Smart Resume CV selector for IT Industry

System Requirements Specification

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DECLARATION

I hereby declare that the submitted project Software Requirements Specification document for People Clues is an original work done by Perera B.G.A. This document is proprietary and an exclusive property of the SLIIT project group 16-073. List of references I referred for the preparation of this document are given as references at the end of the document.

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Revision History

Version	Date	Summary of Changes	Author

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1. INTRODUCTION

1.1. Purpose

Today in Sri Lanka, in IT industry, workforce management has become a critical factor since there are huge number of employees as well as the qualified candidates. In order to manage individuals and groups in an effective way, companies hire new employees with enough qualifications as well as good attitudes. In this case most companies follow up one traditional process in hiring new employees. The normal process is advertising the vacancy, calling Curriculum Vitae (CV) from the interested parties, short listing them by referring the CVs one by one and interviewing the short listed candidates. The most important part of this process is referring the CVs and short listing them. Because CV is the storage or the database of the applicant's skills and qualifications. It should be read properly in order to select the best. But, today this part is handled manually. In order to select the best and most suitable candidate, the reader has to check several attributes such as skills, experiences and personal information. Sometimes the best candidates can be missed just because the reader couldn't grab their qualifications properly. Due to this matter we are introducing **Smart Resume**, the CV short listing Business Intelligence tool.

The main objective of this document is to illustrate a general description and analysis of the software requirements for the predictive model builder **Smart Resume** for IT industry. And also the resulting software requirements analysis will be used to proceed with the design and implementation of the use case applications, the development process of predictive model and visualization component will be included in this document. The document is written in a simple form that any person can read and understand the content.

1.2. Scope

The scope of the predictive model builder is having the following functional areas. There are three primary components that need to be handled in order to complete **Smart Resume predictive model builder component**.

1. Model Building and Prediction
2. Predictive Model Evaluation

3. Dashboard Simulation

This document describes the most important part of the project. It is **Model Building and Prediction.**

Scope of Model building and Prediction will include the following steps.

1. Hypothesis Testing
2. Data Sampling
3. Building Algorithms for Classification

1.2.1 Objectives

Creating Predictive model using classification algorithms.

Create an intelligent system to decide the set of most suitable candidates for a specific job position and apply this system to compose candidate teams to be interviewed in IT industry. The component relies on given qualifications of the applicants. Depending on the user requirements given an optimal or feasible team will be generated. The optimal team composition is the one with the lowest probability of unfavorable outcomes an optimal solution is a theoretically proven solution. But it might not be the logically suitable solution and we might have to come up with the feasible team. Hence the tool has the option of providing the most feasible (possible and practical) solution as well.

Other Objectives

- To make the Business intelligent tool easy to understand and easy to use for non-techy people
- Develop a system with high accuracy, efficiency, flexibility, and support for other non-functional requirements

1.2.2 Benefits

- Smart Resume is a comprehensive product with predictive algorithms where the selections pf the candidates can be done automatically.
- Small or large all IT industry firms can be use this product
- Reduce time to check CV and analyze them

- Reduce time use to insert data one by one.

1.3 Definitions, Acronyms, and Abbreviations

SRS	Software Requirement Specification
DW	Data Warehouse
MySQL	MySQL database
CSV	Comma separated value
CV	Curriculum vitae
GUI	Graphical user interface
IT	Information Technology
BI	Business Intelligence
HR	Human Resource

Table 1- Definitions, Acronyms, and Abbreviations

1.4 Overview

This SRS document intent to cover all the functional and non-functional requirements of the **Smart Resume Predictive Model Building.** Each of them has been discussed clearly in details. All are described under three chapters. It will also give an overall description that presents a background of general factors that effect to the requirements, a summary of main functions that system will perform, and general characteristics of the users of the product. It provides the purpose of the SRS, users, objectives, goals, and benefits of the system.

The second chapter contains software and hardware interfaces that system contains, requirements of the system, summary of major functionalities, an overview of the system.

The third chapter contains references, indexes, and appendices. This document can be used as a guide by the development team in the development phase.

1.4.1 Goals and Tasks

- Identify the Relevant and most suitable classification algorithms to be used.
- Get the stored data in DW
- Using those data in selected algorithms.
- Creating the suitable predictive models.
- Making predictions
- Send to dashboard simulation

1.4.2 Users

- HR workers in IT firms
- DB Administrator
- Top Level Management

1.4.3 System Overview

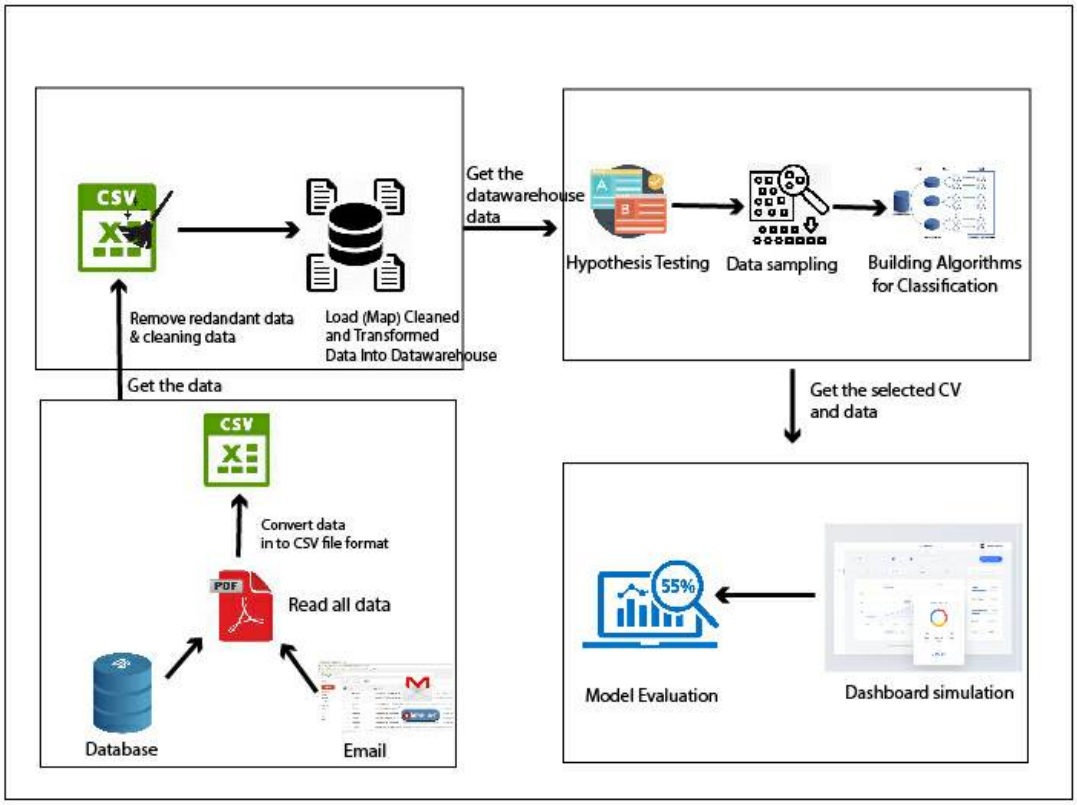

Figure 1: System Diagram

2 OVERALL DESCRIPTION

Smart Resume- Is a Business intelligence toot that selects most suitable candidates for a given job position by using the given user requirements. The system involves data warehousing, data mining, and predictive modeling. **Smart Resume** turn data into the decision.

Classification is used to construct the predictive model using the historical data that accurately predicts the teams. Different algorithms are used to find relationships between predictor attributes. This process is done using test data to test the predictive model as it measures the predictive model accuracy. This model evaluation method is used to identify the best predictive model [1]. For further evaluation optimization techniques can be applied to increase the model accuracy.

Finally, after processing all data set based on predefined predictive models, it generates comprehensive, self-descriptive and exploratory dashboard which provide fact – driven visualization of the data.

2.1 Product perspective

Products Available in the Market

[1] Jobscan Recruitment Solution Tool

- Here we have to submit one CV at a time.
- No BOT to save or download CVs.

Features	**Oracle BI**	**Birst**	**Jobscan**	**Smart Recruit**	**Smart Resume**
BOT(Automated)					✓
ETL Tool					✓
Optimal Solution			✓		✓
Feasible Solution					✓

All the user does not have to interact with the system	✓	✓	✓	✓	✓
Visualization of data in an abstract way		✓	✓	✓	✓
Predictive Analytics	✓	✓	✓		✓

Table 2 - Comparison with existing Systems

2.1.1 System interfaces

- Web – Desktop connectivity Interface.
- JVM

2.1.2 User interfaces

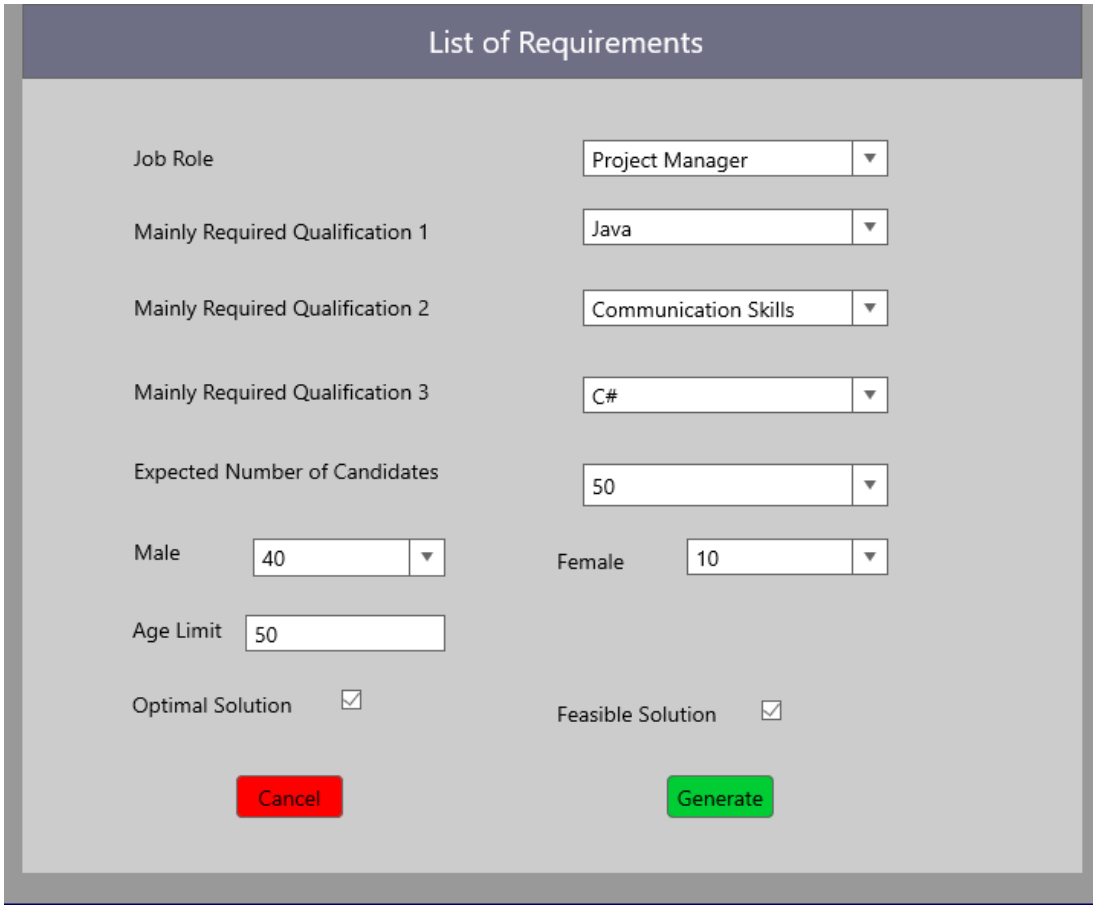

Figure 2 – User Requirements Gathering Interface

Above interface will gather the user requirements in order to generate the most qualified candidate CV list. This should be filled by the responsible parties of shortlisting CVs. They have to enter the below details in order to get the best output as they want.

1. Job Role – Title of the job (Project Manager, Business Analysis, Software Engineer etc)
2. Mainly Required Qualifications (What are the main qualifications that they are looking from the candidates. It may be a language skill like Java, C, C#, or some other qualification like Communication Skills or working experience.)
3. Expected Number of Candidates (The number of the CVs that they want after Shortlisting.)
4. Male (How many male candidates they want?)
5. Female (How many Female candidates they want?)
6. Age Limit (Is there any limitation for age of the selected candidates?)

7. Finally, they have to select whether they want either the Optimal solution or Feasible solution or both.

2.1.3 Hardware interfaces

Smart Resume CV Shortlisting tool does not require any special Hardware interfaces apart from a computer.

2.1.4 Software interfaces

- Jython library
- My-SQL
- Latest updated web browser that supports JQuery and AJAX
  Ex: Google Chrome, Mozilla Firefox, Apple Safari, Internet Explorer, Opera web browser.

2.1.5 Communication interfaces

Following communication interfaces are required in order to use the **Smart Resume CV Shortlisting tool:**

- Internet Connection - Required Connection bandwidth might differ time to time. Since large data load is travelling through the network, having a high bandwidth internet connection will help a lot for the users.
- Database connection interface

2.1.6 Memory constraints

- RAM of 2GB or higher

2.1.7 Operations

Operations of Top Level Management

- Select suitable attributes and generate optimal or feasible team.
- Interpret results with the dashboard.
- Viewing reports

2.1.8 Site Adaptation Requirements

Following site adoption requirements are identified regarding the implementation of **Smart Resume CV Shortlisting tool:**

- The server must have MySQL installed on it.
- Server machine must be running Apache server in order to deploy the web application.
- The user machine should have Java Virtual Machine installed.

2.2 Product functions

Use Case NO.	01
Use case Name	Insert attributes and generate team
Pre –Condition	Database connection is active. System should be available.
Actor	Logged User (Top Level Management).
Main Success Scenarios	1. Insert necessary requirements 2. Click ‘Generate’ button
Extension	

Table 3 - Use case scenario for inserting attributes and generate team

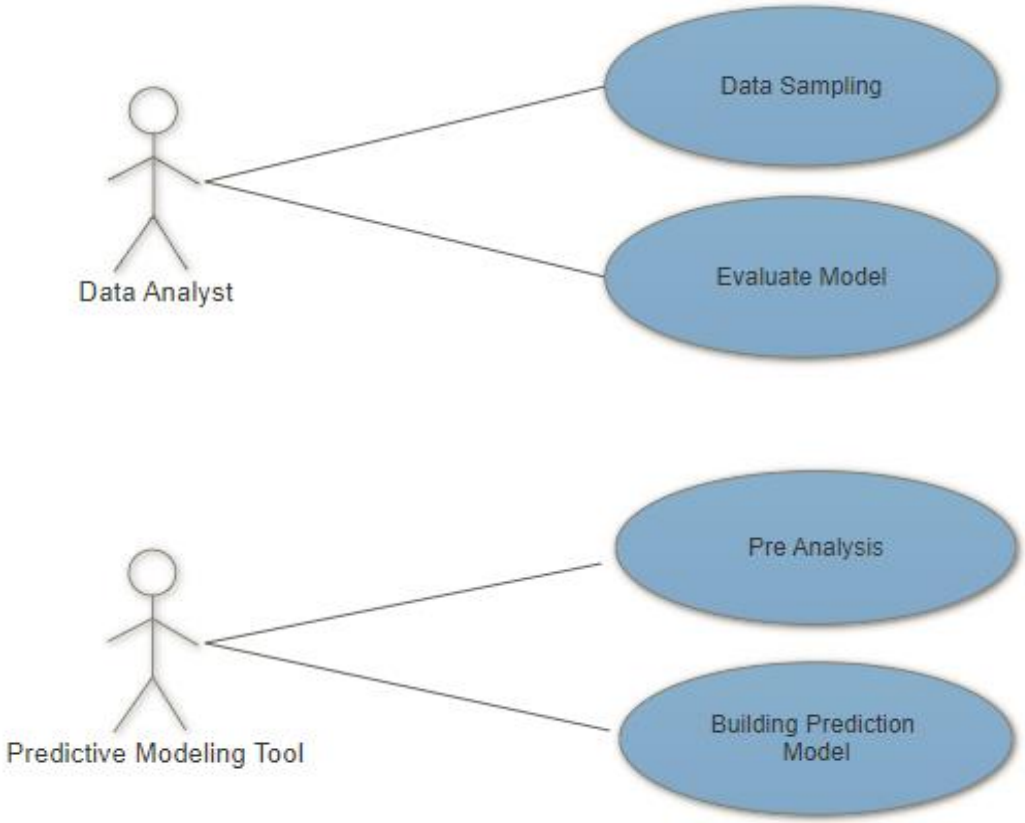

Figure 3 – Use case Diagram for predictive Model

2.3 User characteristics

User	Privilege	Activities
Decision Maker (Top Level Management)	Full access to the system. Mainly focuses on Visualization layer /Dashboard	1. Get the Optimal or Feasible Solution 2. Predictive results with dashboard

Table 4 - User characteristics

Users of the **Smart Resume CV Shortlisting tool** are always not to be business intelligence professionals to use this system. A user who has an interest and motivation in predictive modeling and its application in business intelligence can use this system as this will be implemented in a simple manner. Especially the decision makers of a company like top level management can use this system as they are the one who needs to select the best optimal or feasible team as new employees.

2.4 Constraints

- All the tools and technologies used for the development should be open source.
- Limitation of available time. The project group is expected to complete the **CV Shortlisting tool with predictive model builder and visualizer** within 4 months.

2.5 Assumptions and Dependencies

- All the users of the tool should have basic knowledge using a computer and the internet.
- There is an active internet connection.
- Server is up and running 24x7.
- There's sufficient memory and processing power in all user PC's.

2.6 Apportioning of requirements

The requirements described in sections 1 and 2 of this document are referred to as primary specifications; those in section 3 are referred to as requirements (or functional) specifications. The two levels of requirements are intended to be consistent. Inconsistencies are to be logged as defects. In the event that a requirement is stated within both primary and functional specifications, the component will be built from functional specification since it is more detailed.

3. SYSTEM REQUIREMENTS

3.1. External interface requirements

3.1.1 User interfaces

- **User Requirements Gathering Interface**

This is where the user inputs the user requirements in order to generate the most qualified candidate CV list. This should be filled by the responsible parties of shortlisting CVs like top level management. They have to enter the below details in order to get the best output as they want.

Job Role, Mainly Required Qualifications, Expected Number of Candidates, expected number of Male candidates, expected number of female candidates, Age Limit and Finally, they have to select whether they want either the Optimal solution or Feasible solution or both.

And then click the 'Generate' button.

3.1.2 Hardware interfaces

No special hardware interfaces are used for the system.

3.1.3 Software Interfaces

- **MySQL**

  MySQL is used for database management system for the system. For data transformation and data mapping use MySQL. Also to create data marts.

- **Jython Library**

  Use to connect interfaces between java and python. As all interfaces and validations develop by java and use python for calculations and algorithm developments.

3.1.4 Communication interfaces

- **Internet Connection**

  Data processing is done offline mode but in order to access web application user need an internet connection.

- **Database Connection Interface**

  This interface is use to communicate between database and the system. It acts as the adapter which converts database queries into system and vise-versa.

3.3 Performance Requirements

- Database can handle 50000 records.

3.4 Design Constraints

- The system based on IT industry only.
- Limitation of available time to develop the system.
- Performance, accuracy, reliability, security should achieve.

3.5 Software system attributes

3.5.1 Reliability

Reliability is the probability that an application will accurately perform its task under stated environmental conditions. It means that system support to allow user to work normally in many environmental conditions. Application must be tested unit vise and integrated vise in order to eliminate errors and give user a proper reliability. All technologies and configuration is used to provide better reliability to the system.

3.5.2 Availability

Database servers are running 24x7 hours. So that ETL tool can be performed in every time. [5] Immediate server's aggregation to data warehouse can increase high availability

3.5.3 Security

It indicates how to protect application from unauthorized people. Database has usernames and passwords in order to grant security. Only authorized people can access to the database and work with ETL Tool.

3.5.4 Maintainability

- Proper coding standards and naming conventions will be used at development time.
- Each attributes are validated using proper transformation functions.
- Creating user friendly interfaces with some standards.

3.6 Other Requirements

- Data that Map into Database are acquire from valid sources for further processing
- Use open source technologies.

4. SUPPORTING INFORMATION

4.1 Appendices

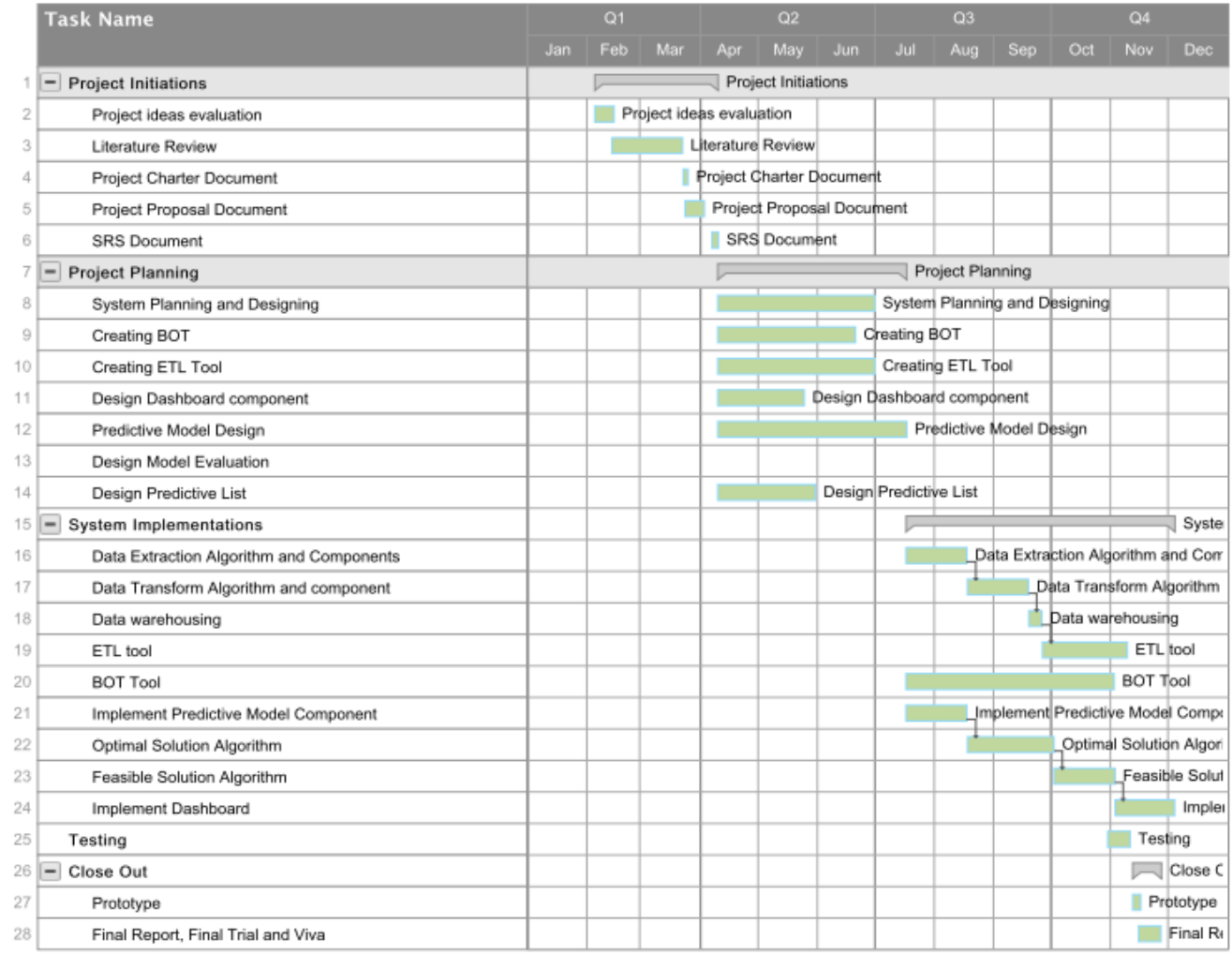

Figure 4- Grant chart

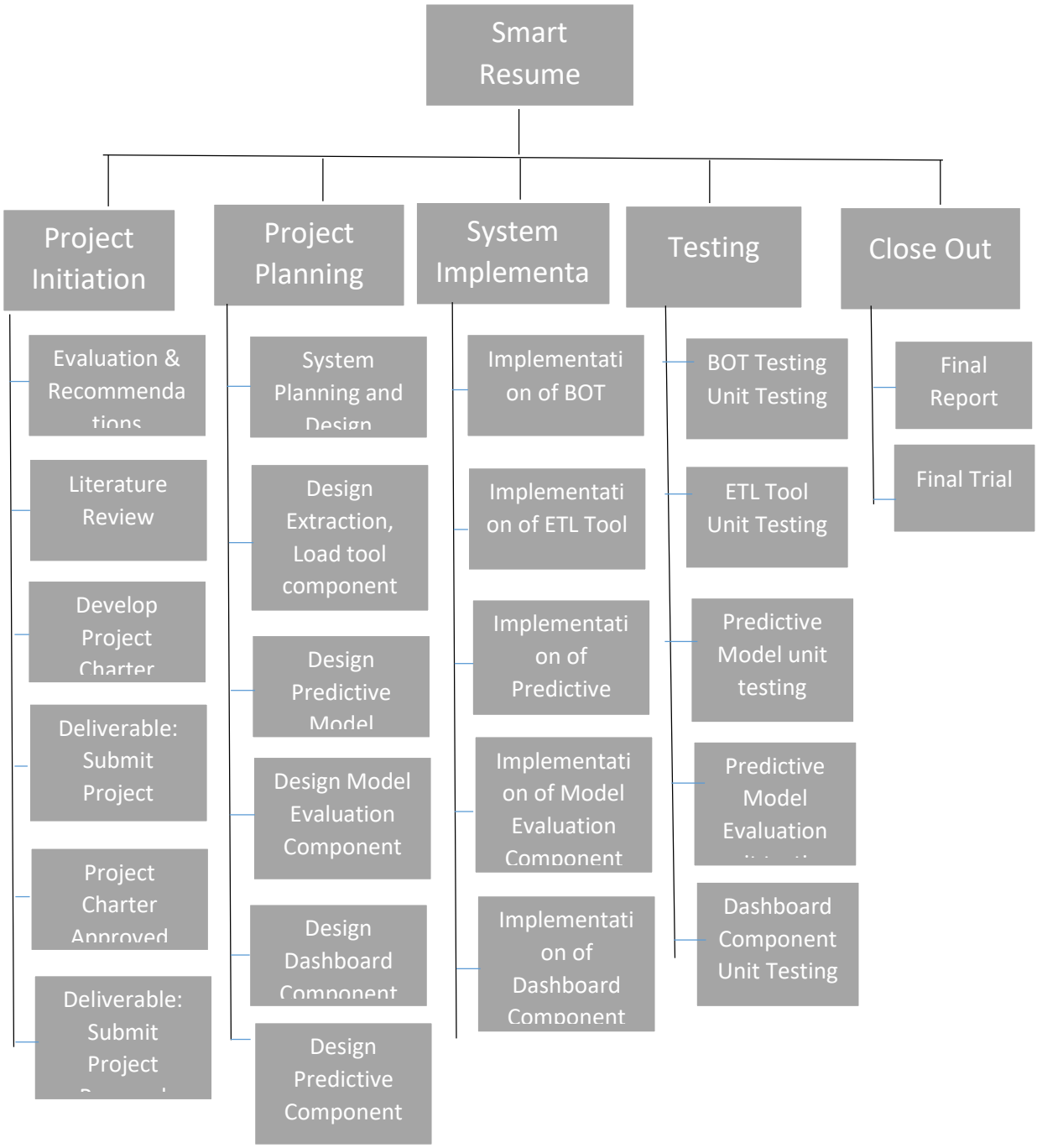

Figure 5 : Work Breakdown Structure

4.2 References

[1] [Online]. Available: https://docs.oracle.com/cd/B13789_01/datamine.101/b10698/3predict.htm [Accessed: April 29, 2018]