

Volume 9, Issue 2, February 2021

# International Journal of Advance Research in Computer Science and Management Studies

Research Article / Survey Paper / Case Study

Available online at: [www.ijarcsms.com](http://www.ijarcsms.com)

## *Integrated Applications Test Engine*

**Chaitanya Narayanam**

M.Phil (CS), MSC(IT)

Test Manager, TQA, Hitachi Consulting  
Hyderabad, India

---

**Abstract:** *This Paper provides Solution for those people who are testing manually or automatically where the complex integrated applications are coupled and working together. This will give awareness on the integrated technologies. Application suite includes ERP applications, 3rd party integrated applications, web applications, graphical representation applications etc. this paper will help how to test in a complex integrated SOA scenarios situation. It talks about automated solution to integrated applications which are based on different platforms. This solution will solve all the issues of manual testing teams and automation testing team at one shot. This paper also helps the business rules validations of integrated SOA applications.*

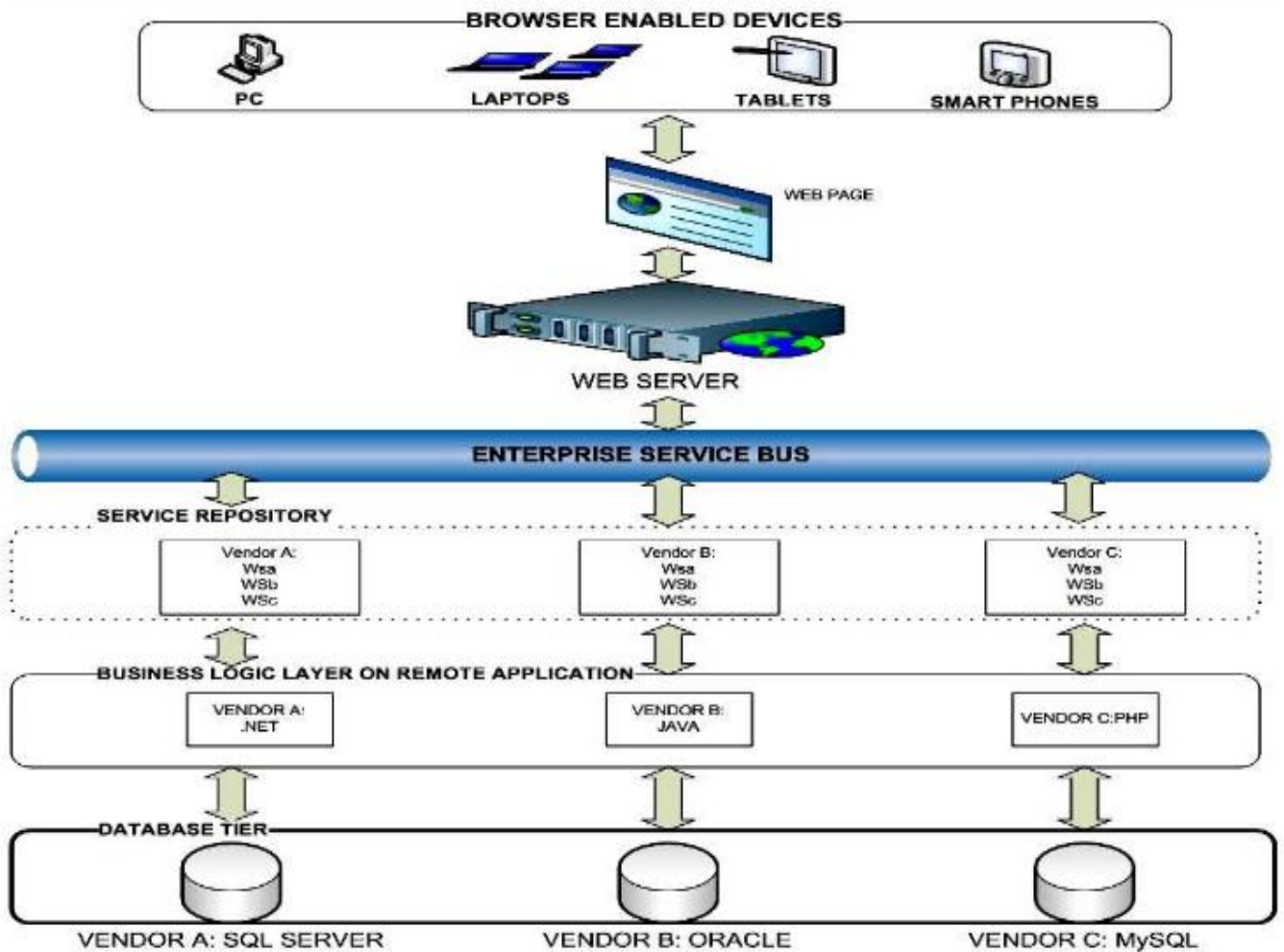
**Keywords:** *Integrated SOA Applications Testing, Automated Testing Solution, Manual Testing Solution, Complex Applications Testing, Web Applications Testing, Business rules Validations testing, ERP Applications Testing.*

---

### I. INTRODUCTION

This Paper is providing Test automation solution for Integrated / SOA applications testing. Integrated / SOA applications are developed in the form of Suites Viz. WebMethods, TIBCO, etc. Integrated Applications Test engine will test SOA along with potential business drivers, it will give new opportunities which is an innovative product and services from the key differentiator to competitive edge. This tool is having ability to leverage technology to adopt newer business models thus enabling more channels to earn revenue. Test engine cost savings are happening through cost reduction via reduced total cost of ownership adds to the bottom line. This tool business agility is with cut throat competition and the ability of an enterprise to quickly respond to various business stimuli will be the key to survival. Test engine makes delivery faster tie to market increases customer satisfaction and customer loyalty. Test engine can provide on demand service in real time. Seamless collaboration with partners and customers helps to improve service quality and time to market.

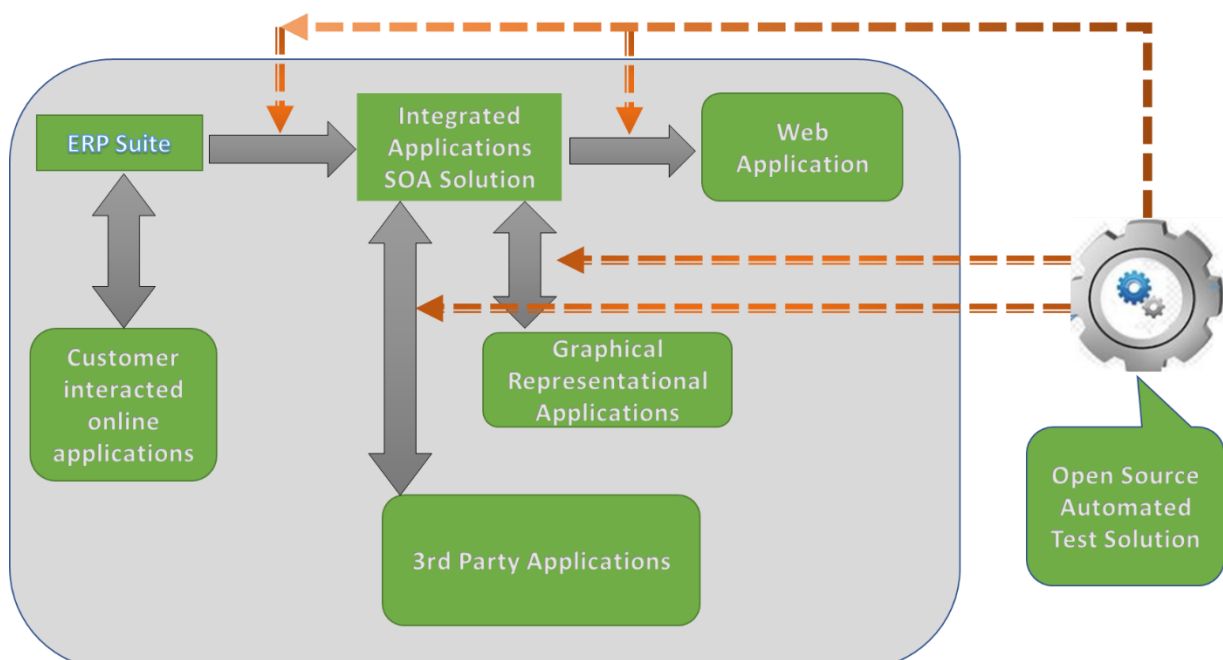
Integrated Applications Test engine Technology drivers are to achieve business goals, it is imperative to adopt an IT strategy that has openness and agility as intrinsic properties and results in cost savings. Openness will have dependency on technology and platform vendors are an external risk to an organisation on which it has little control. However, adopting open standards will mitigate this risk. Cost saving is happening through reduction in maintenance cost / Total cost of ownership. Increased reuse of investment in IT leads to increased productivity resulting in increased ROI. Loosely coupling increases agility and reduces time to market for new application. Seamless scalability at minimal cost to cater to seasonal increase in load. Test engine helps projects to meet all these business drivers and technology drivers.



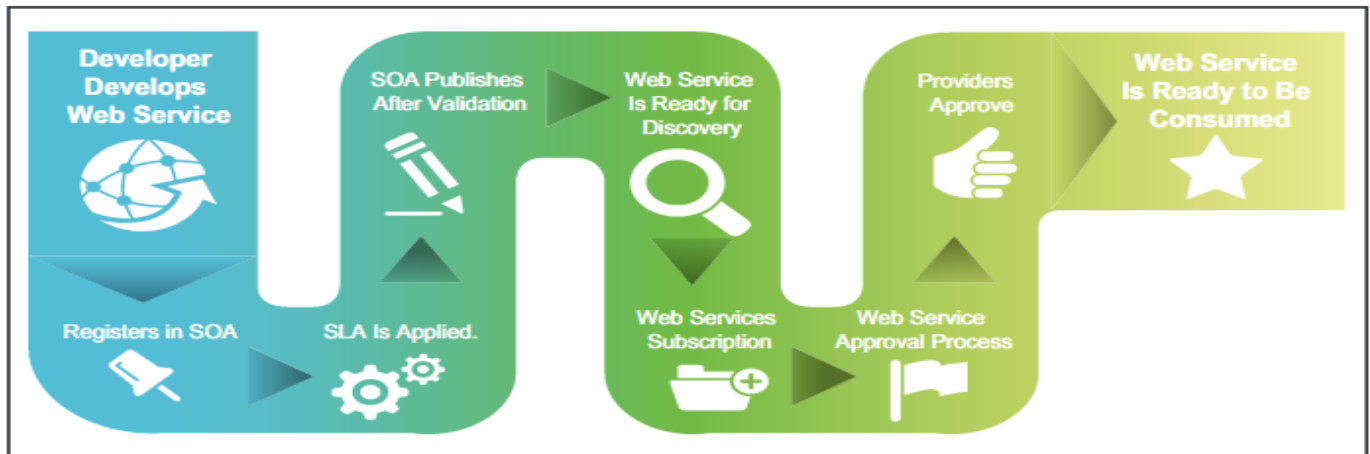
Above diagram talks about the integrated applications architecture. It has combination of multiple development technologies accessing at PC, Laptops, Tablets and smart phones. These devices may run at different operating systems and Apps.

## II. INTEGRATED APPLICATIONS TEST ENGINE

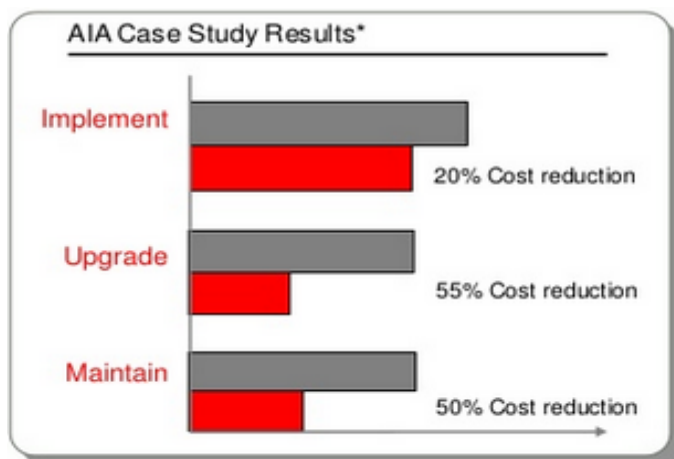
Test engine work flow architecture is as follows.



Test engine solution will support different platforms like C#, Java and legacy application which can talk to these technologies.

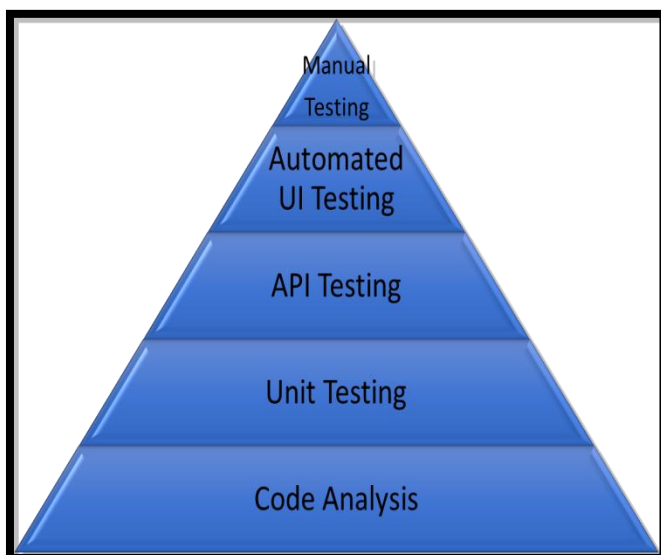


Test Engine supports above diagram shown delivery process where it plays critical role in Webservice Approval process. Above diagram explains about how the webservice is developed, various steps of its process and how the webservice is ready to be consumed.



American Institute of Architects (AIA) case study results talk about Test engines will give benefits of cost reduction for SOA / integrated application testing projects. We can use these types of Test engines implementation projects, Upgrade projects and Maintain projects. They will give cost reduction is test effort cost as shown in figure.

■ Traditional custom integration  
■ Application Integration Architecture



Test engine pyramid is shown in figure. Code Analysis is base and will be done in highly matured manner by development team. Unit testing will be followed with Development team. API testing will happen with Test engine. Automated UI Testing is also part of Test engine capability. Manual testing will be conducted for very few tests which are not feasible for Automation candidates. Test engine will cover testing for all development technologies includes Java and C#.

Testing Feature	Availability
API Testing	✓
Web UI Testing	✓
Test Data Management	✓
Load & Performance Testing	✓
Mobile Testing	✓
Test Orchestration & Reuse	✓
Microservices Testing	✓
Security Testing	✗
Reporting & Analytics	✓

Above table explains about the test engine available test features. Test engine support API testing of few protocols such as JMS, REST, HTTP, UDDI and SOAP. Test engine supports Web UI testing of various flavours of Java script frameworks such as Angular JS and React JS etc. QA team can easily do test data management with test engine. Test engine is having capability of performing non-functional testing like Compatibility testing, Load testing, and Performance testing. Test engine support Android, iOS mobiles testing of various versions. Test engine enables easy to creates tests, easy to orchestrate & reuse tests, easy to execute tests. Test engine performs microservices testing and reporting and analytics testing. But, security testing is not in scope.

### III. CONCLUSION

Integrated application test engine will solve all the problems of manual testing team, automation testing team at one shot. It provides solution for API Testing, Web UI testing, functional testing, usability testing, non-functional testing, Test data management, Mobile testing of various operating systems with different versions. This engine also solves the testing problems of various development technologies like Dot net, PHP, Java, SQL Server, Oracle, and MySQL. It also supports Mobile testing of various operating systems like iOS & Android for almost all versions. Compatibility testing is very easy to achieve with this tool either in mobile various devices or desktop.

### References

1. Gable, and Julie, "Enterprise application integration", Information Management Journal, March/April 2002.
2. David S. Linthicum (1999). Enterprise Application Integration p6.
3. Understanding Enterprise Application Integration - The Benefits of ESB for EAI (2012). Available: <http://www.mulesoft.com/enterprise-application->

integration-eai-and-esb

4. Enterprise Application Integration & Service Oriented Architecture (2012). Available: <http://www.managementstudyguide.com/enterprise-integration-service-oriented-architecture.htm>
5. Prof. Paul A. Strassman .What is a Service Oriented Architecture - George Mason University, November 19, 2007
6. Qusay H. Mahmoud, (2005). Service-Oriented Architecture (SOA) and Web Services: The Road to Enterprise Application Integration (EAI) .Available: <http://www.oracle.com/technetwork/articles/javase/soa-142870.html>
7. Web Services Architecture Usage Scenarios, W3C Working Group Note, H. He, H. Haas, D. Orchard, 11 February 2004 Available: <http://www.w3.org/TR/2004/NOTE-ws-arch-scenarios-20040211/>
8. Web Services Glossary, W3C, 2004, [online]<http://www.w3.org/TR/2004/NOTE-ws-gloss-20040211>
9. Builder, C., Bankes, S., and Nordin, R., Command Concepts: A Theory Derived from the Practice of Command and Control, RAND Corporation, 1999.
10. Web Services Architecture Usage Scenarios, W3C Working Group Note, H. He, H. Haas, D. Orchard, 11 February 2004 Available: <http://www.w3.org/TR/2004/NOTE-ws-arch-scenarios-20040211/>
11. Ren, M. and K. Lyytinen (2008) "Building Enterprise Architecture Agility and Sustenance with SOA," Communications of the Association for Information Systems 22(1), pp. 75-86.
12. Papazoglou, M. P., and D. Georgakopoulos, D. (2003) "Service-Oriented Computing," Communications of the ACM, 46(10), pp. 24-49.
13. Schulte, S., Repp, N., Berbner, R., Steinmetz, and R. Schaarschmidt (2007) "Service-Oriented Architecture Paradigm: Major Trend or Hype for the German Banking Industry?" Proceedings of the 13th Americas Conference on Information Systems (AMCIS).
14. Teti, F. (2006) "Develop a Service-Oriented Architecture Methodology," Database Advisor Magazine, <http://websphereadvisor.com/doc/17991> (current Oct. 15, 2007).
15. Kwon, T. and R. Zmud (1987) "Unifying the Fragmented Models of Information Systems Implementation," in R.J. Boland and R. Hirschheim (Eds.), Critical Issues in Information Systems Research, New York: Wiley.
16. Haines, M. (2007) "The Impact of Service-Oriented Application Development of Software Development Methodology," Proceedings of the 40th Annual Hawaii International Conference on System Sciences (HICSS).
17. Kester, Q. A., Gyankumah, G. N., & Kayode, A. I. (2012). Using Web Services Standards for Dealing with Complexities of Multiple Incompatible Applications. International Journal of Information Technology, 4.

#### AUTHOR(S) PROFILE



**Chaitanya Narayanam**, received the M.Phil. Degree in Computer Science from Bharathi Dasan University and M.Sc. degree in Information Technology from Alagappa University. Currently, he is working as a Manager in TQA department at Hitachi consulting. He is having overall 16 + years of experience in IT.