Vodafone Portugal

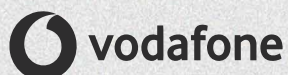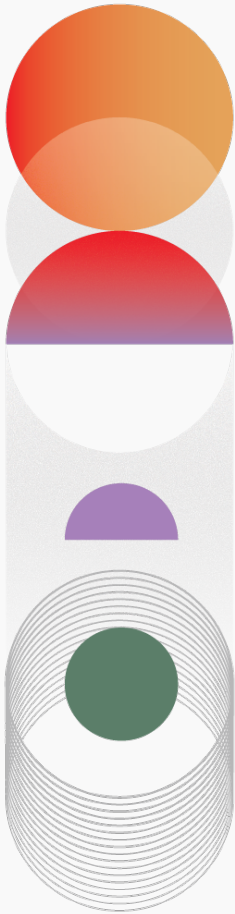## Optimising Release Testing Through Automation

"Test automation is key for Vodafone Portugal to increase development lifecycle efficiency and to provide customers with improved service and experience. Celfocus Automated Testing Framework is a powerful tool to achieve high standards of automation."

Miguel André
IT Governance & Quality Assurance Manager
at Vodafone Portugal

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The Road to Smart Testing
Calls for Automation

In the digital economy, where speed is king, organisations seek to deliver solutions with shorter release cycles, but that still ensure high-quality standards. In this context, strong Quality Assurance practices and robust testing methodologies are pivotal to guaranteeing end-to-end system quality and integrity while optimising resources.

Testing, as part of a Quality Assurance process, is a crucial stage in the software development lifecycle as it ensures the delivery of reliable software. However, routine and repetitive manual testing activities are prime automation candidates because it can free resources and increase the Quality Assurance process efficiency and speed.

Automated testing automates the validation of applications against requirements, saving time and effort in defect detection and reporting while assuring that highly frequent changes don't bring additional risks of software regression.

Committed to a higher level of consistency, automated testing expands test depth and scope, accelerates results and optimises the allocation of resources, freeing up teams to execute more added-value tasks and to be more proactive in enhancing the overall quality of the development outcome.
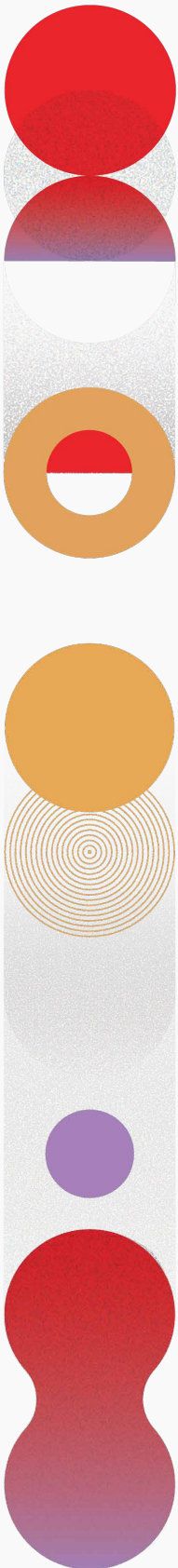
Automation is gradually gaining acceptance and trust among business and IT teams, either following Waterfall or Agile and DevOps delivery methodologies. However, the latter, in particular, has been emphasising its importance in supporting shorter development cycles, in which quality must be delivered quickly and consistently.

Automated testing is particularly critical for regression testing: when delivering constant streams of change, several scenarios must be tested across multiple systems and environments.

Implementing automated regression testing allows for the early and quick detection of defects, which, in turn, increases testing efficiency and effectiveness. Test automation tools are essential elements of a smooth DevOps-led pipeline and enable continuous testing, integration and delivery, providing higher degrees of confidence and speed.

About **Vodafone Portugal**

Vodafone Portugal is a historic national telecommunications provider, presenting a well-recognised convergent offer. A leader in innovation, brand awareness and customer satisfaction, Vodafone Portugal has nationwide coverage that reaches 3,4 million homes and companies with its cutting-edge fibre network. The company holds a customer base of over 4,7 million mobile subscribers, representing a 30% market share.

The **Challenge**

As part of Vodafone Portugal's BSS core IT systems, the Siebel upgrade project was a critical piece to continue unleashing the value of the undergoing CSP digital transformation. Testing was an essential part of the project, and there was a strong need to automate and streamline the entire process to achieve smaller release cycles – all while assuring the defined quality standards.

Vodafone Portugal challenged Celfocus to accelerate the Siebel upgrade and unlock test automation for the business acceptance validations. It recognised the central role that automated testing plays in triggering the required agility to deal with shorter go-to-market cycles and to roll out new application features and functionality faster. Predominantly manual testing activities were being performed on Siebel, resulting in thorough and time-consuming releases, as well as unproductive human resource management.

The goal was to **decrease release approval time** for small and large releases, covering automated regression and sanity testing, and reducing business teams' workload and effort on tasks that could be automated.

Regression testing executes end-to-end validation on updates to the software product. In contrast, sanity testing runs quicker, as-needed checks for deviations over the validation period and, by doing so, mitigates risk.

Siebel test automation was a critical step in the path towards overall release optimisation. However, a continuous testing infrastructure implementation was required to set the ground for further automation initiatives.
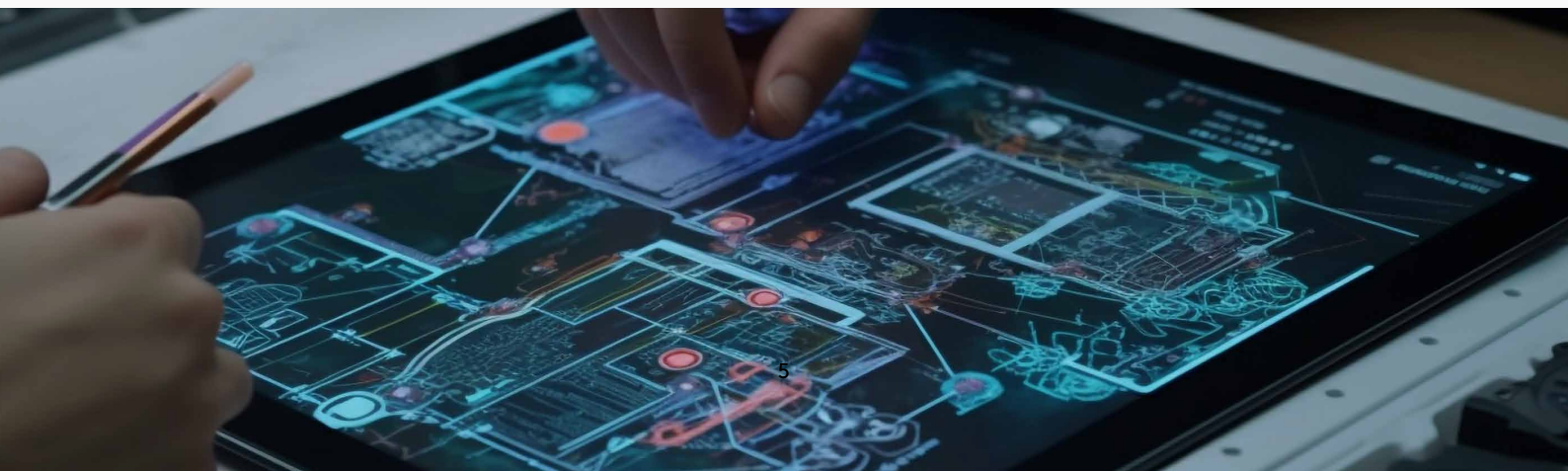
The **Solution**

With a clear mission to build an automated testing ecosystem, a collaborative team composed by Vodafone Portugal and Celfocus executed a Siebel testing update and defined a set of tests to be automated, with basis on predefined criteria and in coordination with the operator's business areas.

Following the Agile Scrum methodology, the team used **Celfocus Automated Testing Framework** to automate Siebel regression tests. It's a proprietary technology-agnostic technical framework for complete and complex testing systems.

It applies industry best practices and standards to design and implement rapid, robust, scalable and easily configurable scenarios for multiple testing environments, with highly reduced maintenance efforts. Test suites created can be triggered to run automatically with every release, promoting ongoing testing under continuous integration/continuous development (CI/CD) contexts. Test suits can also be activated on request or scheduled to be executed at desired times and frequencies.

Celfocus Automated Testing Framework abstracts the underlying technologies to support automated testing development. It allows running tests against web, mobile-native apps, database, services and open APIs, as well as performance tests, among others. It can validate the applications at different stages and over multiple iterations, mitigating the risk of human errors, guaranteeing an efficient development lifecycle and all necessary checks.

The team reached
three key milestones:

1

Automation
of 377
Test Cases
regression
and sanity tests

2

30 Continuous
Testing Pipelines
Created
for different
scopes

3

TDM
Integration
to feed
complex
test data
requests

The delivered test cases covered 12 functional Siebel work areas – such as inventory, configuration orders and user support, and the different scopes of the continuous testing pipelines included mandatory and non-mandatory Siebel regression tests, sanity (also known as smoke) tests and tests per work area.

Test Data Management tool (TDM) is a Vodafone Portugal's proprietary Test Data Management tool, covering different samples of test data. Being integrated into the automated testing ecosystem through Celfocus Automated Testing Framework, it became easier and more effective to build user stories for test cases to be automated.
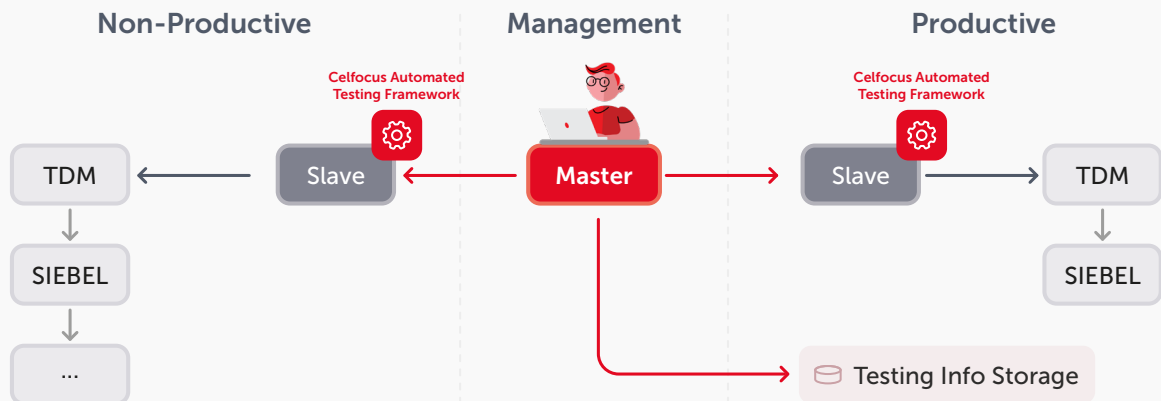
As a result, validation cycles were shortened and manual activities reduced to the essential.

Project Architecture

Implementing a robust continuous testing infrastructure relies on an effective regression testing methodology, over which changes are introduced into the existing version of the system to provide new features or improve existing ones.

To support the development lifecycle, two types of environment – productive and non-productive – were set-up.

The continuous testing infrastructure comprises a TDM and an Automation Server with a Master/Slave configuration:

The Master:
Invokes the Slaves to execute the tests in the isolated network and to retrieve the result in report form with all required information about the state of the execution, including the steps and the evidence of what worked as expected and what did not. They then store the report and status;

The Slaves:
Invoke Celfocus Automated Testing Framework to retrieve data from TDM; execute automated functional tests, and to generate a test execution report.

Security was a top priority, and both environments were segregated to prevent unauthorised access to the system and its components. To support this isolation, state-of-the-art techniques were used to segregate access levels and specific environments.

To support Data Anonymisation, all data sampled into the Non-Productive environment was masked in such a way that it can no longer be reverted to the initial state. Therefore, the information becomes highly protected. After that is done, a TDM is used to retrieve data that can be used for testing.

Benefits

Using Celfocus Automated Testing Framework, Vodafone Portugal has significantly shortened its release validation cycles and decreased the reliance on business analysts and developers to perform testing-related activities. Furthermore, the framework delivered the following benefits:

1 **Easy set-up, configuration and use,** not requiring its users to possess in-depth technical knowledge and skills to adapt to different projects and environments;

2 **State-of-the-art open-source technology,** promoting collaboration and support when facing challenging testing scenarios;

3 **On-demand and scheduled execution capability** to improve responsiveness to automation needs;

4 **Versatility to be used in multiple platforms,** allowing test automation coverage expansion;

5 **Reusability,** allowing the single development of tests and their use as many times as required.

Next Steps

Test Automation is one of the most decisive factors in decreasing release cycles.
Vodafone Portugal now has a robust, reliable and easy-to-use automation capability on core IT, covering Siebel release regression.

There's room to expand automation coverage to other applications and projectrelated contexts in the future. There's also room to increase value through frequent feedback and shorter release cycles, giving form to a **cross-functional, automated testing factory**.

Why **Celfocus?**

Celfocus has a dedicated Quality Assurance team that possess the tools, skills, practices and experience in supporting projects of different types and sizes, and in engaging with various customers, cultures and quality approaches that require the adaptation of methods and tools.

With an extensive track record in streamlining development lifecycles, Celfocus Automated Testing Framework features open-source tools that promote the flexibility and customisation required to meet the proposed goals. Finally, Celfocus's knowledge and experience in working with Siebel made it the right partner to support the version upgrade that enabled test automation implementation in this core BSS component.

"In addition to the Celfocus team's deep technical knowledge, its true collaboration spirit with Vodafone was vital to perform and deliver quality work and add an extra layer of confidence in automation."

Miguel André

IT Governance & Quality Assurance Manager at Vodafone Portugal

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