DEVELOPING A DATA ELEVATION MODEL (DEM) BASED-MAP OF BELAKANG PADANG ISLAND, BATAM

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Abstract

Belakang Padang is one of the islands located in Batam City hinterland area. It is known as "Pulau Penawar Rindu" and has become one of tourism interest in Batam City. Even though it has become a tourism interest, Belakang Padang island lacks a map for tourist navigation. This community service aim to help Belakang Padang island by making a map based on data elevation model (DEM). By using ArcGIS as the data processing, a navigation map is created as a tourism property. The map contains the basic information of the island such as transportation route, geographical element, and place of interest. Future project can be done by expanding the information provided by the map.

Keywords: Map Making, Data Elevation Model, ArcGIS, Community Service

Introduction

Belakang Padang is an island located in Batam City hinterland, specifically in the north of Batam island. It has a population of 18.508 peoples and divides into two districts. Even though it is a small island, Belakang Padang has a number of tourism and historical interests. Due to its location and accessibility, many people don't know about this. Based on the interview with the head of Belakang Padang district, one of the reasons that caused that phenomenon is the lack of a map in Belakang Padang area. A geographical map has become one of the attributes that every district needs especially in an area with tourism potential (Citra & Sarmita, 2019). Based on one of the previous research that has been done, geographical map became one of the attributes that every city needs to have, especially areas with tourism potential (Fatimah & Ariaji, 2018). The lack of information leads to a limited number of visitors, especially in historical tourism places. If the location of historical tourism is explained well in a geographical map, the number of visitors in a certain time can increase (Purba, 2016). Another attempt that is done is the making of tourism map for Desa Mekarbuana in Karawang City. The need of Mekarbuana Village for map is essential since the village has a potential for tourism. The map is later developed and has help Mekarbuana Village promotion for tourism (Elsa et al., 2020).

Therefore, this project aims to develop a map that consists of geographical element, and place of interest in Belakang Padang. The existence of this map is aimed to increase the number of tourists in Belakang Padang. This map also becomes the government asset of information and can be updated for future use.

Methods

The first stage of community engagement is location surveying. The method used in this stage is observation and interview. Observation is carried out to seek the information of the places and record it in a photograph (Siyoto & Sodik, 2015). The observation data is complemented by the interview of the Head of Belakang Padang district and several people in the Belakang Padang. The retrieved data is later used in the map design stage. The design stage starts with cataloging the local point of interest that is recorded during the survey stage. Later, the DEM map is retrieved to generate the geographical map by using ArcGIS application. The DEM app allows the user to preview the top view of Belakang Padang island where the geographical information (Road name, sub-district, recorded local point of interest) are later input to complement the map. Beside the geographical map, another implementation strategy is by making a decorative map that has local point of interest tags. This other type of map is designed with Adobe Photoshop and Adobe Illustrator. This map is made to be more interesting than the geographical map so it can attract tourists. This community engagement project is conducted in Belakang Padang Island. Belakang Padang island is the place where the central of Belakang Island district located. Belakang Padang island is located at north of Batam Island. According to Batam City Statistical Centre through 2010 population census, Belakang Padang has 18.508 peoples. People living lin Belakang Padang island consists of Javanese, Malay, Minangnese, and Chinese. Belakang Padang relies on tricycle transportation namely "Becak" and motorcycle on the island. For inter-island transportation, Belakang Padang people rely on boat and a large boat namely "Pompong".

The schedule of this project is carried out with the following time:

Table 1.
Project time schedule

No	Activity	December 2021				January 2022	
		1	2	3	4	1	2
1	Preparation	■					
2	Survey		■	■			
3	Design				■		
4	Report					■	
5	Presentation						■

Sources: Project team discussion

Implementation plan involved in presenting the map to Head of Belakang Padang District and the representation of Belakang Padang folks.

Result and Discussion

The survey of Belakang Padang island was implemented on December 11th, 2021. The survey is led by the head of the Belakang Padang district. By traveling and observing the island of Belakang Padang, forty-six (46) local points of interest are recorded. The record of the local points of interest can be seen in Table 1.

Table 2.
Record of the local point of interest in Belakang Padang

No	Point of Interest	Total
1	Religious Place	10
2	Government offices	10
3	Outdoors and Recreation	1
4	School	9
5	Kindergarten	1
6	Homestay	1
7	Tourist Attraction	5
8	Burial	1
9	Community Hall	1
10	Post office	1
11	Water Treatment Facility	1
12	Corporate Office	1
13	Port Authority	1
14	Shopping center	1
15	Gas station	1
16	City Park	1
	Grand Total	46

Sources: Project team survey

The decorative map is shown in Figure 2. The decorative map is made from the geographical data generated from ArcGIS, combined with the information retrieved from the survey. Later the information is designed through Adobe Photoshop and Adobe Illustrator to generate an attractive map as shown below. The maps are later submitted to the head of Belakang Padang district to receive inputs and suggestion. After further discussion and revision, the finalized map is later submitted to Belakang Padang district office. On behalf of Belakang Padang district, the head of Belakang Padang district expressed the gratitude and mention that this map will be useful in the future especially with Belakang Padang plan of tourism publication.

Figure 1. Survey team with Belakang Padang district head and team (Source: Project team documentation)

Figure 2. Illustrative map of Belakang Padang (Source: Project team documentation)

Figure 3. Tourism Destinations of Belakang Padang (Source: Project team documentation)

Conclusions

The project is a success where a new illustrative map is developed to fulfill the lacks of map in Belakang Padang island. This map has brought a new hope to the future of Belakang Padang island tourism. This project could benefit Belakang Padang District Office to increase the tourist that would come to Belakang Padang island. The recommendation for further program is to expand the map to cover even more area that haven't recorded around Batam. Special thanks for Belakang Padang District Office that has provided much needed information and help so that this project could be carried out successfully.

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