RBI Mapping Geographic Information System in Pangkep Regency Using ArcGis Online

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Abstract: The Indonesian Medan Map (RBI) is a topographic map that displays several natural and man-made elements in the territory of the Republic of Indonesia, especially in Pangkep Regency. The purpose of this study is to map sixteen RBI objects, namely Hospitals, Education, Industry, Health Centers, PLN Offices, Package Delivery Offices, Worship Facilities, Government, Ports, Post Offices, Gas Stations, Rivers, Dams, Roads, Irrigation, and Settlements. Use the ArcGIS Online app. This mapping is useful for providing information about the spatial data of objects and topographic maps. The method used is a survey by determining the coordinate points of each object. Furthermore, coordinate points are used as data input in ArcGIS applications. Primary data collection is carried out by direct observation of objects or places. Secondary data collection includes Quickbird Citra Pangkep Regency, as well as the Indonesian Medan Map (RBI). Data analysis was carried out in a descriptive manner. Based on the results of object mapping in Pangkep Regency, there are sixteen RBI objects, including: three health service objects, one education object, four transportation objects, five construction work service objects, one government object, one housing object and one worship object object. Sixteen RBI objects are spread throughout Pangkep district.

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1. Introduction

Pangkep Regency is a district with spatial uniqueness, which is located in a mountainous area. Pangkep Regency continues to experience an increase in the number of RBI objects. The number of RBI objects to be mapped is sixteen objects, both natural and man-made. Landscape RBI objects emphasize the peculiarities of natural conditions that are still pure, man-made landscape attractions provide distinctiveness in the process of their formation. The development of RBI has a positive influence on its existence. Pangkep Regency develops its RBI potential both in natural and man-made elements.

Pangkep Regency has the potential for land that can be developed for RBI mapping in Pangkep Regency. The existing RBI objects also vary, namely Hospitals, Education, Industry, Health Centers, PLN Offices, Package Delivery Offices, Worship Facilities, Government, Ports, Post Offices, Gas Stations, Rivers, Dams, Roads, Irrigation, Settlements and more.

Mapping RBI objects in Pangkep district needs to be carried out. This mapping is useful for providing information to the public about the types and locations of RBI objects. RBI object mapping can be done with the Geographic Information System (GIS) or the Geographic Information System (GIS). GIS is a tool for making maps, analyzing data, and reporting results (ESRI, 2012). GIS is able to present real-world phenomena, one of which is the mapping of RBI objects digitally. Compared to maps on sheets of paper, GIS provides a more attractive appearance.

RBI in Pangkep district needs a GIS application to map RBI object information as a first step for planning. The field of RBI and the function of GIS are interconnected (Bahaire and Elliot-White, 1999). GIS is able to connect various RBI object data in Pangkep Regency. Furthermore, GIS combines, analyzes, and maps tourist attractions as outputs, and can provide spatial information of RBI objects. Providing information to the public in today's technological era is important. Technological developments have encouraged the delivery of spatial information to be more interactive. Therefore, mapping RBI objects in Pangkep district with the help of GIS is important to be carried out.

2. Methods

This research was conducted in Pangkep Regency, South Sulawesi Province, Indonesia. The research approach is qualitative with a survey method. The survey was carried out in all RBI objects in Pangkep Regency. The number of RBI objects is sixteen, namely: Hospitals, Education, Industry, Health Centers, PLN Offices, Package Delivery Offices, Worship Facilities, Government, Ports, Post Offices, Gas Stations, Rivers, Dams, Roads, Irrigation, and Settlements.

2.1. Data collection
1. Data collection is carried out by observation to take primary data in the field, including: coordinate points, landscape characteristics, man-made landscapes, accessibility to RBI objects, connecting transportation.
2. Documentation collection includes Quickbird Imagery processed using ArcGIS applications.
3. The Global Position System (GPS) is used to determine the coordinate points of RBI objects.

2.2. Data analysis
The data obtained was used as input data for the creation of a map of the distribution of RBI objects (natural and man-made elements) with ArcGIS software. The data needed is the coordinates of the location of the RB object. Location coordinates are obtained from determining points using the Global Positition System (GPS). After the map of the distribution of RBI objects in Pangkep Regency is made, then the descriptive characteristics of RBI objects are analyzed.

2.3. Geographic Information System (GIS)

GIS began to develop in the 1700s marked by the application of modern surveying techniques for topographic mapping. Then at the beginning of the 20th century came the development of photo lithography. This has an impact on the development of maps, namely the separation of data in maps into several layers. In the early 1960s, mapping applications became more multifunctional due to the development of computer hardware caused by nuclear weapons research. The presence of GIS cannot be separated from the development of information technology. Reporting from the book Encyclopedia of Geography of Geographic Information

Systems (2014) by Nur Fitriana Sari, it is explained that GIS was first implemented in 1967 in Canada under the name Canadian Geographic Information System (CGIS). The person who developed CGIS is Roger Tomlison. CGIS is used to store, analyze, and process the data collected for land inventories in Canadian territories. CGIS is the world's first system as a result of the development of a mapping application that has various capabilities. Unfortunately, CGIS only lasted until 1970. This is due to the inability of CGIS to compete with commercial mapping applications issued by several vendors, such as ESRI, CARIS, and MapInfo. The development of the industry in the 1980s and 1990s made GIS grow even more by penetrating UNIX workstations and personal computers (PCs). At the end of the 20th century, GIS users began to export and display GIS data through the internet so that GIS is increasingly known by the public. Indonesia itself began to use GIS since the 2nd Pelita around 1974. Right in 2016, the one-map policy for various data displays has begun to be implemented in Indonesia. Geographic Information Concept and Its Application in Quantitative Geomorphological Analysis (2018) by Emi Sukiyah, GIS is a computer-based system used to store, process, and analyze geographic information. The basic concept of GIS is that data is managed and stored in a layer. Each layer contains similar data, either in the form of thematic information or polygon-type objects. Each object in each layer can be associated with attribute data that is stored and managed using a Data Base Management System (DBMS). Information in the form of basic data or operational technical data can be easily created using DBMS. The hook between the graphic data and the attributes is what finally forms a GIS. In GIS, computers are a very important component. Because GIS is directly related to information,technology.

2.4. ArcGis

ArcGIS is one of the software developed by ESRI (Environment Science & Research Institute) which is a compilation of functional functions of a wide variety of different GIS software such as desktop, server, and web-based GIS. This software began to be released by ESRI in 1999. The main product of ArcGIS is ArcGIS desktop, where ArcGIS desktop is a comprehensive professional GIS tool and is grouped into three components, namely ArcView, ArcEditor and ArcInfo In addition, ESRI also has an ArcGIS product that can be accessed via the internet, namely ArcGIS Online.

3. Results and Discussion

The implementation method in this study is generally divided into 5 stages as shown in the following diagram:
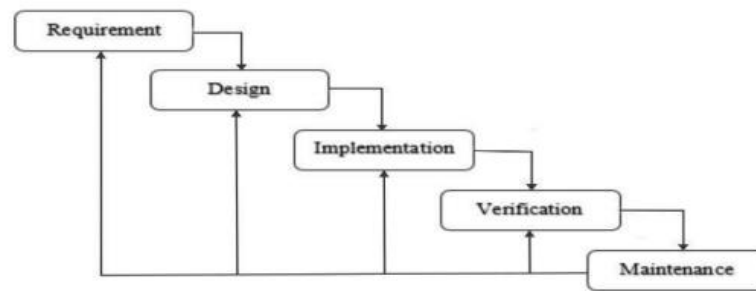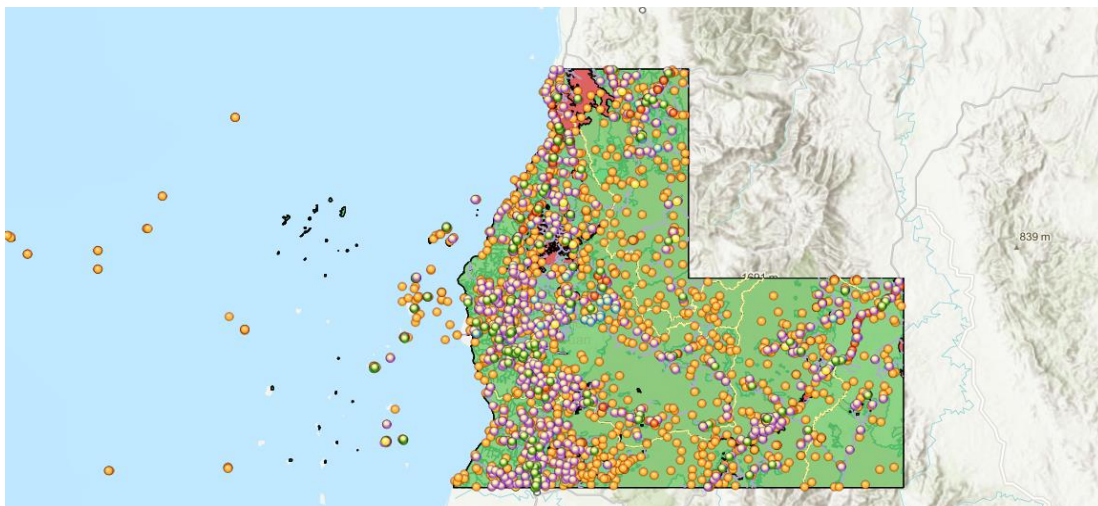
Fig 1: Research Workflow

3.1. RBI Map View Using ArcGis Online

Displays RBI maps using online ArcGis that can be used through www.arcgis.com. An RBI map view on the ArcGis online of the designed system, as shown in Figure 3.
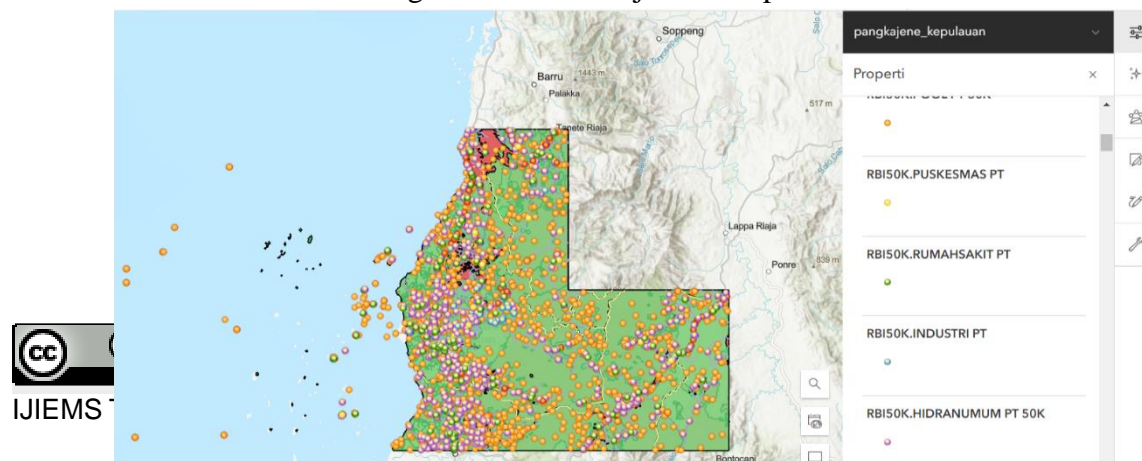
Fig 2: RBI Map View Using ArcGis Online

3.2. The entire object of map creation

This map includes the data needed to create the map to make the ArcGis app work as intended. On this map, round marks and colors are made to distinguish between other objects.

Fig 3: The entire object of map creation

4. Implementation and Testing

The design of the software in the form of a waterfall that more or less represents the implementation in the field and the ArcGis software. The software design consists of GIS and ArcGis, to create RBI maps.
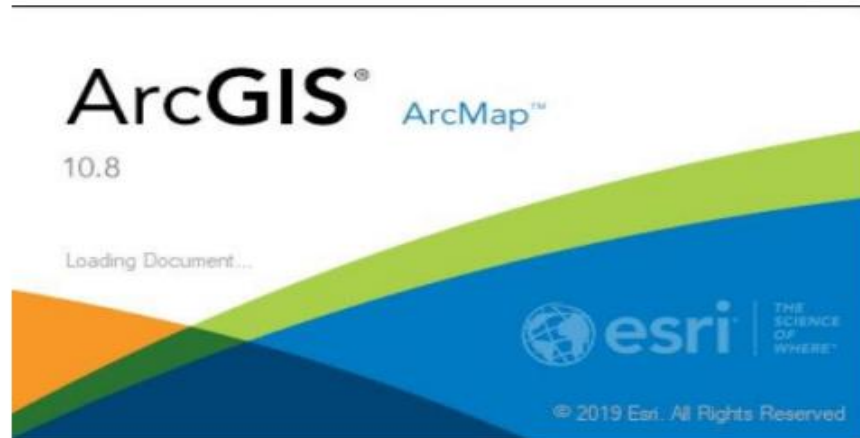

Fig 4: Software Set

5. Conclusion

After conducting various tests on the design of the Indonesian Terrain Map (RBI) in Pangkep Regency, both hardware and software, the following conclusions can be drawn. In this report, a map of the terrain of Indonesia (RBI) has been made in Pangkep district with sixteen objects. And where the mapping is made using the Geographic Information System (GIS) and the online ArcSis. This map has sixteen object points spread across Pangkep Regency, including: three health service objects, one education object, four transportation objects, five construction work service objects, one government object, one residential object and one worship object object. The sixteen RBI objects are spread throughout Pangkep district. Each RBI object has its own attraction in the form of natural beauty, both natural and man-made. From this RBI map, we can find out some places such as hospitals, education and so on.

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(Hartono, 2019; Hidayat et al., 2024; Hisanah et al., 2015; Nugroho & Yarianto, 2011; Restu Wardani & Maulana Malik Jamil, 2020)

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