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Deployment of Webgis Spread Location Natural Resources of Labuhanbatu Regency

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ABSTRACT

Natural resources abound in the Labuhanbatu region of North Sumatra. Natural resources are plentiful in the district. The labuhanbatu were unaware of their abundance of natural resources. We will establish dominion over Labuhanbatu's location and abundance of natural resources. Utilizing Geographic Information Systems (or GIS, as it is more commonly known) in an ever-changing internet environment. People are constantly seeking access to data, and the Labuhanbatu community will benefit from GIS (Geographic Information System). Create an interactive map of the subdistrict's natural resources for the benefit of nearby residents. Collecting data in a GIS may or may not be easy. Additionally, horticulture, poultry, plantations, and fisheries are included, as are natural resources that benefit the soil.

1. Introduction

Applying GIS natural resource distribution is a mapping specifically located in Labuhanbatu Regency that includes holticulture, forestry, fisheries, plantations, farms and food crops. To support the citizens of Labuhanbatu Regency, accurate natural resource data in Labuhanbatu Regency. The application of GIS natural resource distribution is planned by the nature of the Systems Development Life Cycle (SLDC) approach where the method is very helpful to create a system and improve a system that has been developed because this method is very good to be used to build regional systems where needs, design, code, implementation and maintenance are analyzed. They ensure the system is constructed correctly. Since natural resource studies GIS application was not widely applied in the Labuhanbatu regency, researchers conducted this research by developing a web-based application to provide reliable and practical details. Geographic Information System (GIS) Technology for organizing, reviewing and disseminating spatial location and information related information. Geographic Information System (GIS) consists of many good tools for collecting, displaying, and converting spatially from the real world into maps. It can be inferred that a specification of a Geographic Information System (GIS) is a compilation of earthly information[1].

systems of geographical data (GIS). Computer technology is purpose-built to read, store, and manipulate data, as well as to analyze, read, and view all mapped geographic data through the use of analytics software.[2]. By introducing Systems Development Life Cycle (SLDC) process, analyzers are very helpful in measuring the presence of data taken to become relevant information in the content of the system to be developed. System Development Life Cycle (SDLC) is a stage that can help improve and execute the system using a more user-centered cycle. The System Development Lifecycle (SDLC) is a tool for understanding how information systems should fulfill business needs, design systems, deploy systems and send them to users.[3]. Waterfall model is a method long used to design waterfall software because it is systematic and sequential, because each stage involves completion of the previous stage. It's also called the classic life cycle or waterfall method.[4]. Based on the information provided, this review involves a special UML (unified modeling language) design to explain the system flow from the beginning to the end of the system to be developed. Unified Modelling Language (UML) is an industry standard method for drawing, designing, and archiving software systems. UML provides a model design standard for a framework based on [5]

2. Method

The Waterfall methodology is used in this study (SDLC). Where this SDLC transforms into a system

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containing all of the steps necessary to build software.

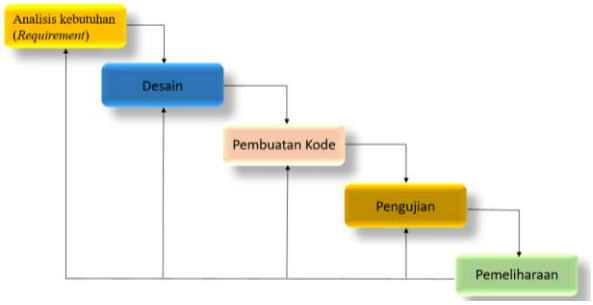

Fig 1. SDLC Method Stages

2.1 Requirement Analysis

The research stage is the Waterfall model's first stage. Analysis reviews are carried out to support the system being built, from software, hardware, users, software and how long it takes to install the system.[6]. At this point, researchers evaluate the information acquired at the BPS (Central Statistics Agency) Labuhanbatu office as efficient and strategic data. This spreading performs two stages in data webgis system array, namely:

a. Interview with a source in person
b. Direct observation

2.2 Design

This method uses live observations and interviews. The steps to complete can be seen by constructing a structure using UML (Unified Modeling Language) diagrams, including use case diagrams and sequence diagrams representing flows in gis delivery systems. Labuhanbatu's natural resources.

2.3 Code Generation

After analyzing and designing the natural resource GIS system in Labuhan Batu Regency, the system needs to be transformed into logic and programming that will shape the gis function for natural resource distribution to meet the needs of system growth.

2.4 Testing

During this point, the device is installed to decide whether it meets the user's needs, which will be accomplished through the test phase Black box test.

2.5 Maintenance

In the final phase of client waterfall system development. It's necessary to keep your computer functional and serve as backup data.

3. Results and Discussion

3.1 System Analysis

The system developed in this way will be generated in the form of a webgis application containing the amount and data of natural resources in the labuhanbatu district. [7]. The definition of using natural resources webgis in labuhan-batu district can be explained as follows through a flowchart:

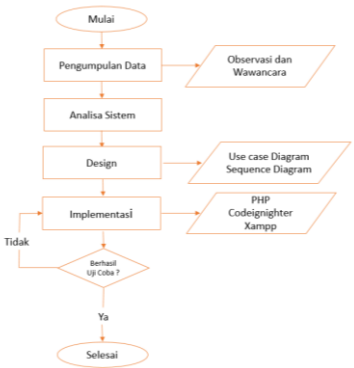

Fig 2. Webgis Distribution Planning Concept

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3.2 Use Case Diagram

Use case diagram to explain how an actor uses the system to solve the problem. The picture below shows the machine running the use case diagram. The system consists of inputs, processing and a two-actor family: administrator and community.[8]

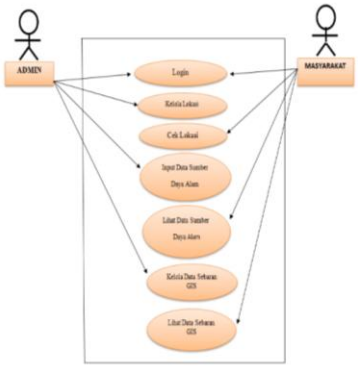

Fig 3. Use case diagram GIS distribution of natural resources

3.3 Squence Diagram

Squence diagram below is a process of stages of the natural resource distribution system in labuhanbatudistrict. This method consists of input processing to his kin. Managed by 2 actors, namely admin and group, where the system created tells the system's flow from start to finish. Location search, natural resource distribution data input and GIS distribution data, for example. In the picture below, there is a login phase that has many login phases, such as filling in the email and password, then connecting to the database that has been explicitly given in the user table that provides email and password, and if it fails to login, it will return to the login form show.

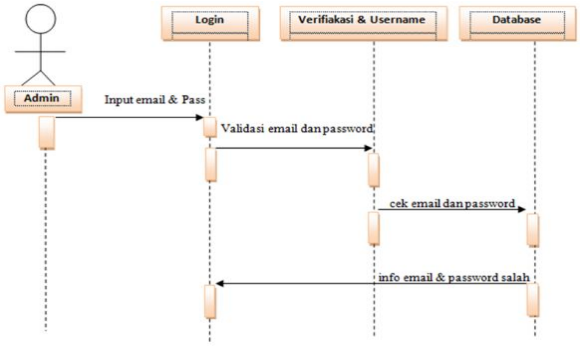

Fig 4 Squence Diagram Login

In Fig. 5 below, illustrates the stages of the system running to perform the process of checking the position of gis distribution played by the administrator who completely controls the system to be run, while the user (community) performs the input process controlled from the admin to the exit as shown in the sequence diagram below. There are two stages to run the system, namely location checks and plantations, at this stage of location check describes the location of the plantation and on this plantation is the location data you want to see, so it can be inferred that the user (community) needs to see the location on the plantation data.

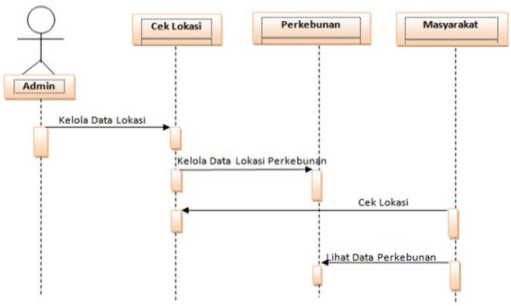

Fig 5 Sequence Diagram Check Location

Fig 6 below explains the stages of an administrator to do input natural resource data, which includes food planting. Meanwhile, the user (community) performs the effects of inputs handled by the administrator,

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so it can be inferred that the user (community) wants to see the natural resource data containing food planting.

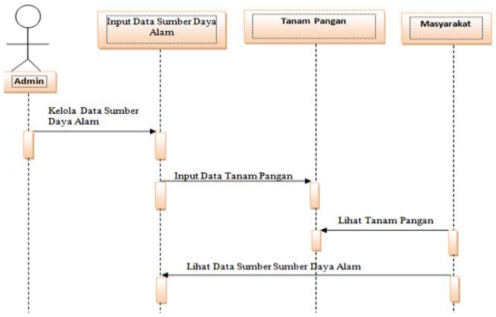

Fig. 6 Natural Resources GIS Data Diagram Sequence

Fig. 7 below is the last stage of the process on this system where the GIS distribution data and inputs GIS distribution data are managed by an administrator (community). Although the user (community) does the results of inputs controlled by the administrator and can be inferred in the Fig sequence diagram below that the user (community) needs to see data from input results managed by the administrator.

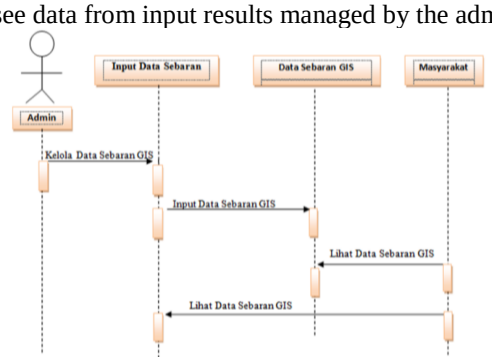

Fig. 7 GIS Distribution Data Chart Sequence

3.4 Implementation Results

This implementation is done in advance by performing research and design, and was done at the previous level. Implementation is done in PHP and HTML, with supporting tools, particularly Codeigniter, which serves as a coding process framework. Xampp is a database management and creation platform and a Google Maps API to handle spatial data in Figs [9]. Various views were successfully implemented, including the GIS Natural Resources page (Fig 8), the show of GIS Natural Resources Distribution Data Pages (Fig 9) and the login page view (Fig 10).

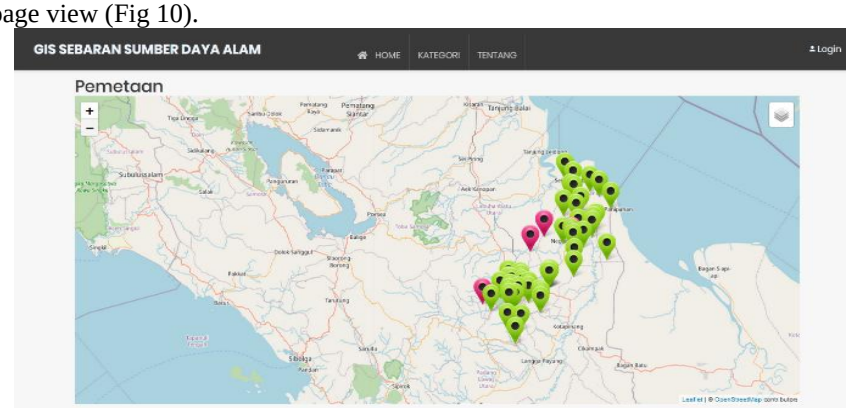

Fig. 8 Natural Resources GIS Home Page View

3.5 System Testing

The successfully tested device stages are login menu, location search, natural resource data entry, and gis distribution data. Testing this device using black box test method as in table below:

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Table 1.
Testing System on Black Box Testing

Tested Parts	Testing On Systems	Model Testing	Test Results
Menu login	Verifikasi pass & username	Black Box	Valid
Check Location	Plantation	Black Box	Valid
Natural Resources Data Input	Food Planting	Black Box	Valid
Distribution Data	View GIS Distribution Data	Black Box	Valid

4. Conclusion

Natural resources abound in the Labuhanbatu region of North Sumatra. Utilizing Geographic Information Systems (or GIS) in an ever-changing internet environment. Create an interactive map of the subdistrict's natural resources for the benefits of nearby residents. Must be connected to the internet to access longitude and latitude in each city, especially in labuhanbatu. A map of the region will be displayed. A GIS application of GIS to the distribution of natural resources has facilitated both functional and non-functional levels.

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