Development of an Information System for Reporting Road Damage in Bandar Lampung City

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ABSTRACT

Roads are crucial land transportation infrastructure and vital pathways for transportation. They serve as catalysts for regional development and equal distribution of development across an area and its surrounding regions. Another function of roads is their significant role in connecting growth centres with other areas. For the government, roads are essential transportation infrastructure for driving economic and governmental activities. Smooth transportation and economic activities are facilitated when roads are in good condition. A common challenge faced by communities is how to communicate and report road damage in a particular area to relevant authorities. There are often cases where communities block a road due to severe damage, making it impassable. Additionally, communities may not know which roads are prioritized for repairs by the authorities. In the current digital era, almost every field benefits from technology or computerized systems. This includes addressing the aforementioned issues by developing a road reporting information system. It is believed that such a system will be highly effective in assisting both the public and relevant authorities in promptly repairing roads. The aim is for road repairs in a given area to be well-structured and easily monitored by the general public. The development method for the Bandar Lampung city road damage reporting system uses a prototype model. The prototype model is a system development method, one of the system life cycle methods which is based on the working model concept.

Keywords: roadways, land transportation, regional development, governance, infrastructure, information system, road damage reporting, rapid response, transparency.

INTRODUCTION

Highways are land transportation infrastructure and very vital transportation routes. Roads have the function of being a driving factor in the development process of a region as well as equitable development of a region as well as equitable development for all surrounding areas. Another function of roads is that they play an important role in the process of connecting growth centers with other regions. For the government, roads are transportation infrastructure that is important for running the economy and government. If road conditions are good, transportation and economic activities will run smoothly.

In accordance with PUPR Ministerial Regulation Number 15/PRT/M/2015 concerning the Organization and Work Procedures of the Ministry of Public Works and Public Housing, the Ministry of Public Works and Public Housing has the task of carrying out government affairs in the field of public works and public housing to assist the President in administering state government in Carrying out the tasks referred to above, the Ministry of Public Works and Public Housing carries out the following functions:

Formulation, determination and implementation of policies in the fields of water resources management, road maintenance, housing provision and development of residential areas, housing financing, building arrangement, drinking water supply systems, waste water and environmental drainage and solid waste management systems, and construction services development and the Bina Marga service is a part of the PU (Public Works) service which specifically handles road management for the community.

The general obstacle experienced by the community is how to convey and report if there is road damage in an area to the relevant parties. There are often cases where local people block a road because it has been badly damaged and is not fit to pass. The public also cannot know which roads are prioritized for repairs by the PU.

In today's digital developments, almost in all fields regardless of technology or computerized systems.The above problems are no exception, which can be answered by developing a road reporting information system. It is believed that this road reporting system will be very effective and help the community and Public Works to repair roads with a fast response. With the hope that road repairs in an area can be well structured and easily monitored by the wider community.

METHOD

The development method for the Bandar Lampung City road damage reporting system uses a prototype model. The prototype model is a system development method, one of the system life cycle methods which is based on the working model concept. The goal is to develop the model into a final system. This means the system will be developed faster than traditional methods and the costs will be lower. The stages carried out in developing this system include the following:

1. Needs Analysis
   This is a stage in carrying out an analysis of what will be needed in developing an information system for reporting road damage in Bandar Lampung City. At this stage, communication is needed between the client and the system developer about what is needed.
2. Building Prototypes
   At this stage the system developer designs the interface of the system to be built. This stage is useful for knowing the client's needs for the system. At this stage, use the Balsamiq application to build a MockUp model of the website that will be built.
3. Prototype Evaluation
   This stage is a negotiation stage between the system developer and the client, in order to find out whether the function created by the developer is in accordance with the client's wishes. At this stage, the developer must understand and know what the client's needs and desires are for the system.
4. System Coding
   After knowing the needs and functions of the client, the developer then implements it in coding until it becomes the required system. In this system, the Laravel framework and MySQL database are used.
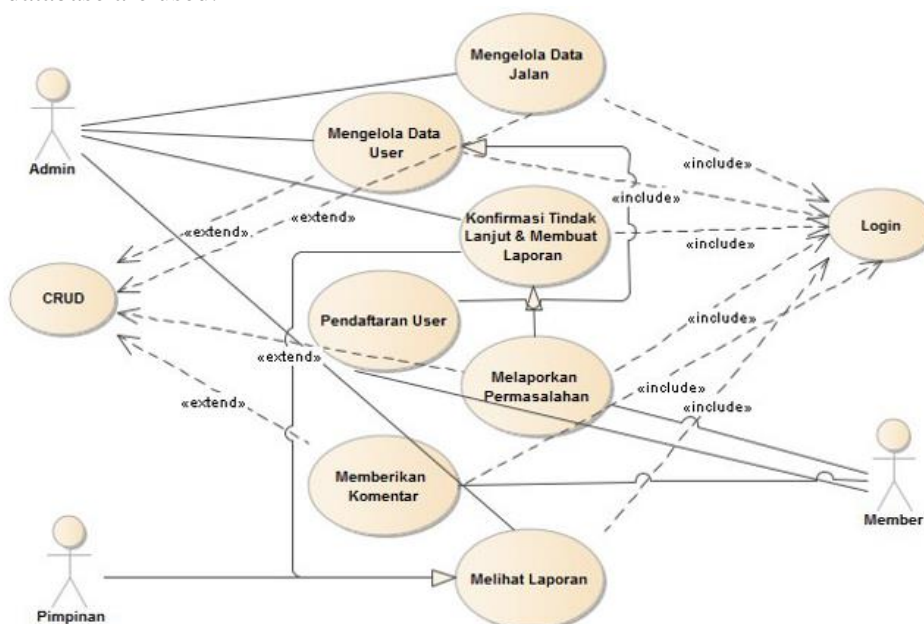
Gambar 3.5 *Use case diagram*

3.5 *Fully Development Use Case Description*

Berikut ini adlah beberapa perancangan *Fully Developed Use Case Description*.

a. *Fully Developed Use Case Description* untuk Mengelola data daerah dapat dilihat pada tabel 3.1 di bawah ini.

Use Case Name	Mengelola Data Daerah			
Scenario	Menambah, melihat, memperbaharui, menghapus data daerah			
Trigerring Event	Data daerah baru			
Brief Description	Membuat data berdasarkan data daerah dari staf yang telah terjun kelapangan			
Actor	Admin			
Related Use Case	Login			
Stakeholder	Staf Admin			
Precondition	Login Admin			
	Actor		System	
Flow Activity	1. Admin menambah data daerah 2. Admin melihat data daerah 3. Admin memperbaharui data daerah 4. Admin menghapus data daerah		1.1 Menyimpan data daerah 2.1 Menampilkan data daerah 3.1 Menyimpan data daerah yang baru 4.1 Menghapus data derah	
Exception Condition	1. Login Admin			

Tabel 3.1 *Use Case Description* Mengelola data daerah

RESULTS AND DISCUSSION

With the development of the Information System for reporting road damage in Bandar Lampung City, it is hoped that it can help the public in reporting damaged roads. It also helps public works department employees monitor which roads need to be prioritized for construction according to complaints from the public who report them through the information system that has been built.

The development of the information system for reporting road damage in Bandar Lampung City is still far from perfect and needs improvement and deeper innovation to maximize the functions and objectives that have been designed. The author's suggestions for developing a better system include:

1. Seek information from the public as users about how the application will develop in the future by using a questionnaire. Or directly add criticism and suggestions received directly by the admin.
2. There is a need to evaluate the operation of a special system for how members monitor a report that has been uploaded. Starting from the verification stage, follow-up, proof of work to a report from the admin that the improvement project from the report submitted has been completed.

Sub section 1

This is the stage of application development that is in accordance with the client's requested functions, the design that has been created, as well as input and revisions from the client during the development process.

a. System main page

This page is the main page display when the URL of the website is opened, the display is similar to social media. At the top there is a menu for uploading reports. And at the bottom there is a display of uploads from other users sorted by upload time and can be commented on by other members.
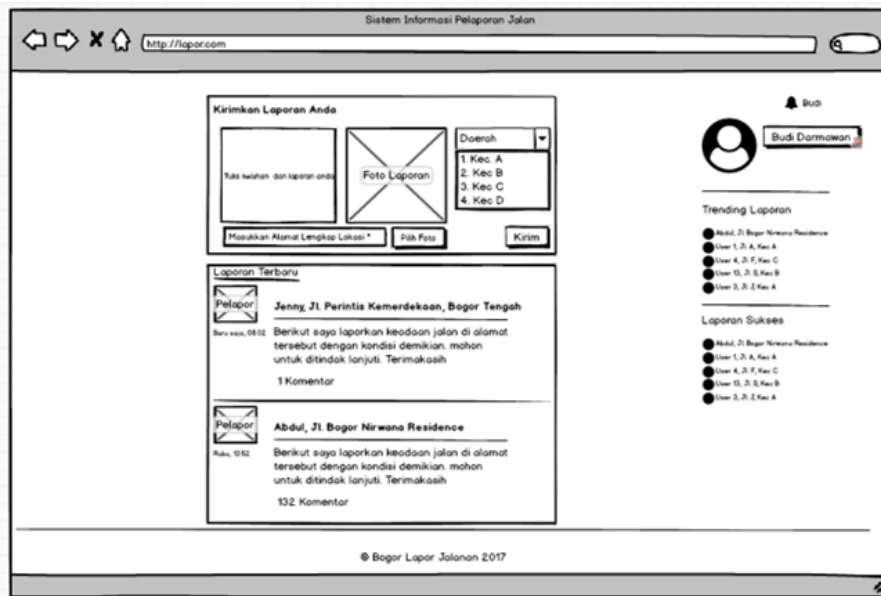
Gambar 3.6 *Mockup* tampilan halaman utama

b. Login display mockup

A login display mockup is a plan or design for the home page when a user tries to enter the system using the email and password that has been previously registered. On this page there are 2 buttons besides login, namely forgot password and don't have an account? If you press forget password, the user will be directed to the forgotten page. However, if the user does not have an account, they must create a new account by pressing the don't have an account button and they will be directed to the signup page.
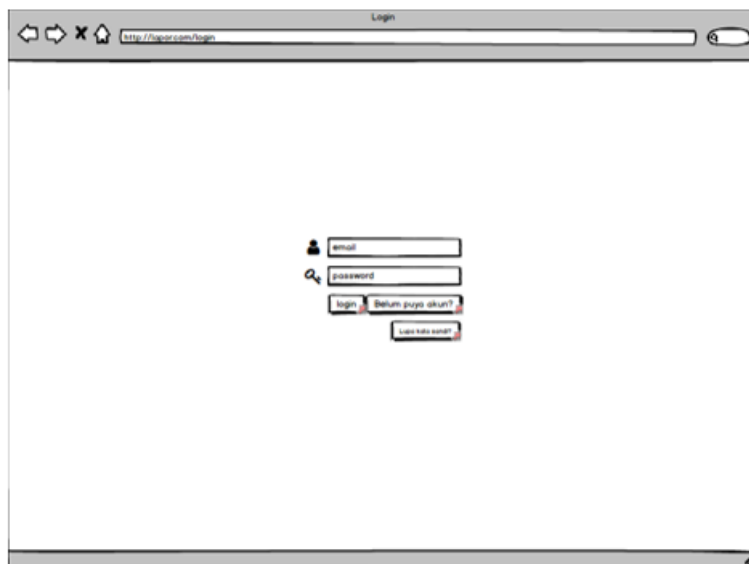
Gambar 3.7 *Mockup* tampilan *Login*

Sub section 2

The software to be built is a web-based information system. This web application was built using the Laravel framework combined with the HTML, CSS and JavaScript programming languages. Because this application is web-based, it certainly requires internet access or is online-based. This software has a menu or main function, namely as a media for

road reporting in Bandar Lampung City with the aim of time efficiency and location accuracy. This application is a system that covers all public highways in Bandar Lampung City, so that every citizen in the entire Bandar Lampung City area can report road damage anytime and anywhere.

In this system there are 2 levels of users who can use it, including:

a. User: Are residents of Bandar Lampung City or immigrants living in Bandar Lampung City, who have previously registered for an account. Users have access to this road damage reporting system, by logging in first, and then entering the road reporting menu. After reporting, the user waits for follow-up from the admin regarding the submitted report.

b. Admin: The admin in this system is an employee of the Bandar Lampung City public works department. Admin is responsible for managing content in the system. Another task is to verify reports as the first step in following up on public reports. After road repairs are carried out, the admin must update the information on the system, so that the reporter and other users already know the results.

CONCLUSION

With the development of the Information System for reporting road damage in Bandar Lampung City, it is hoped that it can help the public in reporting damaged roads. It also helps public works department employees monitor which roads need to be prioritized for construction according to complaints from the public who report them through the information system that has been built.

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