Information Systems Method Using Bandung Destinations Location Based Services (LBS) Android-Based

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Abstract: Bandung is a city with many interesting locations to visit in it. Travelling in Bandung can be used as an option to relieve fatigue after a full day activity. The problem is when people go for a travel but do not feel like travelling instead of creating a new burden of thoughts. Selection of proper destination influential in this regard. Sistem Informasi Destinasi Kota Bandung is an application that can be used to help someone choosing a destination frequented by people in Bandung or choosing from a list of locations that have been provided by the application. By using information technology in the form of picture, maps and textual, someone can share with people a list of locations that have been visited during a visit to Bandung. These locations will be an update for others and can be accessed again using a map that can be used as a reference.

Key words: Location Based Services (LBS), Destinasi Kota Bandung, Android, Sistem Informasi Geografis (SIG), Global Positioning System (GPS)

INTRODUCTION

Preface: Bandung is a city with many interesting locations to visit in it. Travelling in Bandung can be used as an option to relieve fatigue after a full day activity. The problem is when people go for a travel but do not feel like travelling instead of creating a new burden of thoughts. Selection of proper destination influential in this regard.

Based on the number of foreign and domestic tourists statistics who visit Bandung since 2012 the number of tourists who come to Bandung showing an enchancement (Head of Culture and Tourism, 2015). In 2012 the number of tourist arrivals reached 3,513,705 people and increased by 9.84%-3,897,429 people in 2013. Then in 2014 increased by 11.79%-4.418.781 people. However, a decrease occurred in 2015 by 9.37% bringing the total tourists coming into 4,004,492 people (The Central Bureau of Statistics Bandung, 2015a, b).

The table above shows the data arrival of foreign and domestic tourists in 2010-2015. In 2010 there is a significant increase towards the year 2011 compared to other years, it is foreign tourists which increase by 7.19% and for domestic tourists increase by 22.08%. However, entering the year 2012 decrease by 18.373% for foreign tourists and 13.58% for domestic tourists. The same thing happen when entering year 2015 where foreign tourists decrease by 26.31 and 8.67% for the domestic

tourists. Nevertheless in 2013 and 2014 the data shows a fairly steady rise both in foreign and domestic so that the average number of tourist arrivals in the last 6 year stands at 3,852,624 people.

Based on the results of questionnaires about list of interesting places in Bandung they know that were distributed to 20 samples of respondents only 15% who knows a whole list of interesting places that author give to the respondent. In addition 60% of respondents claimed that they have visited the same places every year in the last 4 year with family or colleagues because it is considered the most attractive and yet they feel bored. Therefore it is necessary to have a system that can introduce locations in Bandung so the election of new destinations can still be done and also act as a media in order to exchange information with others. This study aims to improve the society information in searching locations in Bandung using applications that can meet these needs so that the parties involved can immediately access the desired information.

MATERIALS AND METHODS

Research methodology in this research include the identification of problems, formulation of research objectives, data collection and processing, system design, system manufacturing and analysis and improvement. The following are described in detail.

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Identification of problems: At this stage is to identify the problem based on the phenomenon that occurs in the society to seek resolution of the problem. In implementation of the identification of problem is how to make a system that is useful for selection proper destination.

Formulation of research objectives: At this stage is to determine the formulation of research objectives based on the identification of existing problems which is making a system to choose destination easier as well as facilitate the exchange of information about destinations in Bandung.

Collecting and processing data: At this stage is collecting data about the factors that cause people to be bored of a destination which will be the basis of establishment. Then authors use all the data that has been obtained for processing thus creating application "Sistem Informasi Destinasi Kota Bandung".

System design: At this stage defines the components involved in the system. To make the system works, it requires Android device, a server with web services and users.

Making system: At this stage is the system making of "Sistem Informasi Destinasi Kota Bandung" to assist in the selection of destinations and exchange information by accessing information through mobile applications.

Testing and repair: After the system is finished then simulation is done with the stages in the research methodology above. Then proposed indicators of achievement at each of these stages. "Sistem Informasi Destinasi Kota Bandung" final version has been tested and improved.

System design: Here is the design of systems used to build "Sistem Informasi Destinasi Kota Bandung". To make it works these components are necessary; Android device, a server with web services and users. First of all, application needs tobe installed on user's Android devices. Users can access information on the server by calling web services using application installed. Furthermore, web services will provide the information requested by the user in the form of JSON response. JSON response reprocessed by Android device into an information requested by the user (Fig. 1).

Screenshot program: Here is an example of screenshot program. This application enables users to find destinations that are frequented based on starting
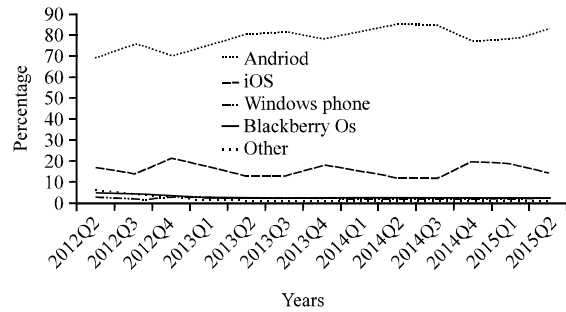

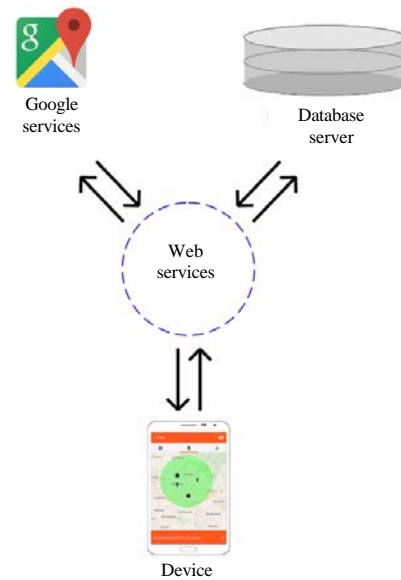Fig. 1: Operating System User Statistics Year 2012-2015

Fig. 2: System design of sistem informasi destinasi kota bandung

position determined on the map in a certain radius, the profiles of other users or based on data supplied by application (Fig. 2).

RESULTS AND DISCUSSION

Theoritical basis: Here are some basic theories used to build Sistem Informasi Destinasi Kota Bandung.

Information system: Information system is a system that is applied to an organization using information technology in order to meet the information needs of those who need them. The information obtained is the result of data processing of each element in a system into a form that is easily understood by the recipient so that it can be used for making a decision (Table 1).

Table 1: Number of Foreign and Domestic Tourist in Bandung year 2010-2014

		Tourist	
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Years	Foreign	Domestic	Total
2010	180,603	3,024,666	3,205,269
2011	194,602	3,882,010	4,076,072
2012	158,848	3,354,857	3,513,705
2013	170,982	3,726,447	3,897,429
2014	176,487	4,242,294	4,418,781
2015	130,039	3,874,453	4,004,492

Table 2: Percentage of operating system users year 2012-2015

Periods	Android (%)	iOS (%)	Windows phone (%)	Other (%)
2015Q2	82.8	13.9	2.6	0.70
2014Q2	84.8	11.6	2.5	0.12
2013Q2	79.8	12.9	3.4	4.00
2012Q2	69.3	16.6	3.1	11.00

Fig. 3: Screenshot program

Android: Android is an open source operating system. Android has a large number of application developer community that extend the functionality of the device, generally written in a customized version of the Java programming language. Based on the number of operating system user statistics year 2012-2015, since 2012 the number of users of Android operating system shows an increase. In 2012 the number of users of Android operating system reach 69.3% and increase by 10.5-79.8% in 2013. Then in 2014 increase by 5% bringing the total users of Android operating system to 84.8%. Then in 2015 decreased by 2-82.8%. However, comparing the Android users and other operating systems users are still relatively quite large at 8: 2 (IDC, 2016) (Fig. 3, Table 2).

By dominating the Android operating system, the developers try to create the best applications due to the high potential market opportunities in the world of Android. Various types of applications such as tourism began to develop on Android devices.

Global Positioning System (GPS): Global Positioning System (GPS) uses a system to determine the position on the earth by satellite signal synchronization (Prahasta, 2009). GPS makes someone knowing the position of the object he wants through a device that has a GPS sensor in it. GPS works when the satellites are in the orbit the Earth emits a signal to Earth. The signal is then captured by the receiver which later transformed into information in the form of point locations. Since, it is totally dependent on the satellite, the satellite signal is the most important factor to get the object position information in the form of point coordinates. Things that can interfere satellite signals including geographical conditions, electromagnetic waves, buildings and bounce signals.

CONCLUSION

Based on problems are found then one way to improve knowledge of the destination information in Bandung is by using an application that can meet these needs so that the parties involved can immediately access the desired information. In this study, there is still a shortage of applications such as requiring the development of Google Places, Google Directions and Geocodes.

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