

HELP DESK MANAGEMENT SYSTEM

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**A report submitted in partial fulfillment
of the requirements for the award
of the degree of
Bachelor of Computer Technology (Software Engineering)**

**Faculty of Computer System & Software Engineering
University College of Engineering & Technology Malaysia**

MARCH, 2005

ABSTRACT

Help Desk Management System is basically a central point where problems or issues are reported and consequently managed and coordinated. In other words, Help Desk Management System is a system for customers support center to find out and deal with the problems logged from the customers through phone calls or self service portal. An effective Help Desk can fulfill customers' needs in providing them the proper solution to solve their problems in a short period of time. The Help Desk Management System that I developed for my project is the Performance Analysis Module of Ardent Helpluz. For the time being, Ardent Helpluz is lack of Performance Analysis Module. Employer is not able to generate any analysis to find out the performance of his company. Therefore, employer could not identify the cause of loss and profit in order to improve the productivity of the company. Hence, Performance Analysis Module plays an important role in a Help Desk Management System. With the development of Performance Analysis Module in Ardent Helpluz, Ardent Helpluz can be enhanced to a more reliable Help Desk Management System.

ABSTRAK

“Help Desk Management System” adalah satu pusat di mana segala masalah atau isu akan dilaporkan dan akhirnya dikaji dan diselesaikan. Dengan perkataan lain, “Help Desk Management System” adalah sistem yang khas untuk pusat perkhidmatan pelanggan untuk mendapat dan menyelesaikan masalah yang dilaporkan oleh pelanggan melalui telefon atau “self service portal”. “Help Desk Management System” yang efektif akan memenuhi keperluan pelanggan dengan membekalkan jalan penyelesaian yang betul untuk menyelesaikan masalah mereka dalam masa yang singkat. “Help Desk Management System” yang saya bangukan sebagai projek saya ialah “Performance Analysis Module” yang diintegrasikan dalam “Ardent Helpluz”. Sementara ini, “Ardent Helpluz” kekurangan “Performance Analysis Module”. Maka, pihak pengurus tidak dapat menjalankan analisa ke atas pencapaian syarikatnya. Oleh itu, pihak pengurus tidak dapat mencari punca kerugian dan keuntungan syarikatnya supaya dapat meningkatkan produktiviti syarikat itu. “Performance Analysis Module” memainkan peranan yang penting dalam sesebuah “Help Desk Management System”. Dengan adanya pembangunan “Performance Analysis Module”, “Ardent Helpluz” dapat dipertingkatkan ke sebuah sistem yang efektif.

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LIST OF ACRONYMS

MTBF	-	Mean Time Between Failures
SLAs	-	Service Level Agreements
IT	-	Information Technology
SMS	-	Short Message Sending
FAQ	-	Frequently Asked Question
RCA	-	Root Cause Analysis
RAD	-	Rapid Application Development
SDLC	-	System Development Life Cycle
UML	-	Unified Modeling Language
PAM	-	Performance Analysis Module
J2EE	-	Java 2 Platform, Enterprise Edition
J2SE	-	Java 2 Platform, Standard Edition
GUI	-	Graphical User Interface
SRS	-	Software Requirement Specification
SDD	-	Software Design Document
URL	-	Uniform Resource Locators

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This thesis is about Ardent Helpluz (a Help Desk Management System) and its Performance Analysis Module which acts as an additional benefit for both the clients (companies that use Help Desk) and also the customers (users who bought products from the companies mentioned before this). In order to let more people understand about the importance of Help Desk Management System in today's business and service, this thesis is produced to explain more detailed on it. Before Help Desk Management System is developed, people tend to go to the service center or the shop where the product is bought to get the problem fixed. Most of the time, even the shopkeeper cannot find out or fix the problem immediately, therefore, the customer is asked to leave the product there for a few days. What happen if the customer needs to use the product immediately? Hence, Help Desk is here to solve this problem.

1.2 What is Help Desk Management System?

The Help Desk Management System is essentially a central point or support center through which problems or issues are reported and subsequently managed and coordinated. From a general or wider perspective, it is an integral part of the service function, responsible for bringing resources together to address a problem or other issue.

Help Desk users can of course be internal or external, making the function potentially critical in terms of both the organization's smooth running and the quality of support offered to customers. The Help Desk Management System that is being studied about and developed as a project is called Ardent Helpluz and its Performance Analysis Module.

1.2.1 Performance Analysis Module

Performance Analysis Module of Ardent Helpluz is a powerful and helpful subsystem which provides engineer performance analysis, product quality analysis, fast and accurate reporting, system early warning, resource allocation or relocation analysis, root cause analysis, and product Mean Time Between Failures (MTBF). Performance analysis plays an important role in identifying the value of a Help Desk Management System. Inefficiencies in support center performance slow down problem resolution, which adds to the cost of technical support and compounds costs associated with lost productivity resulting from unresolved technical issues. The greatest predictors of successful support center performance are the delivery of high-quality, cost-efficient, and timely problem resolution Help Desk Management System. Inefficient support centers that are failed to meet Service Level Agreements (SLAs), will only frustrate end users, and demoralize Help Desk staff and management.

1.3 Problem Statement

In the meantime, Ardent Helpluz is lack of Performance Analysis Module. Employer is not able to generate any analysis to find out the performance of his company based on the functionalities mentioned above. For example, by generating engineers' performance report, the performance of the engineers in solving the problems can be evaluated. Employer gets to know who are the ones who can perform by looking

at how long he takes to solve the problem and who are the ones who are actually working by looking at how many work he is handling. By doing so, Employee can decide whether he should continue employ those engineers.

1.4 Objectives

The objectives of this project are:

- (i) To enhance the functionality of the Ardent Helpluz by developing the Performance Analysis Module in it.
- (ii) To be able to generate and customize reports in .txt file according to the functionality provided in the Performance Analysis Module.
- (iii) To ease the work of employers and managers in terms of lessening their time taken to produce report.

1.5 Scopes

Ardent Helpluz is a web-based application, meaning that the Performance Analysis Module will also be developed as web-based application. This application is using Java language for development. This system is interacting with database through MySQL. The Performance Analysis Module is to provide an array of information for customer support and service managers to ensure performance and customer satisfaction. The Performance Analysis Module allows users to have highly customized reports that cater for their entire reporting needs. In order to produce a successful Performance Analysis Module, it is necessary to study about the whole Help Desk Management System. The scopes of this project are:

- (i) To create the interfaces of the Performance Analysis Module.

- (ii) To interact the interfaces with the existing database of the Ardent Helpluz.
- (iii) To generate reports of performance analysis according to the functionality provided in the Performance Analysis Module.
- (iv) This system is using Windows platform.
- (v) This system is a web-based application.
- (vi) This system can be used by both the clients (companies that use Help Desk to manage their customer services) and also the customers (users who bought products from the companies as mentioned).
- (vii) Tool used for create interfaces is Macromedia Dreamweaver MX.
- (viii) Tools used for coding are TextPad and JCreator.
- (ix) Tools used for database are MySQL and WinSQL.

CHAPTER 2

LITERATURE REVIEW

2.1 Problems Occurred in Today's Help Desk Management System

Providing cost-effective information technology (IT) support in today's rapidly changing computing environments is a challenging, frequently frustrating, and sometimes seemingly impossible task. According to *Right Answers*¹, today's organizations have implemented two types of support for end-user: staff support center and self-service portal.

(i) Staff Support Center

This group consists of technical professionals who are available by phone or by email to resolve users' problems. The staff members are increasingly equipped with real-time collaboration tools that improve efficiency but still require a one-to-one relationship between a support analyst and each problem presented.

(ii) Self-Service Portal

This portal provides tools that allow users to troubleshoot, diagnose, and fix their own technology problems. Organizations will often implement a self-service portal to augment support-hour availability, provide a means

¹ Right Answers (The Knowledge-Pak Company), "Improving Help Desk Performance with the Knowledge-Enabled Support Center.", pp. 1 - 8.

to open tickets when the support center may not be staffed, or let end users check the status of previously opened tickets.

2.1.1 Staff Support Center

Staff support center is a typical support center operates on a call center model. Inbound requests (tickets) are received from users, and Tier-1 agents attempt to resolve the issues or pass them along to an expert (Tier-2 or Tier-3) for additional diagnosis and eventual resolution. The support center is usually responsible for capturing the end-user and problem information into a ticket in a system that tracks all resolution efforts and centrally manages the information. Sometimes questions are quickly resolved at the Tier-1 level. Very often, they are not. Consider a typical help desk call:

- (i) A caller states a problem. The Tier-1 agent asks diagnostic questions based on that agent's knowledge and begins to formulate possible solutions.
- (ii) If a solution is not immediately apparent, the Tier-1 agent will attempt to duplicate the issue on his or her computer and devise a solution while the caller is on the phone.
- (iii) If the Tier-1 agent is unable to resolve the issue, he or she will consult associates (if any are available), again while the caller is on the phone.
- (iv) If this consultation does not result in a solution, the Tier-1 agent may search the Internet. The results of such a search are unpredictable, and there is no way to assure that the information found there is accurate. Again, this process occurs while the caller is on the phone.
- (v) If at this point the problem is still not resolved, the call escalates to Tier-2.

End users can be impatient and are easily frustrated. Before a caller even reaches a Tier-1 agent, he or she has often had a lengthy wait on the phone because all the agents

are busy going through this process with other callers. In addition, when a support center is underperforming, the challenge compounds with low morale and high turnover, which in turn increases training costs for support center personnel and adds to the overall cost of the support system.

2.1.2 Self-Service Portal

Resolving technical problems by telephone is time-consuming and expensive, especially when calls follow a pattern like the one described above. Many organizations are deploying self-service portals so that end users can resolve problems on their own and can do so with the added advantage of 24x7 (24 hours X 7 days a week) availability. Self-support systems typically work by using one of several models to find answers:

- (i) Questions and answers to navigate to a solution.
- (ii) A decision tree to find information about particular topics.
- (iii) A searchable knowledge base.

The goal of a successful self-service portal is to enable end users to solve their own problems by assisting them in troubleshooting, diagnosis, and resolution through knowledge-enabled systems. Only after failing to resolve their issue is a ticket opened. This step-wise approach assures that simple questions are resolved at the portal level and only problems that truly require a Tier-1 analysts' effort are escalated.

Self-service is an appealing concept, but it can be difficult to effectively implement. If the knowledge base content is not of the highest quality or is difficult to search or navigate, frustrated users will abandon the system and not return. Often, users will work through a troubleshooting matrix without ever finding information specific to their issues, or they will wrack their brains thinking of different ways to pose their questions without ever getting the answers they want. Frequently, users will search a

knowledge base only to find a great deal of information but nothing that answers their specific problem. In frustration, they may turn to Internet search engines. There again, they are often presented with countless search results, but the solutions they find are often unreliable, untested, or even occasionally malicious. In the end, frustrated end users will call the help desk, which defeats the purpose of implementing a self-service portal.

2.2 The Complete Solution - Ardent Helpluz

According to *Ardent Solution*², Ardent Helpluz is a powerful incident management tool that allows organizations to develop and deliver services to support their customers across any business size. Ardent Helpluz does not only aid companies to provide their support services worldwide, it also raises their service level. With such catalyst in place, business growth and increase of customers will be inevitable.

2.2.1 Core Modules

This comprehensive suite of customer service helpdesk solution comprises in itself the following four core modules. **Figure 2.1** shows the diagram of the core modules and sub module of Ardent Helpluz.

- (i) Service Request Management
- (ii) Service Level Management
- (iii) Support Resource Management
- (iv) Management Information and Reporting

² Ardent Solution Sdn. Bhd., company that developed Ardent Helpluz, a Help Desk Management System.

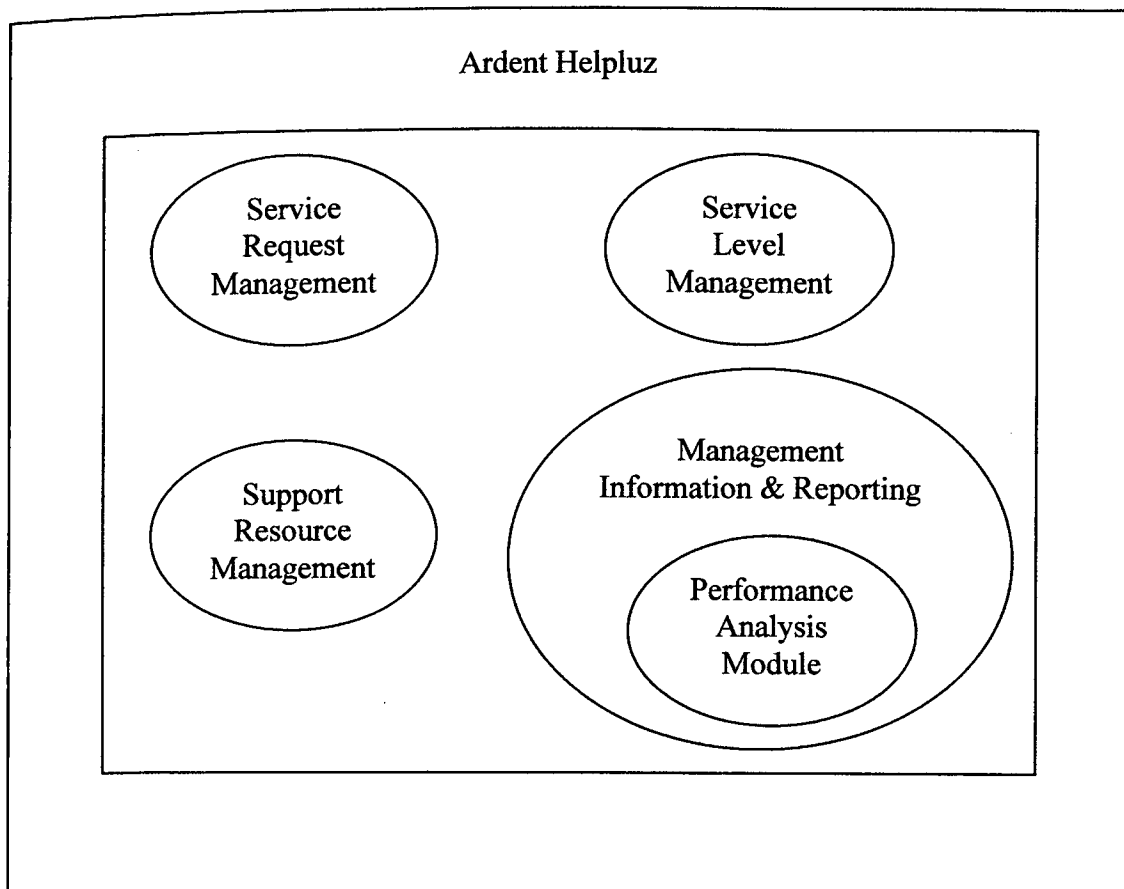


Figure 2.1: Core Modules and Sub Module of Ardent Helpluz

2.2.1.1 Core Module 1: Service Request Management

In the first core module - Service Request Management, Ardent Helpluz provides a reliable operational repository to ensure customer and contract information is always the latest. It allows organizations to track maintenance contracts and warranty schedules of the products and services supplied to customers that are all keys towards a successful relationship with clients. Maintaining such customer information at the heart of the support environment will provide fast response to issues. Customer service and support teams will be able to quickly identify problems and rectify them in the shortest time frame possible. Such control is needed to manage customers through critical times and assists change management teams to schedule resources on a structured and prioritized

basis. Product and service lifecycle will be improved while providing the reporting and metrics for line-of-business decision analysis.

2.2.1.2 Core Module 2: Service Level Management

Next, the second core module - Service Level Management. Ardent Helpluz supports a configurable scheme of Service Level Agreements (SLAs). The SLA model, while tracking a request, generates escalations and displays alerts in compliance with the response and fix deadlines stated within customer support contracts. Ardent Helpluz's SLA mechanism is a comprehensive time measurement module provided as part of the core application to support call assignment and complex escalation rules.

2.2.1.3 Core Module 3: Support Resource Management

Then, the third core module - Support Resource Management. With provision of first class support services in mind, it is of the utmost importance to ensure the availability, effectiveness and utilization of resources. Ardent Helpluz provides a real-time view of the current support and service activities with summaries of personnel and group workloads. This allows appropriate utilization and selection of resources when assigning or escalation requests.

2.2.1.4 Core Module 4: Management Information and Reporting

Finally, the last core module - Management Information and Reporting. Ardent Helpluz provides an array of information for customer support and service managers to ensure performance and customer satisfaction. The reporting tool provided in Ardent Helpluz allows users to customize reports according to their needs. Additionally, managers needing real-time information to facilitate resource management and to help define resolution activities on-the-fly will be provided with latest statistical views on the requested data on screen.

2.2.2 Key Features

The key features of Ardent Helpluz are essential to determine its strength.

- (i) **Web-based Customer Access**
Allow customers to view their own personal online help history of all service requests via the support portal.
- (ii) **Customer Request Management**
Create a new case record for each customer support request. Each new request creates a unique ticket number and all the new requests containing ticket number are linked with the original request.
- (iii) **Ticket Escalations**
Define escalation policies. Ticket will be automatically escalated depending upon various parameters that will be set.
- (iv) **Service Level Agreement (SLA) Management**
Define SLAs for customer groups with features like auto notifications, escalation, routing.
- (v) **Knowledge Management**
Comprehensive Knowledge Management can solve customer queries in matter of minutes.
- (vi) **Email or SMS Notification**
Receive email or SMS confirmations when tasks are created, assigned or completed.
- (vii) **Online Contact Repository**
Store up-to-date contact information pertaining to customers.
- (viii) **Reports**
Highly customizable reporting modules that caters for user's entire reporting needs.
- (ix) **History of Activities**
Track down history of activities for each request, including status and resolution to each case.

- (x) **Define Customer Permissions**
Verify the identity of customers and grant the appropriate privileges to entitled users.

2.2.3 Functionality of Performance Analysis Module

2.2.3.1 Engineer Performance Analysis

- (i) Accurate Engineer Performance Assessment based on call information.
- (ii) Based on the engineer strength analysis employer can identify necessary training and retraining if it is necessary for the engineer.
- (iii) Task assignment efficiency can be improved based on engineer strength.
- (iv) Reward system can be implemented for best performance engineer.

2.2.3.2 Product Quality Analysis

- (i) Identify Frequent Support Question asked by customer; continue improvement of product can be implemented for quality improvement.
- (ii) Knowledge based can be build based on Frequently Asked Question (FAQ). The FAQ can be distributed as user manual or instruction manual.
- (iii) Mean Time Between Failure (MTBF) report can be generated.
Recommendation for preventive maintenance for customer owning the product would be possible.
- (iv) Identify problematic product and provide feedback to production/supplier to improve product quality hence reduce cost of maintenance.

2.2.3.3 Fast and Accurate Reporting

- (i) Report can be generated within minutes with minimal manual intervention.
- (ii) Minimized the needs of spending long hours in preparing performance reports.
- (iii) The resources can be reassigned to perform other more efficient task such as providing better customer services.

2.2.3.4 Early Warning System

- (i) Problem related to product can be identified and rectified.
- (ii) With this information, customer satisfaction can be improved as the reliability of product can be improved.

2.2.3.5 Resource Allocation/Relocation

- (i) Identify branches that require additional resources based on the Help Desk trending analysis.
- (ii) Justification of resources can be done easily based on the needs of branch.
- (iii) Resource acquisition can be done based on the study of the Help Desk trending.

2.2.3.6 Root Cause Analysis (RCA)

- (i) To reduce cost and increase productivity, all Help Desks should utilize root cause analysis (RCA) as an integral part of their continuous improvement strategy and as a best practice.
- (ii) Root cause analysis in a Help Desk environment is like finding the preventive cure, i.e., the fix that prevents the problem from occurring.

- (iii) This will not only reduce the overall cost of support, but it will increase the productivity of those that benefit from the reduction of repetitive problems, creating a "win-win" situation for the company.
- (iv) Implementing root cause analysis in a Help Desk environment is an entire process.
- (v) This white paper provides the fundamentals that one need to implement an effective RCA process.

2.2.3.7 Product MTBF Analysis

- (i) Short for Mean Time Between Failures, the average time a device will function before failing.
- (ii) MTBF ratings are measured in hours and indicate the sturdiness of hard disk drives and printers.
- (iii) Typical disk drives for personal computers have MTBF ratings of about 500,000 hours.
- (iv) This means that of all the drives tested, one failure occurred every 500,000 hours of testing.
- (v) Disk drives are typically tested only a few hours, and it would be unlikely for a failure to occur during this short testing period.
- (vi) Because of this, MTBF ratings are also predicted based on product experience or by analyzing known factors such as raw data supplied by the manufacturer.