Analysis of The Concept of Global Positioning System and Location Based Services to Make A Marking Mapping Mobile

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1. Introduction

1.1Background

Information technology is increasingly developed and developing all the time, has a very important role in all aspects of all wildlife. One aspect of the emerging technology is mobile technology on smart phone devices (smartphones).One of the technologies being busy discussed smartphone is Android. Android is an operating system for smartphones. It is built based on the Linux kernel that has been modified so that it is suitable for use in mobile phones or other handheld devices. Today more and more people are using the Android operating system, almost all walks of society to use it.To determine the nearest lane to use API in Google Map.The author took the initiative to create a concept of mapping the position and distance calculator for smartphones with Android plat-form. This concept utilizes Google Maps as map and GPS service embedded on smartphones to determine the location and calculation distance. (Mapping Location Based Service (LBS) Android-Based Bengkulu, ISSN, 2014, Lia Astari, Khairil). In the process of marking a mobile mapping there are methods that can be used algorithm *devicebased*(LBS based tool). The algorithm is based on the GPS device on the phone. Mobile phones rely on the ability of the GPS device. To the authors are interested in GPS and LBS analysis concept titled **"CONCEPT ANALYSIS OF *GLOBAL POSITIONING SYSTEM* AND *LOCATION BASED SERVICES* TO MAKE *MARKINGMOBILE*MAPPING".**

2. Basic Theory

2.1 Review of Literature

In support of this writing, the authors take a few sources of previous similar studies do by previous researchers.

2.1.1 Research conducted by Lia Astari, and Khairil about "Mapping Location Based Services (LBS) Android-Based Bengkulu".

According to Mulyadi (2010: 328) GPS (Global Positioning System) is a satellite navigation system developed by theDepartmentUSof Defense (US DoD = United States Department of Defense). GPS allows us to know our geographical position (latitude, longitude, and height above sea level).GPS consists of three segments: space segment, control or controller, and users: Space Segment, the Segment Control / Controller, User Segment, Ground Segment.

2.1.2 Subsequent research by Naja Sariyun Anwar, Isworo Nugroho and Endang Lestariningsih about "Design and ImplementationApplication of Mobile Semarang Guidance On Android".

The technology applied indevices *mobile phone* today is the technology of *Global Positioning System* (GPS). By utilizing the GPS, the user can know inthe position of its *real time*existence. *Location BasedService* (LBS) utilize GPS technology to apply. Besides being able to know the position of the user, LBS applications can also specify the position of certain places. And with this combination, LBS applications will find a route to connect the user to a spot position. For someone who is traveling to an unfamiliar area, he will be difficult to find a location where. To facilitate these conditions, it would require an application route information and a brief description and ask questions through *GoogleMaps*APIs.

2.1.3 Further research conducted by Maria Agata about"Location Based Service Application The Catholic Church Located In Bandung Diocese Territory".

LBS (Location Based Service) or abbreviated Location Based Service LBS is the ability to find the geographical location of the mobile device and provide services based on location gained. Concept

LBS produces information services that can be matched to the location where the prospective recipient of the information. This leads to an increase in the value of information because the recipient can associate knowledge or information obtained where abouts.Here are the main support component technology Location Based Services which include:

1. Mobile Devices.
   Mobile devices are one important component in the LBS. This tool serves as a tool (tool) for users to request information. The results of the requested information can be text, sound, pictures and other mobile etc. Device that can be used can be a PDA, smartphone, laptop. Besides the mobile device can also function as a navigation tool in the vehicle as well as GPS-based navigation tool.
2. Communication Networks.
   The second component is a communication network. This component serves as a connecting line that can transmit the data submitted by users of its mobile devices to then be sent to the service provider, and then the result of the request sent back by the service provider to the user.
3. Component Positioning (Position Indicator / Location).
   Each service provided by a service provider usually will be based on the position of the user requesting the service.There forever need a component that serves as a processor / processor that will determine the user's position at the time of service. The user's position can be obtained through the mobile communication network or also using the Global Positioning System (GPS).

2.1.4 Further research conducted by Badru Anwar et al. On"Implementation of Location Based Service-Based Android User Position To Know".

Location Base Services is an application that relies on the specific locations and defined as well as an information service by utilizing technology to determine the position of something. Location-based services use Positioning System technology, this technology allows users to obtain location information according to their needs. LBS is included in the same category of technology with geographic information system (GIS), and the application of global positioning system (GPS), which is known as geospatial technology. This technology consists or device to collect, store, analyze and distribute data in accordance with the needs of users of geographic information systems. This service is very important for users because it can connect between geographic location information to the location its use, it strongly supports such mobility era in this period. The existence of LBS applications is the result of the merger.

3. Analysis of results and Discussion

3.1 Analysis

This section describes the results of several journals and a book that has been read by the author using GPS and LBS, so it will be known the results that have been made to achieve the desired goal or not.

3.1.1 How it WorksLBS

To illustrate how theLBS, suppose that LBS will find information about locations that are around the position of the user. Suppose now that the search function has been activated, the position of the actual user of the mobile device is obtained from Positioning Service. This can be done either by using GPS alone device or network positioning service from the provider (Cell Tower). Once the mobile device user sends a request for information, which contains the destination to find and transmit the position via the communication network to the telecommunications gateway.Gateway has a duty to exchange messages between the mobile communication network and the Internet. Therefore, he knows the web address of multiple application servers and service request specific to a particular server. Gateway saves also information on a mobile device that has requested the information. The application server reads the request and activates the associated services.Then, the service analyzes more messages and decide which additional information other than the search criteria and the user's position is required to answer the user's request. In this retrospective case series service will find that a user requires information from a database on a specific area and then the service should ask the data provider to provide data.The next service will find that information on the road, distance and means necessary to

examine whether the marking can be achieved.After all of the information service will now perform spatial buffer and routing the query to get some nearby location. After calculating the data, the results are sent back to the user via the Internet, gateway and mobile networks.Then, the information will be presented to the user in the form of a digital map.

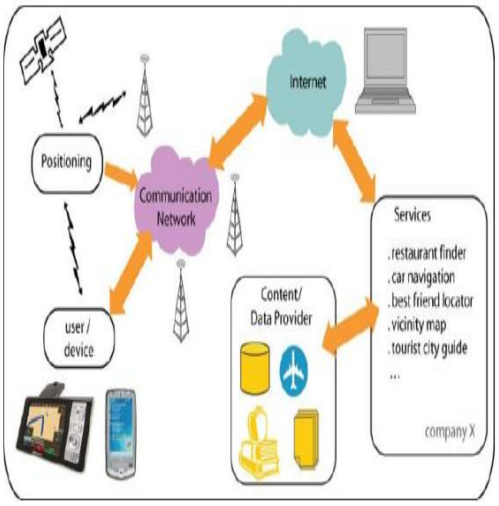

Figure 1. How it Works LBS

3.1.2 How It Works GPS

The system uses a number of satellites that are in orbit of the earth, which transmit their signals to earth and captured by a receiver. There are three important parts of this system, the control section, part of space, and part of the user, the following sections:

a. Section Controls

As the name implies, this section to control. Each satellite can be a bit outside the orbit, so this section is to track the satellite's orbit, location, altitude, and speed. The signals from the satellite is received by the control section, corrected, and sent back to the satellite. Correction of the data the precise location of the satellite is called ephemeris data, which will send it to our navigation tool.

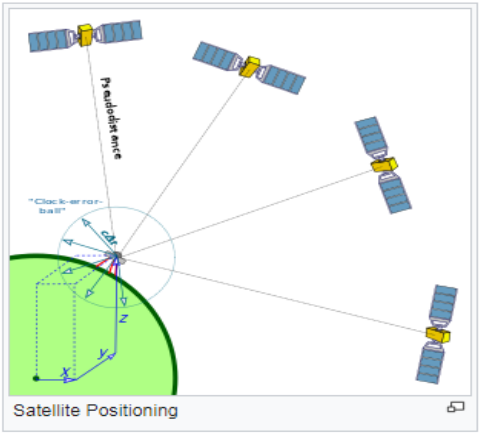

Figure 2. Positioning Satellite

b. Space Section

This section consists of a collection of satellites that are in earth orbit, about 12,000 miles above the Earth's surface. Set of these satellites are arranged so that the navigation tool at any time can receive signals from at least four satellites. The satellite signals can pass through clouds, glass, or plastic, but can not pass through buildings or mountains. The satellite has an atomic clock, and will also emit information 'time / h' is. This data is transmitted by the code 'pseudo-random'. Each satellite has its

own code. The code number will usually be displayed in the navigation tool, then we can identify the satellite signal is being received by the tool. This data is useful for a navigation tool to measure the distance between the satellite navigation tool, which will be used to measure the coordinates of the location. Satellite signal strength will also help tool in the calculation. The signal strength is more influenced by the location of the satellite, an instrument will receive stronger signals from satellites that are right on top of it (think satellite locations such as the position of the sun when 12 noon) compared with satellites that are in the line of the horizon (think satellite locations such as the position of the sunset / published).

There are two types of waves that are currently used for satellite-based navigation tool in general, the former is better known as L1 at 1573.42 MHz. The L1 signal to be received by the navigation tool. Satellites also issued L2 wave at a frequency of 1227.6 MHz. L2 wave is used for military purposes and not for the public.

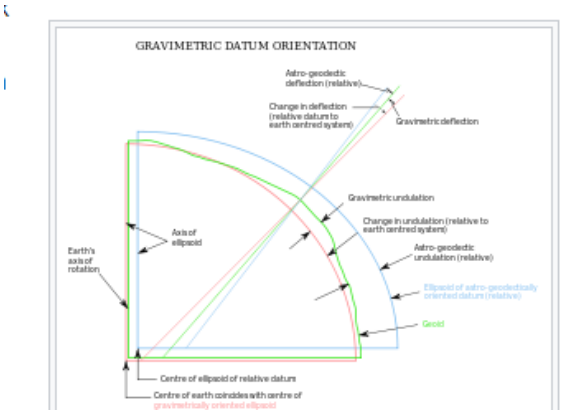

Figure 3. Orientation Gavimetri

c. User Section

This section consists of navigation tools used. The satellite will transmit the almanac data and ephemeris to be received by the navigation tool on a regular basis. Almanac data contains the approximate location (approximate location) satellites continuously emitted by the satellite. Ephemeris data transmitted by the satellite, and is valid for about 4-6 hours. To show the coordinates of a point (two-dimensional), navigation tools need at least a signal from three satellites. To show the elevation data of a point (three-dimensional), required additional satellite signals from one piece again.From the signals emitted by the satellite collection, navigation tools will do the calculations, and the end result is the coordinate position of the tool. The more number of satellite signals received by a tool, will make the tool calculate the coordinates of its position more precisely.

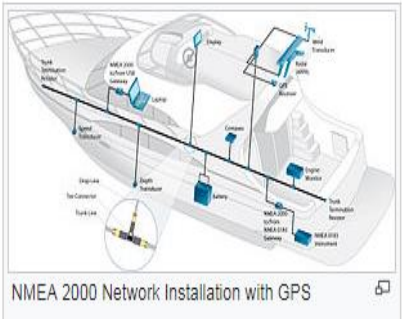

Figure 4. Network InstallationWith GPS

3.2.1 Discussion

3.2.2 Marking View Map With LBS and GPS Concept

This displayin the form of maps for navigation. In this Activity Map directly to ask questions and make the marker position received from the GPS. Has two modes, the satellite mode and normal map mode.

Figure 5. Marking Map

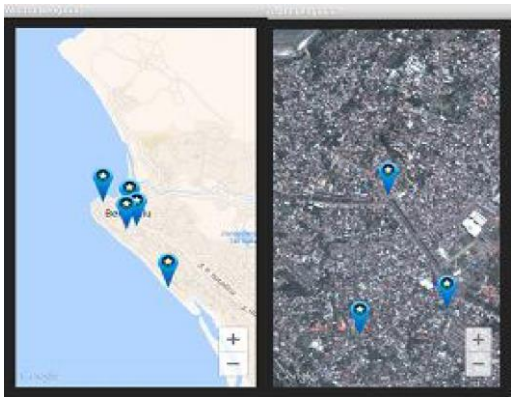

Figure 6. Display Activity Map

Location Based Service is a system that provides a service that has a geographic location so that we can see on the map. And one of the geographic data source that is currently very easy to get is in the form of location coordinates taken from our smart phones.

Android has two types of location itself, that is coarse and fine-location-location. Location coarse / rough is user specified location via the nearest base stations, has a precision that is not accurate, but saving battery power. While the location of fine-location / fine location, is the location of the user obtained through the GPS that is now common in Android devices. Fine-location has a higher precision, but wasteful batteries.On Android, the determination of this location all governed by a class named Location Manager, so location manager who will determine when to wear fine-location, or if a coarse-location when GPS is turned off. Location Manager also automatically detects the change of location going, because he has a kind of listener class named Location Listener. Class that will monitor all events, such as a change of location, the provider change, and will adjust the location detection in accordance with the existing situation.

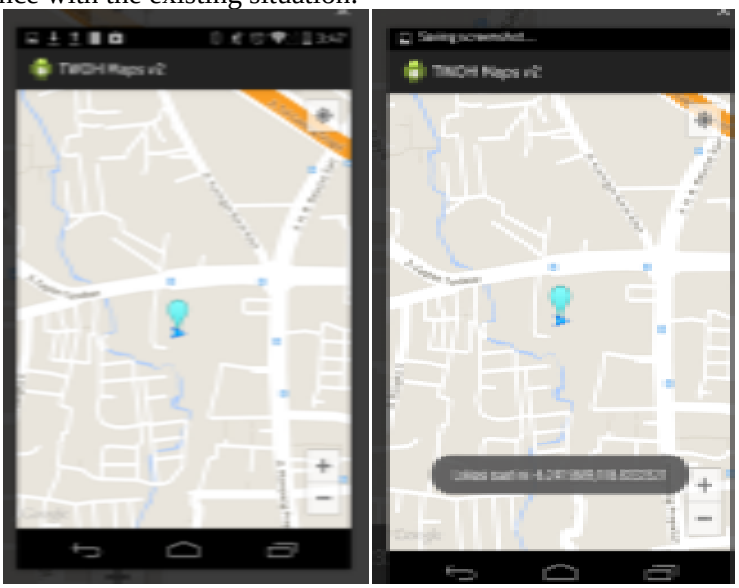

Figure 7. Marking With Lat-Long

4. Conclusions And Recommendations

4.1 Conclusion

Based on the analysis and discussion conducted can be summarized as follows:

1. LBS find information about locations that are around the position of the user, which contains the destination to find and transmit the position via a communications network to a gateway telecommunication.

2. GPS uses a number of satellites that are in orbit of the earth, which transmit their signals to earth and captured by a receiver. There are three important parts of this system, the control section, part of space, and part of the user.

4.2 Recommendations

Apart from the contribution that is given, in order to improve further, particularly with respect to methodology research, the author intends to convey some suggestions as follows:

1. In scientific writing about the concept of GPS and LBS authors hope when creating marking mobile mapping can then be according to the needs of its users ,
2. The author hopes that the writing is then performed a comparison between the GPS and LBS in making marking.
3. The author hopes that this paper can be a source / reference for other writing which write about the creation of mobile mapping marking.

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