FIRE DISASTER REPORTING APPLICATION WITH GPS TECHNOLOGY PHOTO TAGGING BASED ANDROID

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ABSTRACT

Firefighters, Branwir, FMD, or the officer or agency is damkar trained and tasked to tackle fires. In addition to trained firefighters to rescue the victims of the fire, also trained to rescue the victims of traffic accidents, the building collapsed, and others. In addition the officer damkar have difficulties in handling the fire disaster, namely the difficulty of information obtained from the society for less so clearly, the difficulty of determining the location of a aksespada fire is often hampered by congestion, difficulty to find the scene of the fire disaster based on information obtained by the public, community the difficulty knowing the position of firefighter.

Based on these problems then it can be inferred the GPS Photo Tagging and Google Maps can be used to get information of reported fire disasters from the community in the form of photos, along with locations taken photos, besides communities can also see the position of the presence of firefighters to help tackle the fire early on.

Based on the test results using the method of Black Box it can be concluded that the application of firefighting help officers to find information faster and fire officers can find out the location of fire disasters accurately.

Keywords: GPS Photo Tagging, Damkar, Google Maps

1. INTRODUCTION

Firefighters, Branwir, FMD, or the officer or agency is damkar trained and tasked to tackle fires. In addition to trained firefighters to rescue the victims of the fire, also trained to rescue the victims of traffic accidents, building collapse, etc. [1]. In the year 2016, there are 106 cases of fires in the city of Bandung, with each victimsuffered losses of material and imateril are quite high, 80% of all cases of fires caused by electricity short-circuit. From the Office of Fire prevention and Supression of Bandung has also done someefforts to reduce the number of fire cases in the city of Bandung and also asked forcooperation with the community in order to minimize the number of cases of fires in the city of Bandung.

Based on the results of the questionnaire and the interview with Mr. Asep Rahmat as Firefighting operations section of Bandung city, handling Fire Department Firefighter Bandung often have difficulty that is 10% of the difficulty of information obtained from the public and the information is less so that the delay in handling fires often happen, 25% of the difficulty of determining the access at a location of fires has often hampered by bottlenecks kendaaraan , 50% of the difficulty to find the scene of the fire things based on information obtained by the public community, 15% of the difficulty knowing the position of Fire Department vehicles. To overcome such difficulties, therefore it takes a pembangunana media or applications that could provide information in realtime.

There are some technologies that can help build media i.e. one with using a GPS Photo Tagging, aiming to provide a photograph and its location.Operating system android is used for authorized because the current android has a market

share of 87.7% of all smart phone that is turned on.

Based on the description of the problems described above, then it becomes the basis of making an app or media fire disaster reporting that aims to help the community make it easier for reporting a fire disaster occurrence and mak e it easier for officers to do fire disaster management

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2. The CONTENT of PAPERS

2.1 *Android*

Android is an operating system for linux-based mobile devices that includes an operating system, middleware, and applications. Android is an operating system for cell phones are Linux-based.Android provides an open platform for developers to create their own applications. It was initially developed by Android Inc., a company that makes newcomers software for mobile phones that was later bought by Google Inc.For its development, an Open Handset Alliance (OHA), a consortium of 34 corporations hardware, software, and telecommunications including Google, HTC, Intel, Motorola, Qualcomm, T-Mobile, and Nvidia [2].

2.2 *Global Position System (GPS)*

GPS is a satellite infrastructure serving the placement position of various objects (Speikerman 2004).GPS was first used for the benefit of the military, but in the years 1980-90s Born States Government decided to make the system freely and positioning and is available for a wide range of industry in the world. According to the (Roth 2004) GPS system consists of three segments, namely [7]:

*1. **User Segment** consists of the mobile device from the user (GPS receivers).*

*2. **Space Segment** composed of satellites. Each satellite has a heavy falling between 1.5 to 2 tons and had an autonomous energy which is supplied by solar cells*

*3. **Control segment** required administration by satellite as a correction of the satellite internet data (time systems and orbital).*

GPS can do calculations and determine the position of the user and displays it in the maps. If it can save the position of the next GPS users can count on other information, such as speed, direction go, routes, travel destinations as well as distance goals.

2.3 *Location Based service (LBS)*

LBS is a service that provides information about a place, accessible with mobile devices through the mobile network and have the ability to use the geographical position of the mobile device (Archanam1989, 2012).

Location Based Service (LBS) or location-based services are information services that can be accessed through a mobile device by using a mobile network which features the ability to take advantage of the location of the mobile device. LBS gives the possibility of two-way communication and interaction. Therefore the user tell the service provider to give information, with reference to the position of the user.Location-based services can be described sebagaisuatu service which is at the confluence of three technologies:

*1. **Pull Service**: the service is provided on request from customers will need a information. This type of service can be analogized as menggakses a web on a network the internet.*

*2. **Push Service**: this service is provided directly by the sevice provider without waiting for a request from the customer, of course the information provided remains with regard to customer requirements.*

This technology is used in the construction of mobile application reporting catastrophic fires, to determine the geographic location of the place of occurrence of catastrophic fire, and can find out the position of the user.

2.4 *UML*

UML design tool is oriented on the object sistemyang. UML diagram has a goal to help development teams communicate, explore potential designs, and validate the architectural design software or the manufacturer of the program.

UML diagrams are classified into two categories; structure and behavior. Structure diagrams for visualizing, specifying, constructing, and documenting the static aspects of the system.Diagram of the structure which will be discussed in this writing is the class diagram, while the behavior diagram for visualizing, specifying,

constructing, and documenting the dynamic aspects of the system.Diagram behavior that will be discussed at this writing is the use case diagrams, sequence diagrams and activity diagrams.

UML being the method used to build the system was the OOAD (Object Oriented Analysis and desaign) [13].

2.5 *Geotagging*

Geotagging is the combined features of a camera with a GPS (Global Positioning Sytem) in order to provide information, relatime where and how the condition of an object. Mobile phones dilengkapai facilities can be used to generate geotagging photo position data that save information, such as GPS latitude and longitude, altitude, bearing, distance, accuracy data, and place names.Many mobile phones are equipped with GPS location can add photos into photo metadata, or commonly called EXIF data, automatically so that the location of the image can be displayed into the map [7].

2.6 *Google Maps*

Google Maps is an online map or open a map online, can be done easily through a free service from Google.Even this service provides API (Application Programming Interface) that allows other developers to take advantage of these applications in applications.Google Maps can also display selected, based on the original photo or image map routes only.

Googlemaps is a free service provided by Google and are very popular. Googlemaps is a map of the world that we can use to view an area.In other words, GoogleMaps is a map which can be viewed by using a browser. We can add features to the web in GoogleMaps we have made our blog or on a paid or free though with GoogleMaps API. Googlemaps API is a library in the form of JavaScript [15].

2.7 Web Service

Web service is a software system designed to support interoperability and interactions between systems on a network.The Web service is used as a facility provided by a web site to provide the services (in the form of information) to the other system, so that other systems may interact with the system through the services (service) provided by a system that provides a web service.Web service data store information in XML format, so that this data can be accessed by other systems even though different platforms, operating systems, as well as language compilers [3].

2.8 *Business Rules analysis*

Business Rules analysis conducted by explaining the terms that occur in existing business processes. Analysis of the business rules implemented in business processes in applications to be constructed are as follows:
a. Just an android based mobile users can use this application.
b. the Rapporteur can do a fire disaster reporting through android-based smartphone.
c. Officers damkar gets notification when there is a report.
d. Officers damkar can mengatuhi fire location using GPS installed on the smartphone.
e. damkar Officers could see the path that should be skipped, the distance, and the travel time shown in Google Maps.f. Admin in damkar has the task of managing the data clerk, data access rights, user data applications.
f. Admin in damkar has the task of managing the data clerk, data access rights, user data applications.

The rapporteur can see information officer position that damkar sedag walked to the fire disaster.

2.9 *System Architecture Analysis*

The stage is the stage of system architecture analysis to get an overview of the system to be built. Be it the description of system admin Backend or Frontend system overview (mobile user). An overview of the system architecture can be seen in Figure 2.1

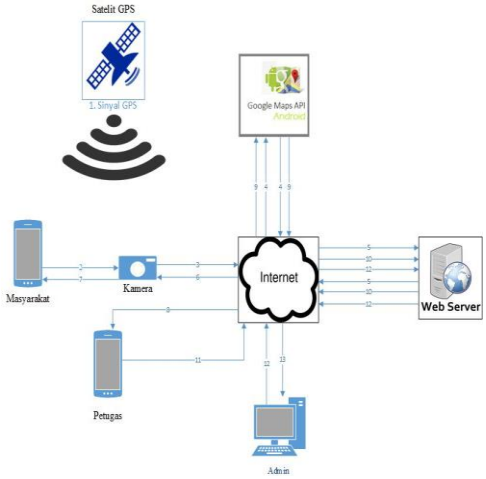


Figure 2.1 system architecture

2.10 *A functional needs analysis*

A functional needs analysis performed using UML tools, as for the stages of analysis using UML use case diagrams, include use case scenario, activity diagrams, and class diagrams. A functional needs analysis on the android mobile platform will be described as follows:

2.10.1 *Functional needs analysis Frontend*

2.10.1.1 *Use Case Diagram*

Use case Diagram is one of the diagrams to model aspects of the perilakau system. Each use case diagram shows a set of use case, actors, and their relationship.

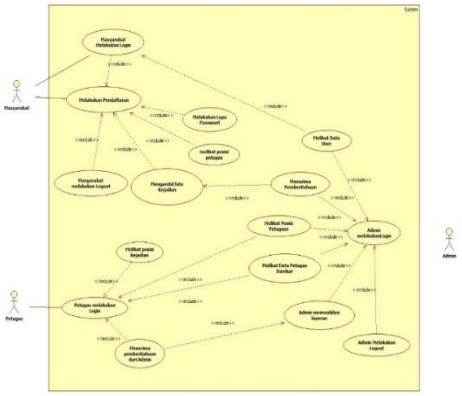


Figure 2.2 Use Case Diagram

2.10.1.2 *Sequence Diagram*

A sequence diagram shows interactions between objects. This diagram is a dynamic view of the system. This diagram emphasizes on the side of the base of the keberurutan time of messages that occur.

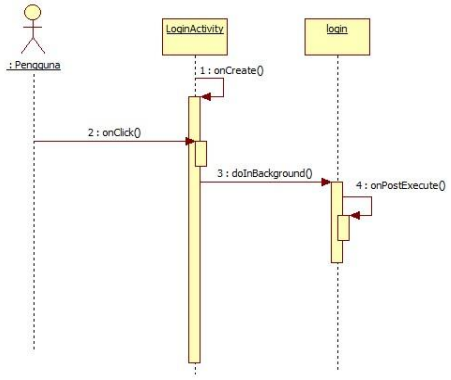


Figure 2.5 Sequence Diagram Login Activity

2.10.2 *Functional needs analysis Frontend*

2.10.2.1 *Class Diagram*

Class diagram describes the structure and description of the package, class, and object as well as have a relationship between one object with another object Class diagrams from this fire disaster reporting application based on the class – the class that is contained in the program.

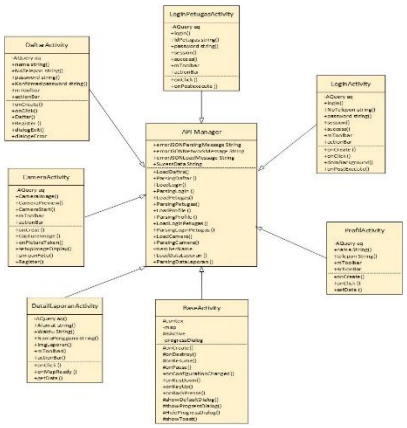


Figure 2.6 Class Diagram

2.11 Design System

2.12.1 Relation Scheme

The partnership scheme is a series of relationships between two or more tables in a database system.

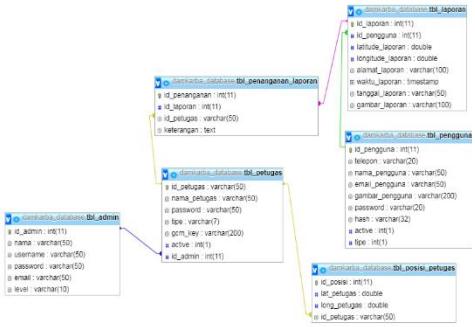


Figure 2.10 Frontend Relation Schem e

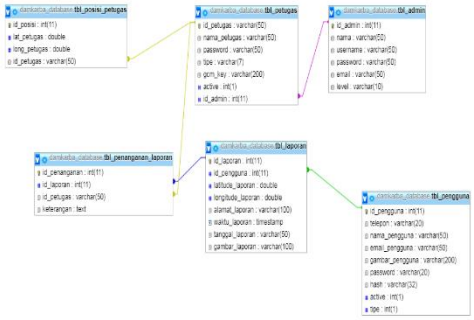


Figure 2. 11 Relation Scheme Backend

2.11.5 Struktur Menu

The design of the structure of the menu is the description of the line usage application so that applications built easily understood and easy to use

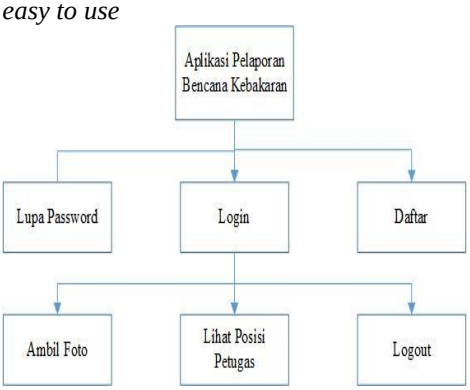


Figure 2.12 Menu structure of society (Frontend)

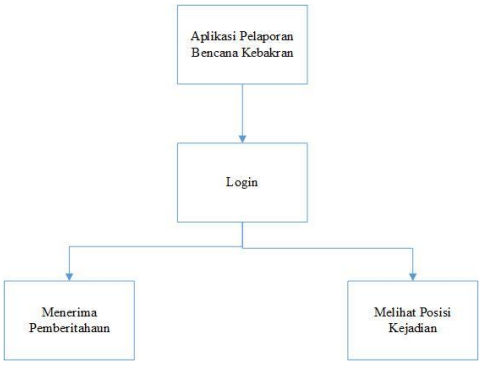


Figure 2.13 StrukturMenu Officer (Frontend)

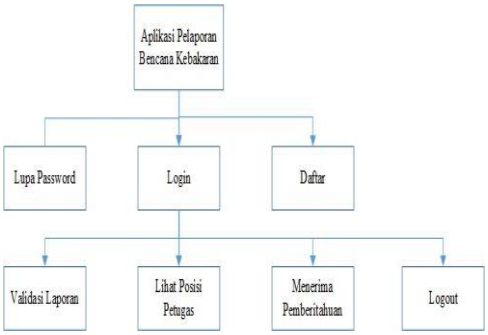


Figure III. 35 Backend Relation Scheme

2.12 Implementation

System implementation stage is the stage of translation of design based on the results of the analysis into a specific programming language as well as the application of the system to be built in the real environment. At the stage of testing the system, which will be discussed, namely the implementation of the interface and the test results.

2.12.1 The Backend Interface Implementation

1. *Login Interface Implementation*



Figure 2.15 Backend Login Interface Implementation

2. *The implementation of the Home Interface*

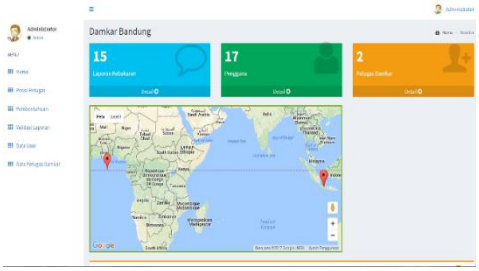


Figure 2.16 implementation of Backend Interfaces Home

3. *Implementation of the interface Position Officer*

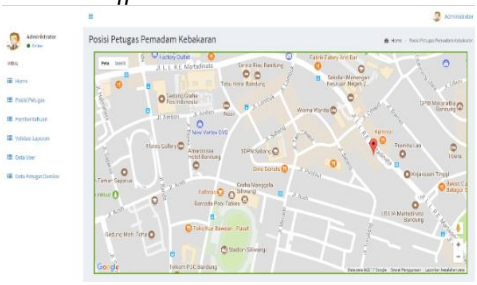


Figure 2.17 Backend Interface Implementation Officer Position

4. *Implementation of the notification Interface*

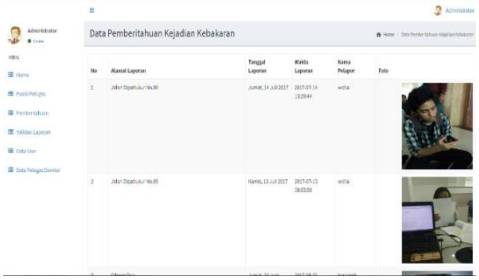


Figure 2.18 implementation of Backend Interface Notification

5. *Implementation of the interface for User Data*

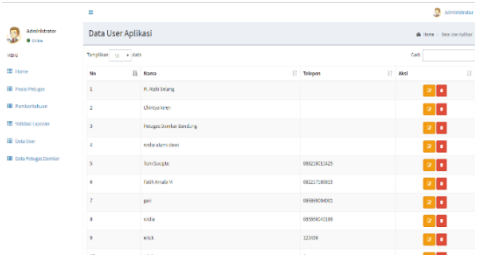


Figure 2.19 implementation of Backend Interface Position Officer

6. *Data Interface Implementation Officer Damkar*

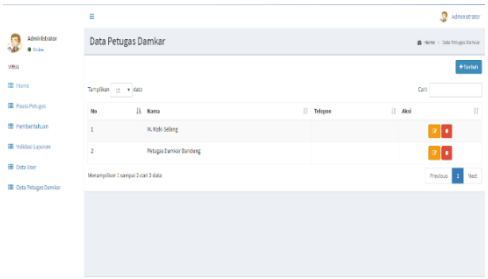


Figure 2.20 Data Backend Interface Implementation Officer Damkar

2.12.2 The Frontend Interface Implementation

1. *Implementation of Community Login*



Figure 2.21 the Frontend Interface Implementations Officer Position

2. *Implementation of the registration*

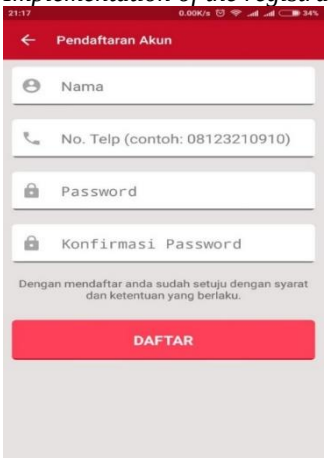


Figure 2. 22 the Frontend Interface Implementation registration

3. *The Implementation Of Main Page*

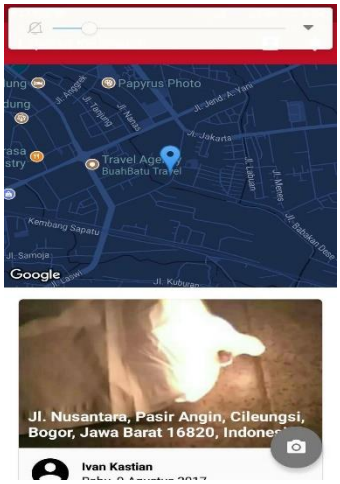


Figure 2. 23 Main Page Frontend Interface Implementation

4. *Implementation Report*



Figure 2.24 the Frontend Interface Implementation Report

5. *Implementation of the Log Officer Damkar*

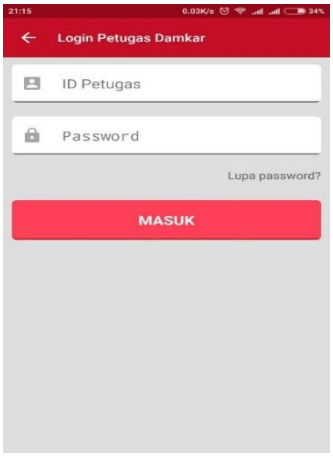


Figure 2.25 the Frontend Interface Implementation Damkar Officer Login

6. *Main Menu Implementation Officer Damkar*
7.

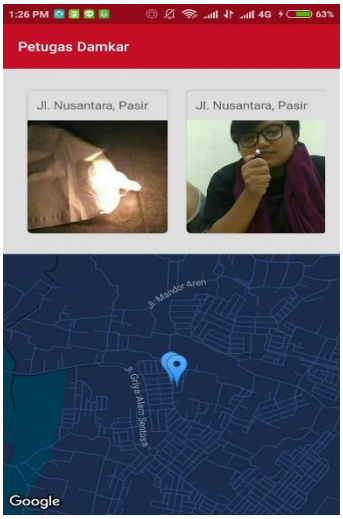


Figure 2. 26 the main Menu Interface Implementation Officer Damkar

3. CLOSING

3.1 conclusion

Based on the results of the analysis and implementation of obtained in making this final task, can be drawn the conclusion that the results of the application of design fire really help disaster reporting Officers and the public in reporting the fire disaster, also very helpful Admin in giving information and reports to the clerk. Following are the results from the reporting application development goal disaster fires and obtained the following results:

1.*Making fire reporting applications to provide information accurately to the Fire Department in the city of bandung has been fulfilled because the system uses GPS Photo Tagging dimaana report provides information in the form of photos and location details and took the photo.*
2.*The making of fire reporting applications to provide information that will be on the road traveled by the officers of the fire to avoid congestion have been met since the system uses a google map.*
3.*Making the application of reporting fires to ease the search location of fires that sent by users has been reached because of the results of the questionnaire, 82% of officers easily get the location of the fire, so minimize the delay the officer came to the location of the fires.*
4.*Making the application of fire to provide information reporting the presence of officers has been reached because damkar of questionnaire results, 77% of these applications help the community know the whereabouts of the officers so that the community can cope before officers arrived at the site of the fire.*

3.2 Advice

Fire disaster reporting software android-based application is built that focuses upon reporting a fire disaster, therefore there are some suggestions that can be used as a blend of software development towards a better growth in support of the user and the content on this software. As for the suggestions towards the development of the software is as follows:

1. *Developing applications to be used in areas other than the city of bandung.*
2. *Developing applications to be able to report a disaster other than fires.*
3. *develop these applications in order to support other platforms such as ios and windows phone*

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