Royal Cyber

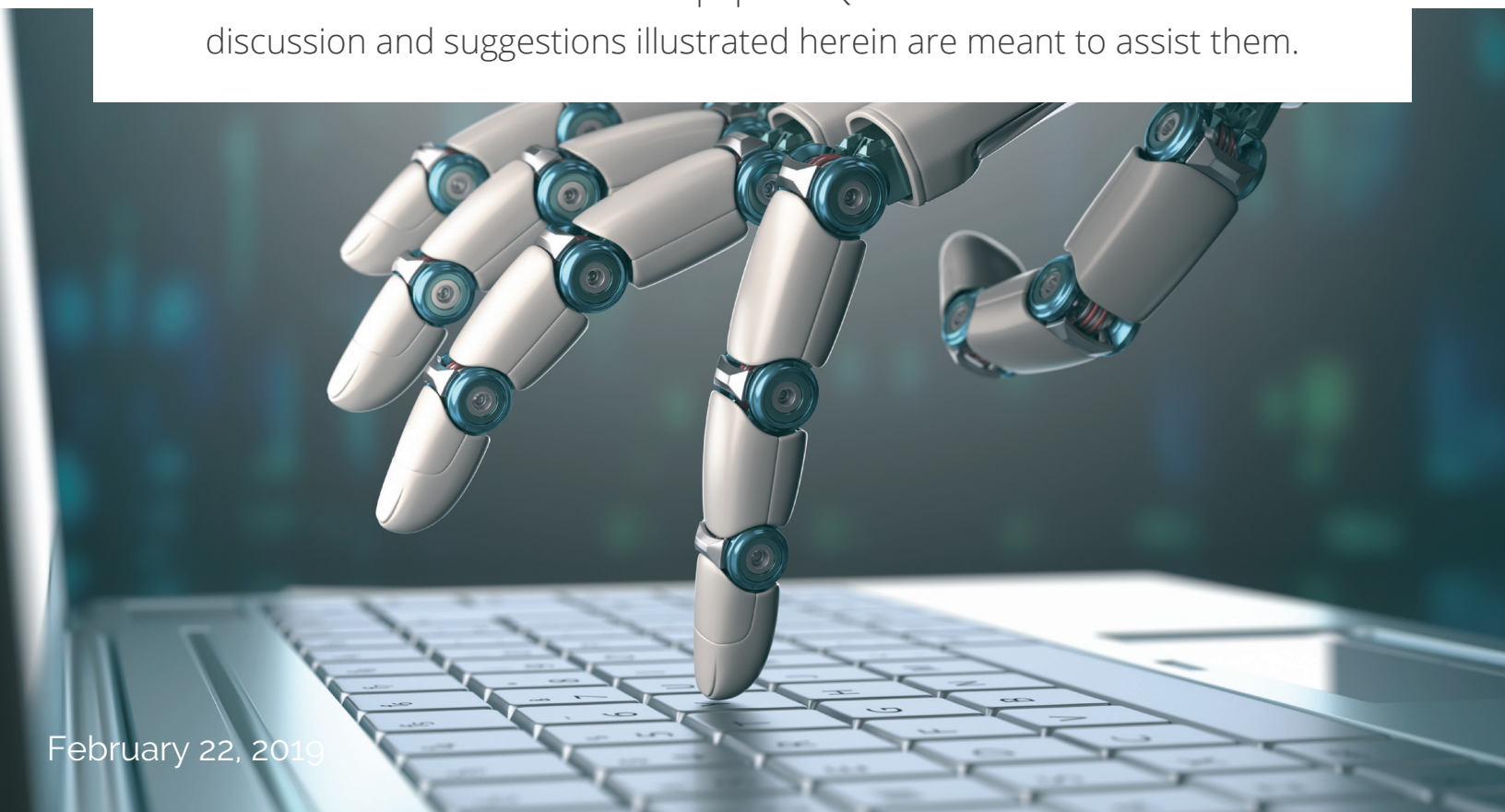
Test Automation Framework (RC TEAF)

Effortless Test Automation

Executive Summary

This white paper is about Royal Cyber Test Automation Framework (RC TEAF). This paper provides an overview of RC TEAF, Architecture, Approach and Process, Benefits, success stories, and implementation timelines.

The intended audience for this paper is QA consultants and the entire discussion and suggestions illustrated herein are meant to assist them.



February 22, 2019

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1. Overview

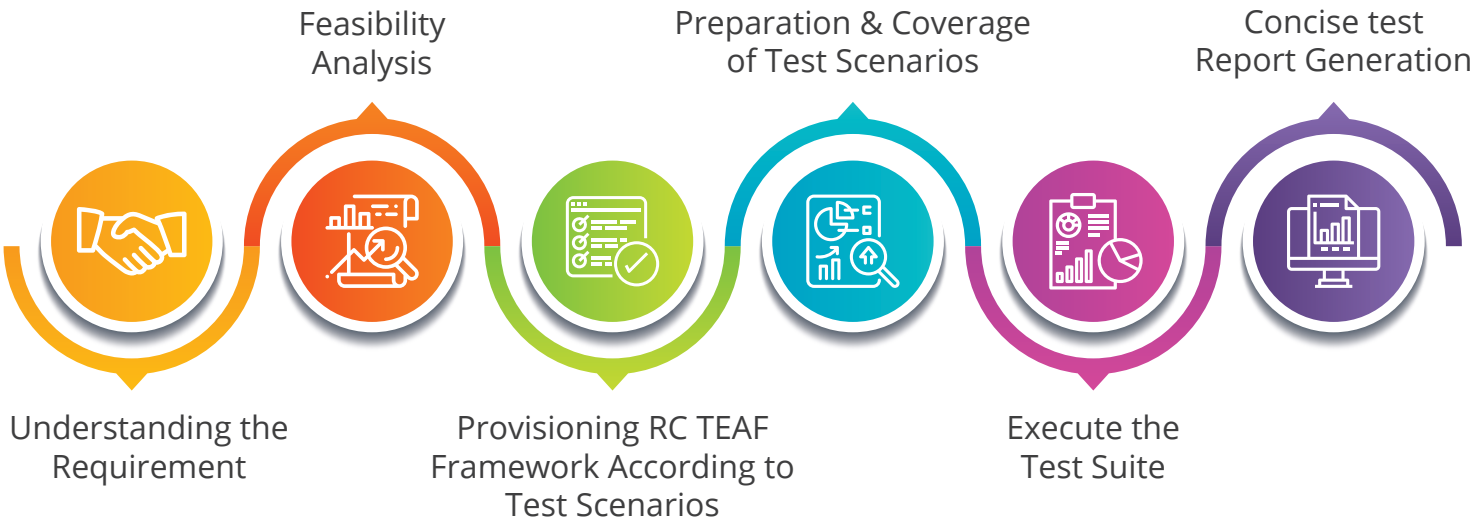
Testing frameworks are an indispensable part of any successful automated testing process. They can minimize the testing efforts and maintenance costs which will provide a higher return on investment for QA teams looking to optimize their agile processes.

1.1. Unify the buying experience.

Royal Cyber's Test Automation Framework (RC TEAF) offers painless and effortless test automation that has helped the clients in realizing tangible & invaluable benefits in terms of

- Time saved,
- Reduced efforts &
- Setup a high quality QA system that's unmatched

2. Approach and Process



3. Benefits and Value-Added

Mobile Support

- Enables enterprises to build applications that are scalable & accessible across multiple platforms.
- Write tests against iOS and Android platforms using the same API, enabling code reuse between test suites. Free Open-Source test automation framework for mobile testing

GALEN UI

- Responsive design layout testing & Image comparison is possible by describing Galen spec language.
- Reports the error, makes a screenshot and highlights the misbehaving element on it.

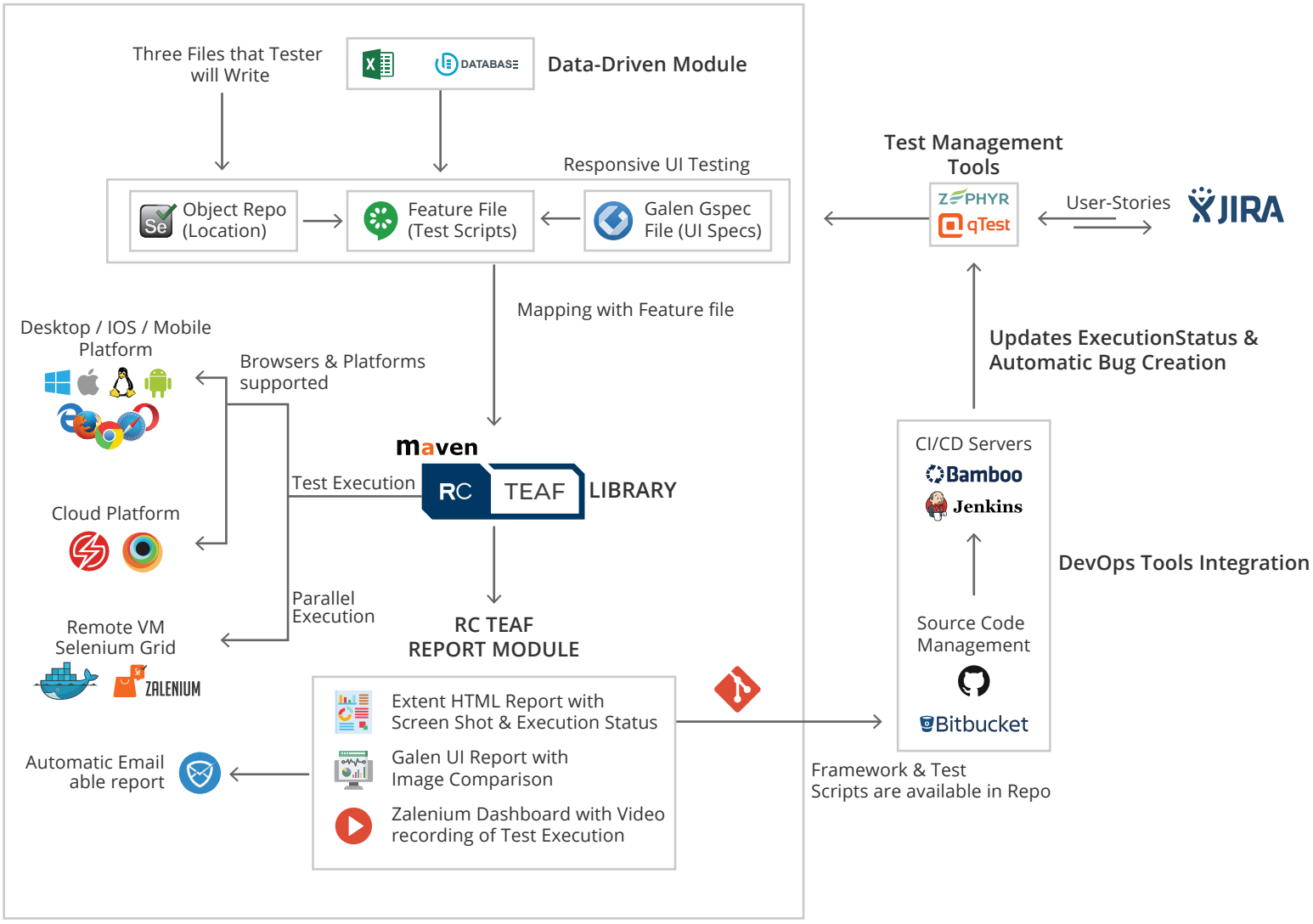
DEVOPS CICD

- Integrate with leading DevOps tools, CI/CD environments which automatically triggers the execution periodically, helps BU ensure the application is working seamlessly.
- A complete long-term change history of every code for the application can be managed in SCM tool.
- Automatic Bug creation for Failed test scenarios in JIRA.
- Integration with test management tool Significantly reduces subsequent software maintenance and Supports robust software development which Speeds up the testing process.

BDD Cucumber

- Allows BU to grasp the test scenarios as the scripts are written in plain English language.
- Intensive data driven testing possible by easy access of data tables from within script and from separate files.
- Generates cucumber & extent reports with detailed information on test execution with screenshot and can also be email able at the end of execution, which enables easy go/no go decision making.

4. Architecture



4.1. Step 1: Page Object Repository

- Reusable locators.
- Easy Correction for new enhancements.
- Modularized Page by Page locator storage.
- Name and Value pair.

4.2. Step 2: Feature File

- Code-less Test Scripts with the object and test data's.
- Plain English Language.
- Reuse user actions with auto-complete.

4.3. Step 3: Galen Spec

- Easy to maintain Objects definition.
- Web element Specification in the English language.
- Base-line image comparison for UI Validations.

4.4. Step 4: RC TEAF Compatible

- Choose a wide range of RC TEAF Compatible Platforms and Browsers to execute the automation test scripts

4.5. Step 5: Report Generation

- Extent Report for End-to-End functional Test Cases execution with Screenshots
- Galen Spec Report for UI Validation for all devices used during Test Cases Execution
- Zalenium Report – Video based for Test Cases Execution
- Auto-generated Email to all stakeholders involved in the project after Test execution

5. Manage all your DevOps Tools using Single UI

VERSION CONTROL

Integrate with version control tool of your choice Git, SVN, CVS...

BUILD

Integrate with your existing CI tools like Jenkins.

TESTING

Integrate with your existing UT, FT & PT tools seamlessly.

DEFECT TRACKING

Integrate with your existing bug tracker like JIRA.

6. Success Story

OMEGA Success Story
A Popular US-CA Expertly Engineered E-Commerce Store (Hybris)

Use Case: E-commerce provides an easy way to sell products to a large customer base, which helps customers narrow down their broad ideas and enable them to finalize the products they want to purchase seamlessly.

Business Issue

- Selecting the right & effective automation testing framework which is suitable for across all platforms.
- Choosing a testing approach which is adaptable to test the application simultaneously
- Constant updates based on business and customer needs makes the tester to do regression repeatedly.
- Inherent challenges in test automation causing reluctance on the part of QA teams to adapt test automation and use automation effectively.
- High coverage of automation is equal to high higher efficiency, but the challenge of existing / old approaches hinders achieving high coverage in terms of automation.

Solution Approach

- RC TEAF adapt with changing requirements as the prospect of maintenance is highly simplified.
- Ease of Automation helps teams achieve greater test automation coverage and there by save up time for other effective QA practises such as finding difficult to find bugs.
- Resist code break for Ever-changing Product Data with minimal Automation Test Suite updates, ensures the stability of the Test Scripts & prevents false failures and successes in Automation Report.
- Automated Front end UI Validations to speed up overall QA process, as there is no need for manual human interventions (important requirement in automation CI CD processes).
- Tools/ Technologies used: RC - TEAF

Value Delivered

- 90% automation coverage using RC's Customized TEAF on multiple platforms.
- Expedited QA Process due to test automation enables high coverage of important QA scenarios and there by achieve high quality products.
- Production leakage is reduced by around 95% and ensure test automation support for P1 issues which will not impact the business
- With risk based test approach; most of the sites (70%) are tested on mobile and tablet devices to ensure quality across platforms.
- Shorter automation time and Faster time-to-market
- Increase overall productivity and consequent cost reduction and supports for flexibility, Scalability, Reusability and just-in-time reporting add value which helps in more than 50% cost savings in automation design, implementation and maintenance.

6.1. RC TEAF's Customization for OMEGA Project

- Device addition to the exist script (various screen fragmentation such as Mobile, IPad etc)
- JIRA integration - if failure (automatic bug creation in the event of failure in script)
- Clean up database every week periodically (to avoid the dump of new test users creation)
- Pass different environment server URL as Jenkins parameter (Stag, Test, Prod)
- Galen UI validations with end to end automation
- Parallel browsers execution - (using docker-zalenium grid)
- Test results email to stakeholder (auto-generated email after every execution)
- Execute one or two scenario of the test scripts periodically triggers every half hour (to ensure the server is up and running)
- Overall CICD workflow
- Generate extent report, galen UI report with screenshot and zalenium/browser stack recorded video execution

7. Implementation Timelines

Work estimation for automation is based on the overall test cases count and the complexity of the test case being automated. Test cases complexity may be categorized as:

• **Simple complexity:** A straight forward test case with up to 3~4 simple verifications (such as the presence of an element, text, page etc.) can be categorized as simple complexity. **A single automation engineer can automate 10 to 12 simple complexity test cases in an 8 hour business day.**

• **Moderate or medium complexity:** Test cases which have multiple verification points and or few complex verification actions that require specifically written test code or actions to be performed, which takes a longer time to be automated can be categorized as medium complexity. **5 to 6 medium complexity test cases may be automated in a single business day.**

• **Complex or high complexity:** Test cases that are lengthy and have very high verification points, usually equal to or greater than 10, also having complex action to be performed, such as dependency cases with large test data and multiple levels of verification and complex test code to be written are categorized as high complexity test cases. **2 to 3 high complexity test cases may be automated in a single business day.**

The Test cases were categorized and the count of each test case for each category is listed in the table with their respective time estimates.

Note: This is a sample estimation for reference and varies based on the business requirements features and complexity involved.

Complexity	TCs Automation per day (8 hrs.) per person
Complex Test Cases	**1 – 2 TCs**
Moderate Test Cases	**5 – 6 TCs**
Simple	**10 – 15 TCs**

- The Overall automation time estimation would be based on the given count of test cases and analysis of their complexity.
- Initial Test Framework setup and verification would require 8 hours.

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Royal Cyber Inc. Headquartered in Naperville, IL is a leading software organization that provides services ranging from application development and deployment to training and consultancy. We commenced the operations in the year 2002 as a specialized Technology provider striding in as a software deployment service provider, assisting clients to meet the standards and demands of doing business in the rapidly changing marketplace.

Today we stand tall as a One Stop Shop for all your IT needs.

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