



ENHANCING SOFTWARE QUALITY

Integrated Testing Strategy for SMAC

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1 Abstract

With the IT trying to keep pace with the innovations, the testing end is on search for a one stop strategy for enabling customer satisfaction & high ROI. With lightning fast development and integration of social media and mobiles, a sound test approach focusing end to end testing on the Social-Mobile-Analytics-Cloud integration is highly required. This paper proposes a strategic framework for SMAC testing and unfolding a custom technique for high ROI.

1.1 Key takeaways

The benefits out of this whitepaper are

- Improving organization ability to scale on demand
- Effective IT utilization & efficiency
- Providing complete setup for enhancing the end customer experience

2 Introduction

Any business target is always to improve its operation and move closer to the customer with maximum reach. In particular with IT industry this has much to do as the pace of evolution is faster than the others. Various models and services are attempted and continuous improvement is the key factor on this industry. Current prediction is now on the term “Computing Everywhere” which focuses on providing services on all devices and platforms. This is a major challenge concerned with IT is that it has to look out for a bunch of things. The requirements now will be shifted to adapting to the overall environment.

On the management scale for IT industry, this raises the challenges even more as they will either lose the focus or controlling the endpoints. This Computer Everywhere scenario influences responsive designs and smart applications that act as a complete setup for enhanced end customer experience. The new road is needed as the end users are already ahead of the digital driven lifestyle. SMAC will prove a helping hand in this major transformation of enhancing the future.

This paper places the interest on effective testing approach for SMAC. The approach is formulated to focus on the providing better opportunities for customers. The trend of integrating social – Mobile – Analytics – Cloud is a major agenda for most organizations. With testing services which focus on either mobile testing or social media is individually evolving, the near future expects integrated testing approaches.

3 Need for SMAC Testing

There were individual evolutions happening in each of the terms of SMAC. But in the recent years with the influence of digitalization, every industry is on the verge of utilizing SMAC as a whole. It basically transforms the organization into a productive and functional object with the scope of managing the future business challenges. Software developments have started to integrate social mobile analytics and cloud. This makes the testing services more complicated to perform an end to end testing with a comprehensive strategic test approach. There is a look on for combining different test techniques resulting in resource optimization, cost savings & higher ROI. In Agile world, the efforts of integrating different test techniques are complex.

SMAC testing here brings the collaboration of test strategies which were traditionally followed by each of the individual testing. For a long time perspective and effective coverage, this collaboration is essential and hence forth brings value additions to the client customer relationship.

3.1 Social Media Testing

Smart devices are getting social; Thanks to the cheap sensors that has led the explosion of these devices. With every devices starting from home are collecting data and sending across internet, the social media gets bigger and better proposing a lot of challenges for the organizations. The easiest and effective way for launching & marketing the products is across the social media which will have a wide range of coverage. The demand for social media in 2015 is definitely going to be bigger which in fact not only paves way for competition across

product and service organizations but also within the social media itself. A recent study states that one fourth of the world population is using social media with millions of people are sharing, posting, viewing, tweeting & uploading every minute.

2015 will add new and enhanced advertising channels which are expected to firmly integrate social advertising with huge data & multi-channel approach. Mobile & Social media are now working together resulting in geo-targeted, contextualized real-time content in digital marketing strategy. Most of the organizations use social networking to achieve customer engagement. Most of the Global retailers spend 25% of their advertising budget on social media channels.

While coming to testing any social media application or product relating to social media, there are a certain factors to look for. Along with functionality, usability, performance & security are major concerns. Into the Internet world, user cannot be restricted to operate only with certain platforms. Hence the compatibility of the product is very essential. To ensure consistent user experience & safety, testing approach should include

3.2 Mobile Testing

Variety of devices with various environments has posed a big challenge for the testers to follow an approach. About 1.9 Million mobile handset is about to be shipment in 2015 with increasing web traffic via mobile every day. This overtake on PC's has influenced the organizations to prepare for a mobile version for its products. The growth of the business is also moved high with the ease of mobile devices. An overview on the sales of the shopping sites projects that it made a huge difference in the financial transactions. The growth of mobile has led the users to switch from desktop to mobile which helps in easy access.

Testing in mobile is more challenging than the desktop applications as it is trickier due to the look out on various aspects. This includes device fragmentation, External vs In-House testing, mobile testing tools, and shorter lifecycles. Individual mobile testing strategies include prioritizing mobile selections, usage of emulators, testing on cloud & network connectivity.

3.3 Analytics

Data has been generated enormously in the last couple of years at a highly unimaginable figure. Every year this seems to be doubled. The high usage of social media & mobile has generated high percentage of unstructured data. The main point of any organization is to have a long relationship with the customers as it is the key to sustain. Analytics is the main idea behind knowing the customer by exploring the structured and unstructured data sources. Data base testing and services related to the business intelligence are necessary for knowing and understanding the customer. Other needs of analysis are on the data that is being generated through social media, mobile apps and click stream. Hidden trends and patterns, likes and dislikes are the insight for making a decision. Hence, analysis becomes the key for a successful management process.

With 2.5 billion gigabytes of data are generated every year and out of this 90% were created in the past 3-4 years. For example, Facebook generates 500 TB of data every day and Twitter about 12 TB of data. Companies across the world are now in the process of looking at this data pool and thinking on how best it can be mined and gauge their customers' likes and dislikes. Data from social media, weblogs, images, emails, audio & video are the sources of providing the insight for analytics. Sources say that around 80% of the data available today is unstructured and includes just raw data. Analysing this unstructured data can provide competitive edge.

3.4 Cloud

Rapid increase and availability of environments, problems arise in organization related to cost control, effective utilization & service capabilities. To the rescue is cloud computing as a new paradigm to resolves the issues on environment and its maintenance. They provide virtual hardware and software resources that are hosted remotely and providing suitable infrastructure on data intensive computing. Testing on non-cloud is challenging which usually has restricted deadlines, limited budgets and availability. Cloud testing resolve such challenges as they take care of the infrastructure and other bottle necks. When it comes to environment, boundaries are hard to identify and computing power becomes pay as you go. And cloud services can offer a shared pool of resources including data storage space, networks, computer processing power & specialized corporate/user applications.

Cloud services are popular because they reduce the cost and complexity of owning and maintaining systems. With this there is not much concern on the information technology infrastructure, purchase hardware or buy software licenses. They provide collaborative solutions that carter to real time information management

4 SMAC Testing Challenges

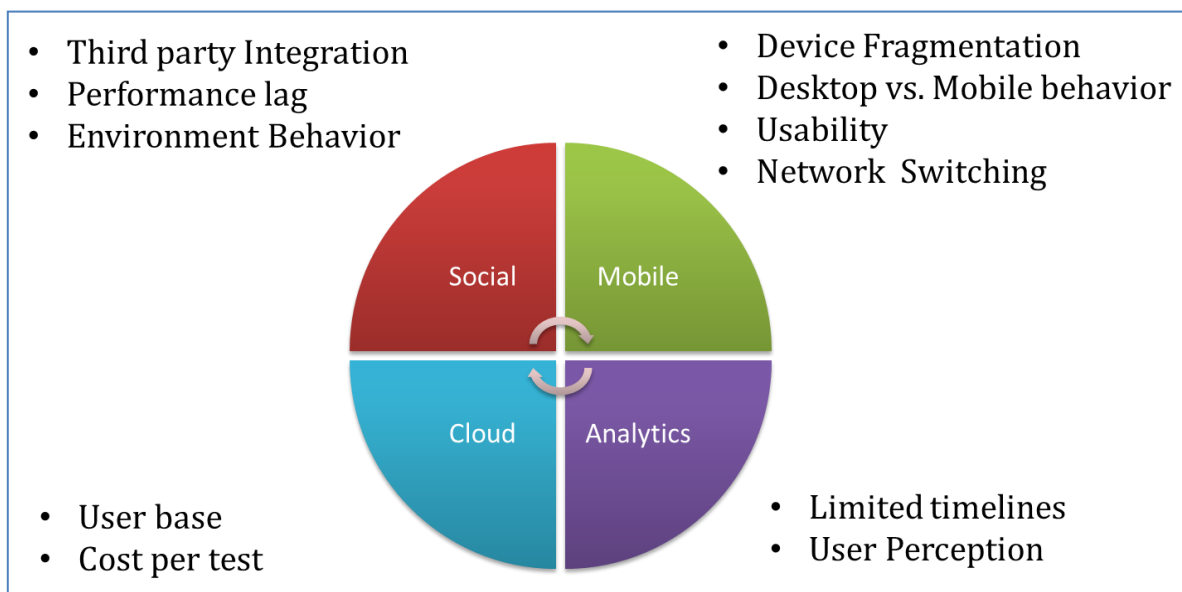


Fig: 1

There are a lot of challenges involved when testing SMAC as a whole. With social, the integration with third party applications is critical as most of the applications are initiated to a different app. There are chances of performance lagging when it comes to social applications. The environment is also a big concern as more number of devices and platforms are available for the user.

In mobile testing, device fragmentation is of high challenge due to the variety of devices available for the user. The behaviour of the mobile application is different from the desktop application and this cause gaps in the test approach. Same approach cannot be followed for both the application. As it is mobile, usability aspect should be considered while doing testing. Also another major area of concern is the stability of the application when switching between networks.

Cloud is another area where it is connected with the user base and the access location. Cost per test is more when organization has their own test lab and also the maintenance factor is a bigger challenge. Analytics are always a value add to the clients knowing about the pattern and the knowledge from the user perspective. Analytics cannot be concentrated on limited timelines and hence most analytics are skipped during the test process.

5 Testing on SMAC

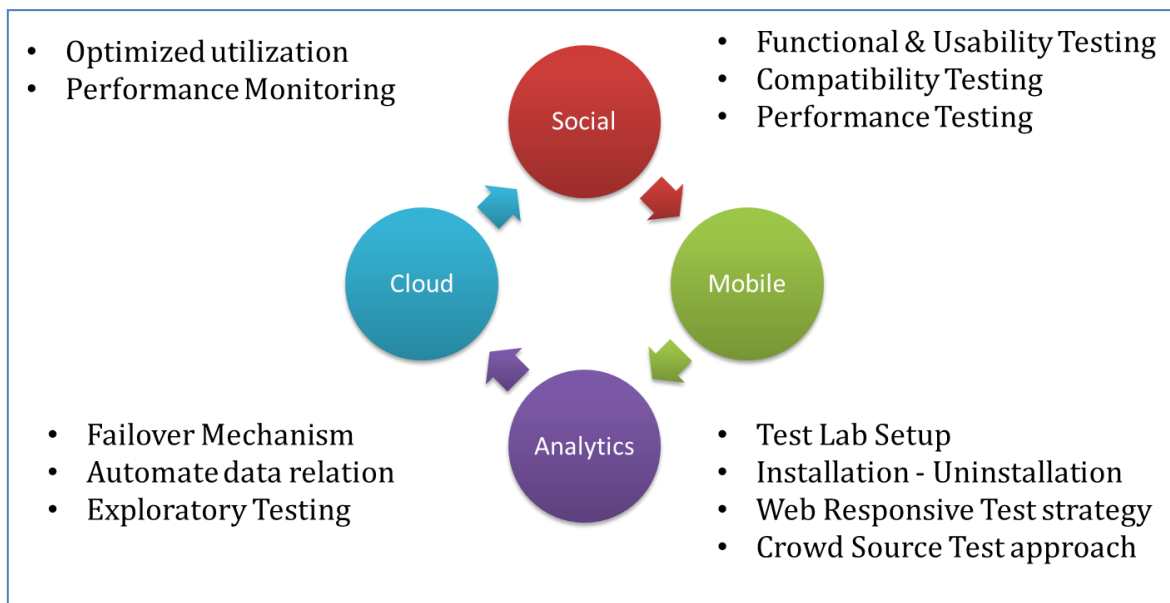


Fig: 2

In order to do SMAC testing, an integrated approach should be followed and therefore a process flow is proposed in this paper to overcome the challenges posed by SMAC testing. This process covers the testing for SMAC with integrated test approach.

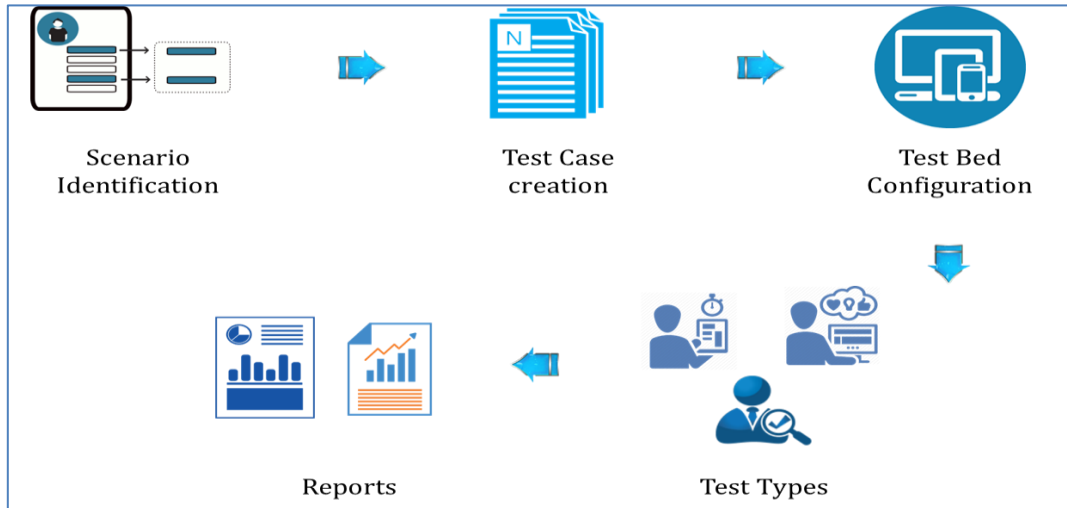


Fig: 3

5.1 Scenario Identification:

Initial process of the approach is scenario identification. Wireframe analysis is followed which helps in picking the scenarios for functional testing. The strategy used here includes soap opera test technique where high level scenarios are identified. The scenarios are used as a blue print to exploratory testing and crowd source testing. Major functionalities are identified in this stage and hence can be used as a source for performance testing.

5.2 Test Case Writing:

The scenarios identified are further split and broken down into specific test cases. These test cases are written considering the functionality and usability of the application. As most of the apps are developed with web responsive technology, test cases are created with different break points. More attention is given to social media related test cases which specifically covers the third party integration.

5.3 Test Bed Configuration:

Test environment plays a major role in the testing process. With different test beds available to cover, the setting up of environment is difficult. The test lab in the organization cannot cover the entire requirement. Hence, major test beds can be setup in the lab which is picked based on the analysis of environment's market share. And based on the requirement, the other configurations can be opted in cloud.

5.4 Test Process:

Initially, functional testing & compatibility testing are done as per the traditional practice. In parallel, performance testing can be initiated if the product is ready. Else the scenarios can be tested later when the complete product is ready. Few of the repeated process in the testing can be automated in order to save time. After the completion of the initial testing process, the same team is deployed for the exploratory testing. This is an important stage where the analytics can

be obtained from a user perspective. Simultaneously an internal crowd source testing is practiced. This brings out the actual expectation from the real users.

5.5 Reports:

Reporting is a tricky process in this SMAC where results are obtained from different level of testing. This also involves triaging the root cause for the defects. Results from the functional and compatibility are analysed and in addition the performance results gives scope for improving the user experience. Other analytics involve results from the exploratory and crowd testing. These results are the base on knowing the expectations of the real users.

6 Comparison

Independent test strategy	Integrated test strategy
Limited to test lab	Covers major devices <ul style="list-style-type: none"> • Test lab – Cloud - Crowd
Less Analysis & Feedback	Efficient Analysis & Feedback <ul style="list-style-type: none"> • Crowd test results • Exploratory test results • Performance results
More budget for individual testing	Comparatively Less budget <ul style="list-style-type: none"> • Integrated services
More timeline	Reduced timelines <ul style="list-style-type: none"> • Early test scenario identification • Fewer test cases
Less optimization chances <ul style="list-style-type: none"> • Effort duplication • Schedule overlaps 	More Optimization <ul style="list-style-type: none"> • Effort & resource optimized • High ROI

7 Conclusion

With the above comparison, it is clearly showcased that the Integrated test approach benefit us more. Also, this approach improves the organization ability to scale on demand. The IT Utilization is effective and also provides a complete setup for enhancing the end customer experience. In the future to have an excellent user experience, there is a need for SMAC as a whole platform and this paper provides an insight on how SMAC testing can be done effectively.

8 References & Appendix

1. <http://www.statista.com/>
2. <http://www.gartner.com/technology/topics/trends.jsp>

About Indium Software

At Indium Software, we've been entrenched in the world of software testing since 1999. We've built a team of 450+ software and test professionals in our offices in Chennai, Bengaluru, New Jersey, Sunnyvale, London and Kuala Lumpur.

The core of Indium's objective to servicing our global customers can be explained with this simple line: "We're small enough to care, large enough to deliver." We are a preferred testing vendor for enterprise and ISV customers ranging from Fortune 100 to 5000 companies and small to medium enterprises.

Till date, we've served over 250 clients in the U.S., and Rest of the World.

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