

# CHAPTER I

## PRODUCT REQUIREMENTS

### **I.1. Introduction**

Technology nowadays has been developed vastly, especially in information field. This influences other human lives sector/ field. Automotive is one of those sectors that have been greatly influenced greatly. There are many aspects available in automotive field that are kept developing and being developed. All of these developments are related with the role of Electronic Control Unit (ECU). All of the new developments are put in ECU and all of ECU functions are controlled by using diagnosis system. This is why an application that can diagnose ECU is needed. Application dIAVisko is made and designed to do diagnosis process which is accurate and correct.

#### **I.1.1. Objectives**

The purpose of writing this report is to analyze application dIAVisko ver. 1.9.2 (Stand: 07.08.2008). There is an addition of new function in application dIAVisko to examine whether all of menu options and their functions work well or not.

#### **I.1.2. The scope of project**

The scope of project is to analyze the application dIAVisko and the function added by the author in this application, which is a function of examination of all menu options available in this application. This function can examine every menu and submenu options available in this application.

### I.1.3. Definition and acronym

This subchapter will cover the definition and acronym found in this report. This subchapter hopefully can help readers to understand more the terms and acronyms written by the author.

Here is a list of definitions and acronyms used in this report, which are:

Table I.1 Definition and Acronym

| Acronyms  | Definition  |
|-----------|---|
| Diagnosis | <p>Diagnosis is concerned with the development of algorithms and techniques that are able to determine whether the behaviour of a system is correct. If the system is not functioning correctly, the algorithm should be able to determine, as accurately as possible, which part of the system is failing, and which kind of fault it is facing. The computation is based on observations, which provide information on the current behaviour.</p> <p>The expression diagnosis also refers to the answer of the question of whether the system is malfunctioning or not, and to the process of computing the answer. This word comes from the medical context where a diagnosis is the process of identifying a disease by its symptoms.</p>   |
| OBD       | <p>On-Board Diagnostics, or OBD, in an automotive context, is a generic term referring to a vehicle's self-diagnostic and reporting capability. OBD systems give the vehicle owner or a repair technician access to state of health information for various vehicle sub-systems. The amount of diagnostic information available via OBD has varied widely since the introduction in the early 1980s of on-board vehicle computers, which made OBD possible. Early instances of OBD would simply illuminate a malfunction indicator light, or MIL, if a problem were detected—but would not provide any information as to the nature of the problem. Modern OBD implementations use a standardized fast digital communications port to provide real time data in addition to a standardized series of diagnostic trouble codes, or DTCs, which allow one to rapidly identify and remedy malfunctions within the vehicle.</p> |
| ODX       | <p>Open Diagnostic Data Exchange is a formal definition language/protocol which is relevant for the vehicle in shop floor testers and software configuration</p>  |
| VAG       | <p>Volkswagen Group, or Volkswagen Aktiengesellschaft (German), (listed as Volkswagen AG) is a German automobile manufacturing group, currently the third largest automobile maker in the world[4], and the largest in Europe. Although it operates worldwide, Volkswagen Group's core market is</p>  |

|                  |  |
|------------------|--|
|                  | <p>continental Europe. Of its car brands, Volkswagen Passenger Cars is its mainstream marque, and the Group's major subsidiaries also include well-known car marques like Audi, SEAT, Škoda, Lamborghini, Bentley, and Bugatti. The Group also has operations in commercial vehicles, owning Volkswagen Commercial Vehicles, along with a controlling stake in Scania AB and a 29.9% stake in MAN AG.</p> <p>Volkswagen's second-largest market is China where its subsidiary, Volkswagen Group China is by far the second largest joint venture automaker. The Volkswagen Golf is the third bestselling car in the world, selling over 25 million cars through 2006. In 2007 the Volkswagen Group sold 6.19 million automobiles, claiming over 10% of the world passenger car market. In late 2007, the company openly reported that they plan to double sales, overtake Toyota and become the world's largest automaker by 2018.</p> |
| DataBank         | <p>In telecommunications, a data bank is a repository of information on one or more subjects that is organized in a way that facilitates local or remote information retrieval. A data bank may be either centralized or decentralized. In this sense, data bank is synonymous with database.</p> <p>Data bank may also refer to an organization primarily concerned with the construction and maintenance of a database.</p>  |
| Parameterization | <p>Parameterization (or parametrization; parameterisation in English) is the process of defining or deciding the parameters - usually of some model - that are salient to the question being asked of that model.</p>  |
| ECU              | <p>electronic control unit which controls various aspects of an internal combustion engine's operation. The simplest ECUs control only the quantity of fuel injected into each cylinder each engine cycle. More advanced ECUs found on most modern cars also control the ignition timing, variable valve timing (VVT), the level of boost maintained by the turbocharger (in turbocharged cars), and other peripherals.</p> <p>ECUs determine the quantity of fuel, ignition timing and other parameters by monitoring the engine through sensors. These can include, MAP sensor, throttle position sensor, air temperature sensor, oxygen sensor and many others. Often this monitoring and control is done using a control loop (such as a PID controller).</p> <p>Before ECUs, most engine parameters were fixed. The quantity of fuel per cylinder per engine cycle was determined by a carburetor or injector pump.</p>           |
| Bugs             | <p>An error found in the application.</p>  |
| Phyton           | <p>one of the prgramming language types.</p>   |
| GHz              | <p>a unit of computer speed; equal as 1000 Megahertz.</p>  |

|      |  |
|------|--|
| MB   | a unit of memory capacity in a computer/ system; equal as 1000 Kilobytes |
| INCA | a software created by IT team in IAV Gmbh.                               |

#### **I.1.4. The outline of the report**

Chapter I explain about the objectives, the scopes of project, definition and acronym, and the description of whole system which include product perspective, which are system interface, user interface, hardware interface, software interface, communication interface, limitation of memory, adaptation requirement at the destination place that is explained shortly. Besides, there are also product function, characteristic of users, limitation of cases, assumptions and dependency, and postpone of requirements explained in this chapter.

Chapter II contain details of application that will be analyzed, such as user interface, hardware interface, software interface, features available in the application including its functions, attribute of software system, database requirements, and etc.

Chapter III will discuss about the overview of system, overall software design, software components, concept of execution, and design of application interface.

Chapter IV will cover the plan of implementation step which includes classification of modules, inter-modules relation, details of implementation step, debugging, discussion of function realization, and discussion of user interface realization.

Chapter V will discuss about the plan of testing the implemented system, test case, details of test methodology, which includes the test method of target application, and discussion of evaluation result that has been carried out.

Chapter VI will explain relation between conclusion and the result of evaluation, relation between suggestion and the result of

evaluation, and improvement and implementation plan of the suggestion given by the author.

## **I.2. The Description of Whole System**

### **I.2.1. Product perspective**

This application dIAVisko is related with other application in reading the output of process run by application dIAVisko. One of other application which is used to read the output of application dIAVisko is INCA. Diavisko data input type is .DCM, and the output divide into hard and soft output. Hard output is read by INCA and the example of the soft outputs are data in Microsoft excel

### **1.2.2. Product function**

This application has main function which is as helping tool to run diagnosis of a vehicle, by checking the databank that belongs to the vehicle, finding certain parameters in the databank, and then giving output that is required for the diagnosis function.

### **I.2.3. The characteristic of users**

The characteristic of users of application dIAVisko, which includes the function to test all menu options added by the author, are the workers/ stuff of division of vehicle diagnosis, who are working in:

1. Volkswagen AG.
2. Audy AG.
3. IAV Gmbh.

#### **I.2.4. Limitation of cases**

The function analyses and development in application dIAVisko have some limitation of cases as follows:

1. This application until now is still under development stage.
2. This application is created in Germany language and it is limited in use by the internal parties of Volkswagen AG including the branch companies of Volkswagen AG.
3. The function that will be developed is only limited to test function of every menu options available in this application because the limitation of analyses and development of application that is permitted by the company.
4. This application created use python programming language.

#### **I.2.5. Assumptions and dependency**

The function analyses and development in application dIAVisko have some assumptions and dependency as follows:

1. The users of this application have to understand how to use the application dIAVisko.
2. The menu options in application dIAVisko are still in developing and adjusting stage.

#### **I.2.6. Postpone of requirement**

Postponing the requirement in function analyses and development in dIAVisko:

- The development of test function is not only carrying out examination to the menu options available in dIAVisko for the future, but also can examine all of functions available in application dIAVisko.