

DESIGN AND DEVELOPMENT OF MONITORING SYSTEM APPLICATIONS LYN SEPARATION OF STTAL PERSONNEL BASED ON ANDROID SYSTEM

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ABSTRACT

The STTAL personnel pickup lyn mechanism and system is a means of pick-up transportation that helps STTAL personnel to transport departures from the pickup location to the work unit (satker). With the STTAL personnel pickup lyn facility can improve the performance of personnel at each work unit, travel time to the work unit is faster than using public transportation. Updated information related to vehicles in support of personnel pick-up cannot yet be fully accessed by personnel, so misinformation often occurs. Therefore, it is necessary to design an Android-based personnel pickup lyn monitoring system application. Here we will design a device for monitoring the pickup lyn by using a transmitter device in the form of a cellphone carried by a man or driver. This system can provide information through an application that is embedded on Android by looking at an integrated application in Open Street Map, which is able to send vehicle position data through an application that is planted on the Android user so that STTAL personnel can monitor the position of pickup service vehicles and updated information related to the vehicle. worn. Users can access the application and see the pickup lyn position on the android mobile. After this system is built, it makes it easy for all STTAL personnel who use the pickup service vehicles to monitor the position of the vehicle through applications that are planted on Android.

Keywords : Android, Lyn pickup personnel, Open Street Map

1. INTRODUCTION

Background

In supporting the needs of the Indonesian Navy personnel, the Transport Unit (Satang) has basic duties and functions that are vital in the implementation of personnel movement towards work units. Support by transport units through existing modes of transportation such as (Truck; Bus; Car) is an important facility and infrastructure to be considered both the condition of the vehicle and the condition of personnel in the needs of official vehicles used.

Official vehicles (randis) as a mode of transportation is one of the important elements of the transport unit in supporting the routine mobility of the personnel service to the work unit. With the STTAL personnel pick-up transportation facility it is expected that travel time to the satker is faster than using public transportation, so as to improve the performance of each personnel in each of the satker, the final destination of the pickup vehicle is in accordance with each worker's satker. In the implementation of the randis field in supporting personnel services to the satker they often experienced problems including :

1. Personnel who are far away in the work unit cannot monitor the presence or randis during pickup so that it causes too long waiting times.
2. The updated information related to the vehicle in support of personnel pickup cannot yet be fully accessed by personnel, so often the wrong information occurs.
3. Recording maintenance or maintenance of STTAL official vehicles.

In today's development of technology and information sophistication is a trend for all people to support and overcome existing problems. One of them is technology that is applied to this modest transportation mode. by maximizing the function of the Navy's personnel pickup transportation facility, as well as the utilization of information technology systems, namely by monitoring or monitoring the movement of personnel pickup transportation. The tools to be applied can provide personnel needs including waiting time efficiency; timely and updated technological developments increasing performance; and the physical needs used (vehicle maintenance and repair) as well as sudden and important information.

So the writer has an idea or an idea to make a design of an integrated Android-based STTAL personnel pickup monitoring system integrated with OpenStreetMap that is able to send vehicle position data through an application planted on an android user so that STTAL personnel can monitor the position of pickup vehicles and information- updated information related to randis used.

Problem Formulation

The formulation of the problems that exist in the design of the integrated Android-based STTAL personnel pickup monitoring system integrated in OpenStreetMap are as follows:

What is the design of the STTAL personnel pickup vehicle monitoring system application through Android so that it can be useful and easy to use?

Research Objectives

The objectives of this research are as follows:

- a. Can design a device for monitoring the pickup lyn by using a transmitter in the form of a cellphone carried by a man or driver.
- b. Provides convenience for all STTAL personnel who use this pickup service vehicle facility in monitoring the position of the vehicle through an application that is planted on Android.
- c. Improving the ability of STTAL personnel in the field of increasingly modern and sophisticated technology through the use of Android

Benefits of Research

The benefits of this research include the following :

- a. Member
 - 1). Makes it easy to monitor the coordinates of the updated official vehicle.
 - 2). Minimize discipline violations for STTAL members.
- b. STTAL Transport Unit
 - 1). Knowing the position of official vehicles that are operating.
 - 2) Improve the performance of basic tasks, as supporting elements of a work unit.
 - 3) Knowing the condition of maintenance and maintenance of STTAL official vehicles.

- 4) Important and emergency related to the use of official vehicles.

2. LITERATURE REVIEW

Android system

The Android operating system was developed in 2003 by 4 technology experts named Andy Rubin, Rich Miner, Nick Sears and Chris White. On August 17, 2005 the Google company successfully acquired Android, Inc. as its subsidiary. Although Android has been acquired by Google, the founder of the Android company still has a full role in the development of this operating system

Android OS is an open operating system under the Apache license that allows this operating system to be developed, modified and distributed by other parties. In addition, the Android operating system is also supported by many application developers, so that it can improve the function of Android itself. This can be proven by the application in Play Store, which until now has reached more than 50 billion.

Android OS has several versions as follows :

- a. Android version 1.0
- b. Android version 1.1
- c. Android version 1.5 Cupcake
- d. Android version 1.6 Donut
- e. Android version 2.0 Eclair
- f. Android version 2.2 Froyo
- g. Android version 2.3
GingerBread
- h. Android version 3.0 Honeycomb
- i. Android version 4.0 Ice Cream
Sandwich
- j. Android version 4.1 Jelly Bean
- k. Android version 4.4 Kitkat
- l. Android version 5.0 Lollipop
- m. Android version 6.0
- n. Marshmallow
- o. Android version 7.0 Nougat
- p. Android version 8.0 Oreo
- q. Android version 9.0 Pie
- r. Android version 10.0 Q

User Interface

Another understanding of the interface (interface) is the way programs and users communicate and one of the services provided by the operating system as a means of interaction between users and operating systems. The interface is an operating system component that is in direct contact with the user. There are two types of interfaces, namely Command Line Interface (CLI) and Graphical User Interface (GUI).

The term user interface or interface is sometimes used as a substitute for the term HCI (Human Computer Interaction). HCI (Human Computer Interface) is all aspects of user and computer interaction, not just hardware. Everything that looks on the screen, reads in the documentation and is manipulated with a keyboard (or mouse) is part of the user interface or arguably the desktop niver.

OpenStreet Map

OpenStreetMap is a collaborative project to create a free world map. The two main drivers behind the pioneering and growth of OSM are the limited use or availability of map information in most regions of the world and the rise of affordable portable satellite navigation devices. OpenStreetMap was pioneered by Steve Coast in the United Kingdom in 2004. This project was inspired by the success of Wikipedia and the availability of copyrighted map data in the United Kingdom and other regions. Since then OSM has grown by contributing 1.6 million registered users who collected data using self-surveying, GPS devices, aerial photography, and other free sources. The data generated by this power is released under the Open Database License. The site itself is supported by the OpneStreetMap Foundation, a non-profit organization based in the UK.

Some of the reasons that make OpenStreetMap Free, are:

1. OpenStreetMap is open and free. Therefore, OSM will not ask you to pay when using OpenStreetMap data.
2. OpenStreetMap data is rich in information, accurate, and is a real-time update.
3. The use of OpenStreetMap is easier.
4. OpenStreetMap maps can be changed as desired.



Figure 1 Open street map Display

MySQL

MySQL is a multithread and multi-user database management system or SQL database system. MySQL is actually a derivative of one of the main concepts in the database for the selection or selection and entry of data that allows data operations to be done easily and automatically. MySQL was created by Michael "Monty" Widenius in 1979, a Swedish computer programmer who developed a simple database system called UNIREG that uses the InnoDB engine's low-level connection with indexing.

The advantages of MySQL in its use in the database are:

1. Free or free, so MySQL can easily get it.
2. MySQL is stable and resilient in its operation.
3. My SQL has a pretty good security system.
4. Strongly support the transaction and have a lot of support from the community.
5. Very flexible with various programs.
6. The development of MySQL is very fast.

Netbeans

Netbeans is an Integrated Development Environment (IDE) application based on Java from Sun Microsystems that runs on a swing. Swing is a Java technology for developing desktop applications that can run on various platforms such as Windows, Linux, Mac OS X and Solaris. An IDE is a programming scope that is integrated into a software application that provides a Graphic User Interface (GUI), a code editor or text, a compiler and a debugger.

Netbeans can also be used by programmers to write, compile, search for errors and spread netbeans programs written in the Java programming language but besides that it can also support other programming languages and this program is free to use and to create professional desktops, enterprises, the web, and mobile applications with Java language, C / C ++, and even dynamic languages such as PHP, JavaScript, Groovy, and Ruby. NetBeans is a successful open code project with a very broad user, a growing community, and has nearly 100 partners (and counting!). Sun Microsystems founded the NetBeans open code project in June 2000 and continues to be the main sponsor. And even now Netbeans has 2 products, the Netbeans Platform and the Netbeans IDE. The Netbeans Platform is a reusable framework to simplify the development of desktop applications and the NetBeans Platform also offers services that are common to desktop applications, allowing

developers to focus on application-specific logic.

The features contained in netbeans include:

1. Smart Code Completion: to propose the name of a variable of a type, complete the keyword and propose the parameter type of a method.
2. Bookmarking: features that are used to mark the lines that one day we want to modify.
3. Go to commands: a feature used to jump to declarations of variables, source code or files that are in the same project.
4. Code generator: if we use this feature we can generate constructors, setters and getter methods and others.
5. Error stripe: a feature that will mark an error line by giving a red highlight.

3. RESEARCH METHODS

Research Design

The design of this research is applied research because this research aims to provide practical solutions to certain problems. This research does not focus on developing an idea, theory, or ideas, but rather focuses on the application of the research in daily life.

But this research can also be categorized as engineering research because this research applies science into a design, in order to obtain performance in accordance with specified requirements. The design is a synthesis of design elements combined with scientific methods into a system that meets certain specifications. The research is directed to prove that the design meets the specified specifications. The research starts from determining the design specifications that meet the specified specifications, choosing the best alternative, and proving that the design chosen can meet the specified requirements in an efficient, effective and low-cost manner.

Research Procedure

The research procedure is a sequence of steps as well as an explanation of a research process that will be carried out, starting from the design work system diagram to the input and output systems that are expected or to be produced. The overall research process can be seen in the following figure is the Flowchart of the overall research procedure. The procedure of design research on the application of the Android-based STTAL personnel pickup monitoring system can be seen in Figure 2.

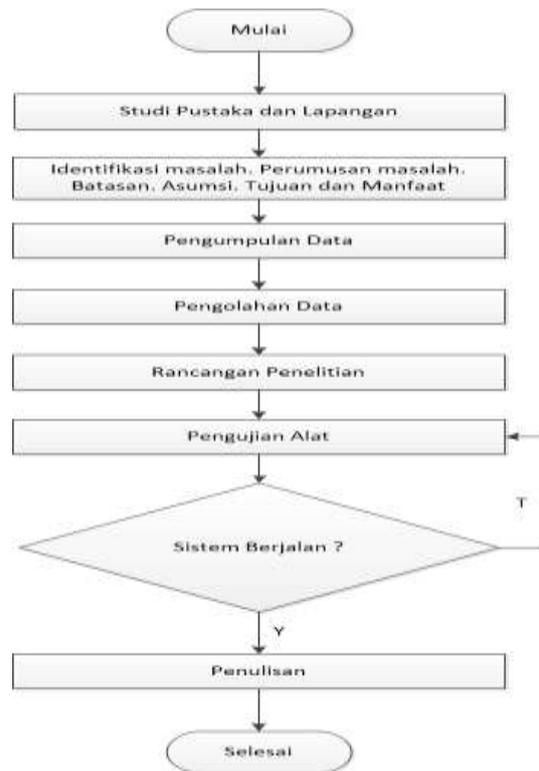


Figure 2 Research Procedure

Time and Place

The time of the final research is starting in July 2019 and the place for conducting research in Surabaya STTAL Transport Unit.

Tools and Materials

In carrying out this research, several software development tools are needed to make it easier in designing and testing research. The software development tools needed in conducting research include:

- a. Handphone Android
- b. Computer / Laptop
- c. Software Android Studio
- d. Software Database Mysql
- e. Xampp
- f. Netbeans

Research Design

Figure 3 is a general description of the Application system as Lyn Monitoring in carrying out lyn monitoring tasks. The research design is a concept that provides a general description of the system that will be created. In the research design an analysis of the system is carried out, namely the development stage by studying the existing system based on the results of a survey of current problems. Data obtained from the survey results are processed to get a general picture.

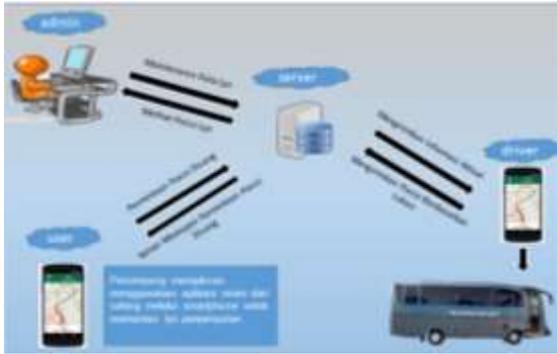


Figure 3 General Description

System Analysis

The monitoring process can be illustrated in Figure 4. In the monitoring process, the driver will see the position of Lyn and Lyn's data. Here Lyn will escort personnel according to the route to the destination at STTAL, Satang can also see Lyn travel data.

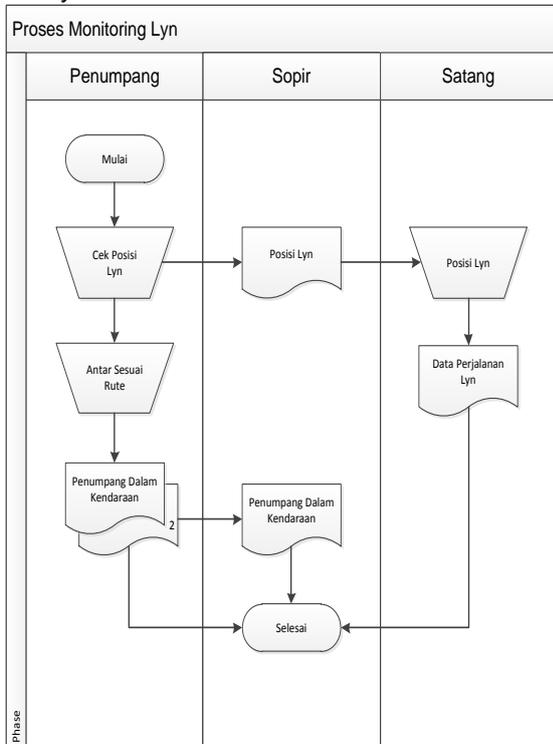


Figure 4 Document Flow Monitoring process lyn

Figure 4 is a Document Flow chart showing the flow of documents between parts within a system logically. Can describe each part of the organization involved in processing documents in the processes undertaken.

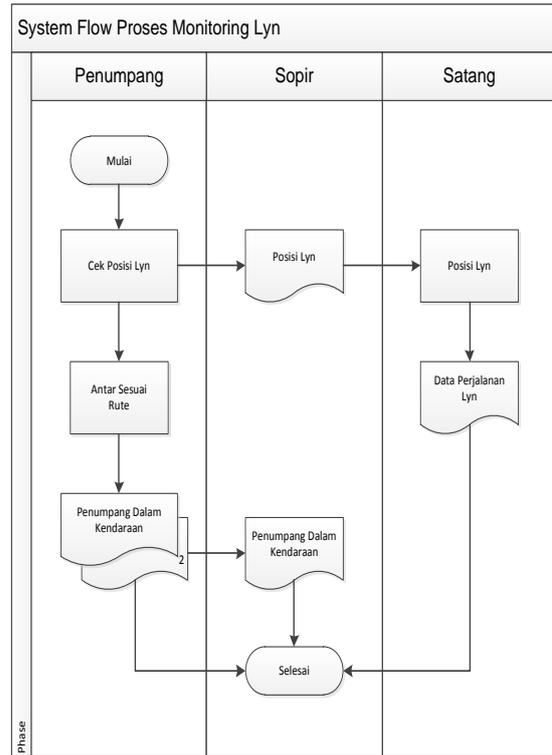


Figure 5 System Flow proses monitoring lyn

Figure 5 is the System Flow of the system to be built. System Flow is not much different from Document Flow, it's just that the process is more computerized.

In making this system, a design is made using a use case diagram. The use case diagram in Figure 6 illustrates the system in outline of all the relationships that exist in the Android-based STTAL personnel vehicle monitoring system application.

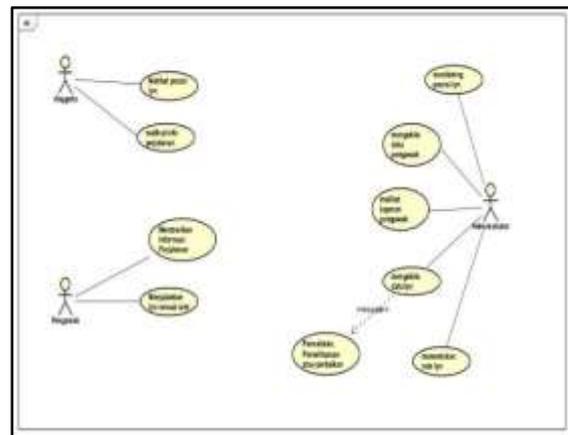


Figure 6 Use Case Diagram

Data Collection

The methods used to collect data in this research system are:

- a. Observation Method is a method of data collection which is done by direct observation of the data relating to this research. We plan to do this by directly observing the operational activities of the STTAL lyn in the August period for the Sidoarjo - STTAL round trip.
- b. Interview Method is a method of collecting data that is done by way of question and answer directly to informants relating to the data needed in this study. We will interview interviews with Kasatang, the lyn driver, and several members of the STTAL lyn user in the August period to get information about lyn.
- c. Library Study Method, Our plan for library study will be to visit the STTAL library and find data on several books relating to land transportation.

Data Processing

Data processing is the processing stage of data that has been successfully collected for further processing to be presented and applied in a system that is being investigated by the author. The main purpose of testing this application is to find out whether the application that has been created is able to meet the needs of the user and whether the application can provide results as expected. The trial is done by evaluating and testing the functions contained in the system. When an error is found, it will be repaired and then re-evaluated or tested until the application does not experience an error.

4. ANALYSIS AND DISCUSSION

Analysis of Data and Research Results

Data analysis is an effort or a way to process data into information so that the characteristics of the data can be understood and useful for solutions to problems, especially problems related to research. Or other definitions of data analysis, namely the activities carried out to change the results of research data into information that can later be used in drawing conclusions. That explanation of the data analysis hopefully can be understood. In this final project research is required an analysis of the needs of supporting components in designing the monitoring system application for the pickup of STTAL personnel by using a transmitter device in the form of a mobile phone that will be made. These components include information system needs, hardware and

software requirements as well as supporting data requirements .

The results of the study were a review of the validity of the research results. Discussion of research results can be termed the original thought of researchers to provide explanations and interpretations of research results that have been analyzed in order to answer research questions. In essence, the discussion of research results is a discussion of the findings obtained.

4.1.1 Design

The design is an initial process carried out to complete a project that will be done. A good analysis will facilitate in completing the project so as to produce a system that configures the hardware and software so that it can solve the problem optimally. In the Android-based STTAL personnel pickup lyn monitoring system application, it functions to monitor or monitor the movement of personnel pickup transportation. The tools to be applied can provide personnel needs including waiting time efficiency; timely and updated technological developments increasing performance; and the physical needs used (vehicle maintenance and repair) as well as sudden and important information.

In the design of the monitoring system, the Android-based STTAL pickup personnel system consists of several designs, namely input / output design, and form design.

a. Design Input/Output

The input / output design is a design on an Android-based STTAL personnel pickup lyn monitoring system, as a whole consisting of input and output designs. The explanation and appearance of each design will be discussed in the explanation of each design.

1). Design Input

Input design is a system application design that functions as admin (input) data for a man or driver in a monitoring system for the pickup of Android-based STTAL personnel. The overall input design consists of a login form in accordance with access rights, dashboard form, master form, transaction form, and report form.

2). Design Output

Output design is a system application design that functions as a user or user which receives input from the data administrator or driver in a monitoring system for the Android-based STTAL personnel pickup. The overall

output design consists of the login form in accordance with access rights, home form, event form and personnel profile form.

b. Display Interface

The interface is a form of graphical display that is directly related to the user. The user interface functions to connect between the user and the operating system information, so that applications in the android can be used. Interface design is the overall design of the display contained in the information system to be built. Dashboard design of the home page can be seen in Figure 7.



Figure 7 Design Login Android

c. Design Dashboard

Dashboard design is a design to display a visual interface that presents information needed for a specific purpose and is the initial display encountered when a user enters a system. In the system built there are four dashboard designs that are used as a dashboard display that is the home page dashboard, the dashboard display map tracking and event menu, the dashboard profile and the dashboard menu admin admin.

While the dashboard design as an admin, this is Kasatang, that is the home page dashboard and dashboard edit or enter driver data.

1) Dashboard Homepage

The home page dashboard on the information system that was built was designed to be seen by all visitors without having to log in first. On the dashboard there is a login menu at the beginning of the dashboard display and only those who have a password and username that have been adjusted or created for their users can be logged in.

The dashboard design of the home page can be seen in Picture 8.

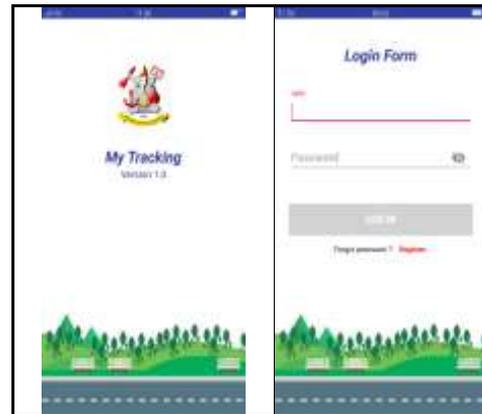


Figure 8 Homepage

2) Dashboard maps tracking display and event menu

The maps tracking display dashboard on the information system that was built was designed to be able to monitor and monitor the movements of the STTAL personnel pickup lyn. For the event or broadcast menu, you can send news and information suddenly from the driver to the user, in the application there is a feature to broadcast. The map tracking dashboard display design and event menu can be seen in Figure 9.



Figure 9 Maps Tracking Display and Menu Event

3) Dashboard man's profile

The Manner Profile Dashboard is a display that explains data from the lynman. In the map tracking dashboard display design there is a menu option under the right hand corner and the profile of the soldier logged in as a user. Dashboard design of the user's profile can be seen in Figure 10.



Figure 10 Man's Profile

4) Dashboard Menu Admin

Admin menu dashboard is the initial display after logging in using admin. In the admin menu Dashboard design there are sub-menus located on the left. Admin menu dashboard design can be seen in Figure 11.

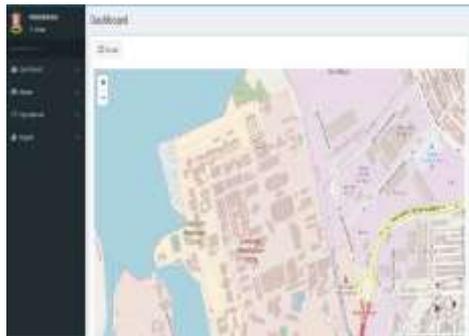


Figure 11 Menu Admin

4.1.2 Implementation

The implementation is the result of the implementation of the research design and the design of the monitoring system for the Android-based personnel pickup STTAL. This stage is a series of software manufacturing that is tailored to the research design and system design that has been made and is ready to be implemented.

a. Software

The software needed is an Android computer and smartphone program as well as to operate the functions of this Lyn monitoring system. The software required in the design and manufacture of an Android-based STTAL personnel pickup monitoring system is :

- 1) Windows operating system

- 2) Android smartphone operating system
- 3) Android Studio
- 4) Domain dan hosting
- 5) Database MySql

4.1.2.1 Form Menu Dashboard Admin

On the admin dashboard menu form there are Dashboard submenus, maps settings, and administrators. dashboard sub menu here as a display to monitor the STTAL pickup lyn as in Figure 12, to make the lyn position that will operate into the settings menu in Figure 13, here the administrator data form is used to change the admin's logo as in Figure 14.



Figure 12 Form Menu Dashboard

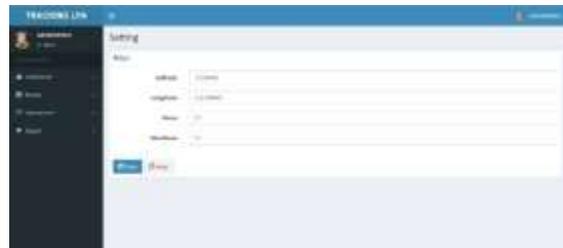


Figure 13 Form Setting



Figure 14 Form Data Admin

4.1.2.2 Form Menu Master

On the master menu form there are submenus icons, lyn, grade and member. sub menu master icon here is used to change the lyn pointer and the name of the vehicle in Figure 15, to add a fleet of lyn and maintenance lyn

using the master lyn menu in Figure 16, here the master grade menu is used to determine the rank of the lyn man in Figure 17, form menu member is used to find out the personnel data in lyn as in Figure 18.



Figure 15 Form Menu Icon



Figure 16 Form Menu Lyn



Figure 17 Form Menu Grade



Figure 18 Form Menu Member

4.1.2.3 Form Menu Operational

On the Operational menu form there are submenu drivers and driver positions. Driver sub menu here is used to find out who is the person to lync the pickup of STTAL personnel in Figure 19, in the driver position

menu to see the last position of the pickup lyn in Figure 20.



Figure 19 Form Menu Driver



Figure 20 Form Menu Driver Position

4.1.2.4 Form Menu Report

On the report menu form there is a History tracking submenu. History tracking submenu here is used to see the initial and final data of the STTAL personnel pickup which can be seen from latitude and longitude in Figure 21.

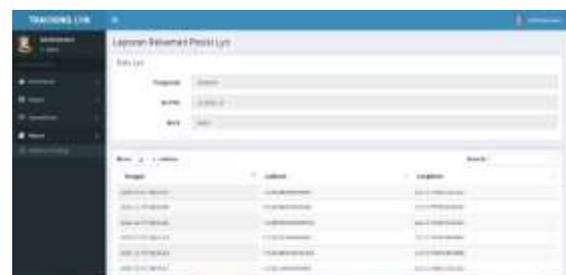


Figure 21 Form Menu Report History Tracking

b. System Implementation

The use of the program can be implemented after all software components that support the application process of monitoring system based on Android-based personnel pickup. If the usage process is carried out correctly then the system is expected to be run to provide updated information via the Android mobile phone of each Indonesian Navy soldier.

- 1) Dashboard
 - a) Start Page Dashboard

- b) Maps Tracking and Menu Display Dashboard
- c) Dashboard Profile of the man
- d) Dashboard Menu Admin

2) Login

Login form is a form intended for users who have access to enter the system. Not everyone can log in, because only certain parties have access in the form of a username or nrp and password. The information system that is built is divided into 2 login levels with different functions. Login level 1 is for the Kasatang STTAL Surabaya Administrator, where by logging in, the Admin can access the entire system from inputting, editing and deleting data in the system. Level 2 login is for users or lynch officers of the Indonesian Navy, where by logging in, the officer can only run the lyn monitoring application in the form of maps tracking display, can deliver emergency and sudden things. Cannot input, edit and delete data that is in the system. Login form design can be seen in Picture 22.



Figure 22 Form Login Android and Login Admin

3) Form Input/Output

- a) Form Input dan Output Display of the man's profile

Forms of data input on the profile of the person is a form to input the profile data of the member of the person who is in the work area of the Surabaya STTAL Surabaya. In this form consists of NRP, Name, and Rank.

Forms output data for the crew profile is a form for displaying profile data for lynn members in the working area of STTAL Surabaya. In this form consists of NRP, Name, and Rank.

Form input and output of the crew profile can be seen in Figure 23 and Figure 24.



Figure 23 Forms Input of manned profiles

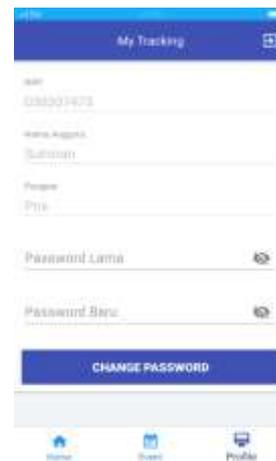


Figure 24 Forms Output of manned profiles

4.2 Research Discussion

The discussion conducted by the researcher is to provide an explanation and interpretation of the results of the research that has been carried out in order to conclude from the results of the discussion that has been carried out by the research. This contains the researcher's ideas related to what has been done and what was observed, presented and analyzed in the previous chapter. The description of this idea is related to theoretical results and other relevant study results. This thesis is complemented by research implications.

4.2.1 Software Testing

The purpose of testing an Android-based STTAL personnel pickup lyn monitoring system is to determine the ability of several

processes carried out in the system that has been built. System testing is performed on software and to determine the results of the design made.

a. Software Testing

Software testing is carried out to determine the extent of the work capabilities of the monitoring system lyn pickup from STTAL personnel. The software testing that is carried out includes several processes including the process of registering users or loggers, logging in, monitoring lyn position, and logging out. The results of software testing of this system can be seen in Table 1.

Tabel 1 Trial Application

NO	PROGRAM	TUJUAN	INPUT	OUTPUT DIHARAPKAN	OUTPUT	STATUS
1	2	3	4	5	6	7
1.	Pendaftaran User	Masuk ke dalam program login	Username, Password	Dapat masuk ke dalam program login apabila username dan password sesuai.	Memiliki username dan password sendiri	Sesuai
2.	Login	Masuk ke dalam program utama	Username, Password	Dapat masuk ke dalam program utama apabila username dan password sesuai	Dapat masuk ke program dengan username dan password sesuai	Sesuai
3.	Input data pengawak atau sopir lyn	Menyimpan, merubah data pengawak		Menyimpan data baru atau perubahan data pengawak	Dapat menyimpan data baru dan perubahan data pengawak	Sesuai

4.2.2 Integrated System Testing

Testing the application of the monitoring system of the position of the lynch pickup of STTAL personnel with a transmitter integrated with the openstreetmap. This can be done after all software components that support the system process have been completed and installed correctly, testing on this system receives coordinate data from the transmitter in the form of a smartphone application that is sent through the web server and received by the admin. Admin himself follows from an application so that for the maintenance process of data lyn can use a laptop or PC easily.

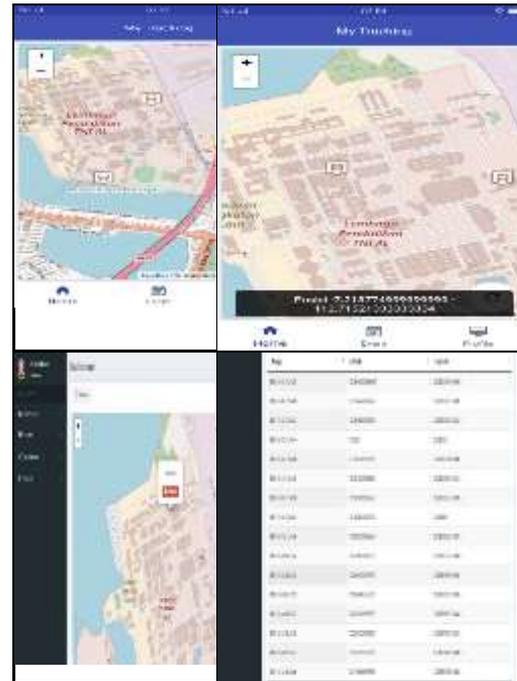


Figure 25 Trial Application

In Figure 25 above is the initial test results which can be seen from the openstreetmap display image for the lyn position has a delayed position so that a failure occurs because of the reception of GPS signal quality, and the failure of sending data affects the results of the lyn tracking report.

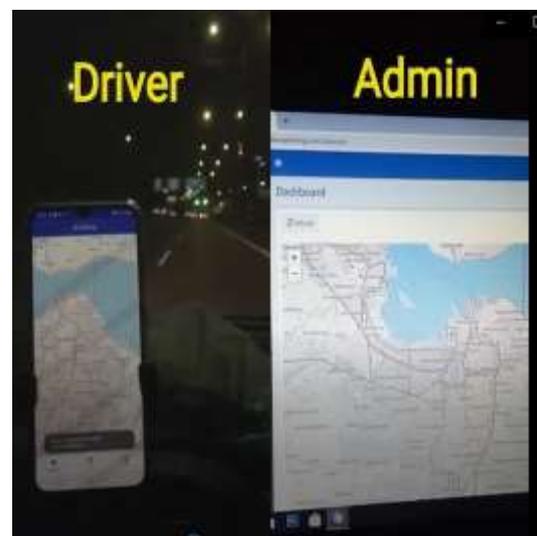


Figure 26 Display Test Application

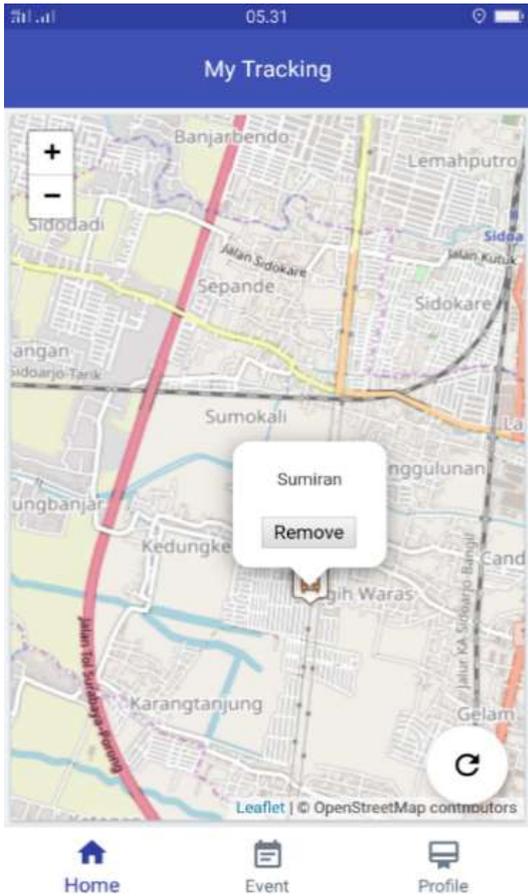


Figure 27 Starting Point for Application Testing

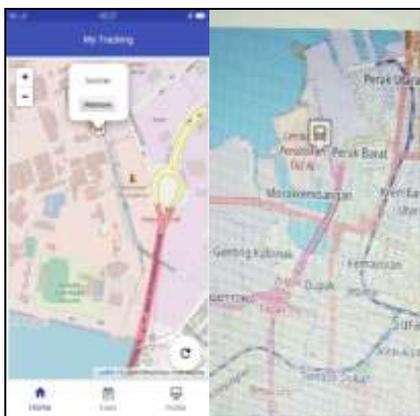


Figure 28 Application Testing Endpoints

Pictures 27 and 28 show the application testing using the Transmitter tool from the starting point to the end point of picking up STTAL lyn personnel integrated with OpenStreetMap, in general the application testing runs as expected, data from the lyn position application can be sent to the web server in this case the administrator. In this test for longitude and latitude coordinate data is limited to sixty data coming into the lyn tracking report, in terms of drivers there is a feature to provide the latest information or broadcasts of

emergency and sudden lyn activity, in terms of passengers who differentiate before logging in must register first to enter the lyn application and there is no broadcast feature. Here passengers can only see where Lyn is now where to pick up.

4.2.3 Test Result

Research on Design and Development of Lyn Monitoring System for Pickup of STTAL Personnel Based on Android is a type of applied research. This study aims to provide a solution to the performance of Satang STTAL in carrying out the task of supporting the pickup of STTAL personnel. This research can help the task of Satang and STTAL personnel in monitoring the lyn position and providing sudden and emergency information about the lyn and the position quickly and in real time.

The main result of this research is the concept of monitoring a STTAL personnel pickup lyn. The concept of monitoring lyn with the application as a medium is detecting each other by using the web as a Kasatang media for monitoring. By using the application as a means to see the lyn position and wait for the pickup time lyn to place personnel on duty to carry out the morning apple. From testing the application of lyn position, the personnel pickup from Sidoarjo to STTAL is the longitude and latitude position of OpenStreetMap, so the application test results can be seen in table 2.

Tabel 2 Application Test Results

No	Nama	Tanggal	Lokasi Pengamatan	Latitude	Longitude	Ket
1	2	3	4	5	6	7
1	Pes Sumiran	06 Nov 2019 06:27 - 07:27	Masjid Arteri Sidoarjo - Tanggulan ge - Tal Sidoarjo - STTAL	- 7.2209248 99999999 - 7.2207096 99999997	112.716683333 33332 - 112.7166150000 9991	Sesuai
2	Sesu Chattel	07 Nov 2019 04:05 - 04:30	Masjid Arteri Sidoarjo - Tanggulan ge - Gerbang Tel Sidoarjo - STTAL	- 7.2209683 33333334 - 7.2206241	112.716636666 9967 - 112.7187343	Sesuai

The method used in position reading is based on longitude and latitude of the position data sent by GPS. GPS data readings in this monitoring are based on GPS satellites that work at very precise time references and transmit data that shows the location and time at that time.

Application Analysis or Testing :

Report or report on vehicle mileage for 1 month and its accumulation in this case to provide input to leaders, especially Kasatang and Kadeprenalog in terms of vehicle maintenance.

5.CONCLUSIONS AND RECOMMENDATION

5.1 Conclusion

After carrying out the design process and making the application and testing has been carried out on the monitoring system of STTAL personnel pickup position integrated with OpenStreetMap, it can be concluded. This study aims to provide a solution to the performance of Satang STTAL in carrying out the task of STTAL personnel pickup support. This research can help the task of Satang and STTAL personnel in monitoring the lyn position and providing sudden and emergency information about the lyn and the position quickly and in real time. Reducing discipline violations from STTAL personnel in terms of delays in entering service, in addition STTAL personnel can be helped in monitoring and monitoring the movement of Lyn pickup positions.

5.2 Recommendation

The design of the STTAL personnel pickup position monitoring system that is integrated with OpenStreetMap still requires development suggestions based on the results of the tests that have been carried out, as follows:

- a. This system can be developed by making passenger manifest reports and pickup estimates.
- b. This system can be developed by providing a coordinate position of personnel in the lyn for the monitoring process.
- c. Required development of membership cards can be used to manifest passengers by using NFC technology (Near Field Communication).

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