+ countries helping people of all ages to make measurable progress. This product which was automated is an online assessment solution for Pre-K12. It will be used by teachers & students of schools / institution.



ROI:



Total Savings - Last 1 Year		
Module	# of runs	Time Saved (hrs)
Smoke	48	856.8
Regression	24	22752
Integration	12	1500

Time Duration to Automate		
Module	Resources	Duration
Smoke	3	20 days
Regression	10	8 months
Integration	6	1 month

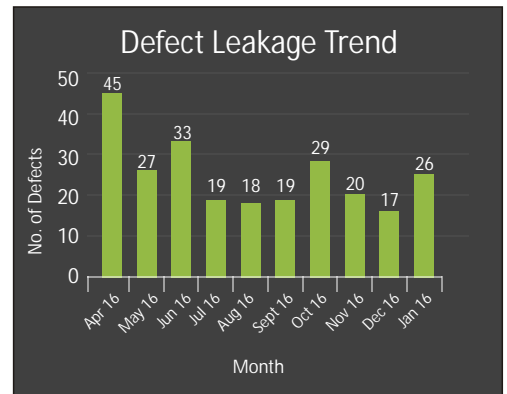
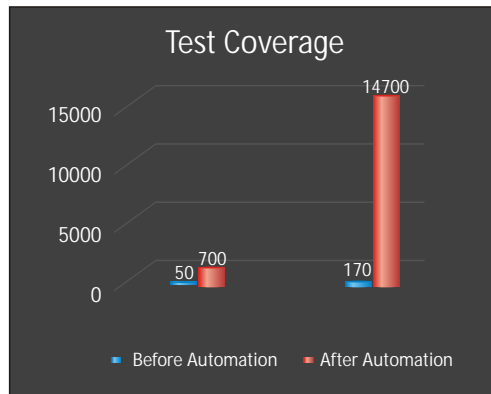
Maintenance Effort	
Module	Hours / Month
Smoke	12
Regression	80
Integration	25

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Case 2: Cloud Billing and Subscription Solution

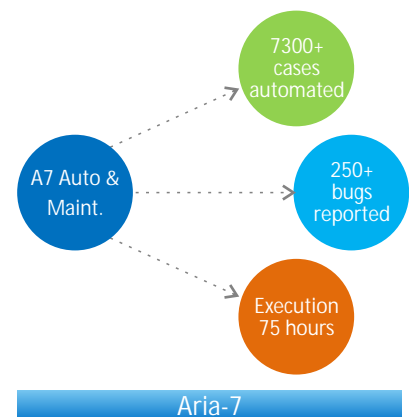
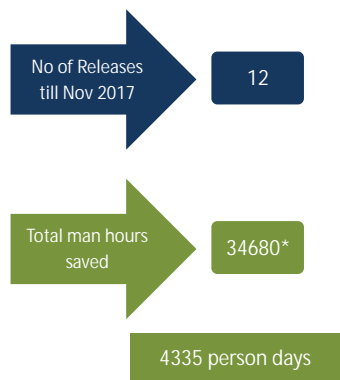
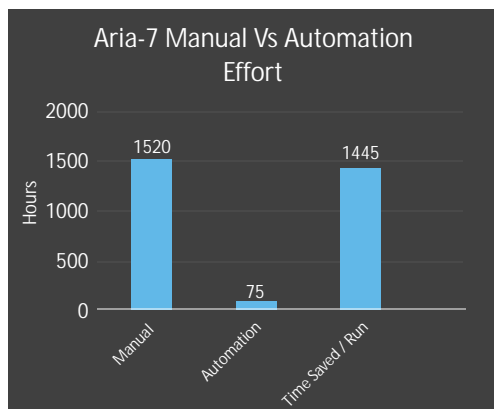
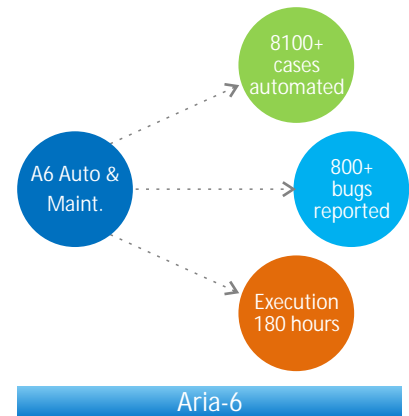
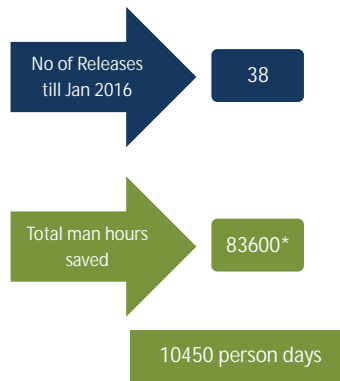
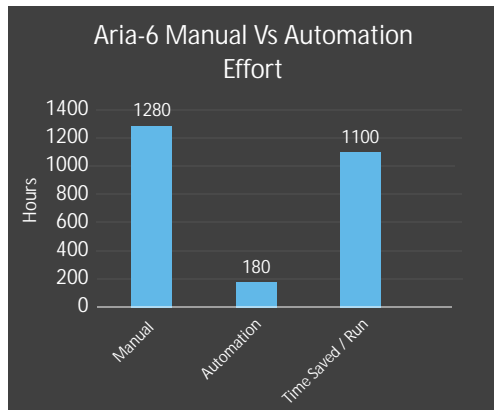
Our customer is a leading cloud billing and subscription solution provider based in US. They work with more than 2000 global organizations which includes the likes of Disney, Pitney Bowes, Ingersoll Rand, EMC, Internap, VMware, Taleo, HootSuite etc. They help many industry leaders in monetizing recurring revenue businesses and deliver exceptional customer experiences.

Automatoin Tool Stack	Soap UI (Pro)
	Groovy (Scripting)
	Jenkins (CI)



Monthly average for last 6 months = 21.5
Weekly average for last 6 months = 5.5

ROI:



* Automation script runs at least twice per release

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Case 3: Enterprise Information Management (EIM) Solutions

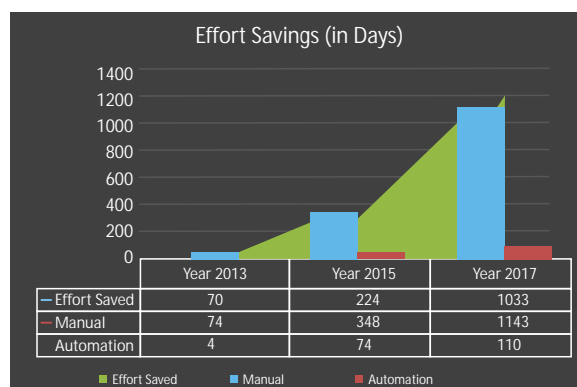
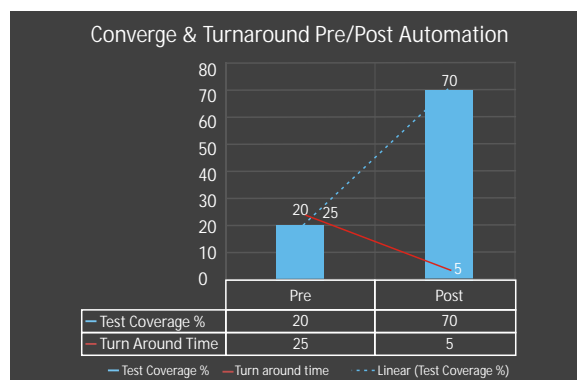
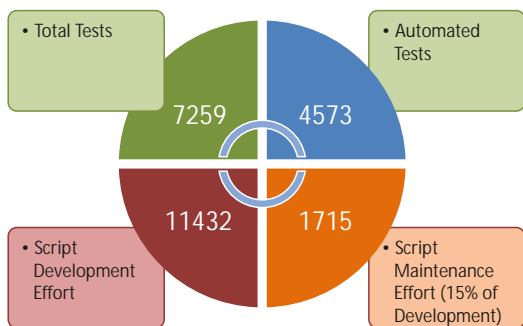
Our Customer is one of the global leaders in Enterprise Information Management (EIM) solutions, with offices in the United States & United Kingdom. Their product eliminates information silos and provides quick and easy access to the right content from any core business system and device. They have about 1,00,000 global users across 100 countries supporting in 25 different languages. The organization was included by Gartner, Inc. Magic Quadrant for Enterprise Content Management for the 3rd consecutive year.

Automatoin Tool Stack	Test Complete
	JScript (Scripting)
	Jenkins (CI)

Test Coverage:

Test Suites	# Total Test Cases	Automated Tests	Automation Development Effort (Days)	Automation Maintenance Effort (Days)	Manual Maintenance Effort (Days)	Man Days Involved in Automation (Days)	Effort Saved through Automation (Days)	Frequency of Executions
Regression Suite	7259	4573	1524	229	1143	110	1033	Monthly
Sanity Suite	1525	1525	508	76	3304	312	2992	Twice a Week
Compatibility Suite	318	318	106	16	13	2	11	Half-Yearly

ROI:



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