TOP 10 CHALLENGES TO CONSIDER BEFORE TESTING SAAS BASED APPLICATIONS

Whitepaper

SaaS – What's in store for 2015?

Forrester has revealed that there is a significant change in adopting enterprise applications as companies are looking out for more flexibility and speed. The major factor which is driving this change is SaaS. Till date, the shift towards SaaS has been more visible for applications, largely in four segments:

- Human Resource Management
- Customer Relationship Management
- Collaboration Software
- Procurement Solutions

The SaaS trends for 2015 will be in the similar lines of providing the enterprises and end customers with meaningful options and venture into broader range of areas such as enterprise resource planning, finance and business intelligence. Here are 5 such trends that we can expect to see this year.

1. Procurement Solutions

Relevant marketing strategies depend a lot upon the consumer data you have. To improve customer satisfaction, companies need to do more customization and personalization of their consumer research.

With the help of Big Data and direct communications like email, social media, companies would be able to get hold of details like purchasing motivations, lifestyle and desire of the consumers. This will be a complete changeover from what is being done currently – analysis of static data using surveys.

2. Cloud Data Services

Forrester research suggests that, Microsoft would generate more revenue from its cloud services than its on-premise applications. This growth will allow businesses to contract cloud services while it's still relatively inexpensive. But security will still be the challenge, as Forrester has stated – "A breach of some form is inevitable".

3. Industry – Specific SaaS

This year we will see a lot of vertical expansion to better appeal to enterprise customers. Industries like health-care, retail and manufacturing will be among the leading application producers. The need for more and more customizations will keep the generalized apps, at bay.

4. Alternatives to Multi-Tenancy

Forrester expects to see a rise in offering more of hybrid models, which would include some kind of on-premise implementations. Recently, Salesforce has come up with Super pod based on HP's converged infrastructure. This allows companies to have their own dedicated infrastructure inside their data centres.

5. Big Data Analytics

More companies are taking interest in big data analysis, especially when the relative cost of cloud storage is de-creasing. According to an IDC report, the total spend on data-as-a-service is going to reach $215 billion in 2015.

Key Modules in SaaS

Now, with the humongous demand for more customized apps, the SaaS providers will have to overcome the ever growing challenges more swiftly. But before taking a look at the challenges, let's see, what the key mod-ules of a SaaS app are.

1. Access

The software is network based and is accessible by different end users through the internet. It recognizes a particular login and might show a different UI for the same app/tool, as per the requirement.

2. Multi Tenancy

It allows for multiple users to access the same tools and data simultaneously. The relationship is like one to many, rather than an individualized service.

3. Pricing

The overall structure is designed on the basis of a pay-per-user model. This structure has to be set up in the system design phase itself and it requires a lot of effort.

4. Centralized Maintenance

It is a great advantage for the vendor as they can have a better control of the product. All the system patches could be done simultaneously for all the users.

5. Service Oriented Architecture

The infrastructure to run a SaaS product is often based on SOA. This design ensures that each module of the app functions independently and can cater to clients requiring different services.

Top 10 Challenges faced in testing SaaS based app

There are a lot of challenges while testing a SaaS based app. Let's look at some of these, including probable solutions for the same.

1. Frequent updates of the app

Since it will require very quick validation of the regression suites, we can take the help of automation tools.

2. Interface compatibility

For each upgrade, backward compatibility of the application has to be validated to ensure continued services at the consumer end.

3. Security and Privacy

Every individual has a different privacy requirement and we have to imbibe this while integrating a strong level of encryption. It has to be validated for various multi-tenant scenarios.

4. Access privileges

Each user will have different privileges associated with them and so will be the access rights depending upon their roles. So we need to perform access control and multi-privilege tests.

5. Data Integration

We need to do inbound and outbound data integration validation, when subscribers integrate their internal applications with SaaS. We also need to validate the performance of the data migration between an organisation's network and SaaS applications

6. Live Upgrade

We can use automation tools to create a simulation of a live scenario and then validate the upgrade. It should be conducted in cloud based pre-production environments.

7. Impact of Customization on Core and Non-Core Areas

We need to create test cases to validate the core areas. These same suites can be run for validating those non-core areas which look to get impacted during the customization.

8. Data Migration

Data migration among different SaaS applications or from other applications to SaaS can be challenging. We need to identify the different sources in the existing system and take help of tools to validate the data migration and post migration scenario.

9. Compliance with Regulations

There will be government guidelines for different countries. So, we need to adopt a comprehensive testing strategy that is compliant to such regulations.

10. Licensing

Licensing depends on a lot of factors like functionalities, usage, volume of users, etc. All of these factors need to be tested for each release.

SaaS testing: Focus Areas

As in any application testing, SaaS based apps have to go through the same functional and non-functional testing. Apart from that, we have to test the SaaS attributes embedded in the app. So, let's look at these aspects of the testing, focussing on three broad areas – business, non-functional and operational.

1. Business (Functional Testing)

It is actually testing the functional side of the application and consists of –

- Manual and Automated functional testing – Testing the different functionalities of the application using both manual methods and automation tools.
- Exploratory Testing – Here the test design and test execution goes on simultaneously and it is useful when very little is known about the product and you need to explore.
- Workflow Testing – Testing end-to-end specific workflows which are expected to be used by the end users.
- Data Integration/Migration Testing – The goal here is to verify that the data moved from the source to the target, as expected, according to the business rules. It's even known as ETL testing.
- Some more like checklist validation, automated regression testing, etc.

2. Non – Functional Testing (Security & Performance)

Non-functional testing will include all sorts of testing, broadly coming under security testing and performance testing. Let's take a look –

- Web & Network Security Testing – there are a lot of tests done in this like vulnerability scanning, penetration testing, etc.
- User access and roles testing – based on business needs and segregation of incompatible roles and functions, user access is reviewed periodically.
- Data integrity testing – it checks for the quality of data in the database and examines if it functions as expected, for a given application.
- Scalability testing – it tests the ability of the system to continue to function well, even during the change in size or volume of the requirements.
- Load testing – it shows the maximum operating capacity of an application under normal as well as at peak conditions. It helps in identifying the bottlenecks.

3. Operational testing (Compatibility testing, Live testing &SaaS Attribute testing)

As discussed earlier, apart from the normal functional and no-functional testing, we need to check these applications for their SaaS attributes too. So, let's have a look at some of them –

- Localization testing – it checks how well the app has been interpreted into a particular target language. It should be compliant with the local laws, grammar, business logic, etc.

- Interface Backward Compatibility – It ensures that assets created by an end user using an older version of the application should still work on the newer versions. It validates the communication between new GUI with the old servers.
- Disaster Recovery Testing – There are always chances of IT failures and there are certain restoration procedures for the same. DR testing validates those procedures.
- Multi-Tenancy Isolation Testing – It ensures that the customization for one tenant doesn't impact other clients during the run time.
- There are a few more to this category like API integration testing, billing mechanism testing, live upgrade testing, stateful scenario testing, etc.

Conclusion

SaaS testing focuses on ensuring the validity of the functionalities of the application. Apart from that, it checks upon the cloud characteristics i.e. the non-functional attributes of the app. And the most important part is validating the SaaS attributes of the same. Such comprehensive testing requires a thorough knowledge of the industry for which the product/app is being developed. The use of automation tools can help in shortening the release cycle of the product as SaaS product always needs a frequent release. As a whole we can say that the key to a successful SaaS testing is a right test strategy, use of automation tools for the functional and non-functional requirements and having a deeper knowledge of the SaaS components.

ABOUT ZADO

Zado is an independent QA Solution provider with specific focus on testing web, mobile and cloud applications. Our framework-driven approach to test automation ensures reliability and performance of your applications in diverse environments and complexities.

Our Center of Excellence works towards ensuring the success of every test automation initiative of our customers, irrespective of the stage that they are in – startup, transitional or mature. We have successfully helped Startup, e-Commerce and Independent Software Vendors with their automation needs. Our goal is to ensure quality of your software using test automation optimally.

We are open to doing POCs and Pilots that prove our credibility. We also have an innovative engagement model, Enhance – Optimize – Transfer (EOT), where we implement automation testing and transition it to your local teams. Our points of intervention after that, will be only towards enhancing the automation framework.

Zado automation frameworks help manual testers write their own test scripts without the necessary automation expertise. This qualifies manual testers into automation testers, providing better economies of scale and faster ROI of your automation efforts.

Email: contact@zadoinfotech.com
Twitter: https://twitter.com/@ZadoInfoTech
Website: www.zado-tech.com