CLINICAL INFORMATION AND TRIAGE SYSTEM

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ABSTRACT

The Clinical Information and Triage System (CITS) will be introduced to the Medical Department of Polytechnic University of the Philippines – Taguig Branch (PUPT) to handle the collected data from the Health Declaration Form of the system, which will identify the involvements and activities of the guest before their entry in the premises. CITS aims to make a hassle-free process for both parties: the guest, and the admin who is the nurse of PUPT. The web application is made under the Agile Software Methodology for the fast pacing of the capstone timeline. The application is built on the CodeIgniter Framework as the front-end and MySQL as the database management system. Each module has their specific functions designed respectively. The students, faculty, employees, and visitors were the respondents for the user acceptance testing. The administrators had acquired a web hosting service and domain name.

With an administrator of the system, it assured the fast and reliable transactions that need to be reached to the users. The system was tested using ISO 25010 and used as the guide for the User Acceptance Testing survey questionnaire. The system has achieved a 4.85 average on the User Acceptance Testing and from the results; the researchers must improve on usability, security, and portability aspect of the web application.

Keywords: Clinical Information, Health Declaration Form, Agile Software Development.

INTRODUCTION

The Corona virus Disease (COVID-19) causes an enormous challenge to the global health system and affects the global economy. In China where the virus started, it has actively taken action to promulgate health information technologies for monitoring, detection, preventive and control, and other tasks.

As the COVID-19 has expanded worldwide, the task of the prevention and control team has become more challenging. The health information community in affected countries has actively taken action to monitor, detect early warning, prevent and control the spread of the virus. If the community fails to isolate patients, rapid increase of Covid-19 in the community is likely to happen. Local governments in the Philippines like Taguig City have set up a team to make sure those who test positive are isolating as well as their close contacts. Testing and tracing is vital to the city's effort to tackle coronavirus. The city is using local knowledge to successfully trace the close contact individual. By checking the data collected with their own record using their system, they are able to identify better contact details in some cases.

Polytechnic University of the Philippines – Taguig branch implemented a manual process of contact tracing and collecting details of the guest, the process involves paper. The process is an explicit system which needs to have an upgrade. This study aims to provide a hassle-free-process system – faster transaction, accurate data gathering, and time efficiency, to avoid local transmission.

In this project, we have chosen to upgrade and propose a Clinical Information and Triage System with QR Code for users/guest as identifier and Health Declaration Form for self-assessment, in order to have accurate data and hassle-free transactions.

The general objective of the capstone is to develop and implement the Clinical Information and Triage System (CITS) to become an online web application that will help the Medical Department to monitor closely the individuals who will enter inside the premises. Also the project aims to help the users or the guest to retrain from the hassle process.

To discuss the general objective, specific objectives must identify each function for the development. The main purpose of the development of the system is in pursuance of replacing the current means of filling out individual health declarations by using Google form and generating reports.

This study is mainly focused on providing an online web-based system. The system will also provide modules which will have four stakeholders: Administrator, Nurse, Guard, and Guest.

The main significance of the research is to be used and propagate the management of information of the guests. Benefiting the study are the various sectors as follows:

The Nurse. Instead of manually sorting the data that is needed or one-by-one, administrators can automatically sort according to the required data. The system makes the work more convenient and accurate, since the system will gather the data from the answered health declaration form automated and stored to the system's database. Also, the system implements paperless transactions. Reports will be easily generated.

The Guest. Instead of filling out the health declaration form manually, they can use the system to fill out the form. Also they can answer the health declaration form beforehand to avoid hassle upon entering the premises, note that they can take the health declaration form or self-assessment within the day of their visit, not before. Also the project prepares a solution for human error, aside from health declaration forms accessible in the system; the researchers will have alternatives to take health declaration forms.

For Guard. Instead of giving and collecting forms of each individual upon their entry in the premises, the guard can use the system's scanner to record the entry of each individual. The scanned records will be directed to the database of the system, and updates data stored in the database.

Results and Discussions

User Acceptance Testing

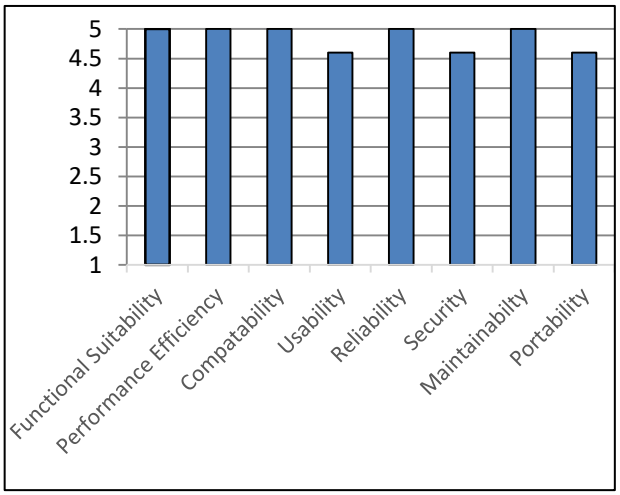
Respondents from PUP-Taguig and our client have tested the web application to give feedback and recommendations. The following figures are the results of the findings of the study after testing the system. The survey used was based on the ISO 25010, answering the questions in the Statement of the Problem and rating is based on the Likert Scale mentioned below in table 1.

Table 1. Average Point of the System (ISO 25010)

Numerical Rating	Interpretation
4.3 - 5	Strongly Agree
3.5 – 4.2	Agree
2.7 – 3.4	Neither
1.9 – 2.6	Disagree
1- 1.8	Strongly Disagree

The survey used was based on the ISO 25010, answering the questions in the Statement of the Problem and rating based on the Likert Scale mentioned in table 1.

Figure 2. Summary of Findings



With the summary of the results, the users of the web application concluded with the use of the User Acceptance Testing questionnaire. From

functionality to portability, the highest rating was 5. This meant that the functionality of the system was met by the researchers, thus appreciated by the users. The lowest ratings were given to the usability, security, and portability aspect. They all received a 4.5 rating.

Although the system's interface designs, user-friendliness, and operational performance are acceptable, users still anticipate improvements. The users were also asked about the system's quality and performance. All users agreed that the system had done its job because all of the prerequisites were there and working properly. They had no problems with the system during its use.

Below are the screenshots of the web application of the System:

Figure 3. Sign-in Page

Sign-in Page. This is where guests can input their login credentials to access their accounts.

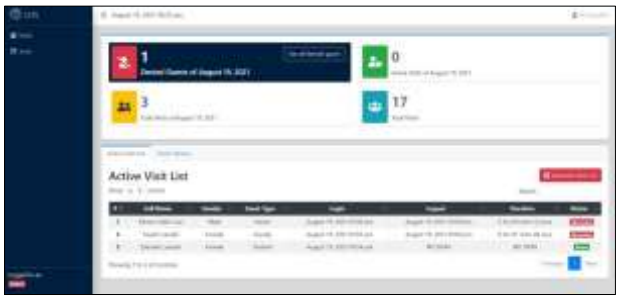
Figure 4. Sign-up Page

Sign-up Page. This form allows creating accounts for the system new users.

Figure 5. Guest Account View

Guest Account View. The guest can access his/her profile to view or download the QR code and the checklists history.

Figure 6. Guard Account View



Guard Account View. The will be the guard view. He can only access the scan module for the entering of the guests and he has its own dashboard.

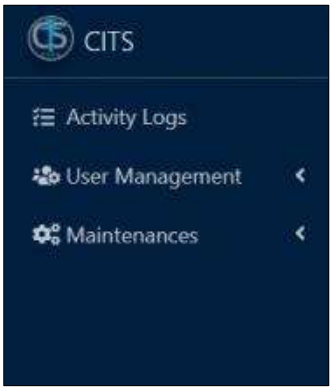
Figure 7. Nurse Account View

Nurse Account View. The will be the nurse view. It contains the Guest assessment module where the invalidation of a user is being done. Also, the nurse has its own dashboard and can view the list of guests who enters the university.

Figure 8. Nurse Account View

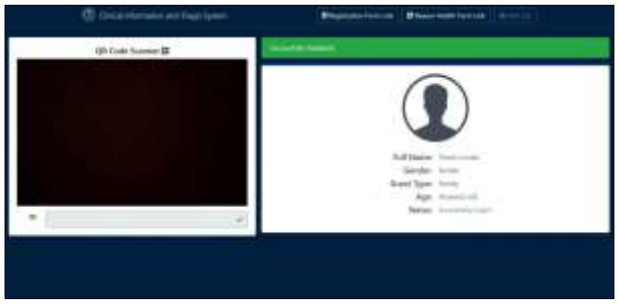
Admin Account View. This user controls all the transactions happening in the system.

Figure 9. Maintenance



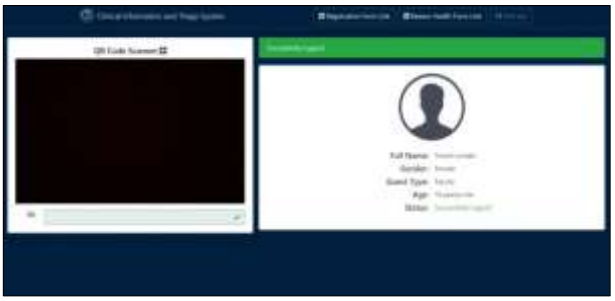
Maintenance. This function is at the admin side where in the admin can add data of maintainable purposes.

Figure 10. Login Transaction



Login Transaction. This form allows the user to process a login using the guest's QR code.

Figure 11. Logout Transaction



Logout Transaction. This form allows the user to process a logout using the guest's QR code.

Figure 12 & 13:

Figure 12. Reason Health Declaration Form QR Code

Figure 13. Reason Health Declaration Form

Alternative Health Declaration Form. This form allows the user to process an alternative Health Declaration form from a QR code or link which will be given by the guard.

Conclusions

Notwithstanding the system's low ratings for usability, security, and portability, the overall rating is still substantial. The results of the tests show that the system is acceptable to users. The features of the system satisfy the requirements and requests made by the client. The system itself will still undergo changes and enhancements as time goes by. The researchers concluded that further improvements of existing modules and further tests should be made in the future. The system remains efficient and effective, and it is now completely ready for implementation.

Recommendations

The system, as stated in the findings following the system testing, needs to be polished and upgraded in order to improve usability and dependability. We urge that this capstone project be employed by management, particularly by the proponents' university, which is in desperate need of it. Finally, the proponents recommend that this system be fully implemented, and that future owners of this system improve this capstone project.

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