DIGITAL SIGNAGE MANAGEMENT SYSTEM

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Bachelor of Computer Science (Software Development)

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2015

DECLARATION

I hereby declare that this project report entitled

DIGITAL SIGNAGE MANAGEMENT SYSTEM

is written by me and is my own effort and that no part bas been plagiarized without
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STUDENT: _____ Date: _____

(UI YEW TENG)

SUPERVISOR: _____ Date: _____

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DEDICATION

This is dedicated to my beloved family, thank you very much for the unconditional supports with my studies. Thank you for giving me the chance to take my desired field of studies and provide me a chance to improve myself through the journey of my life. I love you.

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ABSTRACT

Nowadays, digital signage are become ubiquitous, and it was surround us, it can be in airports, train terminals, and bus station. Other than that, it also can use as menus board in fast food restaurants. But there still lack of efficient digital signage management system to control or manage the digital signage update. Digital signage management system is very useful to manage the digital signage. With this system, update the signage information will become easy and faster. It will also locate all the signage location and monitoring the digital signage information. This can easier the staff to know what information are displaying by the digital signage. The system will build in an advertisement company based, to show better how to manage the digital signage as advertising display on it.

ABSTRAK

Pada masa kini, digital signage menjadi sangat famous dan ia disekeliling kita, ia boleh dijumpai dekat airports, keretapi terminal dan bas station. Selain itu, ia juga boleh diguna sebagai papan menu di restoran makan segera. Tetapi ia juga ada kekurangan efisien untuk mengurus digital signage dan updatenya. Pengurusan Digital Signage adalah sangat baik untuk mengurus digital signage. Dengan system ini, maklumat update akan menjadi lebih cepat dan senang. Ia juga boleh menglokasi tempat digital signage, dan pemantauan maklumat digital signage. Ini akan menyenangkan staf untuk mendapat maklumat yang sedang dipaparkan oleh digital signage. Sistem ini akan menbangunkan berdasarkan syarikat iklan, untuk menujuk bagaimana ia mengkawal iklan yang dipaparkan oleh digital signage.

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CHAPTER I

INTRODUCTION

1.1 Project Background

Nowadays, out-of-home advertising are keep evolution from old style wooden signboard to digital signage. The digital signage are become ubiquitous, this is because the cost of digital signage are decreased more than tenfold over the past ten year. Recently, there are many type of digital signage in the market, such as 2D and 3D displays, Modular display construction, Content Management System and etc. As example, 2D and 3D display may be LCD or plasma screens, there has a wide range of market segments for LCD-based digital signage. As example, digital signage can replace the restaurant static menu display. The dynamic characteristic of digital signage can change throughout the day, promoting different promote set menu. [1]

Mostly of the digital signage are update separately at the signage and not manage by one central system. It's very inconvenient by the staff to update new advertisement. It's not just taking a long time to update each signboard, but it's also wasted man power to update the signage. The digital signage management system are purposes to

help the company to easier to manage and update the digital signage. With this system, staff can update all the outdoor digital signage at the same time. It will increase the update speed and also use less man power to finish the job. The system also include tracking function to track the digital signage information and the system also will maps out where the digital signage location.

Digital signage management system not just use to manage the signage. It's also can have the payment function to calculate the advertising price and print out the receipt. This function will reduce the calculation time and reduce the human error.

1.2 Problem Statement

The problem statements of the current system are:

a) Miscalculate payment will affect the report
   Most of the current system payment are calculate by staff. It may held some calculation error and also calculate with wrong rate. With the wrong calculation will make interpret report.

b) Conflict in handling signage where none event have been held but the signage still there
   When the staff making a new advertising, he need to know which digital signage are free at the time customer want. But sometime it would be complicated when there are too many signage at there. It will make the staff make the signage conflict between the current advertisement and new advertisement.

1.3 Objective

a) To manage and update the digital signage advertisement information.
   When having a new advertising, system will store it into the database. When the time is coming for the new advertisement, it can automatic update the digital signage.

b) To ensure accuracy of payment.

     The system will automatic calculate the new advertising payment based on the type, time, date and amount of digital signage. The system accuracy will high than the manual calculation. It's also store the information into the database and can be generate the information to become report.

c) To provide the digital signage location.

     When the customer want make a new advertising, he need to know where the location is the best for his advertisement and which location are available for the advertisement. The system will based on the customer need to generate the available location to let customer pick.

1.4 Scope

Scope of the advertisement is the area of the advertisement will only locate at Malacca. Other than that, the advertisement also need to display in the correct signage and date.

User scope for this system is only staff can use the system. The staff can only add new customer and advertisement, view report, and manage the digital signage.

Scope for the software and hardware specification is the system cannot be turn off. Furthermore, the advertisement not having conflict in the same digital signage.

1.5 Project Significance

The staff will be easier to manage and update the digital signage. He just need to use the system to update the digital signage. System also will provide advertisement management function and payment calculation function which will ease his work to manage the advertisement and calculate the advertisement payment.

1.6 Expected output

The output of this project will be a management system. The system will be the central of the digital signage, which will be able to update and manage the digital signage. With this system staff will be easier to update and manage the digital signage. Other than that, staff will also able to see what advertisement are show in the digital signage. Furthermore, staff also can manage the advertisement information with the system. Staff will be able to register new customer and add new advertisement. After the new advertising made, the system will be auto calculate the payment. In other hand, the system also will be able to generate report based on the advertisement information.

1.7 Conclusion

In conclusion, this project will bring ease to the staff to manage the digital signage. It can help the staff to update the digital signage with only using system. Staff also can manage advertisement and add new advertising based on this system. Staff can ease to show the customer where the digital signage location and which of it are available. In order to build this system, a methodological approach must be well establish, and necessary information must be obtained. The next chapter will describe the methodology used and the information gathered from all available resources.

CHAPTER II

LITERATURE REVIEW AND PRODUCT METHODOLOGY

2.1 Introduction

There are many type of the digital signage system recently. Although there are various type of digital signage system in the market, but this review will only focus on only one of the system which similar to this project. The system will be discuss in the chapter are Digital Signage Based Building Energy Management System: Solution Concept. Although the literature will present these system with several of contexts, but this literature preview will focus on their method and solution.

Figure 2.1: Example of the Digital Signage Based Building Energy System [5]

Since this project will only create a prototype for the system, the methodology will use in this project is Prototype Development Methodology. The methodology will be explain and descript in below section. In other hands, the project requirements and project schedule and milestones will also be descript.

2.2 Fact and findings

This section discussed about domain and existing system on section 2.2.1 and 2.2.2.

2.2.1 Domain

Nowadays technology are keep improve, out of home advertising are also keep evolution from the old style wooden signboard to the digital signage. These digital signage are become ubiquitous, and it was surround us, it can be in airports, train terminals, and bus station. Other than that, it also can use as menus board in fast food restaurants.

Out of home advertisement also known as outdoor advertisement, is a type of advertisement that take consumer attention when they are outside the home. Out of home advertisement are mainly place at public places such as in transit, roadside,

airport, and in specific commercial locations. There have four main categories for out of home advertisement, which are billboard, street furniture, transit, and alternative. [2]

Billboard is a large outdoor advertising, typically found in crowded places. It present a large advertising to get attractive from the walk by people. It usually show ostensibly witty slogans, and distinctive visuals, and it was places at a high visible area. Since the technology keep improving, many of the billboard have been convert to digital displays, and digital signage is one of the billboard converted digital display.

Digital signage is also known as dynamic signage, since it was a modern type of signboard. Digital signage usually is use to display different information, entertainment or advertisement at public places. Digital signage has become ubiquitous and visible nature in this era due to its capability to reach to people instantly and reliably. In addition, it can also update information in real time. [3]

Digital signage can be show as LCD display or plasma display. Usually digital signage are consists of a computer or a playback device connected to the display. If the digital signage has a network connection with a computer, it may updated information in real time. Other than that, digital signage display has no limit for the number of display. It can have multiple display with or with not the same information output and also without limitation of location.

Furthermore, based on the "Advertising Development in Malaysia" by Malaysian Communications and Multimedia Commission, 2009, the demand to the digital signage has been increase based on 2 reason: growth of the economic and improved of technology. Rapid dropping cost of the software installation fees and hardware price, and the availability and reliability of the system was increase the attractiveness of the digital signage to the market. [4]

2.2.2 Existing System

Digital Signage Based Building Energy Management System: Solution Concept [5]

Digital Signage Based Building Energy Management System is a concept of applying digital signage to classical Building Energy Management System (BEMS). In this concept, building inhabitants will be able to track energy consumption information through the digital signage. Gamification methods will be used in this system to let building inhabits interest to controlling energy usage. In additional information, gamification methods is the concept of using games mechanics in non-game context or system to engage users to the system. [6]

Nowadays technology, can get energy data in real time and use it to combine with additional information in the building to give a complete and continuous overview about the energy consumption information in the building. In the concept, digital signage can publicly display and detect the unnecessary energy waste, track effectiveness of solar plants in economic and social. The management can monitoring the information in real-time by BEMS, but most of the existing management are not managed well the BEMS or used the BEMS less than once a month.
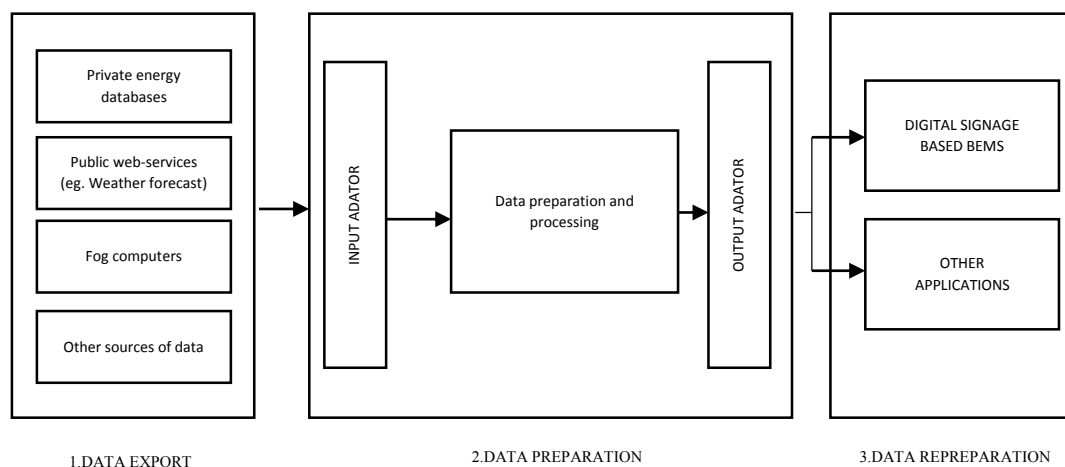
Figure 2.2: Architecture of digital-signage based BEMS [5]

Based on Figure 2.2 as shown above, the solution consist of three layers, which is data export, data preparation and processing, and representation of data. Data export is data which can be public available data source. Data preparation and processing is a combination of the collected data from data export or process machine learning algorithms in real-time. Representation of data is display the result after the preparation and processing, which is consist the frame and a number of gadgets.

The aim of digital signage is use to display the basic functionality of BEMS to the users. The digital signage should be able to extend with new gadget. Meanwhile, the system dashboard can be changed with the personal branding layout along with gadget. The platform can view in 2 mode which is configuration mode and review mode. Other than the configuration mode and review mode, the platform also having expand screen mode which will having more functionality and use to be observed by management. The information display by the digital signage is according to the configuration set by the building management. The configuration can be set into following step:-

- Define purpose of the dashboard.
- Define target audience for the dashboard.
- Define dashboard feedback.
- Define method to interact with user with the dashboard.
- Define user action.

In this solution concept, the digital signage concept and gamification theory is merge into the BEMS to improve the efficiency of classical BEMS. Digital signage was became the output of the BEMS which will show the energy consumption information to the building inhabitants. This will made more people attention to the energy processes. The concept implemented in several locations in Belgium and Netherlands.

2.3 Project Methodology

In this project, the system will be a prototype system which having only the main function. Prototype development methodologies and object-oriented analysis and design will be use in develop this project.
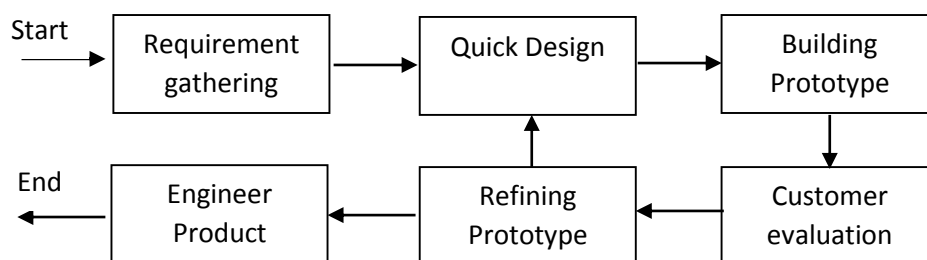
2.3.1 Prototype Development Methodology

The prototype development methodology normally is use to build a prototype system with lack of requirement. The prototype is an incomplete system and only with some

important and basic function. After the prototype system is build, usually it will give customer to evaluate and refining the requirement and rebuild again. The process will keep continuous until an acceptable prototype is build, which it was agreed by customer. Prototyping is a good idea for complicated system or large system which lack of requirement or no existing system to reference.

In this study, the author decide to choose prototype development methodologies is based to the strength of the methodology. Based on the observation of the author, with the prototype development methodologies system can be made quickly. After that, system will be test by user, if the user are not satisfy to the system, it will be thrown and rebuild it with the improved requirement. This can early get known what user really want.

Prototype development have six phases which is, requirement gathering, quick design, building prototype, customer evaluation, refining prototype, and engineer product. The quick design, building prototype, customer evaluation, and refining prototype process will be infinite loop until get a satisfy prototype. [7]

Figure 2.3: Example of prototype development methodologies [7]

The strengths of this methodology are:

- User are actively involved in the development.
- User get a better understanding to the system being develop.
- Prototyping can improve the quality or requirement.
- Can reduce cost, since they can early get know what user really want.

The weakness of this methodology are:

- The prototype focus on limited function only and it can made the system insufficient analysis to other part of the full system.
- User confuse of prototyping and full system.