



Research Article

WEB-BASED SANITARY PERMIT MODULE: A GOVERNMENT-ACADEME PROJECT PLAN

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ABSTRACT

A sanitary permit is issued by the local health authority for an establishment to operate, be it food or not food establishment. With the responsibility of ensuring safety, the development of a Web-based Sanitary Permit Module helps the Sanitation Division of the City Government of Malolos, Bulacan in the processing of sanitary permit to establishments (food or not food) applying or holds existing business permit. The Sanitary Permit Module logs the history of visits of the sanitary inspector and records the behavior of an establishment, including sanitary violations. Gathered sanitary data was identified, and then presented to the City Health Office for validation and approval. The sanitation permit documents apply the necessary regulations from the Local Government Unit of the Sanitation Division focuses on the range of the needs of automating the issuance of sanitary permit to an establishment and covers the following processes such as revoking permit, monitoring sanitation and other processes under the City Health Office of the Local Government Unit of Malolos, Bulacan. The project, however, does not cover the issuance of requirements regarding the requisition of sanitation permit, health certificate and sanitation request form. Thus, the Sanitary Division received sanitary requests from the business permits section.

KEY WORDS: Sanitary Permit Logs, Sanitary Inspection, Automation Permit, Local Government Unit, Health Office.

INTRODUCTION

The City Mayor of Malolos, Bulacan Atty. Christian D. Natividad recognizes the essential role of the academe as the main source of productive citizen for country's growth and development. In order to stimulate the academe resources for the purpose of supporting the area of research, systems design and development of automated systems for various offices of City Government of Malolos the local government is willing, to impart and guide the students and faculty of the College of Information and Communications Technology of Bulacan State University in cooperation with the College Dean Prof. Jaime P. Pulumbarit, together with the College Extension Coordinator Engr. Rosemarie Bautista, and Capstone Project Coordinator Jane Kristine G. Suarez and the

members of the faculty, the need of automating the various offices of the local government. Thus, the partnership between the local government and the academe will create a mutual benefit in developing a stable and reliable automated system for the local government unit.

The project will be using the Open Source Initiatives approved licenses widely utilized by the IT industry. Local Government Unit automation was divided into modules which correspond to various offices that require or must have an automated system installed. Systems such as Real Property Tax Assessment System (RPTAS), Business Permit and Licensing System (BPLS) and Treasury Collection already exists in the Local Government Unit. Thus, these were not included. The project will be developed per module distribution and integrated in a centralized local and remote server.

BACKGROUND OF THE STUDY

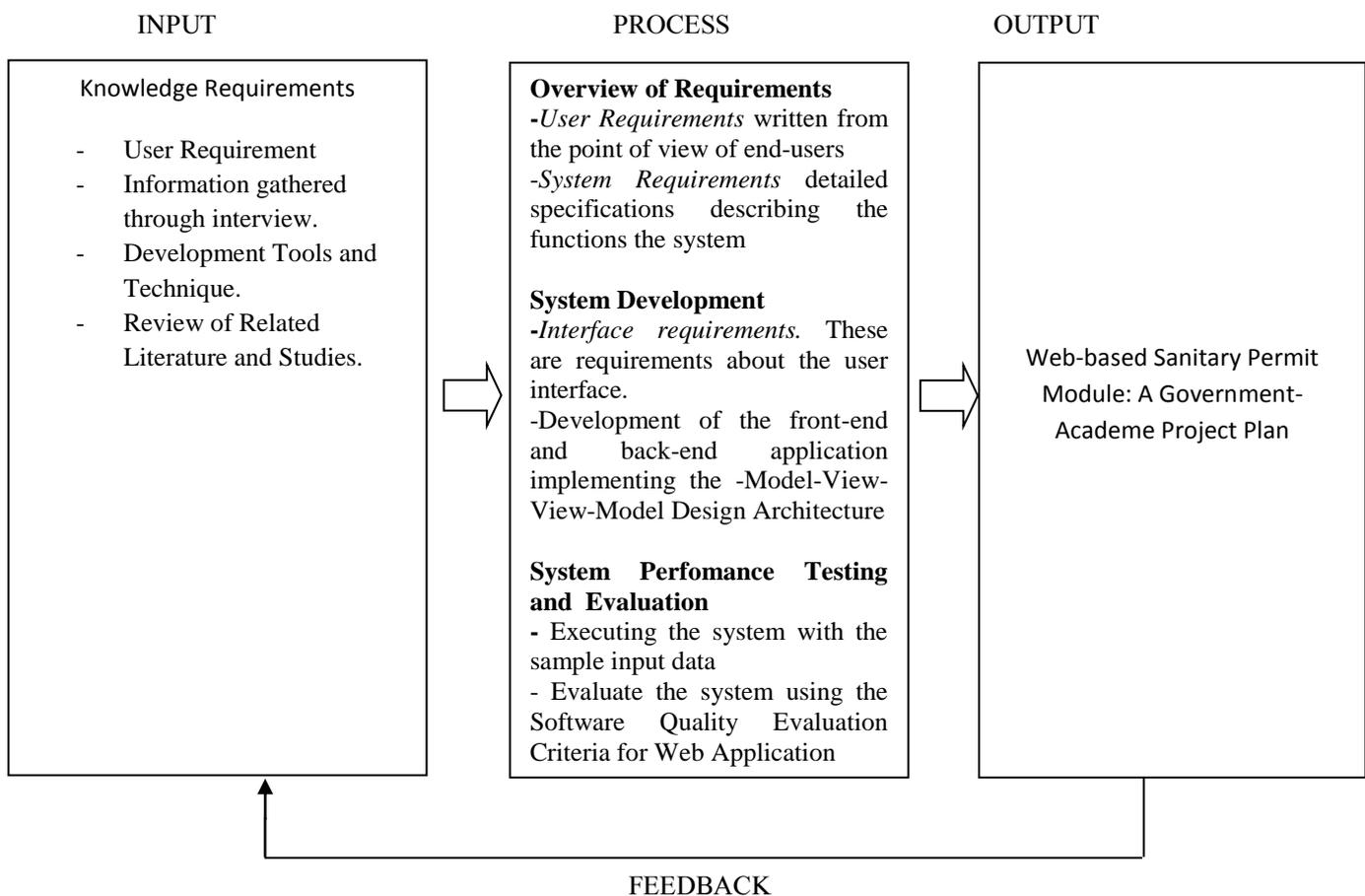
The head officer of the City Health Office, Mr. Jose Eric G. Soriano was interviewed on how the assessments were conducted in monitoring establishment conditions inside the City Health Office. Queries regarding the monitoring process were raised. Along with the interview process, the medical practitioner’s concerns were voiced-out and recorded. The researcher obtained a copy of the monitoring flow process, samples of vital documents in evaluating sanitation of establishments, and their standard rules and regulations. The in significant data were eliminated, and required data were organized for the documentation. The system works in parallel with the present business rule in sanitation monitoring used in City Health Office through the gathered data. These requirements serve as resources in making a dynamic system capable of enhancing the present operations of the existing monitoring system. The current manual system of issuing, revoking, inspecting and establishing sanitary provisions faces problems that affect the quality of work within the employees. An estimated

1000 people, each day, inquire and request sanitary permits and health certificates which create bulk paper works and because limited computer was being utilized by the department, work is slowed down.

Conceptual Framework

The study Sanitary Permit Module for the City Government of Malolos follows the process called IPO that stands for Input-Process-Output. The IPO model is a general system model and used to convey systems overview and it is a preliminary investigation tool in systems processes as shown in Fig. 1 the first frame of the diagram is the input which refers to all Knowledge Requirements for the development of the system. The following requirements include User Requirement, Information gathered through interview, Development Tools and Technique and the Review of Related Literature and Studies that define the system process.

Figure 1: Theoretical Framework



The second frame is the processing side which includes different stages. The first stage includes planning and analysis which discusses the overview of the requirements such as User Requirements written from the point of view of end-users, System Requirements which presents the detailed specifications describing the functions of the systems and under Systems Development the Interface Requirements was established through the use of front-end and back-end application implementing the Model-View-View-Model Design Architecture. System Performance Testing and Evaluation was executed with sample input

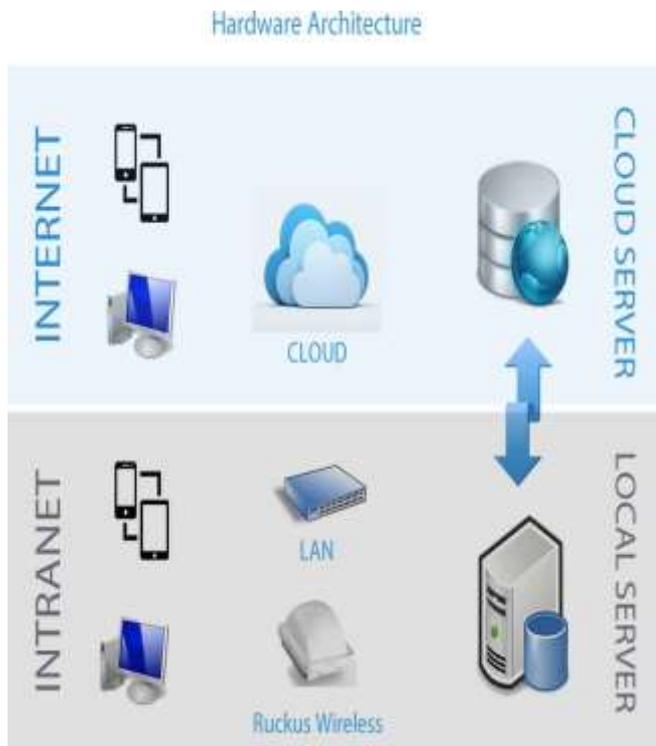
data and evaluation of the developed system was performed using the Software Quality Evaluation Criteria for Web Application.

The developed Sanitary Module for the City Government of Malolos includes user training and software installation. The maintenance part will accommodate all necessary enhancements to the system as well as correction of any error encountered. The last frame is the output of the study which is a fully functional Sanitary Permit Module for the City Government of Malolos.

Hardware Architecture

The hardware architecture of the local government automated system presents a configuration based on existing hardware of the city government offices and new hardware required. It was built on the Intel® Xeon® E3-1200v2 product family architecture, using one physical server. Additionally, the logical perspective was provided as well. Finally, estimates of the system’s throughput regarding hardware resources/load are provided.

Figure 2: Hardware Architecture



Software Framework

The local government automated system will be the widely used open source software architecture, commonly known as LAMP (Linux, Apache, MySQL, and PHP). Building the web application that will run seamlessly in both local and cloud. Moreover, maintaining source codes will be much easier for the project. The project utilized an online source version repository (SVN) which provides easy access to students in uploading and test their work. Also, downloading libraries created by another group can be done to maximize the core of the system.

PHP Framework

Laravel is a web application framework used in the majority of web projects with expressive, elegant syntax. It attempts to take the pain out of development by easing common tasks such as authentication, routing, sessions, and caching.

Frontend Framework

Twitter’s Bootstrap is an excellent set of carefully crafted user interface elements, layouts, and javascript tools, freely available for web design project.

Figure 3: Software Framework



Table 1: Module definition

No.	LGAS021
Department	City Health Office
Module	SPM – Sanitary Permit Module
Description	With the responsibility of ensuring food safety, this module helps the Sanitation Division in issuing sanitary permits to establishments applying or holds existing business permit. The modules logs the history of visits and behavior of an establishment, records the violations and actions provided by the owners of the business. This module will provide access to dependent units such BPLO in issuing or revoking business permits.

EVALUATION AND INTERPRETATION

This section presents the analysis, interpretation and implication of the summarized test results, as well as the observation on the limits of the system capabilities. It also discusses the results and evaluation of the data. To determine the summarized results, the researcher gathered all the data through the evaluation of the system.

The respondents of the study consisting of six IT Experts (6), City Health Office Employees (14) and IT Students (34). The analysis and presentation of the tables discuss the overall mean distribution in each of the criteria. It also shows the description that ranges from Poor, Fair, Good, Very Good and Excellent as the highest interpretation of the mean distributions.

Table 2: Respondents of the evaluation

Respondents	Frequency	Percentage
IT Experts	6	11
City Health Office Employees	14	25
IT Students	34	62
Total	54	100

An instrument used to assess the operational feasibility of the system. The following criteria was provided to evaluate the developed system: (a) Functionality, (b) Reliability, (c) Usability, (d) Maintainability and (e) Portability, (f) Training and Documentation.

The researcher used several tools in gathering data needed for the study. During the evaluation, the researcher distributed questionnaires to the respondents from the pool of six experts: an Information Technology Developer / Consultant with three years of experience with system development and five Associate Software Engineers with two years of experience in the IT Industry, and from the target client the developed system was evaluated by the City Health Inspector and City Health Office Employees.

Table 3: Five point Likert type attitude scale

Scale	Range	Descriptive Rating
1	1.00 – 1.49	Poor
2	1.50 – 2.49	Fair
3	2.50 – 3.49	Good
4	3.50 – 4.49	Very Good
5	4.50 – 5.00	Excellent

Table 4: Summary of the weighted mean for sanitary permit module for the city government of Malolos

Criteria	Experts Response	
	Weighted Mean	Description
Functionality	3.95	Very Good
Reliability	3.89	Very Good
Usability	4.19	Very Good
Maintainability	4.1	Very Good
Portability	3.86	Very Good
Training and Documentation	3.81	Very Good
Overall weighted mean	3.97	Very Good

The data reveal that the system was rated “Very Good” regarding of Functionality (3.95); Reliability (3.89); Usability (4.19); Maintainability (4.1); Portability (3.86); and Training and Documentation (3.81). Comparatively lower ratings were given to the system regarding Training and Documentation (3.81). As a whole, the obtained mean value of 3.97 indicates the system was “Very Good,” and recommended for use in City Health Office.

To ensure the functionality of the Sanitary Permit Module for the City Government of Malolos its Functionality, Reliability, Usability, Maintainability, Portability and Training and Documentation was evaluated.

Regarding functionality, the experts graded the developed system as “Very Good” regarding Suitability with a weighted mean of (4.07) which indicates that functions are appropriate to specifications. In terms of Accurateness, the respondent’s mark as “Very Good” with a mean performance of (4.07) which means Functions are correct. Regarding Interoperability, Software can interact with other components or systems the respondents gave a “Very Good” remark with a mean performance of (3.93). The

compliance indicator that defines adherence to standards recorded a mean value of (3.81). The Security Indicator that measures provision for security requirements the respondent’s mark as “Very Good” with a mean value of (3.85). As a whole, the proposed system recorded a mean value of (3.95) which means that the system is excellent regarding Functionality.

The Reliability of the Sanitary Permit Module for the City Government of Malolos rated as “Very Good”: Absence of failures of the system was (3.7) and, Fault Tolerance (3.7) very good. Regarding the ability to produce correct computations, output or reports the respondents gave a “Very Good” remarks with a mean performance of (4.3). The researcher concluded that the system has the capability to withstand client breakdown and hold a particular running application.

The Usability of the Sanitary Permit Module for the City Government of Malolos rated as “Very Good.” Among the four items presented, the systems functions was easy to understand and got the highest mean rating of 4.26 which is “Very Good” as perceived by the system evaluators. The Learnability criterion got (4.0), Operability (4.3) and Provision for comfort and convenience got a mean rating of (4.19). The researcher safely concludes that the system is visually appealing and at the same time easy to learn.

Maintainability of the Sanitary Permit Module for the City Government of Malolos rated as “Very Good”: the ability to identify the cause of a failure within the software got a weighted mean of (3.81) Very Good. The Software adjusts well to different screen dimensions, color depths, and font sizes. Different interfaces can be chosen to suit beginners, and more advanced users got a weighted mean of (4.52) Excellent; and the ability of the software to be easily stability. Characterizes the sensitivity to change of a given system (3.96) Very Good. The researcher concluded that the system exhibited robust maintainability measures and presented a user-friendly interface.

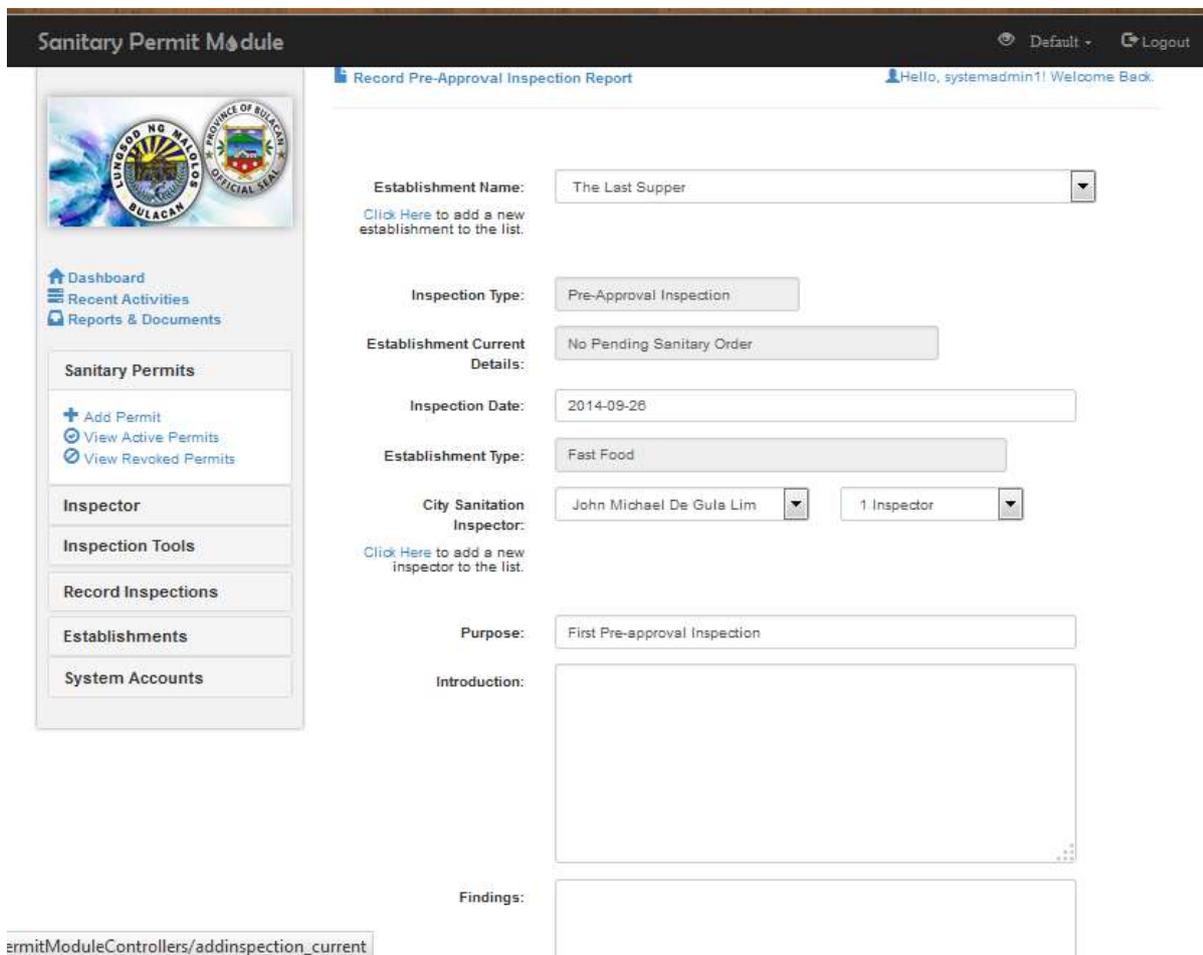
Portability of the Sanitary Permit Module for the City Government of Malolos was rated “Very Good”. The application can change to new specifications or operating environments (3.81) was rated “Very Good”; the application provides different options available for installation, and the software was easy to install (3.78) was rated “Very Good”. Ease of exchanging a given software component within a specified environment and system coupling (3.96) was rated “Very Good”. Regarding the provision for portability of operating system used the system got a weighted mean of (3.81), an absence of other software requirements such as runtime system or standard database management engine got a weighted mean of (3.86).

IT experts rated Training and Documentation of the Sanitary Permit Module for the City Government of Malolos as “Very Good”: every data inserted was accurate and a numerical rating of (4.00) was given with a descriptive rating of “Very Good”; Documentation content was organized in a logical manner and the provision for help component got a weighted mean (3.85) was “Very Good”. The researcher concluded that the system provides guides and printed documentation and all information is readily accessible for reference.

Figure 4: Schedule Calendar of Inspection



Figure 5: Sanitary Permit Inspection Report



CONCLUSIONS

Through extensive findings, the researcher has assessed that the tasks and functions that have been automated such as the issuance and revocation of the sanitary permit, securing records and internal transactions within the inspectors and related establishment information and the generation of reports and documents. Additionally, unstandardized system flows such as inspection frequency and monitoring have been made consistent and follow regulation. Although significant part of the existing system was included into the new Sanitary Permit Module System Flow, which is the subjective analysis during sanitary inspections by the inspectors including their inspection reports and summary. The manual responsibilities and jobs of City Sanitation Inspectors and City Health Office Employees of the Local Government Unit has been reduced. The Sanitary Permit Module has condensed the processes through automation.

The researcher has come to the conclusion that the findings and evaluation data that were conducted and gathered by the researcher have led to a perspective that the Sanitary Permit Module is indeed of great help to the existing system of the City Health Office and have considered the aims and objectives of the client. The researcher tried its best to compensate with new users of computers and computer systems, and although user help information and documentations has been included, it was recommended for proper basic literacy of computers.

The researcher, along with the analysis of the system development, is recommending proper awareness of the provisions and regulations of the law including, Presidential Decree 856 of 1975 and amendments from 1990, Executive Order 522, Malolos City Ordinance No. 43-2006 and pertinent republic acts, both for the inspector and for the citizens. City Health Office employees must also be made aware on how to navigate and utilize computer software as what the Sanitary Permit Module is. Thus, the system will serve as the first step for further technological innovations and inspiration to seek improvements.

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