Low Code Testing and Quality Assurance

A Whitepaper

Microservices and Cloud - Based Platform for a Global Real Estate Company Using Low Code - Case Study I

One of the world's fastest-growing real estate brokerages with operations in 21+ countries and with a community of 82,000+ real estate professionals was

using Indium Software's unique cloud-based platform to connect its globally spread out team. As part of its digital transformation, the firm wanted to:

- Implement microservice-based architecture on Mendix

- Create a common framework for consistency and reusability

- Handle complex workflows

- Enable synchronous and asynchronous processes through multiple apps

At Indium, we proposed Mendix for end-to-end platform development, given its low code development, visual modeling, full integration, collaborative development and time-to-market capabilities.

We used Mendix low code to leverage best working practices in functional delivery and seamlessly onboarded an agent base of 20,000 users. This became a one-stop solution for development, technology transformation, and QA. It also enabled rapid deployments with 100% delivery success.

Development and Maintenance of Enterprise Service Application with QA - Case Study II

A renowned global manufacturer of heating, ventilation, and air conditioning systems for commercial and residential applications wanted to transition its legacy.

NET sales and service application to the Mendix low-code platform. This would help its personnel across countries to maintain sales and service records for equipment, parts, and buildings.

At Indium, we created a service configuration module to perform API requests dynamically in the application, where each module has a unique name for retrieving API data. This helped in the seamless maintenance of the API configurations in the app.

We also utilized AWS ElasticSearch to retrieve a large volume of data by storing them as searchable documents.

These data were stored in the Mendix installed base. We leveraged AWS S3 from the Mendix App Store to build a scalable, retrievable, and secure storage of data on Mendix.

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We also dynamically generated templates integrated with XML-configured BI Publisher in Oracle Analytics (OAC), and then exported the reports to Excel.

This project also involved QA, and the scope included:

- Establishing a streamlined QA process covering management, execution, and reporting

- Parallel testing with development matching the requirement/architectural flow

- Incorporating features match the customer's needs

- Testing on various environments

Migrating from a legacy application to Mendix improved data processing time by 50%. We implemented 12 different languages which supported 30 different countries. We also configured the BI Publisher which created self-service capabilities for the end user.

The Growing Popularity of Low Code Development for Faster Time-to-Market

Today, businesses are compelled to release new features, upgrade products, and improve product lines at the speed of thought to retain customers and enhance digital experiences.

This has led to the software development product lifecycle undergoing a change from the waterfall approach to the DevOps environment, where continuous delivery cycles are ensured with product quality.

However, as technologies are undergoing rapid changes to cope with the demands of the Industry 4.0 revolution, there is a shortage of skilled developers.

In such a situation, low-code and no-code development using platforms such as Mendix and Microsoft PowerApps are gaining popularity.

They shorten the development cycle further and aid in the rapid development of cost effective and smart applications.

These platforms typically do not require a developer to have technical skills because they mostly involve dragging and dropping of building blocks to create apps.

This democratization of development is helping even domain experts with no coding skills to develop apps quickly, to keep up with the market trends.

Some of the advantages of low-code development are, the speed of development, reusability, easy integration, and simplicity.

However, it is not without its challenges. For instance:

- There is concern around security due to low code abstraction

- There could be a possible fall in performance as optimization of every line of code is not possible sometimes

- There can be challenges in maintenance such as the discontinuation of tools/support

Another key challenge is that since it is developed by citizen developers, functionality and performance issues could be hard to detect before it is too late. Any delay will add to time and costs as it will need reworking to become useful.

Testing and Quality Assurance of Low-Code Apps

These challenges shared above make testing and quality assurance critical. Some of the QA processes that every business needs to implement are;

Testing Apps: Low-code apps have fewer variables and environment configurations, but even these need to be tested at the unit and component levels.

Testing Functionality: The internal errors of pre-built components and the external threats need to be identified. This is made possible with functional testing.

Testing Security: As technologies advance, so do the threats to the security of the apps. With low-code apps that are auto-generated or built by citizen developers, the risk can be higher. Security check becomes crucial to prevent data breaches, unauthorized entry, phishing, DOS attacks, and SQL injections.

Testing Performance: The performance of the apps must also be tested for speed, reliability, stability, and so on before release.

Testing UI: The user interface must be intuitive and enhance the digital experience. Therefore, this is an important test to be performed.

Further, quality assurance of the apps and their integration with external resources is a must.

Shift-Left Testing for Low-Code Apps

In traditional testing, an application would be tested after the app has been built and is one step before deployment. But, with software development cycles getting shortened, testing has become a bottleneck.

Identifying bugs at the near-end stage would cause further delays as it may need heavy reworking before it is ready for release. This would hamper a business' competitive advantage and result in loss of revenue due to the delay in release.

Indium solves these challenges by following a shift-up test approach that covers the design aspects of Medix-based entities and microflows.

It also leverages unit test modules, application quality monitor (AQM), and application performance monitoring (APM) etc. This enables the identification of design issues much earlier in the development cycle.

Mendix Application Test Suite enables test automation to accelerate the completion rate and improve test accuracy.

With the shift left approach, testing is integrated with the software development process for a shorter time-to-market.

For low code, the developer and tester pair up, and errors are spotted as the development progresses at the unit and component levels.

This allows for correcting the software right at the initial stages, leading to lower costs, faster development, and the creation of a high-quality product.

Why Indium

Indium Software is a cutting-edge software developer with 150+ experienced low-code developers with expertise in cross-domain development and testing. We assist businesses to speed up releases, minimize errors, and focus on innovation and quality for shorter release cycles and faster growth.

To know more about us, visit: https://www.indiumsoftware.com/

FAQs

How long does it take to build apps using low-code?
Low code allows apps to be developed between a few weeks to a couple of months. This is six to twenty times faster than traditional development timelines.

What is the advantage of using a low-code platform?
Speed of development, automation of repetitive and complex tasks, and development by citizen developers.

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