Article

Android – Based Nearby Location App For Orphanage Searches Using Google Place API Technology With Agile System Development Method

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ABSTRACT

At this time the public is already aware of the value of sharing with the needy, so the search for orphanages has increased dramatically. Often the community has difficulty knowing the location of the orphanage around, as well as the condition of the orphanage which includes the number of children, the number of caregivers, and what are the needs of the orphanage without coming to the orphanage location. In addition, there are often overlapping scheduling problems that often make people who want to hold activities experience unilateral cancellation and there is also the issue of donations where people are confused how to give a little from their income to the orphanage without having to come to the location. With agile development systems method designed nearby location application using Google place, which is obtained the core of the problem is the difficulty of finding information orphanages and not easy to find orphanages around. Therefore, with this nearby location application is expected to help the public to find information on orphanages closest to their location, as well as be able to schedule activities that can be monitored in real time. So there is no overlap back on the activity. In addition, there is a function of giving donations, so that people can donate without having to come to the orphanage.

INTRODUCTION

In the last five years, the use of information and Communication Technology in Indonesia has shown rapid development. The development of technology that is too advanced, beyond many people's expectations, requires all parts of human activity to be able to adopt, adapt, utilize, and produce something useful for life sustainability. In the technological era of the 20th century, some processes are driven by changes in the system as a whole, either directly or indirectly [1]. The percentage of the population using mobile phones continues to increase, until in 2018 reached 62.41 percent[2], so the use of applications also increased rapidly. According to Dimitri Mahayana, a Lecturer in the Scholl of Electrical Engineering and Informatics ITB who is also as Data Scientist Sharing Vision

that about five million applications running on smartphones today, 40 percent of them are android applications. Many mobile phone or smartphone users use applications on their devices. A wide variety of applications have sprung up from games, learning apps to location search apps. About 65 percent of user's active the location searches application on their device [3]. Location search application requires accurate and fast information. Information is needed in the form of geographical information on region. Information is important for making decisions. This information is collected on geographic information systems. The development of Geographic Information System (SIG) is advancement in the field of science and technology in Indonesia, more and more companies or government agencies that need data from geographic information systems as one of the processed data that is very important to be used as analytical material to make a development plan. This Geographic Information System builds and Android Mobile-based application that uses technology from the Google place API making it easier to provide accurate information about the location of nearby locations around. Google Place API is an interface provided by Google for developers who want to get place data in Google maps. With Google Place API we can search various locations such as Hospital, Banks, Schools, Orphanages, and etc. Orphanages are the main topics that will be covered in this research. Orphanage is a place where orphans, children with special needs, children from underprivileged families are cared and nurtured [4]. Orphanages in the present have spread throughout the region, whether it's big or small cities. It is usually difficult to find a list of orphanages and know all the data and schedules of the

orphanage even though there has been a lot that has sprung up when we open Google maps. To do social activities in orphanages, usually the community will directly visit several orphanages to find information where a suitable place to hold activities that want to be done. This method is less effective and efficient, because there will be obstacles that take a long time just to check in every orphanage. One that can be used is utilizing Geographic Information System (GIS). Where the user canbe helped by searchingfor orphanage location around users. GIS can be applied using agile development methods. Agile methods are one of the methods often used in the software development process [5]. Agile software development methods or agile methodology is a set of software development methodologies bases on iterative development, where requirements and solutions develop through collaboration between organized teams [6]. From the above understanding can be taken the meeting point that Agile Development Systemis a software development management methodology that has a high adaptability to changes that occur in each of its elements. One of the characteristics of agility is the existence of a continuous iteration process and evaluation that continues to run on every process it passes. So this research uses Google place fire to find location points that have been provided by Google like Google maps. Which will be used as an orphanage search with the aim to see the complete data of the orphanage and the schedule of orphanage activities.

I. LITERATURES REVIEW

Android

Android is an operating system on mobile phones that is open and based on the Linux operating system [7]. Android provides open

source code for developers to create their own apps that will be used for a variety of mobile devices. Initially, Google Inc. Buy Android Inc., a newcomer that makes software for phones. Then to develop Android, the Open Handset Alliance was formed, a consortium of 34 hardware, software, and telecommunications companies, including Google, HTC, Intel, Motorola, Qualcomm, T-Mobile, and NVidia. At the time of the first release of Android, November 5, 2007, Android together with the Open Handset Alliance stated that it supports the development of open standards on mobile devices. There are 2 types of distribution of android operating system. The first to get full support from Google or Google Mail Service (GMS) and second is the free distribution without Google's direct support known as Open handset Distribution (OHD).

API

API or Application Programming Interface is a technology that facilitates the exchange of access to data, services, and other information to help developers. To use the API in full requires cooperation that is mostly paid. It can be concluded that an API is a medium that stores the information needed to be processed and used properly[8].

Google Maps API

Google Maps was first developed by Lars and Jens Rasmussen, both from Denmark. In June 2005, Google released a public API of Google Maps for developers. The way the Google Maps API work is by displaying multiple sets of images that can form tiles and work behind the scenes using Ajax calls on the web. The Image displayed is a combination of HTML, CSS and JavaScript technologies simultaneously [9].Not only

map images, Google maps also display special objects called overlays. Object overlays provided by Google, among other:

a. Marker signifies a single location on the map, the icon displayed can use images with special icons (custom).
b. The info window displays content (text, images or a combination of both) in a popup balloon in a specific location on the map.
c. Polyline is used to display lines on maps, such as directions.
d. Polygon is used to mark a shape of an area such as the boundary of a region.
e. Square and rectangular to indicate an area as needed.

We can use the service for free because Google gives free 3 months. To use this facility for free then we have to register auto payment with the credit card we have. But after 3 months it will be collected according to the search query from $5 to $30 depending on the function used (source: Google's official website, https://cloud.google.com/maps-platform/pricing, retrieved October 21, 2020).

Google Places API

If the Google Maps service only displays the place name on the map, with the Google Place API we can get more detailed information. Information obtained includes finding a restaurant, rating of places, addresses, reviews, and many more features that continue to be developed [10]. The Google Place API is a service that returns information about where to use HTTP request. Place are defined in this API as companies, geographical locations, or place of interest source: Google's official website, https://developers.google.com/place/web-service/overview, retrieved October 21,

2020). In this study, the Google Places API service was used to record names and other useful information, such as addresses, latitudes, and longitude.

Agile System Development

The development method chosen is Agile Software Development type Extreme Programming (XP). The choice of Extreme Programming because the software to be made is not complex, classified as small scale and takes a short time. Agile type Extreme Programming includes several rules in practice, consisting of planning, design, implementation / coding and test [6].
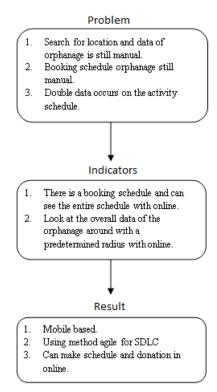
II. FRAMEWORK

Figure 1. Framework

III.   METHODS

Use of the Agile Method

Applying agile methods of this type of extreme to this study provides convenience

for the author. This agile xp method helps accelerate the changes that occur when there is a request to change a process. The processes are carried out to conduct research, as the points below:

1. Planning
    a. Identifying problems
    b. Create Users Stories at the core of the planning of XP
    c. Determine the purpose of the application
    d. Specify app users
    e. Determine the information needed
    f. Identify and analyze application needs
    g. Create Use Case as an overview
    h. Create an Activity Diagram as an overview of application activity.
2. Design
    Create a design of each user stories that has been created at the planning stage so that the design is formed in accordance with the function desired by the author.
3. Coding
    At this stage the author coding using the Java Language in the android studio based on the design that has been made.
4. Testing

The authors conducted a trial by conducting black box testing and white box testing to measure whether the application was running with proper logic.
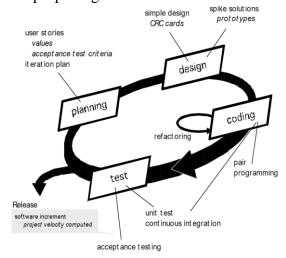

Figure 2. Process of Agile Extreme Programming

Users Stories

At first I did an identifier of the problem that appeared in every orphanage search whose schedule was empty. Some user's stories are created:

1. As a donor, I want to see the orphanage schedule so that I can book the orphanage schedule.
2. As a donor, I want to see an orphanage within 5 KM so that I can find an orphanage around me.
3. As a donor, I want to make a donation without coming to the orphanage so that I can send it through a delivery or transfer service.
4. As an orphanage, I want my orphanage to be searchable so that every activity and donation can be coordinated.

Use Case Diagram

Use case diagram are used in the proposed system to describe a new system process. Use case diagrams are made easier to understand the suggested system. Use case diagram depicted with 3 actors who will use the system (users) who have access rights or system facilities that they will use, namely, the orphanage has the right to accept donation requests and activities requested by donors, add and change the data of the orphanage such as the number of children, the number of administrators, needs, the donors have the right to make donations in the form of goods and materials, looking at the schedule of activities of the orphanage sought, the admin has the right to accept or reject the request of the newly enrolled orphanage.
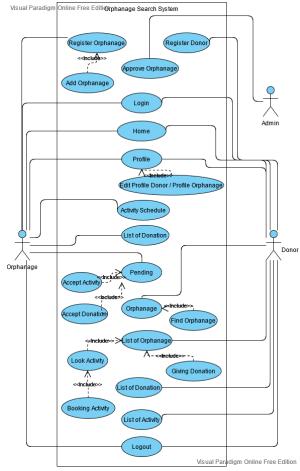

Figure 3. Use Case Diagram of the Proposed System

IV. RESULT

Post-Application Questionnaire

After the system is created, then the distribution of applications and questionnaires to 22 random correspondents to get results from the system according to the user as follows:

Table 1. Post-Application Questionnaire

No	Questions	Answer		
1	Have you ever done social service or social action to an orphanage?	often	infrequently	never
		3 (13.6%)	4 (18.2%)	15 (68.2%)
2	Is it hard to find an orphanage?	difficult	not really	easy
		7 (31.8%)	15 (68.2%)	0 (0%)

3	Have you ever used the Maps app?	often	infrequently	never
		19 (86.4%)	2 (9.1%)	1 (4.5%)
4	How does the Orphanage Search App (YukBerbagi) look like?	attractive	normal	Unattrac-tive
		15 (68.2%)	7 (31.8%)	0 (0%)
5	Is the Orphanage Search App (YukBerbagi) accurate enough to find orphanage around you?	accurate	enough	Inaccu-rate
		13 (59.1%)	9 (40.9%)	0 (0%)
6	Can the Orphanage Search App (YukBerbagi) help you to see the empty schedules in the orphanage you are looking for?	ok	maybe	No
		14 (63.6%)	8 (36.4%)	0 (0%)
7	Is it easy to use the Orphanage Search App (YukBerbagi)?	easy	not really	Difficult
		16 (72.7%)	5 (22.7%)	1 (4.5%)
8	If it is in the playstore, do you want to install this Orphanage Search App (YukBerbagi)?	ok	no	maybe
		12 (54.5%)	10 (45.5%)	0 (0%)
9	Have you ever used a similar app?	ok	no	maybe
		21 (95.5%)	1 (4.5%)	0 (0%)
10	Will you still install this Orphanage Search App (YukBerbagi)?	ok	no	maybe
		12 (54.5%)	10 (45.5%)	0 (0%)

After compiling from the results of the questionnaire, then obtained some result as in the table above. From question number 6 is "Can the Orphanage Search App help you to see the empty schedules in the orphanage you are looking for? And there 63.6 percent of correspondents rated the app as helpful for viewing orphanage data and activity lists. The results obtained from this study are that donors can easily see orphanage data, see empty orphanage activity schedules, and can make donations.

Figure 4. Schedule Activity Orphanage View

Figure 4. above is the view schedule activity from orphanage per day. It is can only be viewed or accessed by the donor uses, because the donor wants to see the schedule of activities for booking that day.

Figure 5. Donation View

Figure 5. above is donation view to be accessed by the donor user. Where donors

can make donations in the form of money and goods to the orphanage.

V. DISCUSSION

As we know, that nowadays to create and order schedule activities at orphanages are still done manually. If we have often held in one place, we just phone or chat through Whatsapp. What if the orphanage we have never been to at all and we want to hold activities at the orphanage? Therefore, the Yukberbagi application is designed to solve the problem.After knowing how the system works, the following will display the appearance of the created program.
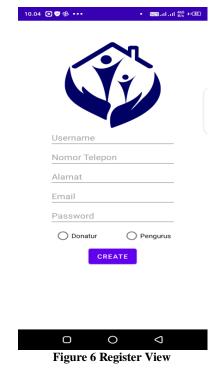

Figure 6 Register View

Figure 6 above is register view where before using the application we must first register in order to use the application.
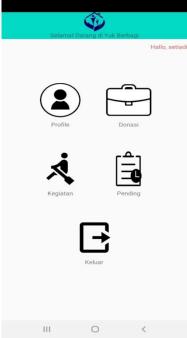

Figure 7. Main View Orphanage

Figure 7. above is the main view of the orphanage user. Users can view profile, donation lists, activity lists, pending lists and exit applications.
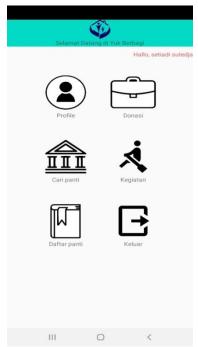

Figure 8. Main View Donor

Figure8 above is the main view of the donor user. Users can view profile, donation lists, find orphanage, activity lists, orphanage lists and exit applications.

Figure 9. Find Nearby Orphanage View

Figure 9. above is the view where we can find the location point of the orphanage around us within a radius of 5 Km. The orphanage search app is designed to solve the problems of the above framework. Especially for the problem of overlapping activities.

VI. CONCLUSION

The conclusions about nearby location app for orphanage searches using Google place API technology with agile system development method that have been described are:

1. With the application, donors can easily see the data - the necessary data is the number of children, the number of caretakers and the needs of the orphanage.
2. This application makes it easier for us without having to visit in the pandemic period.

VII. ACKNOWLEDGEMENT

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BIOGRAPHY

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