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JUDUL: HELPOESK DNA

SESI PENGAJIAN: 2005/2006

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<sup>^</sup> Tesis dimaksudkan sebagai Laporan Projek Sarjana Muda (PSM)

## **HELPDESK DNA**

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This report is submitted in partial fulfillment of the requirements for the  
Bachelor of Computer Science (Software Development)

**FACULTY OF INFORMATION AND COMMUNICATIONS TECHNOLOGY**

**KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA**


**2005**

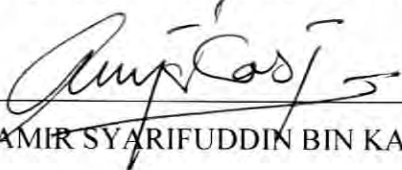
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I hereby declare that this project report entitled

### HELPDESK DNA

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## **DEDICATION**

To my beloved parents, brother and sister.

## ACKNOWLEDGEMENTS

First and foremost, I would like to raise my gratitude to my supervisor, En. Amir Syarifuddin Bin Kassim for his will to supervise this project. With his guides and cooperation over technical and writing aspects, the project deliverables has been much better. Next, I must thank Program DNA Sdn. Bhd. for their willingness to be the subject of my case study. Last but not least, I would like to also thank everybody else for their direct or indirect assistances.

## ABSTRACT

Projek Sarjana Muda is the project that accumulates the biggest portion of knowledge gained during a student's course at this university. Thus, for this project, the highlights will be on building an enterprise-scale web-based application. This software name is helpdesk DNA. Once the objective and scope is completed, it will be used by Program DNA Sendirian Berhad as their major tool in automating their help desk operations. To make sure the end-product is feasible, literature researches are done. Every aspect of software analysis and design had also been based on the project's scope and objective. With Rational Unified Process and Enhanced-Rapid Application Development as its methodology, the software will be more feasible, marketable and easier to develop. The analysis process involves current system study. Functionality requirements gathered in the process are used in identifying ways to automate the system and to learn how to add more quality in the to-be system. Software, hardware and networking requirements to have the software up and running are also analyzed in the analysis process. The design process utilizes the input from analysis phase to design the software in terms of the system's raw data, architecture, user interface, database design and deployment view. This process also details the software's logic in terms of programming algorithm and data dictionary. Based on the artifact collected so far, the software is implemented. Environment setup and version controlling are also documented to make sure the right version of software can run every time. Once all tests for the software are passed, it will be known as the released version of the software.



## ABSTRAK

Projek Sarjana Muda adalah projek yang melibatkan bahagian terbesar daripada ilmu yang ditimba di universiti ini semasa belajar di sini. Oleh itu, untuk projek ini aplikasi web berskala "enterprise" adalah projek pembangunan perisian yang dipilih. Perisian ini dinamakan helpdesk DNA. Setelah objektif dan skopnya dipenuhi, ia akan digunakan oleh Program DNA Sendirian Berhad sebagai alat utama dalam mengautomatiskan operasi sokongan pelanggan (help desk) mereka. Untuk memastikan produk akhir projek ini dapat digunakan, kajian literatur telah dilakukan. Setiap aspek daripada analisa dan rekaan perisian bagi projek ini turut berdasarkan skop dan objektif projek. Dengan "Rational Unified Process" dan "Enhanced-Rapid Application Development" dijadikan sebagai metodologi projek, kebolegunaan perisian tersebut akan meningkat. Ini juga bakal memudahkan pemasaran perisian tersebut disamping memudahkan proses pembangunannya. Proses analisa melibatkan kajian mengenai sistem semasa. Keperluan kefungsiannya yang dikumpulkan dalam proses tersebut digunakan dalam mengenalpasti kaedah bagi mengautomatiskan sistem tersebut. Ia juga digunakan dalam memahami kaedah untuk meningkatkan kualiti sistem yang bakal dibina. Keperluan perisian, perkakasan dan rangkaian turut dianalisa untuk membolehkan perisian yang bakal dibina dapat digunakan seperti yang dikehendaki. Proses rekaan menggunakan hasil daripada proses analisa untuk mereka data mentah, seni bina, antara muka pengguna, rekaan pangkalan data dan gambaran pelaksanaan. Proses rekaan turut memperincikan logik perisian ini dari segi algoritma pengaturcaraan dan kamus data. Berpandukan bahan-bahan yang telah dihasilkan daripada proses-proses sebelumnya, perisian tersebut dibina. Kawalan versi dan "environment setup" turut didokumentasikan bagi memastikan versi perisian yang tepat dapat digunakan pada setiap masa. Apabila perisian itu telah lulus dalam setiap pengujiannya, ia akan dikenali sebagai versi "release" bagi perisian tersebut.

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## CHAPTER I

### INTRODUCTION

#### 1.1 Introduction

The project is introduced in this chapter. This chapter binds together every aspect of introduction comprehensively under firm subjects.

#### 1.2 Project Background

helpdesk DNA is a help desk information system. The term DNA which is being used here, signifies that ProgramDNA Sdn. Bhd. – a software development house is willing to be the case study for the project, and will be the product owner. The system will be used as the center platform to support their customers' and partners' concerns regarding the services provided to them. This system can be judged as another automated CRM (Customer Relationship Management) solutions but with advancement of features.

In every Information and Communication Technology (ICT) service provider operation, there will be questions, problems, request for changes, and suggestions that will be addressed by clients, partners or customers to the service provider. Without any automated system for this matter, the service provider answers the concerns through



phone calls and e-mails only. This creates unstructured and unformatted information on the service provider's site. They will have no knowledge base to handle same or similar concern, they may not track who solved previous issue, and they will not see any statistic of the most problematic project or product they deliver and so on. The answered concerns will end up as wasted resources of information.

Realizing this, it will be very good to these service providers if they can store these concerns in their database automatically in a structured manner. When the data can be stored properly, it can be used to generate statistical report that will help future decision making. It will also be easy when they already can track who is responsible for issuing and solving the concerns as quick as a few mouse clicks, rather than going through e-mails that was coming from various sender on indefinite time.

This system will ensure more quality in the service provider's customer support and benefit the service provider in the same time.

### **1.3 Problem Statement**

As understood, currently, the help desk operation is being applied manually and with computers help – using software. Hence, there are problems known in both manual and automated applications. The following paragraphs will first clarify the problems that occurred when a help desk operation is done manually.

Using the old-fashion way to support customers and partners is actually good in the sense that the customers and partners will be entertained by polite and friendly support personnel. Things will get better when the service is fast enough. However, human resources are getting more expensive. To handle this issue, some service providers open call centers at countries with low currencies exchange such as India, Philippine and South American countries. These countries can provide cheap workers with acceptable English proficiency. This idea is actually applicable but only to customers and partners in a country with cheap telecommunication service. Certainly, customers and partners in Malaysia will not be willing to pay for this call. Thus, the first

problem here is the operation cost. Moreover, cost is another issue if a service provider wants to have a “twenty-four by seven” support center with human services. Even, if there is a need for “on-call” support, an automated system will at least minimize the cost of operation for this scenario.

Using human, as usual will create higher chances of having human error, thus using an automated system will lessen human intervention, therefore lessen human error.

Furthermore, the manual system is not capable to contributing enough information for better CRM. This is true because every support request made is most likely not to be recorded. Even if it was recorded, the data are only good enough for reference in short time. It is hard to maintain more data on papers, doing statistic and analysis will be harder. This will also take more time and effort, making this altogether to be unworthy process. Eventually, this will create more unstructured or unformatted or hard-to-track information on the service provider’s site or even no information at all – another information dead end. Whilst with automated system, this information will be recorded in structured manner and making it accessible for analytic process in just a few clicks.

Because of it is hard to have a knowledge base with a manual system, there will most likely to be no statistical charts or reports produced for the operation. The reports are potential guides for marketing campaigns and smart decision makings. Thus, with manual system, it is a straight forward waste of information as a resource.

With manual system, it is very hard to trace the support engineers, customers and partners involved in any case. The issue will be clearer when the service provider needs to track these responsible people after some time, let say a month or year. Another issue with not much discrepancy from the earlier is the hardness to track these people’s involvement quantity and quality with manual system. Those are not issues anymore with an automated system.

Although there are a lot of help desk software in the market, most of them failed to satisfy the real need of an automated help desk. Current automated solutions for help desk are known with issues that will be discussed through the following paragraphs.

To set up a help desk system will take some time. This issue will vary from the complexity of the system to the needs of the service providers. Some solutions sold on



the internet even stated that the four days of set up is not guaranteed, more days with the vendor's support will entitle more payment to the vendor. This is still not considering the time to be taken to train the system's users. The scenario will become worse when it's happening to an overburdened support department. Thus, a more generic and manageable system especially during setup with a high usability should be built.

Moreover, there are a few features lacking from a current standard automated help desk system such as automatic notification tools, up-to-date knowledge base, users involvement (in terms of quantity and quality) monitor and file-attachment-on-ticket tool. These are the key features that will help service provider greatly improve customer service, significantly decrease call resolution time, and free help desk support call engineers from performing routine tasks. This project will have some of these features. This will be detailed over the scope section.

Last but not least, current standard automated system provides bad user interface in terms of look-and-feel and usability. The service provider will found their costs quickly escalating when they use automated help desk with poor user interface design. Such cases are like; users to go through numerous windows and screens to access the information they needed. Using the software will undoubtedly add more time to each call and more time will cause financial penalties. Even if the service providers are providing toll-free lines for their customers or partners, this will eventually create bad customer service. Plus, the excessive number of screens will contribute to easier system crash due to tougher memory handling load it caused.

## 1.4 Objective

The objectives of doing this system are defined as the followings:

1. To build enterprise-scale web-based software.
  - Enterprise-scale software is software that will carry a lot of functionalities with it. It will also promise efficiency in performance-wise and security-wise. Other than that, enterprise-scale software will

be very flexible for necessary modifications. The software will be assured to have long life and its usage will provide a way for cost-effectiveness in production.

2. To master the skills in making a real enterprise web-based software.
  - Developing these applications will need real strong knowledge of the methodology, server-side language and client-side language.
3. To provide more value added solutions for CRM automation in the help desk fields.
  - This is by ensuring the system will not only be feasible, having high security and performance but will also help to create higher profit for the companies using it. Thus, it will be able to handle the issues stated in the problem statement.
4. To make sure the project will not only be satisfied by KUTKM as a final year project but also by Program DNA Sdn. Bhd. as their commercial product.

## 1.5 Scope

The scope of this system is to provide automation for the help desk operation. The system will become as generic as it will be usable by any company with the same business flow when it comes to help desk operation.

The system was originally requested by Program DNA Sdn. Bhd. Hence, apart of being the final year project, it will be used as one of their automated CRM solutions used by the company and as their legal product to be marketable. The system will be build for the Microsoft Windows platform. The deliverables will be provided on the basis of the project schedule as granted by the committee of the final year project of Fakulti Teknologi Maklumat dan Komunikasi (FTMK) at Kolej Universiti Teknikal Kebangsaan Malaysia (KUTKM). These deliverables will be produced in campus area rather than on



the case study's site. The size of the project will be as large as it takes to accomplish its objectives and scope.

The system will be build in three distinct modules namely – setup, operation and reporting.

The setup module will be used by service provider through its support managers. The support manager which is registered with the system will create the customers information. He will also create and maintains project profiles or product profiles in the system. Each registered users will have the privilege to update their own password once created. Only support manager will have the access in this module. Other than that, this module will have its lookup setup sub module. This is to enable the system's lookup values to be created and updated.

Next is the operation module. Under this module, the concerns from the customers will be renowned as ticket. Each customer or partner will construct the tickets details regarding their concerns.

Tickets will be auto-allocated by the system to respective support engineer. However, the support manager can reallocate the tickets as necessarily. From here, the support engineer will update the ticket's status over time of working on the problem. The support engineer will also state their current explanation for the ticket assigned to them. The customers can close their tickets. The customers can also continue with their concerns over the closed ticket if they think that their issues are not yet resolved. To close tickets, they will have to state their satisfaction level with the help desk service. Every ticket's date and time of opening, updating and closing will be recorded by the system automatically. Moreover, for the same project, there can be more than one customer involved with the system. There is a sub module in this module which is the system operation sub module. This sub module will ensure the system's security in terms of user authentication and data restriction based on the user account.

The sub module will restrict the areas of usage based on user's profile and user's group. The followings are how the system will be restricted.

1. Support manager – They can access setup module, operation module, reporting module. However they may not edit other support engineers' explanation or checking status over the tickets. They also cannot modify

- the customers or partners' description of tickets and checking status. They can update their personal information.
2. Support engineer – They can access operation module for system engineer. However they may not edit other support engineers' explanation or checking status over the tickets. They also cannot modify the customers or partners' description of tickets and checking status. They can update their personal information. They may also update ticket's status.
  3. Customer – This user group may only construct tickets, update ticket satisfaction level to close the ticket and participate in the ticket resolving process by providing their explanation. They also can update their personal information.

The last module is the reporting module. This module will generate necessary statistical management reports based on the factors involved.

The approach towards completing this project will be the Rational Unified Process (RUP). Aside from this, the component classification standard will follow the e-RAD (Enhanced Rapid Application Development) standardization. Furthermore, there will be warm interactions with supervisor from both institutions for prototypes verification. All this will be detailed in the methodology section.

The system will involve vast usage of current web technologies mainly on ColdFusion MX's technology.



## 1.6 Project Significance

There are significant points that strengthen the need for this system to be developed. The following paragraphs will detail out these points.

The customer support functions in an organization have significant influences over a company's revenue stream. This is a fact because, in order to retain customers' loyalty towards a product or partnership, the service provider must be able to support its customer or partner very efficiently. However, the service provider must make sure that the support service they provide will not be too costly. Here, it came to the need for cheap, fast, friendly support system. From this standpoint, a lot of these service providers invest on automated help desk system as one of their CRM strategies. Yet, there are still issues about having a truly cheap, fast and friendly automated help desk system. Thus, this project will produce the system up to that expectation.

Normally, data involved in the support processes will be wasted because once an issue was solved; it will not bring any more value. Actually, from these historic data, patterns of customers and partners interaction behavior can be traced. This project will take advantage from this fact and produce the system with management reports generator so that more strategic decision will be made quickly and easily. In a longer run, it helps in producing more matured services and products.

More about the reporting abilities, there will be flexible graphical analytical tool based on the needs of the project's case study. The reports will be in the form of graphical charts. All this will ensure that critical understandings and smart decisions can be made faster.

The system applies very strict data validation and ensures high security against user access exploitation.

More than that, it promotes simple to complex data manipulation functionalities throughout its modules, with a very user friendly approach. This makes the product easy to use and very practical.

Last but not least, the system records creation and updating date and time with the creator and updater ID for every records. This ensures that all records are traceable regarding who creates and updates them.



## 1.7 Expected Output

The system will be made out of three major modules which are as the setup module, operation module and the reporting module.

The setup module will be used to manage the lookup data, support engineer profile, customer profile and project profile. Only support manager can access this module and do the necessary insert, update, delete and search operations on the records. Support Manager can see who inserted or updated records under this module at what time and what date.

The operation module will be used to store tickets information. In this module, tickets will be allocated by the system to the support engineers. For flexibility reasons, support manager can reallocate the tickets to the support engineers. Support engineers will update the ticket's checking status as stated in the scope. Every ticket's date and time of opening, updating and closing will be recorded by this module automatically. Through this module, any closed ticket can be reopened by the ticket's issuer. This is to bear with reoccurring cases. Tickets are also updateable by the customers all the way of the process. Last feature on this module is the customers and partners may state their satisfaction level for the help desk service if they would like to close the ticket. This module is actually a forum to solve tickets.

The reporting module will generate necessary statistical reports based on the factors involved. The module will incorporate flexible graphical analytical tool. Such reports will be as the followings:

1. Customer ticket statistics.
2. Support engineer load.
3. Customer satisfaction level.
4. Ticket status statistics.
5. Ticket category statistics.

Each of the reports are subjected to lookup values such as companies involved, satisfaction levels, projects, support engineers, ticket categories and ticket statuses. The reports can also be generated over time of opening and closing date of tickets. There will also be options to choose the graphical report's presentation format.