Chapter - 03 Requirement Analysis

This chapter will discuss the requirement analysis part of the Open Source Test Automation Framework.

3.1 Domain Analysis

eBuilder group is operationally distributed among 3 countries. Operational offices are located at Sweden, Australia and Sri Lanka. Some parts of the software development cycle, such as software design, development and testing processes are operated in all 3 countries. The eBuilder group has good matured process for their software development process. But the "Testing Process", is not up to the same standard.

When it comes to product and project development, a simple change done to a piece of code may have an impact on the product or project. So it is the basic responsibility of the Testing Team to conduct tests for new changes as well as the previous functionality. So the regression testing is the only way of tracking the effect of new changes on existing functionality.

Most of the large projects contain thousands of test cases, so when it comes to parallel project development, there should be a huge number of resources for testing to cover all regression testing sessions. So the current possibility is to identify most important test cases and proceed with a medium size testing team.

3.2 General Description of proposed system

3.2.1 Product perspective

The product is fully automated and integrated solution for regression testing. So it will remove all the manual work for regression testing. The product should match with the technologies which are used by eBuilder and final solution should be an open source product. It is essential to make the system available for all Australia, Sweden and Sri Lanka users. Figure 3-1 shows the basic infrastructure plan for the proposed system.

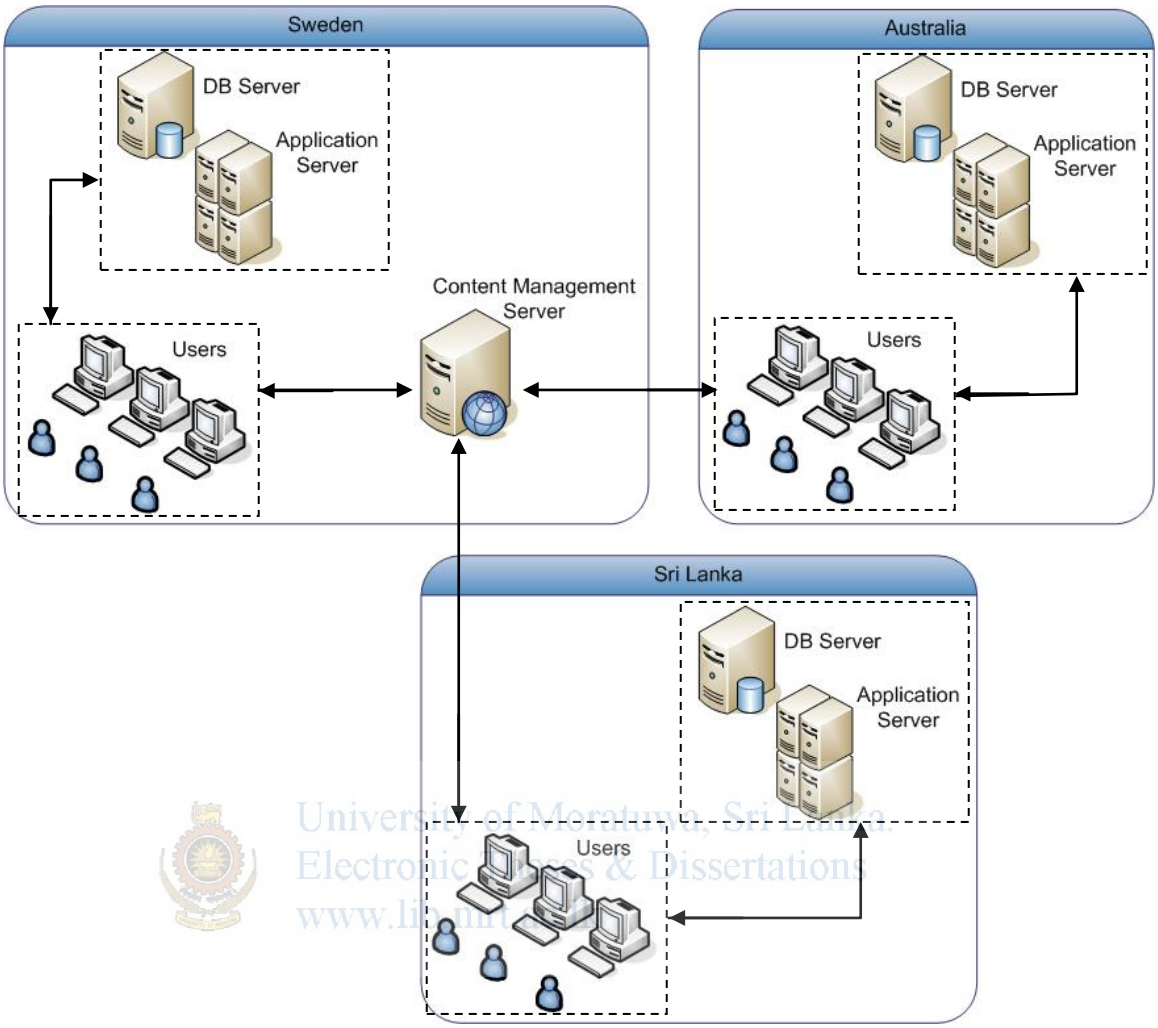

Figure 3-1 Proposed system infrastructure

As depicted in the Figure 3-1, there will be a content management server to control the proposed product versions. So the developed product can be reached by any of eBuilder user from any country. As this product is based on “Test Database” concept all the test database backups should be available on the content management server.

3.2.2 Product functions

Release Test Plugin

Releasing the test plugin into the content management server is done by system developer. This test plugin is the key component of the test automation framework. System developer can release more versions of this plugin, if there is need of any change of the functionality or with new functionality.

Release Test Case Bundle

Releasing the test case bundle into the content management server is done by the system developer. This test case bundle contains all the test cases from all the projects and products. System developer needs to release this component quite frequently. If a project/product needs any new test cases, it should be released with a new test case bundle version.

e-mail Announcement

e-mail announcement is done by the system developer. This is the functionality to announce all the changes or new features in the released components to users. So with this announcement mail, users will exactly know what is the version of test plugin and test case bundle, they should use. After the each and every release of the test plugin and the test case bundle, there will be an e-mail announcement for all the system users.

Install Test Plugin

System users must install test plugin to use the test automation framework. To install the relevant plugin user should know the exact version of the plugin. Once user feeds the plugin name and the version, the plugin will automatically download from the content management server and install in the user's computer.

Configure Target Server

This is the functionality to change the test automation framework configurations to test, whatever application user needs to test. This contains the configurations to IP address and

the port of the target application is running on the server. Testing protocol (e.g. basic web application comes under HTTP) configuration also here with this configuration.

Configure Test Mode

This functionality gives user to configure test run with a great flexibility. With this functionality, user allows to configure the system according to the target project or product. Main 3 testing modes are there to run test cases under particular product or project. Load and Regression test modes to run load and regression test cases which are specified under the particular project or product. Custom test mode is giving more flexibility to run any script that user wants to run. Configurations like number of iterations and number of users for each test case can be defined with this functionality.

Select Test Case Bundle Version

This configuration gives the functionality to specify the version of the test case bundle which is going to test by the user. It is very important to specify the correct version of the test case bundle due to differences of the test cases which are included under each project/product.

View Test Map

This functionality allows user to view all the test cases listed under the relevant project/product. It can be very useful, when it comes to execute test run with Custom test mode.

Execute Test Run

Executing test run is the main functionality of this test automation framework. It allows user to execute the configured test run.

View Test Analysis Report

With this functionality user will prompt to view the results analysis of executed test run. Test results analysis can be view as HTML version of the report. It includes very much detailed analysis of the executed test run.

Snapshot Test Run

Snapshot test run is the functionality which gives system developer to “Test” the test automation framework with modified code base and changed/added test cases.

3.2.3 User characteristics

System Developers and System Users are the 2 main user groups can be identified in this system. Two different configurations need to setup to use with both kind of users.

System developer should be able to develop and test the system with modified code base and test cases. System developer is the user who can keep the test automation framework up-to-date. Release new versions of test plugin and test case bundle, make a new release announcement are the key responsibilities of the system developer.

System user is the other user of the test automation framework. System user is using more functionalities of the test automation framework, other than the system developer. System user’s main functionality is to execute a well configured test run. Number of options is there to configure relevant test run for the system user. Ultimate goal of this user is to view the test analysis report of the executed test run.

3.3 Functional Requirements

Data Base –

Shall be able to use any data base related to the product.

Test Cases –

User shall be able to define test cases at any time.

Testing Environment –

System shall be able to support for regression, integration and load testing.

View Test Map –

User shall be able to see the listed test scenarios for the configured test mode using this functionality.

Execute Test Run –

Configure test run and execute it against the application which is need to test.

View Test Report Analysis –

User shall be able to view the test results analysis at the end of the test execution.

Users shall be able to compare current report with pervious reports.

Report shall be able to display failed test cases and its branches.

Report shall be able to display Test case number, Status, Success Rate,
total Time and average time.

3.4 Non Functional Requirements

High Availability –

System should be available for the international users.

Ease of Use –

Systems functions should be simple and easy to understand by its users. A complete system guide should be provided with the system.

3.5 Use Case Diagrams

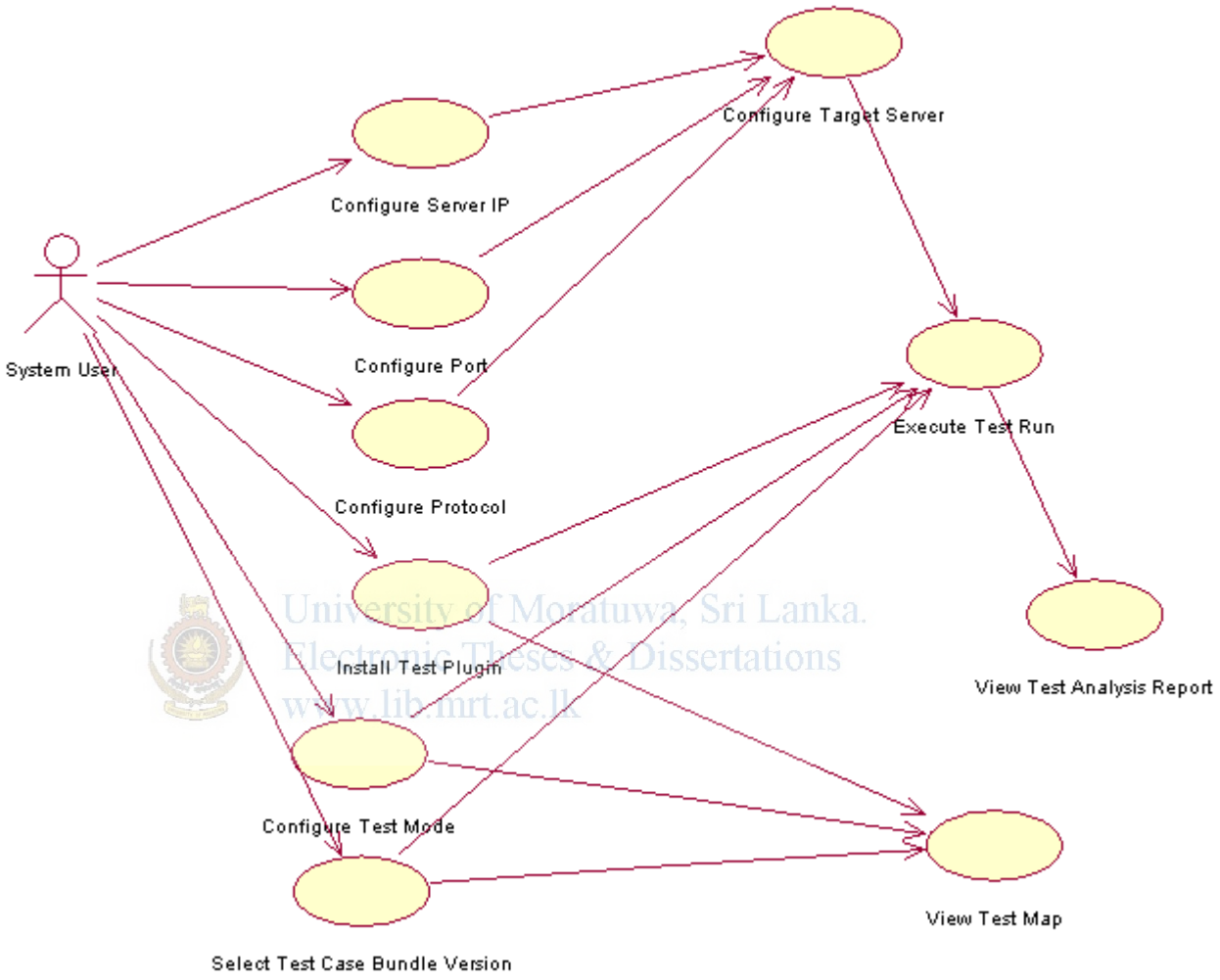

Figure 3-2 System user processes

Brief Description

Figure 3-2 use case allows a system user to run automation test. System user's main functionality is to execute a well configured test run. Number of options is there to configure relevant test run for the system user. Ultimate goal of this user is to view the test analysis report of the executed test run.

System users must install test plugin to use the test automation framework. To install the relevant plugin user should know the exact version of the plugin. Once user feeds the

plugin name and the version, the plugin will automatically download from the content management server and install in the user's computer.

Flow of Events

Basic Flow

When the system user has configured the system he/she can run regression test and at the end of the test will receive detail analysis report.

Alternative Flows

When the user is started the automation he/she can view test map.

Special Requirements

None

Pre-Conditions

User need to install JDK and Maven.

Post-Conditions

None

Extension Points

None

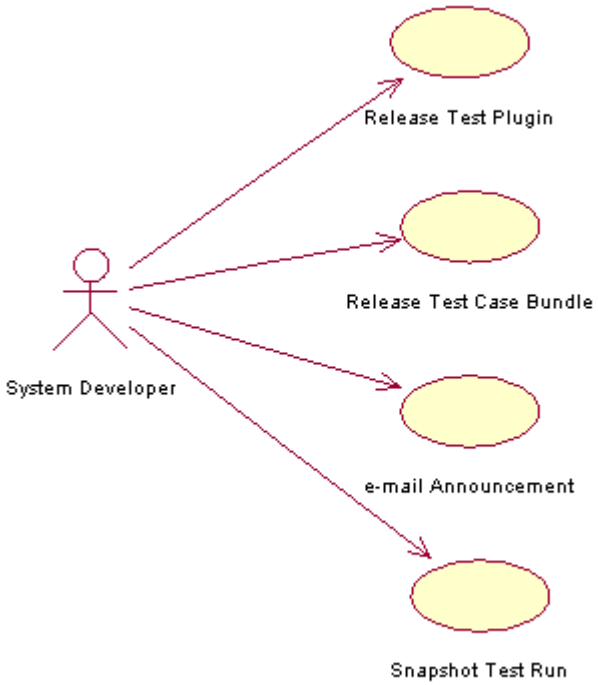

Figure 3-3 System developer processes

Brief Description

Figure 3-3 use case allows a system developer to make releases. System developer should be able to develop and test the system with modified code base and test cases. System developer is the user who can keep the test automation framework up-to-date. Release new versions of test plugin and test case bundle, make a new release announcement are the key responsibilities of the system developer.

Flow of Events

Basic Flow

System developer will release Test plugins and test case bundles.

Alternative Flows

System developer can run snapshot test run.

Special Requirements

None

Pre-Conditions
Developer need to install JDK and Maven.

Post-Conditions
None

Extension Points
None

3.6 Summary

This chapter consists of the requirement analysis part of the project. It discusses about the domain analysis, General Description of proposed system, Functional Requirements, Non Functional Requirements, Interface requirements, Method of requirement capturing used in the project and the use case diagrams.

This system uses by several users from different countries. Therefore all content should be available on common server.