CASE STUDY

BEHAVIOR DRIVEN DEVELOPMENT AND TEST AUTOMATION

BDD is the use of business readable and domain specific language that describes behavior of a system without details on how that behavior is developed. This enables developers having a programming language mindset to collaborate with business at a common ground.

It is an approach to create a shared understanding on the kind of software to build by discussing examples vs functionality.

OVERVIEW

Our client's learning platform helps connect groups through interactive communication. It enables video engagement capabilities to build a community experience with the audience. They empower customers to launch new initiatives, align different groups across organizations, or change the culture.

Organization leaders can keep track of team members' sentiments to provide them digital opportunities for engagement and learning thereby enhancing user experience.

Powered by Artificial Intelligence, the platform combines social listening and learning experiences to measure attitude and behavior.

CHALLENGE

The learning platform which was on-prem required scaling and availability for the increasing mobile users. Therefore, a migration to cloud was necessary to re-position the platform to a SAAS application.

The existing testing approach was feature driven. With the adoption of cloud, the existing set-up posed a large gap in testing behavioral aspects around integration with 3rd party libraries, security of data, data integrity, monitoring and collaboration of features as service. The testing process was not only complex but also inadequate.

The design for the solution mandated UI changes for new features. This made re-usability of existing test cases challenging. It also decreased productivity of the QA team and impacted the quality of testing.

The platform supported video hosting and sharing services that underwent regular updates. Features on Zoom & Vimeo required special expertise to test integration and device compliance apart from video streaming, speed, recall, assistance and experience.

ASSESSMENT

The assessment was structured to include development, testing, and deployment stages.

Customer feedback spiraled changes in application UI and functional behavior making navigation changes inevitable.

Keyword Based Framework with custom functions and utilities didn't allow them add new features and functionalities. Tester is required to learn several special formats and keywords to create customized utilities required for the application. This process took considerable time and had an adverse effect on the test plan development.

Every business rule change required corresponding dataset changes for different senarios. Lack of structured process between development and QA teams created gaps.

Our assessment revealed the following changes to be adopted:

With the adoption of cloud, the testing approach required an integration of environment, data flow, service end point and user collaboration. Whereas the current feature driven framework had limited test coverage integrating the above.
These gaps could be bridged by adopting behavior-based testing which is agnostic to platform implementation.

TESTING AREAS	EXISTING TESTING	CLOUD TESTING
FUNCTIONAL TESTING	Validates ● Component functions ● System functions and service features	Validates ● SaaS/ Cloud service functions ● End-to-end functionalities of an application
INTEGRATION TESTING	Encompasses ● Function based integration ● Component based integration ● Interface based integration	Encompasses ● SaaS based integration in the cloud ● Enterprise level application integration between SaaS/ could and legacy systems

TESTING AREAS	EXISTING TESTING	CLOUD TESTING
SECURITY TESTING	Carries ● Function based security testing on application features ● User privacy and security ● Data integrity and protection ● Client/ server access control	Carries ● Monitoring and measurement as part of SaaS/ could security features ● User privacy and security across a diverse range of clients ● Data integrity and protection even during transit and at rest ● SaaS/ cloud application program interface and connectivity security ● Protection from DDoS attacks
SCALIBILITY AND PERFORMANCE TESTING	Uses ● Performance in fixed test environment ● Customized monitiring solutions ● Monitoring and evaluation	Uses ● Performance in a scalable test environment ● Inbuilt monitoring solution ● Monitoring, validation and measurement

SOLUTION

On-prem to SaaS migration, recreating test cases with reusability

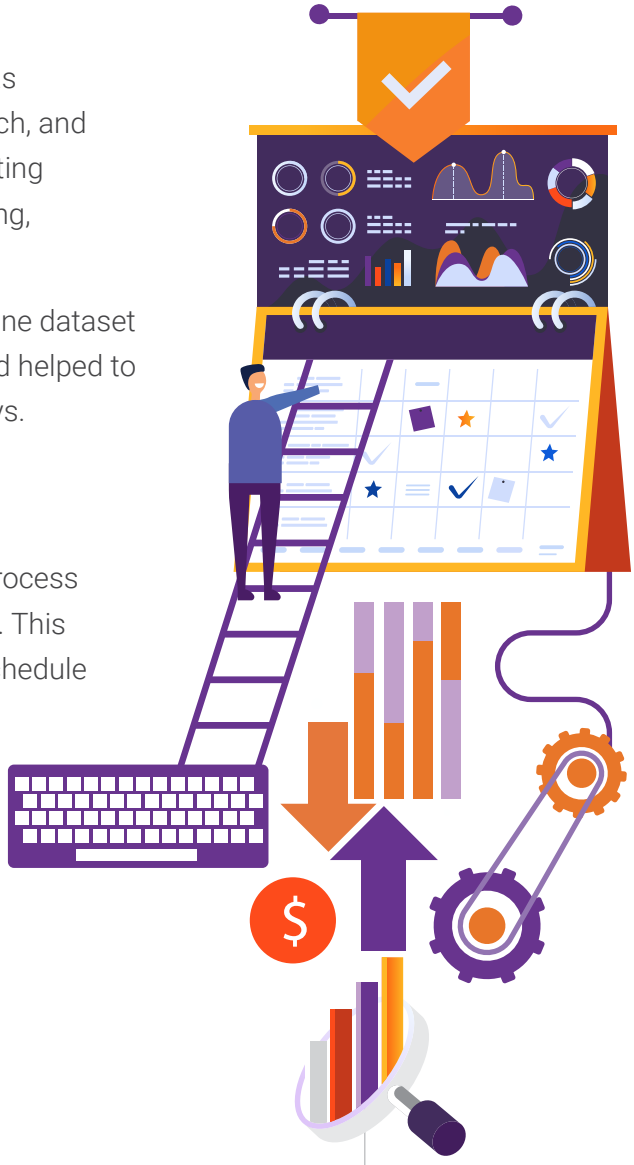
- Over 970 test cases were created to adopt behaviour driven testing to the existing backlogs which included functional testing, migration testing and API testing.
- Rapid deployment enhanced test coverage and test reusability by 65%.
- BDD leveraged Keyword and Data-Driven Testing framework.

New features and integration with social media platforms

- Features like 'player', 'conversational', and 'audience score' was integrated with Social Media platforms like Slack, Zoom, Twitch, and YouTube. Social Media testing that includes compatibility testing (browsers and devices), integration testing, performance tesing, secuirity testing and user profile testing were implemented.
- A custom Data-Driven Testing approach was used to streamline dataset to test cases. This reduced the testing time for test inputs and helped to speed test cycles – 2000+ test cases was completed in 3 days.

Adopting automation tools, CI/CD for testing and process

- Selenium was adopted for test automation and Jenkins for process automation (through DevOps CI/CD pipeline implementation). This enabled maximum utilization of resources, saved time and schedule tests 24x7 remotely from any location.



Tech Stack

Front end - Javascript, react, redux, node
Back end - Java, spring boot, Postgres, AWS (S3, RDS), Heroku
Project/ Defect Management - Jira
Test case management - Test Rail
API Testing - Postman

RESULTS

- We implemented BDD through Keyword and Data-Driven Testing framework. This enhanced test coverage by **48%**.
- With test and process automation, the speed of test cycles increased by **60%**.
- Existing **2000** functional test suite grew to **2900**; cloud and social media testing suite was newly added with over **1500** test cases. A testing practice was created for cloud and social media platform.
- We also helped setup configuration of over **12** third-party applications.