Test Automation
In
Oracle E-Business Suite Projects

Step-Auto Conference

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Prepared by
Kiran S Nair
Oracle Testing Consultant
Wipro Technologies
Bangalore
India
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1. Introduction

Oracle E-Business Suite Testing challenges are manifold with the growing complexity of E-Business Suite (EBS) implementations, reduction in IT budgets, increased emphasis on better test coverage, reduction in risk to application quality, test efficiency and accelerated test cycles. The objective of test automation is to alleviate some of the above testing challenges.

1.1. Oracle E-Business Suite Implementations

Organizations across the world choose ERP solutions such as Oracle E-Business Suite to implement their core business operations due to various reasons.

- Consolidate various legacy applications into a single ERP system. This provides an opportunity for greater interactions across business areas in the organization, eliminates redundancies, and provides an enterprise wide view.
- Implement evolved and proven best practices delivered through ERP systems
- Optimize resources and reduce cost of application maintenance

Oracle E-Business Suite is a compelling ERP system in the market today with rich functionalities amply covering Supply Chain Management, Financials, Human Resource Management, Customer Relationship Management, etc. Oracle E-Business Suite applications usually have a long roadmap and require steady maintenance across its life cycle. This includes application upgrades, patch installs, application enhancements, rollouts to new business units/regions and other major/minor releases involving defect fixes.

New Oracle E-Business Suite implementations are carried out using the latest R12 releases. However, many of the existing implementations are still on older Oracle 11i Version (11.5.9, 11.5.10, etc). Also, many organizations who implemented Version 11i have either upgraded to R12 or planned an upgrade of their existing 11i applications to the latest version of R12.

1.2. Key Imperatives of Test Automation

Since Oracle E-Business Suite applications implement the core business operations of an organization, a comprehensive testing is usually required during application changes/release cycles to eliminate/reduce business risks. Some of the key imperatives of test automation are listed below.

- The need for complete regression testing during phased releases/rollouts.
- Pressure for a quick go-to market from business teams
- Sufficient test coverage to ensure a smooth release
- Optimize testing and reduce cost

As a best practice, it is often required to maintain a robust and reliable regression test suite (consisting manual and automated test scripts) to efficiently handle regression testing requirements during releases in large Oracle E-Business Suite implementations. This regression test suite consisting of core business processes and available on demand will reduce regression testing effort and cost required.
2. Key Test Automation Considerations

Based on a careful analysis of testing requirements the decision on a test automation approach shall be taken. Test scripts development approach can be agile or framework based. Considering a long life cycle of Oracle E-Business Suite application and long term usage of test scripts across releases a framework based approach is usually adopted. The following are some of the key considerations while deciding on test automation of Oracle B-Business Suite

Regression Testing efforts significantly increase as the Oracle E-Business Suite application become more and more complex after new functionalities/customizations are introduced during releases. Hence it is recommended to identify an inflection point in order to efficiently address regression testing efforts to validate releases. Automation is a key enabler for the testing team to address this challenge.
3. Criteria for selecting test automation candidates

As a general rule, automate test cases where there is an opportunity for a high ROI. The following are few criteria that shall be considered while selection candidate test cases from the Oracle E-Business Suite regression test suite for automation.

- Repeatability of a test case: The test case is part of the regression test suite executed during every Oracle EBS release.
- Functional Stability: Previous defect history will indicate whether a functionality implemented using Oracle EBS is stable or not.
- Bulky tests: High setup efforts required. For example, a lot of pre-requisite data needs to be populated to perform test.
- Batch execution: Group of tests to be executed sequentially to ensure core functionalities. For example: A group of transactions executed during smoke test.
- Error prone functionalities: Testing is done iteratively using multiple data sets to validate a specific Oracle EBS functionality.
4. Test Automation Tools

Test tool evaluation is an important activity and hence should be carefully executed. Some of the key parameters are as listed below

- Ease of use, availability of features, functions and other accelerators to support Oracle EBS test automation
- Availability of technical support, online user forums, etc
- License cost
- Availability of skilled resources in the market
- Integrated offerings (for example, test automation tool integration with test management, bug tracking tools, etc)

There are many test automation tools that are available in the market and provide support for Oracle E-Business Suite test automation. The tools include HP Quick Test Pro, Oracle Functional Tester, IBM Rational Functional Tester, etc. The following table lists few key features that are usually evaluated during a tool selection process.

<table>
<thead>
<tr>
<th>SL</th>
<th>Feature</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ease of Use</td>
<td>• Tool is easy to use</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Doesn’t require a high learning curve</td>
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<tr>
<td></td>
<td></td>
<td>• Use of easy and popular scripting language</td>
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<tr>
<td></td>
<td></td>
<td>• Enable re-use of code</td>
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<tr>
<td>2</td>
<td>Tool Compatibility</td>
<td>• Provide the required support test automation on Web &amp; Oracle forms based applications.</td>
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<tr>
<td></td>
<td></td>
<td>• Tools provide accelerators to support to perform Oracle EBS test automation</td>
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<tr>
<td>3</td>
<td>Tool Scalability</td>
<td>• Allow manual scripting to enhance automated scripts when required.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Availability of function libraries to support scripting for various requirements</td>
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<tr>
<td>4</td>
<td>Tool Licensing</td>
<td>• Low cost for tool licenses and annual support</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Evaluate license cost models (Perpetual, term licenses, etc)</td>
</tr>
<tr>
<td>5</td>
<td>Market Space &amp; Resource Availability</td>
<td>• Popular and proven tool</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Easy availability of resources</td>
</tr>
<tr>
<td>6</td>
<td>Test Tool Maintenance</td>
<td>• Low maintenance effort</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Maintaining multiple tools will add to the annual maintenance support cost</td>
</tr>
<tr>
<td>7</td>
<td>Tool Support</td>
<td>• Better support implies quick issue resolution</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Online forms and user groups</td>
</tr>
<tr>
<td>8</td>
<td>Integration with Other tools</td>
<td>• Strong integration with test management tool, defect tracking tool, etc</td>
</tr>
</tbody>
</table>
5. Test Automation Approach

The best automation solution for any Oracle E-Business Suite test automation should balance the cost/risk of defects to business operations against the overall costs and duration of extensive testing. The goals are to maximize the value from the testing done, and to minimize the testing effort and duration to an acceptable level of risk.

The generic test automation approach is displayed as below.

5.1. Test Automation Framework

The delivery of a robust automation solution is dependent on the ability to achieve high productivity and scalability with a predictable performance. The design of the automation framework is critical to the success of any automation project. Over the years, the framework blueprint has evolved taking into consideration the industry best practices.

The following are two popular approaches followed while building a test automation framework.

- Data Driven / Data Driven Model.
- Functional Decomposition Model.

The recommended test automation framework for Oracle EBS automation would be a Hybrid framework where Strengths of both approaches are combined and weaknesses mitigated.
A sample representation of a test automation framework is displayed as below

5.2. Test Automation Benefits

- An Automated Regression Test Suite for Oracle EBS available on demand during Oracle EBS application releases.
- Reduced regression test efforts and cycle time. Reduced efforts implies cost savings & reduced regression test cycles implies faster go-to-market
- Increased test maturity and test efficiency through test automation
- Minimal Oracle SME bandwidth needed during regression test cycles
6. Accelerators / Ready-to-Use Solutions

Oracle E-Business Suite is an Out-of-box solution customized and implemented to suite an Organization’s requirements. The level of customization depends on how well the Organization’s business processes are aligned with Oracle EBS processes. Most of the organizations leverages Oracle vanilla functionalities and minimizes customizations as customizations prove costly during maintenance/steady phase.

Use of ready-to-use automated test scripts for Oracle Vanilla functionalities can help accelerate the test script development process. Wipro’s re-usable test repository built for Oracle E-Business Suite known as WiSTA (Wipro’s Standard Test Accelerator) for Oracle reduces the time taken for Oracle E-Business Test Design & Development, speeds up the process of validation of Oracle E-Business Application changes (upgrades, patches, hot fixes, etc) and imbibes some of the best practices of Oracle E-Business Suite automation.

Key Highlights of WiSTA

- WiSTA (Wipro Standard Test Accelerator for Oracle E-Business Suite) comprises of Oracle manual test cases & automated test scripts for Oracle Vanilla functionalities.
- Ready to use unique automated Oracle EBS components under Order Management, Procurement, Manufacturing & Financials modules
- Scripts are developed using HP QTP and can be leveraged during automated test script development for Oracle EBS R11.5.x & R12.1.x
- Business components are deployable with minimum customization
- An average 25-35% reduction in test script development efforts (data gathered from existing projects employing WiSTA)
7. Case Study

Automated testing of Oracle E-Business Suite performed for a US based Customer

**Requirement**
- Automate majority regression test scripts designed for Oracle EBS
- Automated testing for Oracle EBS major/minor releases
- End to End Order Fulfillment process
- Majority of the Oracle Sourcing components
- Oracle Setups and Process enablement
- Maintenance of test scripts and repositories

**Key Highlights**
- Resources – 16 FTE Peak team (manual + automation)
- Oracle R11.5.10
- Location: US and India
- Fixed Price Project

**Benefits**
- 40% of manual test execution time is reduced through automated scripts. 80% scripts used in every monthly/quarterly test cycle
- Supply Chain Visibility Content Check process testing time reduced from 40 PHrs to 4 hours post automation
- 2000+ orders processed by automated test scripts ~900+ PHrs reduction
- 75% time reduction in Oracle Inventory Org setup process ~ 100+ PHrs reduction
- 60% time reduction in Supply Chain content check process ~ 400+ PHrs reduction
- 60% time reduction in Sourcing RFQ E2E process ~ 100+ PHrs saved per test cycle
- 200+ reports generated using 15 scripts

![Expenses vs Benefits](image-url)