



Faculty of Computer Science and Information Technology

GPS TRACKER AND MONITORING SYSTEM USING MOBILE PHONE

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GPS TRACKER AND MONITORING SYSTEM USING MOBILE PHONE

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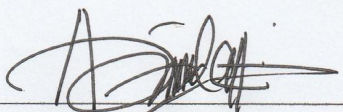
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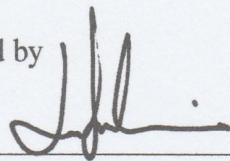
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(12 DECEMBER 2019)

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ABSTRACT

This project is related to the study done on existing GPS tracking and monitoring systems mainly in Malaysia. GPS tracking systems are a common sight in Malaysia and it also gaining the attention of the local community day by day. However, the majority of GPS tracking systems in Malaysia use specialized hardware GPS devices that are installed directly into vehicles such as cars or trucks. With the presence of such GPS hardware in the vehicle, those particular vehicle can be tracked and monitored directly by the relevant party for a specific purposes. However, the installation of the GPS hardware is not an easy task and requires a skilled workforce to prevent damage to the GPS hardware and the vehicles itself. In addition, the use of the GPS hardware also requires high operating and installation costs. This is because the costs involved in using the GPS hardware include installation costs, skilled labor costs, maintenance costs and many more. In addition, external sabotage can also occur when using the GPS device, which can result in damage to the vehicle and loss to the owner or company itself. Therefore, to address these concerns, this project was introduced as an alternative to existing GPS tracking and monitoring systems. In fact, the project was also implemented to create a system to allow users to know the location of the vehicle or other users using the GPS service. Therefore, to prove the effectiveness and applicability of this project, a series of chapters will be further discussed in this report.

ABSTRAK

Projek ini adalah berkaitan dengan kajian yang dilakukan terhadap sistem pengesanan dan pemantauan GPS sedia ada di Malaysia khususnya. Sistem pengesanan GPS merupakan sesuatu yang tidak asing lagi di Malaysia dan ianya juga semakin mendapat perhatian masyarakat setempat. Namun begitu, majoriti sistem pengesanan GPS di Malaysia menggunakan perkakasan khas GPS yang dipasang terus kedalam kenderaan seperti kereta atau lori. Dengan wujudnya perkakasan GPS tersebut didalam kenderaan, maka kenderaan tersebut dapat dikesan dan dipantau secara terus oleh pihak yang berkaitan bagi tujuan tertentu. Walaubagaimanapun, proses pemasangan perkakasan GPS tersebut bukanlah mudah dan memerlukan tenaga kerja mahir bagi mengelakkan kerosakan terhadap perkakasan dan kenderaan. Tambahan pula, penggunaan perkakasan GPS tersebut juga memerlukan kos pengendalian dan pemasangan yang tinggi. Hal ini kerana, kos yang terlibat apabila menggunakan perkakasan GPS tersebut termasuklah kos pemasangan, upah tenaga kerja mahir, kos penyelenggaraan dan lain-lain lagi. Selain itu, perbuatan sabotaj juga boleh berlaku apabila menggunakan perkakasan GPS tersebut yang boleh mengakibatkan kerosakan terhadap kenderaan dan kerugian kepada pemilik. Justeru, bagi mengatasi permasalahan terbabit, projek ini diperkenalkan sebagai langkah alternatif kepada sistem pengesanan GPS dan pemantauan sedia ada. Malahan, projek ini juga dijalankan bagi mewujudkan sebuah sistem bagi membolehkan pengguna mengetahui secara terus lokasi kenderaan atau pengguna lain yang menggunakan perkhidmatan GPS ini. Maka, bagi membuktikan keberkesanan dan kebolehpakaian applikasi untuk projek ini, satu siri bab akan dibincangkan dengan lebih lanjut dalam laporan ini.

CHAPTER 1 : Introduction

1.1 Introduction

GPS tracker is a device used to perform tracking activities. Meanwhile, GPS tracking is the surveillance of certain location by using the Global Positioning System (GPS) to track the location and provide information on the latitude and longitude of the target (Rouse, 2014). Besides, GPS tracking system can be used in many field such as security purposes, transportation, fleet management and many more (“GPS Tracker Market Worth 2.72 billion US\$ By 2023”, 2019). In addition, the article also mentioned by 2023, the GPS tracker market predicted to gain approximately USD 2.72 billion with transportation and logistics as the top segments that will dominate GPS tracking system as it can provides transparency and control over the entire network, reducing the chances of theft and also improving operational efficiency.

However, most of the tracking system available now comes with the physical tracker that need to be installed inside the motor vehicles and also not budget friendly for a small company or institution. For example, iFleet is one of the famous company that provide GPS tracker and fleet management system in Malaysia that already trusted by a lot of companies such as Sime Darby, Atlas, Kudrat Malaysia and many more. However, those companies also use a physical GPS tracker to do the tracking activities.

Thus, this project aims to develop a mobile GPS tracker and monitoring system by using only mobile phone as the tracker device that will have three main platform which are user, single user monitoring and multiple user monitoring view. This project which is the GPS Tracker and monitoring system can be use by the management to keep track on their worker’s work during the working hours without

need to call, text or following them all way round. This is to ensure their worker's performance and also efficiency during work. For example, the bus management can keep track on the bus driver's location from time to time to ensure no problems such as delay or behind schedule occur during the working hours.

1.2 Problem Statement

Here are the several downsides from the existing system:

- I. Requires physical GPS tracker installed inside the vehicles.

Some of the company might already have the tracker system to track their workers movement during working hours but most of it require the physical GPS tracker installed inside the motor vehicles. It is hard to be install inside the motor vehicles and might also take some time before it can be used. Besides, when dealing with the physical tracker, it may need the professionals help on installing the device inside each and every motor vehicles to prevent any unwanted errors or problem happening with the tracker later on.

- II. Not cost and installation friendly.

As mentioned, a lot of tracking system or method that exist nowadays require a physical GPS tracker to be installed inside the motor vehicles before the tracking system can function as it supposed to be. In addition, when it comes to a big company that has a lot of motor vehicles to track, the cost and also time needed to ensure all of those vehicles can be track by using the tracking system will also increase.

III. May lead to external sabotage on company property.

It may also lead to unsocial activities and external sabotage such as unplugging the tracker from the vehicles. Moreover, unplugging the GPS tracker that already been installed inside the vehicles without a proper ways might damage the company's vehicles. It is because, the GPS tracker is not simply been put somewhere inside the vehicles, it is need to be plugged in and installed correctly with a proper ways to ensure it is working, and forcefully removing it can damage the GPS tracker itself and also some parts of the vehicles that connected to it.

IV. No such system to tell user or client the exact location of the mobile tracker.

The user or client of the certain companies especially in the fleet management field does not have any such system to directly tell them the exact location of the motor vehicles that they've waited for. For example, the client for renting car services might need to know where the car that they already booked is located in real-time so they can be prepared. Same goes to the owner or on the management side, they also need to know where they're property located at time to time to prevent theft or any unwanted situation happens.

1.3 Objectives

The main objective of this project is to design and develop a mobile GPS Tracker and Monitoring system which can help the top management to track and monitor their worker's performance during working hours.

Other objectives included:

- To design and develop real-live GPS tracking and monitoring system using mobile phone.
- To develop a real-time platform for location monitoring.

1.4 Project Scope

Basically, the scope that this project will covers are as stated below:

1. This project will only developed in an Android and web based platform.
2. The mobile application which act as the tracker be able to perform Login and as GPS detection to send the location to the server.
3. The user and the multiple user monitoring can view the location of the GPS by using the web based platform application.
4. The basic car rental service within students is use to showcase the functionalities of this whole project.
5. The project will only focus on tracking the activity from the GPS device outdoor.
6. A dummy database is used to keep the tracker information.

1.5 Brief Methodology

Throughout this whole project, the methodology chosen is Rapid Application Development (RAD). RAD is a well-known project management strategy in software development (“4 Phases of Rapid Application Development Methodology”, 2018). In addition, the writer also mentioned that according to study made by PwC, agile projects such as Rapid Application Development are 28% more successful than using traditional approach for the project. As the duration given for this project is very brief, thus RAD is chosen. It is because, RAD has has a fast project turnaround that can help to perform works in a fast-paced environment but with a quality output.

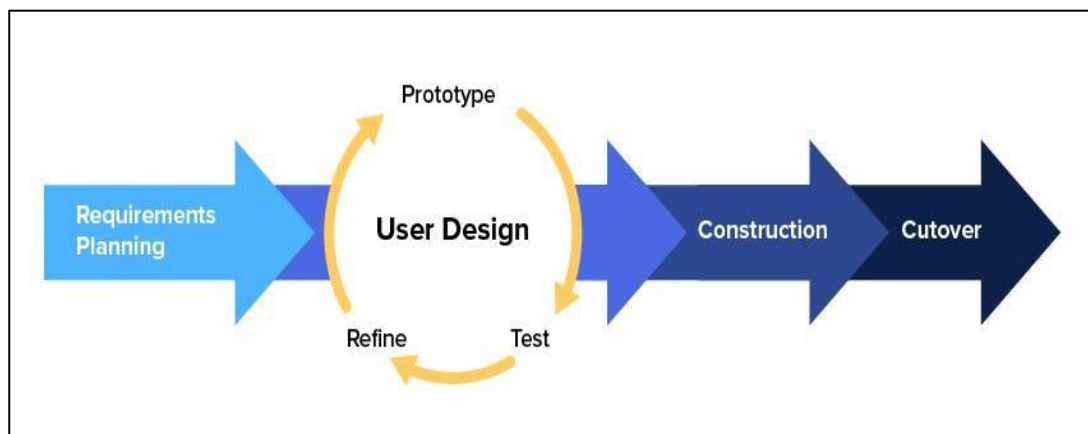


Figure 1.1. Stages of Rapid Application Development Approach. Reprinted From Rapid Application Development: Definition, Steps, Advantages and Case Study. (2019, September). Retrieved from [gd https://kissflow.com/rad/rapid-application-development/](https://kissflow.com/rad/rapid-application-development/).

1.5.1 Requirements Planning

This phase is also known as a project scoping meeting. Besides, during this phase, developer and software user will discuss on the goal, expectations as well as current and potential issues that would need to be addressed throughout the project (“4 Phases of Rapid Application Development Methodology”, 2018).

1.5.2 User Design

In this phase, software user can works together with developer to ensure their needs are met in every step in design process. This method can provide a a better opportunity to developer to tweak the model as they go until they achieved a satisfactory design (“4 Phases of Rapid Application Development Methodology”, 2018).

1.5.3 Construction

This phase is the phase where the prototypes and beta systems from the design phase are converted into the working model. Developers need to make sure everything is working smoothly and ensure the end results can satisfy the expectation of the user. Besides, in this phase, the software user still get to give input throughout the process. Thus, they can give suggestion on any changes and ideas to solve the problem arise (“4 Phases of Rapid Application Development Methodology”, 2018).

1.5.4 Cutover

Cutover is the final phase in RAD that also known as the implementation phase. In this phase, it includes data conversion, testing and changeover to the new system as well as user training. In addition, any final changes are made while the developers and software user continue to look for bugs in the system (“4 Phases of Rapid Application Development Methodology”, 2018).