

## DEVELOPMENT OF GEOGRAPHICAL INFORMATION SYSTEM FOR WEST SUMATERA SOUVENIR TOURISM

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### Abstract

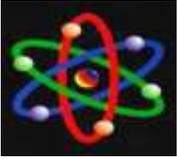
West Sumatra is one of the tourist destinations in Indonesia. It is not only related to its history, but also holds a number of tourism potentials from its alluring natural scenery, shopping tours, to culinary tours. West Sumatra original souvenirs and souvenirs are an inseparable part of the experience while traveling. However, tourists still find it difficult to find a good outlet or shop, close to tourist sites, and find information related to souvenirs and souvenirs in West Sumatra. For this reason, a GIS-based gift and souvenir travel application was built. Geographical Information System for souvenirs and souvenir tours was built in several stages, namely the system analysis stage, the system design stage, the implementation stage and the testing phase. The map design in the system uses the Google Maps API and the software used in building this application is the programming language HP (Pear Hypertext Preprocessor), JavaScript, jQuery, XAMPP database and Adobe Dreamweaver. Presentation of information on the web includes information on tourism objects, culinary gifts and souvenirs or souvenirs.

Keywords: Souvenirs and Souvenirs Tourism West Sumatra, Geographical Information System

### INTRODUCTION

Tourism in Indonesia has gifts and souvenirs or souvenirs with the characteristics of each region. When traveling to a province or region, a souvenir or souvenir is needed to add to the impression and memories of the area you have visited. West Sumatra is a gathering place for people from various diverse regions[1]. The diversity of souvenirs and souvenirs has led to the number of shops and centers for typical West Sumatra souvenirs that continue to be developed by entrepreneurs in the field of souvenirs and souvenirs. So far, souvenirs and souvenirs seek information by asking local people and looking for

information on websites where tourist addresses for souvenirs and souvenirs in West Sumatra. when showing a location where the center for souvenirs and souvenirs is located, the tourism office of West Sumatra province already has a public website, but on that website there is no geographic information system facility and the direction or characteristics of the area, while the clarity of the location where the center of souvenirs and souvenirs is available. These souvenirs are not well mapped because the information obtained is only limited to street names, this causes it not to support the interest of tourists to visit the city of West Sumatra[2]. This causes it not to support the interest of tourists to visit an area. For



tourists, this manual method is less effective because it consumes a lot of time. With optimal management, the tourism potential in West Sumatra can become one of the leading commodities and allow this region to become a tourist destination that is no less attractive than other tourist destinations in Indonesia. Therefore we need tools to identify tourist objects[3]. For that we need precise and accurate information using Geographical Information Systems (GIS). According to previous research (Antoni Zulus and Nelly Khairani Daulay, 2019), GIS is inseparable from the tourism industry, both managed by the government and the private sector. GIS in tourism can provide information to users about the location of tourism in an area. One of the things that attracts visitors is the location of culinary tourism. So that by using the Geographical Information System (GIS) can support the interest of tourists to visit the city of West Sumatra by displaying information, especially the location of souvenirs and souvenirs in West Sumatra, where the presentation of this location information is in the form of data or information related to the geographical conditions of a territory. Map design in making geographic information systems using google maps, which is a free and online virtual globe map service provided by Google. With Google maps, users can easily find information in the form of a location. In its development, Google API maps are widely used in Geographical Information System applications. The

geographic information system using google maps aims to make it easier for tourists to find information on tourist objects and souvenirs typical of West Sumatra. Such as an overview of objects, coordinates, roads to be traversed, routes and directions, as well as supporting facilities around the tourist attraction area. the. OUTSIDE The results of this research can later be published in the form of articles, local journals that have ISSN or accredited national journals, namely the Komtekinfo Journal[4].

## LITERATURE REVIEW

### GIS (Geographic Information System)

Definition of Geographical Information Systems. According to Aris Puji Widodo. (2010), Geographical Information Systems (GIS) can be applied to overcome these problems. Systems of Geographical Information (GIS) has the ability to store data and manipulate information based on geographic data[5].

This is what differentiates Geographical Information Systems (GIS) from other information systems. GIS (Geographic Information System) technology is experiencing rapid development. One of them is Mobile GIS, where GIS, which was previously only used in an office environment, has become more flexible and can be used outside the office by mobile. Mobile GIS can be used to easily capture, store, update, manipulate, analyze and display geographic information[6].

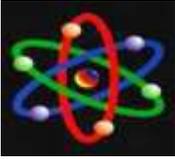


Helmi Kurniawan and Muhammad Rusdi Tanjung (2017) state that Geographical Information Systems (GIS) have the ability to store data and manipulate information based on geographic data. GIS can provide information to decision makers for the analysis and application of spatial databases [7]. Based on the above definition of geographic information system (GIS), namely the information system used to enter, store, recall, process, analyzing and producing data in the form of information in geographic references in order to support decision making in planning and processing a system[8].

### Map

**Map Definition** The definition of a map in general is a description of the earth's surface drawn on a flat plane, which is scaled down to a certain scale and equipped with symbols as explanatory. The digital map in this study is a digital map of the distribution of fauna that is processed and displayed on the LCD screen [9]. A map is simply translated as a picture of the area where information is placed in the form of symbols. As an information medium, maps are used to assist decision making. The map that will be created is a means to assist the discussion process of understanding the conditions of the area. Map design is included in the Geographic Information System, which is a computer-based system that provides the ability to handle geographically referenced data which includes data entry, processing or

management, data manipulation and analysis, and output. Data in geographic information systems is divided into spatial data which includes raster data (image data) and vector data (points, lines, and polygons), and non-spatial data (attribute / table data [10]). A map is a conventional representation of the physical features (natural and man-made) of part or all of the earth's surface on a flat plane with a certain scale. As we all know that the surface of the earth as a whole is a curved surface and it is absolutely impossible to be stretched so that it becomes a perfectly flat plane without experiencing change or damage. Thus, the mapping results of the wide and curved surface of the earth cannot be mapped on a flat plane without experiencing distortion (change) from its original form (Rochmah, Nur Dyah PA and Efawan Retza Arsandy. 2015). Maps contained in geographic information systems can have an overview of objects, coordinates, roads that must be traversed, routes and directions showing many different views with the same subject. Definition of Global Positioning System GPS or Global Positioning System, is a device or system that can be used to inform users where they are (globally) on the earth's surface based on satellites. Data sent from the satellite is in the form of radio signals with digital data[11]. The position of the GPS unit will be determined based on the coordinates of the degrees of latitude and longitude. GPS technology requires 24 artificial satellites (orbiting at an altitude of 20,200 km),



which is also called the space segment so that all points on the earth's surface can be observed. Figure 1 illustrates the placement of the 24 GPS satellites orbiting the earth. The orbit of the satellite is divided into 6 orbital planes spaced 60° (6 planes to fill 360°), and each orbital plane is placed 4 satellites. With this arrangement, it is expected that all points on the earth's surface can be monitored by 5-10 satellites at the same time to obtain accurate position information.. GPS technology determines the coordinate point in determining the location and position on the surface of the earth accurately with the help of satellite signals so that it knows the intended location.

### **Google Maps API**

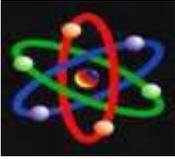
Google's API definition provides the Google Maps API service where developers can integrate Google Maps into their respective websites by adding data so that it can make it easier for developers to modify maps and information on these maps. Stating that the Google Maps API drawing on map is a service used to add objects to a map in the form of points, lines, fields, or objects. The Google Maps JavaScript API calls this object an overlay, an overlay is an object that is tied to latitude or longitude, so that when the object can move when it is dragged or zoomed in according to its position on the map. The Google Maps API is an application feature issued by Google to facilitate the Use of Google Maps API Technology for the Android-Based

Criminal Report Application at the Makassar Police 189 users who want to integrate Google Maps into their respective websites by displaying their own data points The Google Maps API is a development of Google Maps. By using the Google Maps API, it is possible to use Google Maps on a website. Although originally just a JavaScript API, the Maps API was expanded to include an API for Adobe Flash applications. The success of the google Maps API has given rise to a number of competitors, including Yahoo! Maps API, Bing Maps Platform, MapQuest Development Platform and OpenLayers[11] .

### **Souvenirs and Souvenirs**

In Indonesian, souvenirs are often referred to as souvenirs, souvenirs, or souvenirs. Souvenirs are not always closely related to objects, they can also be related to the typical food processed from a certain area or the area being visited. For souvenirs, the famous food in West Sumatra is food that comes from processed beef called rendang . As for typical West Sumatra souvenirs in the form of processed food, namely Sanjai crackers , shredded meat , processed pastries, processed food from vegetables and others. Processed in the form of clothing, namely Songket cloth . Processes in the form of knick-knacks, namely beaded accessories, key chains, bags, wallets, sandals, and traditional regional home accessories.

West Sumatra, abbreviated as Sumbar, is a province in Indonesia located on the island of Sumatra with Padang as its capital. West Sumatra province lies along the



western coast of central Sumatra, the highlands of Bukit Barisan in the east, and a number of islands in the offshore . From north to south, the province with an area of 42,297.30 km<sup>2</sup> is bordered by four provinces, namely North Sumatra , Riau , Jambi and Bengkulu . West Sumatra is home to ethnic Minangkabau , although the Minangkabau customary territory itself is larger than the current administrative area of West Sumatra Province. and consists of 12 districts and 7 cities . The cities that are the objects of research are as follows Padang city, Solok City, Sawahlunto City, Pesisir Selatan City, Pariaman City, Padang Panjang City, Payakumbuh City and Batusangkar City

### RESEARCH METHODOLOGY

Research methods that will be carried out in order to solve the problems to be discussed

#### Study Literature Methods .

The research used is the literature study method with references from books, including dynamic WEB Programming Basics using PHP, Basic Concepts of Geographical Information Systems and the Journal of Geographic Information Systems.

#### Interview

Interview technique, namely, a method of collecting data by conducting unilateral questions and answers which is carried out systematically and based on research objectives, namely by conducting interviews with all the shop owners who have been determined.

#### Observation

Writers direct observation in the province of West Sumatra to retrieve the required data such as the coordinates, the location of the shop and image shop

### RESULTS AND DISCUSSION



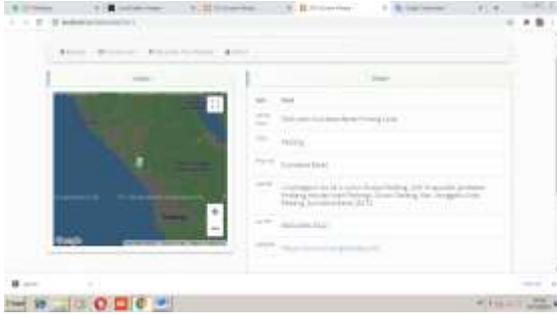
Image 1. Home

This is the initial view of the gis application. This application is designed based on the web but also follows the use of gadgets.



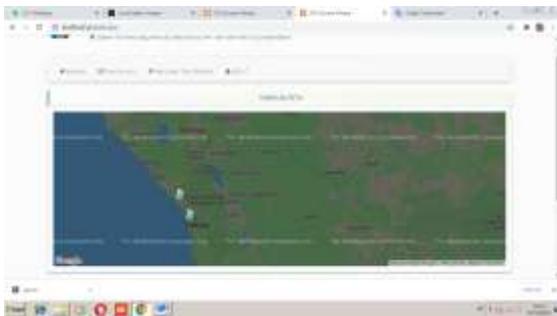
Image 2. Sourvenir Shop Location

On the home page of the souvenir shop, you can see several columns that provide some information such as the name of the shop, category, city, website and coordinates.



**Image 3.** Coordinates

On this page, the coordinates of the store in the application appear. by utilizing the google API, the coordinates will be aligned with the google map so that it can help travelers find shops easily. by utilizing latitude and longitude so that the coordinates will be correct.



**Image 4.** The spread of the survenir shop

this app also comes with a comprehensive spread of the survenir shop. so users can see the real life and the entire gift shop around them.

## CONCLUSION

With the GIS application, it is hoped that it can give the popularity of the souvenir shops in West Sumatra. so that the income of entrepreneurs can increase and economic life also increases. and make it

easier for travelers to get typical West Sumatra souvenirs.

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