Web-Based Geographic Information System Application For The Location Of The Tire Patching Workshop In South Padang District

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Abstract - *This study aims to design and build a GIS-based Tire Repair Workshop Information System Application that can be used for data collection of tire repair workshop locations in Padang Selatan District, a container to make it easier for users to find tire repair workshop locations around Padang Selatan District if a tire leak occurs on a vehicle and can help the economic cycle for tire repair workshop business owners, especially around Padang Selatan District. In making the software in this study, the author uses the PHP programming language and MySQL as a database. The final result of this study is a GIS-based application program that is expected to help users obtain information related to the Tire Repair Workshop in Padang Selatan District.*

Keywords: *Information System Workshop, Geographic Information System (GIS), Unified Modeling Language (UML)*

1. INTRODUCTION

Along with the rapid development of technology, it makes it easy for someone to process and convey information. With this development, it is also accompanied by the development of the internet network which makes communication between computers around the world unlimited. Its very rapid development is proven by the many agencies, individuals, and various organizations that utilize information systems as a medium for disseminating the information they have. By utilizing the information system, delivering information to those who need it will be faster and more efficient so that the information system becomes a necessity that must be met for the smooth running of an existing system. Padang Selatan District is a district in the city of Padang, West Sumatra, Indonesia. Administratively, the area of this district, as well as Lantamal II Padang, the Indonesian Fleet Command, the West Region, the Indonesian Navy. The absence of an information system regarding tire repair shop data and its distribution makes it difficult for users to find information on tire repair shops nearest around Padang Selatan. Then there is also difficulty for

workshop business owners in reaching customers and not rotating the economy in the tire repair shop business.In connection with this, a system is needed to be able to convey information accurately from the data of the Padang Selatan District Tire Repair Shop which includes information on Tire Repair Shops Around Padang Selatan which can make it easier for users to find tire repair locations around the Padang Selatan workshop. In addition, this system can also be used as a container or means for workshop business owners to reach customers / users. Based on the background of the problem, the author submits a study entitled "Web-Based Geographic Information System Application for Tire Repair Shop Locations in Padang Selatan District". This application is expected to help workshop owners and users in processing and presenting information related to the data of the Padang Selatan District tire repair shop so that it can provide benefits for all parties.

2. RESEARCH METHODS

2.1 System

A system is a unit that consists of a collection of elements that are interconnected and interact with each other. These elements work in an organized manner to carry out a certain process with the aim of achieving the main results or goals that have been set.

2.2 Information

Information is a set of data that has gone through a process of classification, processing, or interpretation so that it has a clear and understandable meaning. This information is then used as a basis in the decision-making process to support more effective and targeted actions.

2.3 Information Systems

An information system is a system implemented in an organization to manage and process data to meet the needs of daily transaction processing, support operational functions, and assist in the decisionmaking process of a managerial or strategic nature. This system is designed to provide reports needed by internal and external parties of the

organization, thus supporting smooth operations and strategic planning. In addition, the information system plays a role in presenting information needed by a group of users, so that the process of searching, processing, and utilizing information becomes more effective and efficient. With the development of technology, various computer-based information systems have been discovered and used in various fields. One example is the Geographic Information System (GIS), which is widely used in delivering information related to mapping. GIS uses geographic maps as the main media to present data visually, thus facilitating location-based analysis and decision making.

2.4 Geographic Information System *Geographic Information System* in general is a component consisting of hardware, software, geographic data and human resources that work together effectively to enter, store, improve, update, manage, manipulate, integrate, analyze and display data in a geographic-based information.

2.5 Unified Model Language (UML)

Unified Model Language (UML) UML is a modeling language for software development built using object-oriented programming techniques, UML is a visual language for modeling and communicating about a system using diagrams and supporting texts.

2.6 Web Service

Web Service A cross-platform application that can be accessed over a network (intranet and internet). Where the application provides methods with the purpose of being used for interaction between one application and another application accessed with a URL.

2.7 Use Case Diagram

The following activities that can be carried out on the system to be built are as follows:

a. **Users** can only see the distribution of Tire Patching Workshops Around South
Padang District, detailed data of patchwork workshops, as well as the routes shown, news, website home pages.

b. **Admin** can process web pages, web services, manage categories, manage the distribution of tire patch locations, process web news and process reports.
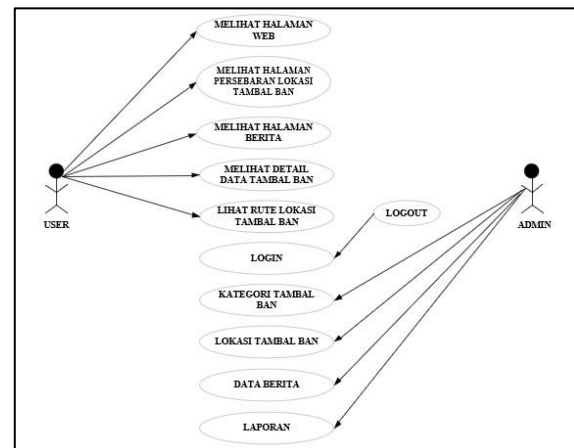

Picture 1. *Use Case Diagram*

2.8 Activity Diagram

Activity diagram is a way to describe the workflow of a system that exists in software. Picture 2 illustrates the user accessing the URL of the information system of the system workshop and then displaying the content on the website including the main page of the website, the distribution of the location of the tire patching workshop, the details of the location of the tire patching workshop and news as a complement to the application.
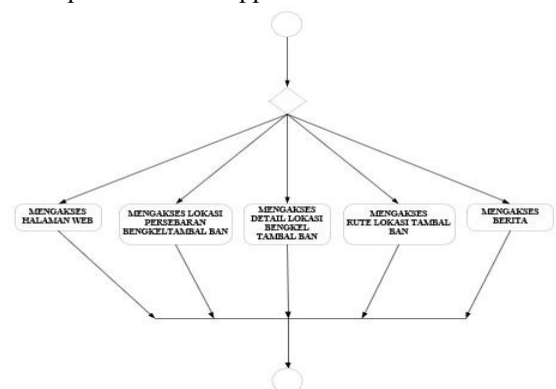

Picture 2. *Activity* Diagram User

Activity Diagram Admin when accessing the system. Initially, the system displays a login form, then the staff will log in, when the login is successful, the Admin can select and access the desired menu. If the admin has completed the desired operation, the study program admin can log out. The Admin Activity Diagram is shown by Picture 3.
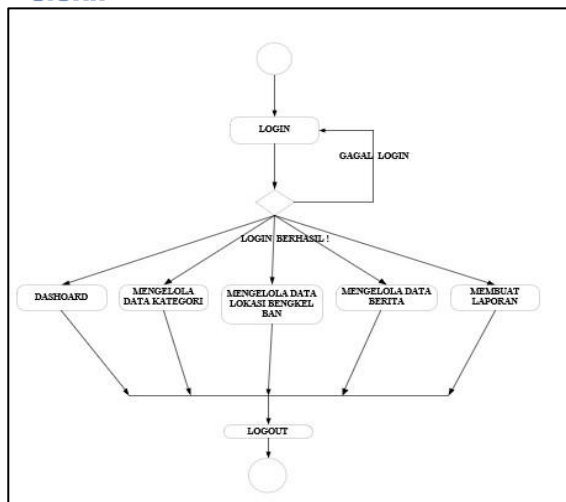
Picture 3. *Activity* Diagram Admin

2.9 Sequence Diagram Menu of Tire Patching Workshop

Diagram Sequence menu The tire patching workshop can be seen in Picture 4.
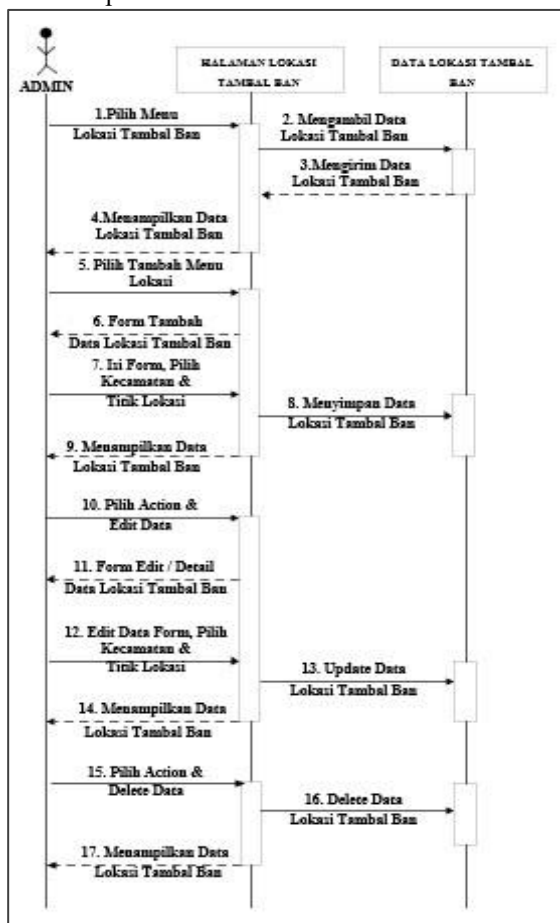
Picture 4. *Sequence Diagram* Menu Admin Add Location Data

Picture 4 shows the sequence of processes when the user (Admin) processes the data of the tire patching workshop. The process that occurs in the sequence diagram first the user selects the tire patch location menu on the system, then the system displays the tire patch workshop data page in which there is a process of input, updating and deleting the tire patch location, each sequence of the process will be processed in the database, namely the tire patch location data.

3. RESULTS AND DISCUSSION

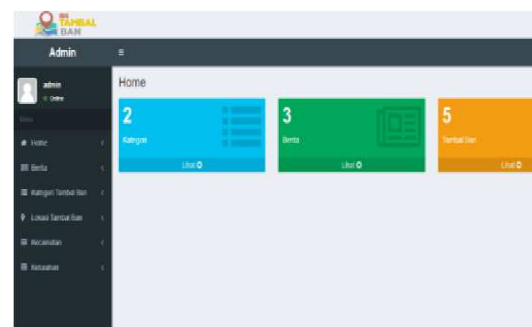### 3.1 System Interface Implementation

The following is the interface on the GIS-Based Tire Patching Workshop Information System Application :
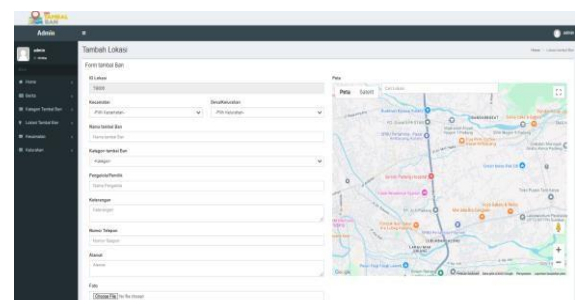
1) Home Menu Page
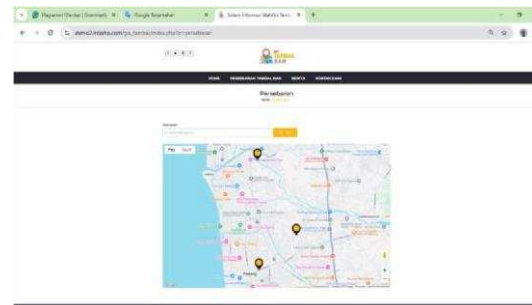
Contains about the location of the workshop and news as an additional feature on the application.

2) Dashboard Admin

Workshop Location Data Input Menu Page

3) Report

4. CONCLUSION

Based on the results and discussions that have been described previously, it can be concluded as follows:

1) The Information System can make it easier for Users to find the location of the workshop around South Padang District.

2) Admins can process data related to the location of the workshop as information to relatives, drivers, and parties in need.

3) WebService is a cross-platform application that can be used by 3rd parties to extend an application built.

5. SUGGESTION

The suggestion for the next development is to add the status of the workshop when it is open or closed so that the detailed information on the location of the complex workshop and users can find out information whether the workshop is open or still closed and it is hoped that the next development should also focus more on security so that the information provided by the system can be maintained.

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