This Paper summarizes an internship report that has been done by Ryan Handy Priyadma. This document describes what he was completed during the graduation project. The main objective of this report is to illustrate the process of graduation project named “Information Visualization on Test Automation” which was taking place at Océ Technologies B.V. in Venlo.

This project was begun by doing analysis at the stakeholders who are involved with the FAT. This is followed by interviews with the stakeholders to understand their needs. From that stage, the requirements will be known based on the stakeholders needs. The next stage is doing research about the technologies available for this project after that prototype can be made, the prototype gives an impression of what the product will look like and what the user interactions are. The final stage is implementation, this stage the prototype will be implemented within real environment and will be use as final product.

Keywords— FAT, Océ Technologies B.V., Information Visualization on Test Automation.

I. INTRODUCTION

Océ develops high-end professional printers. The hardware and software of the printers are extensively tested to ensure their high quality standards. In order to guarantee the quality of the printer’s controller software, Framework Automated Testing (FAT) is used for system level automated testing. The purpose of this system-level automated testing is to detect regression.

During the automated test of the controller software, large amounts of test data are required to configure the test (such as test case data) and are produced as a result of test execution (such as test results). The Framework Automated Testing (FAT) stores these test data in a data-base. FAT uses these test data to provide several views on the stored test data. To ensure the fruitfulness of the automated testing, the stakeholders must have a clear view on the. One of the ways is a website which gives an impression of what the product will look like and what the user interactions are. In this paper, I will show the process of making a FAT website and also give understanding what kind of problems or boundaries that might occur during the process and also explain how to solve it. The report consists of chapters that are related with my graduation project.

II. COMPANY PROFILE

A. Océ History

Océ Technologies B.V. is a Netherlands-based company that develops, manufactures and sells printing and copying hardware and related software. The offering includes office printing and copying systems; production printers and wide format printing systems for both technical documentation and color display graphics. The company was founded in 1877. With headquarters in Venlo, The Netherlands.

B. Océ Research and Development

Research & Development is of enormous importance to Océ. In 2011, Océ operates research centers in nine different countries worldwide, staffed by more than 1550 highly-skilled professionals. In Venlo (the Netherlands), Research and Development concentrates on the development of cut sheet and wide format printers and scanners, strategic consumables (incl. toners and photoconductors) and software.

C. Product and Organization

Océ has three Strategic Business Units: Digital Document Systems (small format), Wide Format Printing Systems (wide format) and Océ Business Services.

Small Format (up to A3 size)

Cut sheet equipment that can be used by all kind of organizations to print documents such as presentations, letters and reports which are printed as part of the daily office practice. This printing device can print large quantities of transaction statements (e.g. invoices, bank statements), marketing material, books and newspapers.

Wide Format (larger than A3 size)

Equipment printing mainly on paper can be used to print technical documents. The target groups of these printers are for instance architects, engineering offices, construction companies, and telecom and utilities businesses. Printing on many different media such as paper, vinyl, textile, glass and tiles. Think about output like full-colour advertising material and signage. This output can be interesting to organizations that print signage materials and organizations that print wide format advertising material for their customers (print-for-pay) or for own use.

Business Services

These operational services can be divided into three different activities. At first there are the basic document services such as mail and print room management, scanning, archiving and desktop publishing services. Furthermore there are value added services such as printer fleet management, digital mailroom, printing-on-demand, creative services and document management in litigations. At last document process outsourcing such as insurance policy process management can be offered.
III. OBJECTIVES

Currently the old website which shows the test result is obsolete, slow and will no longer available from 1st February. A temporary replacement was built which shows similar information the test result from the old website. Using new database, a new website replacing the old one needs to be made. This new website will replace the old website.

IV. GENERAL APPROACH

On this project contains some methodologies that needed in order to support the main problem namely provides information visualization on test automation. The waterfall methods had been chosen in this project, the methodologies are:

- Analysis phase: Identify the stakeholders, interviewing stakeholders, gathering requirements, prioritizing requirements, and setting up a use case.
- Design phase: researching the possible technologies, designing user interface and prototyping.
- Implementation phase: Implementing the prototype in real environment
- Testing: Testing the product in real environment

The methodologies are divided by five main phase:

A. Website Framework

A website framework is designed to support the development of the website. The framework aims to alleviate the overhead associated with common activities performed in web development. For example, many frameworks provide libraries for database access and a template for the website.

B. Visualization Library

When building visualizations, designers often employ multiple tools simultaneously. For example HTML for page content, CSS for aesthetics, JavaScript for interaction, SVG for vector graphics and so on. To provide a clear view of the test results, a visualization of information that stakeholders scan the network share for the available builds. There are a number of build servers, each build server is a different build.

- Log Server: Server where the logs of the test failures during automated test are stored.
- API Server: A service to communicate with FAT database using REST.
- Build Controller: A desktop application for monitoring, maintaining and controlling progress of the builds.
- FAT Website: A website provides views of the test results which stored in the FAT database.
- Scheduler: Schedules the work for the available builds.
- Network share: a place to store the builds from the different build servers.

VI. INFORMATION ARCHITECTURE

Information Architecture describes how the system works. The architecture already implemented in current situation. This project focused in the relation of the website and API server and in the figure 4.3 explained how the information architecture of the FAT system. And this architecture uses the following elements:

- Test PCs: also known as the farm test PCs are the collection of PCs used to perform the automated test. There are approximately a hundred test PCs.
- FAT Database: Database system in which the test data such as test results are stored.
- Build Server: Server where the codes of the daily builds are compiled and processed, the scheduler

Different methods of research were used to gather information for this project. It began with desk research, which included literature research, reading documents from the Internet, and active asking in web developer forum. After the requirements gained, it’s important to know what the possible technologies could be used to make a website. To provide a clear view of the test results, a visualization of the data should be made. This chapter describes the technologies related to make that visualization

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need has to be made. There are a number of JavaScript libraries to realize it.

VII. CONCLUSION

For some stakeholders the visualization of test results is very important, from that visualization, the stake holders have a clear view of what’s going on in their test cases. And a website which shows the test results of the test cases is the best solution to provide the visualization of the test automation. This website made with a newest technology of the web development. With html5, twitter bootstrap framework and the d3.js visualization library.

This framework provides compatibility of the website for all devices and web browsers, and also supports a responsive design which means the graphic design of the web pages adjust dynamically, taking into account the characteristic of the devices used (PC, tablet, mobile phone). So if in the future the FAT team wants to use a mobile phone or tablet to see the test results, it should not be a problem, they don’t have to redesign the website.

However, since the duration of the project only 5 months, it limits me to get deeper on research and prototype phase. These two aspects are also having main role in making a good application. If the project could be longer, I am sure that the website has more view of the test results.

As a recommendation, because the website use the new technologies, it would work perfectly if the stakeholder also used a newer system for the PC, like upgrade windows 8 or upgrade a newer versions of their web browsers for a better performance. And I suggest that the database in FAT system should be extend based on their stakeholder needs. For example for the flipper test case, it would be nice if the FAT system could detect that the test cases are flipper or not and if possible the test results of the module test also have a view in the website.

REFERENCE