SECURE OPEN SOURCE WEB BASED HELPDESK SYSTEM

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ABSTRACT

Secured Open Source Web Based Helpdesk System is a helpdesk management system for the Secured Mail Unit, Malaysian Ministry of Foreign Affairs. It is an online system which was developed to facilitate and manage the incoming complaints from various users in the Malaysian governmental ministries. Previously, it was performed manually by using a log book and jobs were assigned based on the log book's records. This system was developed using PHP as the primary programming language and MYSQL as the database. Three categories of users had been created to manage the system: normal user, supervisor and admin. Every categories of user has their own responsibilities and privileges in accessing the system. The security features such as MD5 for message digest algorithm is one of the functionalities used to secure the saved password in plain text to an encrypted form which cannot be easily interpreted. It works by applying the cryptographic hash function which uses the 128 bit hash value. This functionality had been employed in a wide variety of secured applications and commonly used to check the data integrity. This system is capable to record all the complaints received, show the status of the complaints and monitor the progress of each complaint. It will segregate and distribute the incoming requests to the technical support staffs and their respective supervisors based on each team's capabilities. Besides that, it is also generates report periodically that supports managerial decision making process.

Keywords: *Helpdesk System, Decision Support System, Management Information System, Malaysian Government*

1. INTRODUCTION

Secured Open Source Web Based Helpdesk System is a helpdesk management system [1] for the Secured Mail Unit, Malaysian Ministry of Foreign Affairs. The system's coverage includes 150 workstations at 104 embassies abroad and 46 locations within Malaysia. The computing devices are customized equipments from several vendors [2] based on the Malaysian government's specifications and security parameters. Prior, the operations of the helpdesk service is performed using a manual practice whereby each report is received by phone or email and logged into the log book. The supervisor will then distribute the task to its respective technician depending on the availability, skill and rotation of job. After the corrective action has been taken, the technician will updated the log book according to the task's status and endorsed by the supervisor. The notification to the user's request was not promptly performed [3].

This requires the user to inquire about the problem's status manually (phone or email) if the user's request consumes a longer period of time to solve [3]. The task delegation process does not fully optimize the available resources. In certain cases, its causes underutilization of the technicians and supervisors [3]. Besides that, there is no reporting mechanism that provides managerial reports, specially monthly and yearly appraisal for technicians and their respective supervisors. The management needs to manually formulate these time consuming reports and it is prone to human-errors [3]. Task supervision was based on the log book only. If the technical staffs did not update it, the supervisor will assumed the task was not done and it will affect the credibility of the respective technician [3]. In the reporting process, the supervisor need to calculate manually each task performed and recorded in the log book accordingly for each technician.

2. LIMITATIONS OF MANUAL LOG BOOK PROCEDURES

The According to a survey conducted among major stakeholders which includes technicians, supervisors and operational staffs in the Malaysian Ministry of Foreign Affairs, the current log book based operational procedures has several limitation in term of: (i) No specific format and procedures for an incoming request in the log book (ii) Duplication of data exist when double entries of a certain task are recorded in the log book (iii) Status of the task is not updated. The client and supervisor are unable to monitor the progress of each task assign to a particular technician (iv) No standard procedures for the task delegation process among technical staffs. It solely depends on the supervisor's experience in assigning task to technicians and resolving conflicts (v) Reporting procedures does not support managerial decision making process. Furthermore, the finding also reveals several issues regarding the standard operational procedures among the technical and operational staffs: (i) Telecommunication cost occurs, especially during the troubleshooting process (ii) No supervision on the procedures to complete an particular task (differs in-term technician's experience and expertise) (iii) Past solutions for recurring task is not fully utilized (iv) No standard procedures for utilizing the operational data for strategic planning purpose. The limitation and issues concerning the manual log book based procedures are summarized in Figure 1. The integrated Secured Open Source Web Based Helpdesk System is developed as a solution for these limitation and issues that hinders the technical support services provided by the Malaysian Ministry of Foreign Affairs [4].
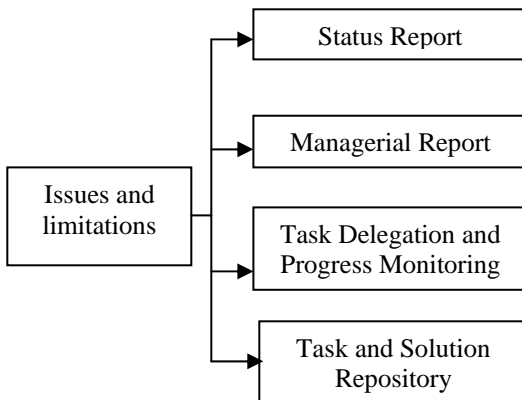

Figure 1. Issues and limitations

3. DEVELOPMENT METHODOLOGY

Waterfall Model [5] is the primary development methodology that comprises the following steps: (i) Planning - Preliminary phase for the system development whereby the planning process aims to identify suitable initial methodology for the system development process (ii) Analysis - This phase involves analyzing the current system to identify the common problems that exists and its recommendations (iii) Design - This phase involves the design process whereby the classification priority based on the system requirements will be analyze to form a comprehensive solution proposal for the system design and development (iv) Implementation - This phase involves the translation process from the design phase to the programming and coding process to form the system inline with customer's needs (v) Testing - This phase validate and verifies the information received and its effectiveness in accessing and receiving data from the database (vi) Maintenance - This phase involves the results of its daily operations whereby it will enhance the capability of its functionalities besides ensuring smooth system operation [6]. The various data will be tested on selected database and files to record the compatibility test on various environment and platforms [7].

4. SECURED OPEN SOURCE WEB BASED HELPDESK SYSTEM

Secured Open Source Web Based Helpdesk System is a platform independent web based information and assistance resource that troubleshoots problems with computing devices for the Malaysian Ministry of Foreign Affairs. It was primarily developed using Open Source technology (Apache Web Server - XAMPP 1.7.4 and MySQL) with reference to the Malaysian government's Open Source Technology adaption plan. It consists of 4 modules: complainant, supervisor, technical support staff and management staff. The modules are illustrated in Figure 2. The users are categorized into 3 user groups: operational user, supervisor and system administrators. The operational users consists of technical staff which include clerk and technician, officers in the Malaysian embassies abroad, head of departments and units in the Ministry of Foreign Affairs. The supervisors are senior technician and programmer elected by the Head of ICT. System Administrators consists of senior programmer and system analyst elected by the Head of ICT. The screen designs are shown in

Figure 3-7. The screen is design based on the potential user's preference and acceptance [8].
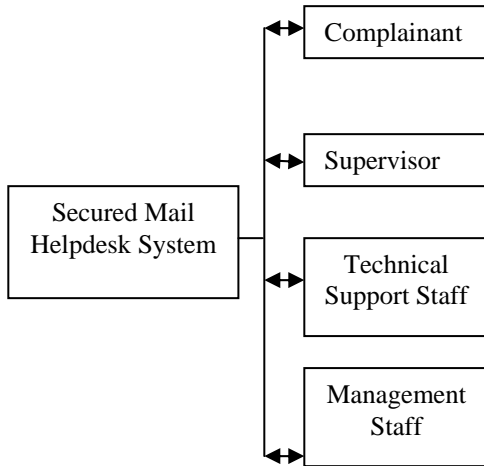

Figure 2. System's Main Modules (4) that caters 3 types of user as illustrated in Figure 1.

The screen design process is optimized for a web-browser based environment. The user's design pattern of preferences is discovered through a series of interviews among the potential users as illustrated in Figure 2. During these interview sessions, selections of mock-up screen designs were presented to these potential users.
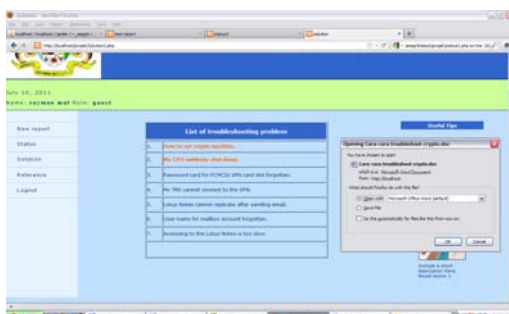

Figure 3. Main Screen
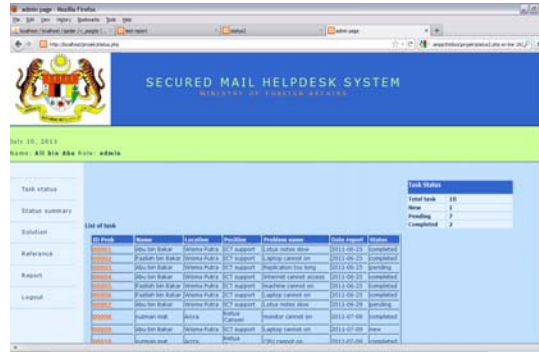

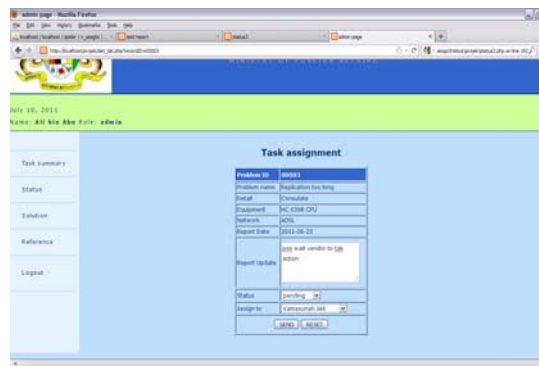Figure 4. List of common troubleshooting task

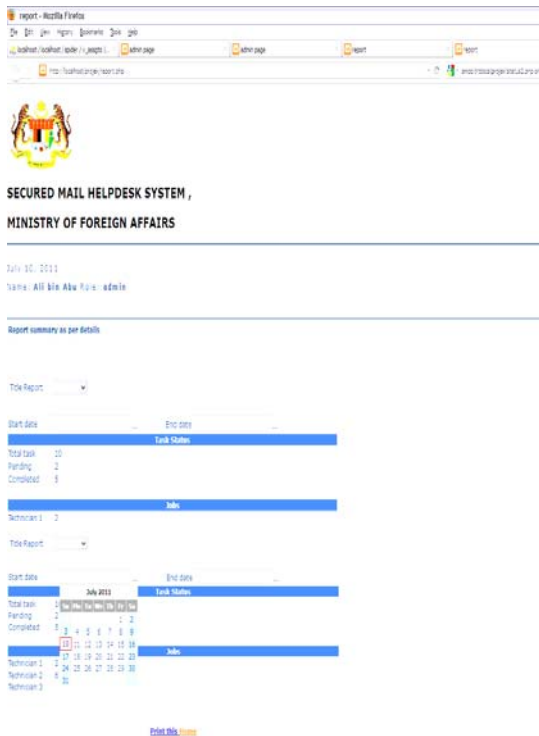

Figure 5. List of Task

Figure 6. Assigning Task

Figure 7. Managerial Report Generation

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5. CONCLUSION

Secured Open Source Web Based Helpdesk System was developed for the Malaysian Ministry of Foreign Affairs. The requirements of the operational staff, clients and management committee were taken into consideration because they represent as the major stakeholder of the overall system's daily operations. It represents a significant contribution in-term of Open Source Technology integration and adaption initiative in the Malaysian government. Initial testing was conducted in the development lab and various errors were rectified. Currently the system is deployed and being utilized for a limited service within the Malaysian Ministry of Foreign Affairs and selected foreign embassies. Numerous reported are recorded for improvement and its full scale deployment. Continuous improvements plans are planned as the maintenance efforts. As for future implementation plan, Mobile Secured Open Source Web Based Helpdesk System is proposed that enables users to interact via mobile web based technology.

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