

Analysis Of Applications Mobile GPS Tracker In Public Transportation

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I. Introduction

1.1 Background

Vehicles in Bandar Lampung its rapid growth, this time a lot of private vehicles filled the streets in the city of Bandar Lampung, this situation would further lead to congestion, one of the ways the government to address congestion in the city of Bandar Lampung is to facilitate public transport for the public, but as far as public transportation in the city of Bandar Lampung can not give comfort to the people. Viewed from a phenomenon that exists today some firms have sought to exploit the situation, but the company is only concerned with his or her business or for-profit are not concerned with the public interest, it can not help the government to deal with the public, such as the case of his company *Gojek, Uber, and Grab* they drove his passengers did not use mass transportation, the results obtained less than the maximum they can not handle the existing congestion. We make online system *gps tracker* which utilize technology of *the Global Positioning System* available today, can provide precise and accurate information, the public is more in make it easy and get better service. GPS is a satellite-based navigation system developed by the US Department of Defense (US Department of Defense DoD) in early 1970. GPS was originally developed for military purposes in the United States, then in the 1980s opened GPS access also for civilian purposes so that the current GPS can be used both for military and civilian users. At that time in 1973 there are 31 GPS satellites that orbit the Earth (*source: <http://www.gps.gov>, Official US Government information about the Global Positioning System and related topics*). These satellites transmit the coordinates to a receiver on the ground. The GPS system can monitor and determine the location of an object that wants to be known almost anywhere in the surface of the earth. GPS will capture the satellite signal from the surface of the earth to be translated into a coordinate point. The coordinates of the point we can integrate digital maps to find the position of an object.

2. Basic Theory

2.1 Literature Review

Reviews used as a comparison between researchers has been done and that will be designed by research. Review libraries derived from several journal entitled:

a. "A Mobile Application For Bus Information System And Location Tracking Using Client-Server Technology" ISSN 2250-2459, ISO 9001: 2008 certified journal, Volume 4, Issues 4 April 2014 Yasya Sardey, Pranoti Deshmukh, Pooja Mandlik, Saurabh Sh Elar, Minal Nekar of AISSMS's Institute of Information Technology, Department of Computer Science, Pune, India. this journal discusses the application of the android app for tracking on bus to provide route information, information about buses, information stop, map generation and tracking information right on the bus with the help of *Google maps* and allows users to plan on their way to destination with the right timing.

b. "Businfo: Bus Information System" ISSN: 2278-1323, *International Journal Of Advanced Research in Computer Engineering & Technology (IJARET)* Volume e5, issue 4, April 2016, Suneel Chauhan, Sweta Chaudhuri, Shweta Baranwal, Mrs. Vidya Kawtikwar. This journal discusses the system bus application that helps users to find current bus locations, giving users a warning when the bus will stop with automatic ring system and also allows users to locate the nearest medical emergency time.

c. "An Android Application For College Bus Tracking Using Google Map" This journal is *the International Journal of Computer Science and Communications Engineering* (2015) pages 1057 -1061 ISSN 2347-8586 vol 3 issue of the Journal written 3. Priya S. et al (2015) from the Department of Information Technology St. Peter's College of Engineering and Technology, Chennai, India. This

journal discusses the application of the android application for tracking on campus bus for give exact location of bus with the help of Google maps and allows users to plan their trip to arrive on campus in a timely manner.

d. "The design of WEB Application Monitoring Trans Jogja bus arrival estimation based on the location of buses with GPS smartphone" ISSN: 2339-028X, National Symposium on Applied (SNTT) 3 2015 Yeyen Meithia, daughter Herman Jalni Yuliansyah. Informatics Engineering Program Industrial Technology Faculty of Ahmad Dahlan University Yogyakarta. this journal discuss the application of Jogja buses to get the timing right or real time for Trans Jogja bus passengers and for monitoring the estimated arrival of the bus.

3. Analysis Results And Discussion

3.1. A Mobile Application For Bus Information System and Location Tracking Using Client-Server Tecnology

This journal is the *International Journal of Emerging Technology and Advanced Engineering* ISSN 2250-2459, ISO 9001: 2008 certified journal, Volume 4, Issu4, April 2014) Yasya Sardey¹, Pranoti Deshmukh², Pooja Mandlik³, Saurabh Sh Elar⁴, Minal Nekar⁵ of AISSMS's Institute of Information Technology, Department of Computer Science, Pune, India.

3.1.1 The results of

application this implemented on the android platform. Various attributes have also been added to this app which will benefit the system. This application is implemented using android and SQL domain. System that use in this application is a GPS system that will automatically display the map and the route of the bus and also track the location of the bus using technology *client-server* and advanced to the client device. This application will be prepared on the cloud platform, so that these applications can be accessed by any user of Android

3.1.2 Discussion

Below are the functions provided by the system:

1. Route Information
2. Information Bus
3. Stop Information
4. Map Generation
5. Location Tracking

a. Location Based Service (LBS)

Location Based Service (LBS) are widely used in applications services of mobile data that have been develop rapidly in the wireless communication strategy as location technology. *Positioning* it is used as an IP service use geographic information to track the location of the bus, and then the bus tracked and sent to the server, then the customer gets an estimated time left for the bus to reach the stops.

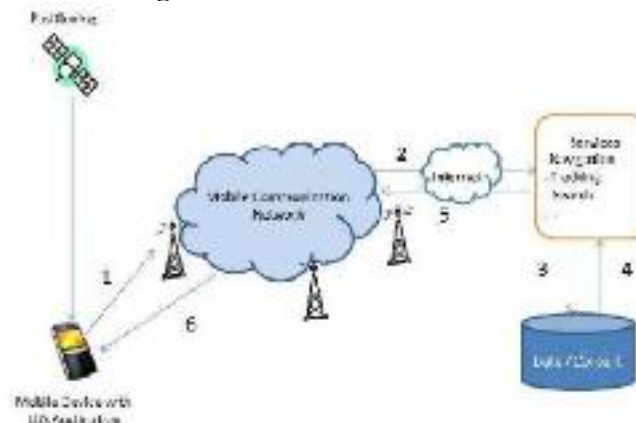


Figure 1 Location-based services

b. System

• Software Requirements:

- 1) JDK 1.6
- 2) Android SDK 4.0
- 3) IDE: Eclipse Helios
- 4) Backend: MySQL SERVER 4.0

• Hardware:

- 1) Pentium 4, with 2 or 4 GB of RAM
- 2) 500 GB Hard Drive
- 3) @Mbps Net speed

c. Client-Server Technology

The proposed system is based on client-server technology, which consists of the client side and server side. Limitations of the two parts have been considered during the development of the project. Buses will enter the name of the goal in the application. This app will forward the request to the server with the name of the destination, and then the server will look for a place into the database and a piece of information will then be forwarded to the customer's phone.

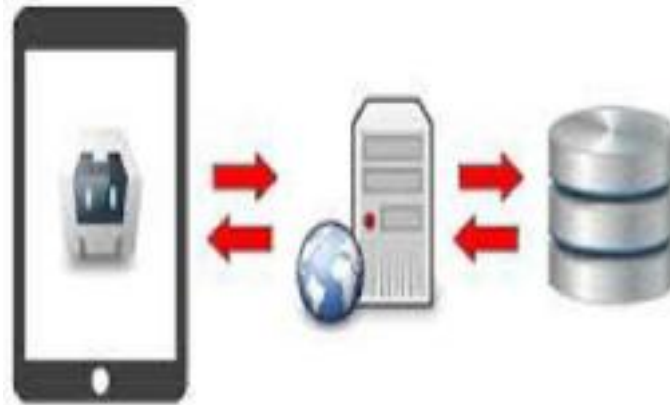


Figure 2 Client-Server Technology Android

3.2. Bus Info: Bus Information System

This journal is *the International Journal of Advance research Engineering & Technology (IJARCET) Volume 5, ISSN 2278-1323, Issue 4 April 2016*. Journal written by Suneel Chauhan, Sweta Chaudhiri, Shweta Baranwal, Mrs. Vidya Kawtikwar

3.2.1 Results

Solve problems of society through traveling through the proposed system author. Author provide the public with reminder facility, one touch service etc. The author tries to make travel easier and safer communities.

3.2.2 Discussion

Based on the Android operating system that will help the user to find current bus locations. This app will also alert users to know the location of the bus, through notification and automatic ringing alarm system, and will also help users to find that the nearest medical emergencies. Users can also find details of the bus they are traveling. Android is a Linux-based operating system designed especially for touch screen mobile devices such as smart phones and tablet computers, developed by Google in conjunction with *the Open Handset Alliance*. Android was built from the ground up to enable developers to create compelling mobile applications that take full advantage of all the handsets offered. This system is determined on the android operating system just because of the high market share of Android. Android also comes with an application development framework (ADF), which provides APIs for application development and includes services for building GUI applications, data access, and other types of components. This framework is designed to simplify the reuse and

integration of components. Android Applications built using mandatory XML manifest file. The values manifest file that is bound to the application at compile time.

a. Advantages of the system

1. Integration of different services for an Android app.
2. Full details of the bus with the location.
3. The use of GPS to locate the nearest medical store.
4. System provides an emergency alert in an emergency.
5. Reminder medicine for patients to take the drug at the time of its

b. various modules insystem

this businfo application will provide complete information about the bus, time and way. Here is information more about the bus.

1. Close to Hospital: This will give users details about Hospital
2. Users can search about the facilities provided by the Health Workers. And also lets users know about the nearest medical use GPS.
3. Close to the police station: It will give details about the police station Nearby users.
4. One-touch Service In an emergency to miss accident, one can use this facility to send messages to their relatives and the ambulance center by just pressing one button.
5. Reminder Service: provides users a warning about the bus service. When going to go and where to go



Figure 3 First Screen

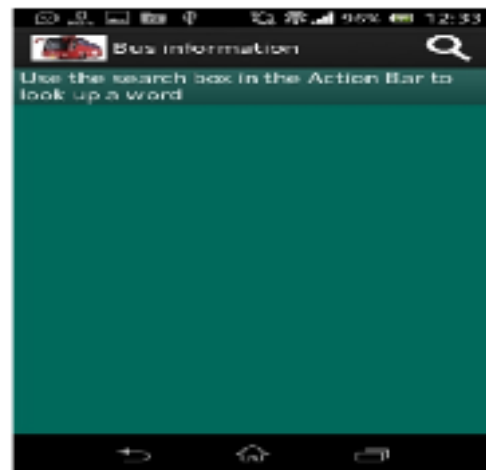


Figure 4 Bus Information



Figure 5 Bus Route Information And Time



Figure 6 Alert Services

3.3. An Android Application For College Bus Tracking Using Google Map

This journal is the *International Journal of Computer Science and Engineering Communications* (2015) pages 1057 -1061 ISSN 2347-8586 vol 3 issue 3. Journals written by Priya S. et al (2015) from the Department of Information Technology St.Peter's College of Engineering and Technology, Chennai, India.

3.3.1 results

This paper presents the bus tracking application using a smart phone. The application consists of two transmitter and receiver inbuilt in the phone. The transmitter is used to transmit the vehicle location and status information to the server. Her recipient is the user who can view details about the location of the bus using its smart phone via Google maps. Due to the movement of buses are always available on this project and also to ensure the safety of the track bus.

3.3.2 Discussion

a. System Architecture

There are three modules in this project are:

1. Registration
2. Bus Tracking
3. These Found



Figure 7 Architecture

b. Module Description

1. Registration

Modules provided for users to register themselves with details such as name, password, confirm password, email id, mobile number as shown in the image above, and use the app to track the campus bus. Registered users can log in with a user name and password once they are registered. The details of the registered students themselves will be maintained in the database.



Figure 8 User Registration

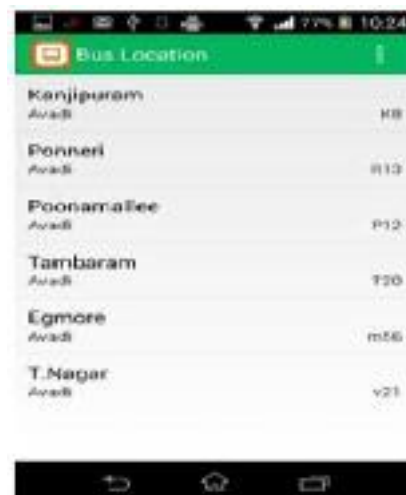


Figure 9 Bus Route

2.Tracking Module Bus

In this module when the bus right bus been found using a particular IP address that is on the bus. Then the bus location tracked by latitude and longitude. In accordance with the movement of buses, changes in latitude and longitude will be updated in the database for each minute.

3. found these modules

In this module latitude and longitude values are updated in the database is used to find the exact location of the bus using a Google map and shown the picture below.



Figure 10 These Bus Location

bus Source and destination, the user, the bus featured in Google maps with different colors to clearly identify them. The distance between the user and the bus along with the expected time is calculated and displayed.

3.4. Web Application Monitoring Draft Trans Jogja Bus Arrival Estimation Based on Location Buses With GPS Smartphone

ISSN: 2339-028X, National Symposium on Applied (SNTT) 3 2015 Yeyen Meithial *, daughter Herman Jalni Yuliansyah2 **. 1.2 Informatics Engineering Program Faculty of Technology Industry Ahmad Dahlan University Yogyakarta, Jl. Prof. Dr. Supomo, Janturan, Yogyakarta 55 164

3.4.1 Results

Based on the results of a web application Trans Jogja bus arrival estimation based on the location of buses with GPS smartphone, it can be concluded that it has designed an information distribution system consisting of android applications and web applications in hand Transjogja scheduling. Android application functions to find information estimation arrival. The web application side bus arrival estimation monitoring trans-jogja. Results of testing black box test showed that the application can be run in accordance with what was expected, while the test results Alph test showed 55% of students strongly agree and 45% agree that the implementation of android applications and the web can run well on the passenger side Transjogja.

3.4.2 Discussion

a. Results of Data Collection

Data collection is done with physical measurements that decision latitude and longitude coordinates of the location of the shelter to be inserted into the base data. Pengambilan coordinates using Garmin GPS

Map 78S. Latitude and longitude obtained by the DDD.DDDDD0 format (Decimal Degrees), are shown in the table below.

Table 1 Data *Latitude and Longitude* Trans-Jogja Shelter DDD.DDDDD0

No	Nama Shelter	Latitude	Longitude
1	Jogja Biru	S -07.783160	E 110.421300
2	Wanitasana	S -07.783240	E 110.392610
3	Urip Sumoharjo (TIP)	S -07.783180	E 110.385070
4	Sudirman 1 (Belkesda)	S -07.783050	E 110.377910
5	Sudirman 2 (Dama Putra)	S -07.783050	E 110.389480
6	Mangkubumi 1 (Tugu)	S -07.784740	E 110.388200
7	Mangkubumi 2 (PEN)	S -07.782770	E 110.386490
8	Maliboro 1 (Dana Garuda)	S -07.790870	E 110.386070
9	Maliboro 2 (Kesatihan)	S -07.795280	E 110.385530
10	Ahmad Yani (Denteng Wadobong)	S -07.799930	E 110.389950
11	Daman Palar	S -07.801470	E 110.387800
12	Pura Paksiherson	S -07.801670	E 110.374790
13	Kawunansagara 1 (Kawangan)	S -07.801850	E 110.383400
14	Kerumatsagara 3 (SGMD)	S -07.802130	E 110.383080
15	Gedung Juang 45	S -07.802300	E 110.389990
16	JEC	S -07.798600	E 110.402250

b. Implementation

Implementation is the phase encoding into a programming language. Discussion on implementation will be divided into two categories, namely the implementation of TransJogja Radar app (android application), and application scheduling TransJogja (web applications). The figure below is a view that first appeared when the application Radar Trans-Jogja opened with previous conditions are not logged in, if the user (driver) has previously been logged it will immediately switch to the page send the coordinates are visible at the center position, while to the right position is a view managed to send the coordinates.



Figure 11 Display Android Application



Figure 12 Page Views Monitor

Web Application Monitoring Estimated Arrival Bus Trans-Jogja implemented using CodeIgniter PHP framework. The programming language used is PHP, HTML, CSS, Javascript. To monitor the estimated arrival of the bus can be seen in below to choose the location of the shelter. Arrival time is calculated by the formula speed by comparing the distance bus shelter to the last position and velocity sending location data bus while driving, in order to obtain the travel time. This time will be added to the current time in order to obtain the estimated arrival of the bus at designated shelters.

4. Conclusions And Recommendations

4.1. Conclusion

Based on 4 journals were analyzed by writing that Information Systems *gps tracker* were implemented on public transport mass (bus) would greatly help the users on the go, with this application, passengers can use their time as well as possible, because the *real time* bus arrival can be in look at the applications that are provided, passengers also get accurate information about the bus, and the bus can

be seen clearly. Circumstances like this certainly can interesting public to better use public transport than the mass public transportation, and help the government to reduce the number of problems of congestion in the city of Bandar Lampung.

4.2 Suggestion

From the author for several journals, its future application development should be done, because there are still some information that should were made by the passengers as potential delays with buses arriving at a stop when the *accident* or damage to the bus crews and the time of the congestion on the road.

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