

ELECTRICAL VEHICLE TRACKING SYSTEM

TAN KAE LE

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

BORANG PENGESAHAN STATUS TESIS*

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ELECTRICAL VEHICLE TRACKING SYSTEM

TAN KAE LE

This report is submitted in partial fulfilment of the requirements for the
Bachelor of Computer Science (Software Engineering)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2015

DECLARATION

I hereby declare that this project report entitled
ELECTRICAL VEHICLE TRACKING SYSTEM

is written by me and is my own effort and that no part has been plagiarized
without citations.

STUDENT : _____ Date: _____

(TAN KAE LE)

SUPERVISOR : _____ Date: _____

(DR MASSILA KAMALRUDIN)

DEDICATION

This work is dedicated to my beloved family, who passed on a love of reading and respect for education.

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First and foremost, a thousand thanks to my supervisor, DR MASSILA KAMALRUDIN for the guidance she gave so that I was able to keep focused, structured and motivated. I learnt a lot from her comment, guidance and it really helped me a lot into doing my best. Thank you for everything.

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ABSTRACT

The small car in golf course, Electrical Vehicle is very important to golfer as it can carry golfer from one area to another area in the golf course. So, it is important to have a system that can detect the current location and also the condition of the Electrical Vehicle. Without this system, the management department of the golf is hardly to detect the Electrical Vehicle location and also the condition. For example, the Electrical Vehicle break down, the department cannot discover it immediately and send another Electrical Vehicle for the golfer waiting. This will results the golfer need to wait for long time and fell unhappy. By detecting the current location and condition of Electrical Vehicle can solve this kind of problem faster.

Electrical Vehicle Tracking System is very important. It helps management department of the golf course to track the current location and condition of the Electrical Vehicle. If without this system, it is difficult to let the management department to identify the condition of the Electrical Vehicle. In this project, an application in the phone is done to let the system tracking the current location when login. The system can display multiple location of the Electrical Vehicle at the same time. The system also can receive the message that is sent by the application about the condition of the Electrical Vehicle.

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CHAPTER I

INTRODUCTION

1.1 Project Background

Nowadays, there are many buggies that help to fetch golfer to go anywhere inside the golf course. However, there are absent of system that can track the position of the Electrical Vehicle. If there are any emergency happen on the way, the driver is unable to contact to the office immediately and maybe will cause the golfer waiting for long time due to no Electrical Vehicle is coming.

This system is developed to help management department of golf course can track the current position of every Electrical Vehicle and its driver in the golf course. If there is emergency happen, the driver can immediate send message to the management department. So, the department can manage it like sending new Electrical Vehicle to fetch the golfer that is waiting. The admin management is web based.

The driver will install the application in their phone. When the driver login the application, the application will detect the location and send the current location to the management for admin to track. In the application, the driver can also send a message to the admin when there is accident or emergency happen.

Besides, the golfers can also using this application to inform the admin their location and where they want to go. Later, the admin can assign a driver that is free to bring them to their destination. The golfers can also view the location of the Electrical Vehicle driver to determine the time that Electrical Vehicle coming.

1.2 Problem Statement

The absence of a complete Electrical Vehicle system has cause inconvenience to management department and also the golfers. The admin cannot know immediately when accident is happening. Meanwhile, the customers cannot get the Electrical Vehicle accurate location. This may cause waste of time at waiting the Electrical Vehicle to come. Sometimes it may waste approximate few hours. If they can know the time that Electrical Vehicle will come then they can do other stuff while the time has not reached. Therefore, it is of great significance to have a system that can track the current location and condition of the Electrical Vehicle.

1.3 Objective

The objectives of this project are:

- i. To let the admin to track the location of the Electrical Vehicle at any time
- ii. To enable sending message between admin and driver
- iii. To let the customer can book a Electrical Vehicle at any time and place
- iv. To enable the admin to assign the Electrical Vehicle to fetch the booked customer

1.4 Scope

User scope for this application is wide. There are three users involved in this system who are of drivers, admin and also customer.

- i) Admin
 - Manage DriversAdmin can add, edit or delete the information of every driver

- Assign Drivers

Admin can assign job for every driver. The job can be go to somewhere to fetch customers that already done booking to another place.

- Track Driver Location

Admin can monitor the current location of all drivers. So, they can easily assign a driver who is nearer to the customer to fetch him. This can prevent the customer wait for a long time.

- Send Message to Driver

Admin can also send message to drivers and receive from drivers. This can let the admin to know the condition of drivers if emergency occurs.

ii) Drivers

- Login

Driver need to login when they start working every day for admin to contact or track their location.

- Contact Admin

Driver can contact admin when emergency or accident happen.

- Start/Finish A Job

When a driver is assigned a job, tracking function only start to run. After they finish their job, the function will stop. Since, nobody likes to be track. This means when the driver that is standby mode cannot be track by admin.

iii) Customer

- Booking Electrical Vehicle

Customer can book a Electrical Vehicle to fetch them from one place to another.

- **View Electrical Vehicle Location**

Customer can also view the Electrical Vehicle current location. With this function, customer no need to wait at a place for a long time, they can monitor the Electrical Vehicle. When the Electrical Vehicle is coming, they only go to wait.

1.5 Project Significant

With the function that is suggested by this system, user's needs can be fulfilled easily. Admin can manage the driver and also customer faster. This is believed that can enhance costumer satisfy level while they are coming.

1.6 Expected Output

At the end of this development, this project will produce a system that consist of mobile application and also web application that help admin to get the current location and condition of the Electrical Vehicle on road. Besides that, the mobile application also provides function that can let the customer to book a Electrical Vehicle at any places easily without any registration is needed. With this system, it is believed that the user's current problems can be solved.

1.7 Conclusion

This chapter focuses on the project background, problems that are currently faced by introduction, problem statement, objectives and scope of this project.

The next chapter will focus more on literature review and the methodology used in this project.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

This chapter will discuss about the literature review and methodology used in this project. The field of this study is about tracking location. Generally, tracking covers a wide range of areas. However, this project will only focus on tracking vehicles. There are total five research project and existing systems were chosen for the literature review. Comparisons are made to determine the strength and weakness of each system.

The methodology section describes about how this project adopts the Agile Software Development methodology and also the reasons choosing it. Other than that, the project requirement and schedule are included in this chapter.

2.2 Fact and Findings

This section will discuss about the past research that have been done by others.

2.2.1 Domain

In many countries, most of the public transport cannot reach the station on time. This actually has caused the company to receive many complaints. The company also faces the problem where they cannot know the accurate location of the driver. Therefore, a tracking system is needed for those companies. Nowadays, most of the smartphones combine GPS with WiFi positioning system. So, it is believed that smartphones are highly potential in tracking the current location.

Due to lack of research about Electrical Vehicle tracking system, research about vehicle tracking system that similar to Electrical Vehicle tracking system was done. In order to understand more about the vehicle tracking system technology, research about current vehicle system was done. The vehicle include of bus, van, car and others. In April 2009, two University of Washington (UW) graduate students, Brian Ferris and Kari Watkins have developed a tool named OneBusAway that allow King Country Metro Transit riders to track the bus. To use this service, one must send the bus stop number to the server, later the server will reply with real-time arrival data of the bus.

In our country, Asia Pacific University (APU) has implemented a real time tracking system for their bus service. The tracking system is built in web page with Google Map embedded. This system allows the student in APU to check on bus position. The web page will automatically refresh every 5 second to show the real time position of the bus.

Besides that, Singapore Bus Service (SBS) Transit also provided an application called Intelligence Route Information System. This system allows bus users to estimate the bus arrival time. This system can use in both web and mobile. However, this system only estimate the bus arrival time, but cannot display the real time position of the bus.

2.2.2 Existing System

Table below will records the results after comparing all the selected current system.

System Name	Strength	Weakness
OneBusAway	- enable user to update information on each stop - will show bus arrival time	- does not show the map
APU Bus Tracking System	- showing bus timetable - showing bus arrival time - web page refresh every 5 seconds	- do not show the whole bus route - timetable just provide scheduled time but not exactly arrival time
NIU Bus Tracking System	- update position without refresh webpage - showing different bus route -bus icon differentiate with shadow	- does not show bus timetable - does not show whether the bus is on service or not
iris-NextBus System	- two platforms: web page and mobile application - manually search each bus arrival time	- does not view in map

Table 2.1: Comparing Selected Current System

2.2.3 Technique

There are four techniques that being used in writing this literature review.

Below are the four techniques:

i) Survey

First, searching and choosing the literature in the area of study is done.

ii) Synthesis

Then, summarizes all the collected information is done.

iii) Analyse

After that, analyse all the information that collected in order to identify the area of controversy and formulate the question for further research.

iv) Present

Last, the literature is present in an organized style.

2.3 Project Methodology

After comparing mobile application and non-mobile application, mobile application need to be updated very fast. This matter can only be achieved through a few changes along the development process. After comparing several methodologies, Agile Software Development methodology is the most suitable for this project.

Agile Software Development is a highly iterative software methodology. It uses incremental strategy and team-based approach in the software development. This methodology can help business to respond toward any unpredictability or changes in requirement. This methodology can adapt to changes is because software delivery is done in a short iteration.

The characteristics of methodology are suitable for this project. As this application is mainly a mobile application, the places of attraction may increase from time to time and this will make the application to become less perfect during its first released. Therefore, updating the application from time to time adopts on the highly iterative and incremental strategy that are being practised in agile software development.

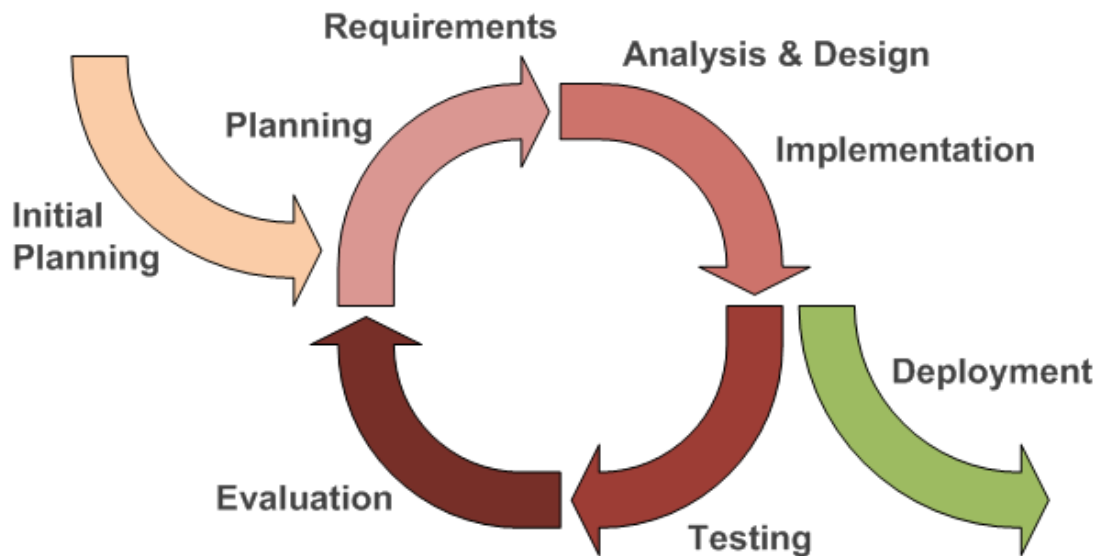


Figure 2.1: Agile Software Development Model

Figure above shows the general process about the agile software development model used for this application. There are seven phases in this methodology. The first phase is planning, whereby plan about what project is going to do. After that, requirement is collected in the second phase. In this phase, interview and questionnaire are done and identify the functional and non-functional requirement. In analysis and design phase, requirements are analysed and are translated into high-level detailed design such as use case diagram, sequence diagram and class diagram.

Later, the system starts to develop in the implementation phase. After the system finishes develop, testing will be done to ensure that the requirements are fulfilled. Normally, unit testing and acceptance testing will be done in this phase. The last phase is deployment phase, where the software is ready to install and use by the users.

As mentioned earlier, Agile Software Development is a highly iterative software methodology. The work will be continuously evaluated by the customer once it is completed. This methodology is able to reduce the risk of project if there are changes in requirements since this methodology is easy to manage and flexible to the developers.

2.4 Project Requirement

In this section, the requirements that are being used in this project are described. There are two types of requirements, which are software requirement and hardware requirement.

2.4.1 Software Requirement

The software requirements that are being used are:

- i) Window 7 Home Premium – Operating System
- ii) StarUML – Open source Unified Modelling Language Tool
- iii) Android Development Tools (ADT) – Used to develop Android application
- iv) Adobe DreamWeaver CS5- Used to develop a web-based system
- v) WAMP server – Used to store application data and php file

2.4.2 Hardware Requirement

- i) Laptop
- ii) Smartphone

2.5 Project Schedule and Milestones

This section is basically described about duration for each task during each development phases. This is used to measure the progress of the project. In this project, Gantt chart is used as a tool to represent the tasks distribution within certain period. Refer Appendix 1 for Gantt chart and Appendix 2 for Project Milestones.

Task	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Discussion of title	■															
Proposal	■	■														
Method and analysis system (progress report 1)			■	■												
Design and implementation system (progress report 2)					■	■	■									
Demonstration and testing of system (progress report 3)								■	■	■	■	■	■			
Poster													■			
Exhibition														■	■	
Final report																■

Gantt Chart

2.6 Conclusion

This chapter focuses on the literature review and methodology used in this project. A good literature review can help someone to locate their research study within past research and also can help one to identify the study area to prevent extra effort been done.

Besides, a good methodology can also compromise a successful development process. It can prevent the project fail or used extra time to complete it. So, both literature review and methodology play an important role in developing this project.