



A web-based geographical project monitoring and information system for the road and highways[☆]

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Abstract

The Department of Public Works and Highways (DPWH) Cagayan de Oro District 1 and 2 is one of the regional offices of the DPWH responsible for implementing transparency of its projects' information by releasing it publicly for the public to access it. However, most of the accomplished and on-going road projects information is not highly available and not easy to navigate in the current website.

The purpose of this study is to design and develop a program application that could provide information about the road projects in a more detailed and informative way and can be easily accessed by the public.

Based on the evaluation, the visual clarity, consistency, and effectiveness of the project are rated as excellent.

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1. Introduction

Roads and Highways are cornerstones of any nation's infrastructure. For centuries, roads and highways have carried people, goods and ideas from one corner of the earth to another. Roads are identifiable routes or paths between two or more places. They are typically smoothed, paved, or otherwise prepared to allow easy travel. Historically, many roads were simply recognizable routes without any formal construction or maintenance (Igbokwe-Ibeto, 2012). It is the responsibility of the designated executive department of the government to build and maintain quality roads and highways, maximizing public convenience (Fiatormu, 2006).

The Department of Public Works and Highways is the executive department of the Philippine government responsible for all the projects in the field of public works. It is responsible for the maintenance of the Philippine road network and

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irrigation system. DPWH is also responsible for collecting, storing, retrieving, managing, analyzing and presenting the data to the public.

Many development projects have serious dependence on transport network. Authentic information on the transport infrastructure is fundamental requirement for many decision making process (Anon., 2016). Therefore information requires it to be reliable, updated, relevant and easily accessible. This demand for information requires new approaches in which data related to transportation network should be identified, collected, stored, retrieved, managed, analyzed, communicated and presented. Considering the complexities in developing, updating and processing of the transport related data, there is an urgent need to adopt new concepts and technologies for designing and developing the information resource management of transport infrastructure in the city (Basu, 2002; Djindjan, 2008). Therefore, the development in the field of information technology is especially relevant to the field of transportation engineering.

Web mapping is the process of using maps delivered by geographical information systems. The locations can be express in many different ways, such as latitude and longitude, address, or ZIP code. Many different types of information can be compared and contrasted (Kraak, 2001). Web Mapping clearly promises many great benefits to DPWH and to its functionality. Web mapping can be a great help in its aim to inform the citizens about their road projects as well as to build positive relations with the citizens it is serving (Almirante, 2013).

Here in Cagayan de Oro, the DPWH consists of two districts. The 1st District office is located at RES Compound, Barangay Bulua while the 2nd District is at Barangay Puntod. The first district's area of responsibility starts from the roads of Barangay Iponan to the Cagayan de Oro River while the second district starts from the Cagayan de Oro River to Syre Highway.

2. Literature review

Project is a common term used in daily conversation by individuals and groups. One eclectic definition sees project as a “planned undertaking of a set of integrated and coordinated activities designed to achieve some declared objectives within a given budget and period of time”. Project has a generic life cycle that begins with its conception, initiation, infancy, maturity, old age and death. Not all projects began are fully completed (Igbokwe-Ibeto, 2012).

Corruption is the major bane of focal government project management. Leakages in fund disbursement due to corruption have robbed the government of much needed funds to execute crucial community development projects. As the introduction states, the DPWH is highly perceived as one of the two most corrupt agencies in the Philippines. Up to this day, it is still continuing its effort of fixing its ruined reputation. A transparency on its projects information must be implemented. It must be released and must be accessed easily by the public (Anon., 2012b).

A Google map is an excellent tool used to prepare a district road plans. The detailed project report includes the survey information such as detailed design and drawings, cost estimates for various road works, etc which are required for execution of the road works. The same information will be highly useful during construction monitoring, quality control and maintenance activities. This in turn become the basis for award of work, monitoring the progress of the work and quantity control in the field (Anon., 2010).

3. Methodology

3.1. Designing the graphical user interface

3.1.1. Website architecture and design

The first step during the creation of the website is performing a research. Getting an understanding of the client's needs and others through thorough examination and brainstorming to learn more about the subject that is to be exposed on the site is the first thing to do. There is a need to a keen gathering of information as much as possible to help develop an outline for the site and also for its design when meeting with the client. This includes asking about the target audience, goals, creative direction and other variables that may affect what they can offer to the client. Performing some industry or market research is most likely done before and after gathering information from the client. This is as simple as looking to see what other websites in the field look like to in-depth research with focus groups. Fig. 1 below is what has been come up.

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