

# Development of Geographic Information System of Dairi Regency Tourism Objects By Applying Circular Method

Harvei Desmon Hutahaean<sup>1</sup>, Ali Akbar Lubis<sup>2</sup>, Rosma Siregar<sup>3</sup>

{harvei.hutahaean@gmail.com}

Department of Electrical Engineering Education, Faculty of Engineering, Universitas Negeri Medan, North Sumatra, Indonesia<sup>1,2,3</sup>

**Abstract.** There are many tours in Indonesia but not all tourist areas are managed by the local government properly, related parties are less able to promote tourism in a web-based way. Therefore, many tourists do not visit tourist attractions whose information is not managed properly. Geographic Information System is the answer to the problems that exist in the field of tourism. Geographic Information System is developed by applying a circular method which can later help prospective tourists who want to visit a place by searching for tourist attractions to visit, tourists can see the locations they want to go to, accompanied by maps, and on the other hand related parties will also experience benefits in the form of foreign exchange input from tourists. Thus, this research is expected to produce a geographic information system that helps recommend types of tourist destinations that are suitable to visit.

**Keywords:** Geographic Information System, Tourist Object, Circular, Arc View, Google Map API

## 1 Introduction

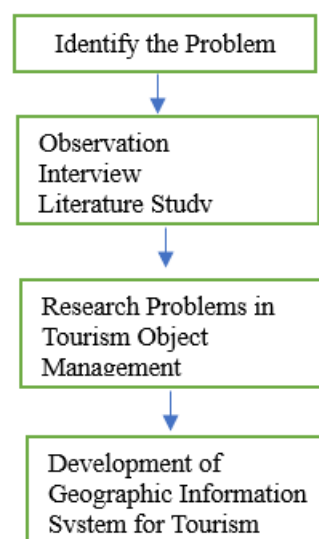
Geographic Information System is one of the developments of information system science and one of its uses is for the development of tourism information in Dairi. Tourism in Dairi from year to year is increasing, but in promoting and advancing tourism the Tourism Office still uses manual methods, namely tourists who come to tourist attractions will be given booklets[1]. Information made by the local Tourism Office is very limited. So it is necessary to create alternative media to inform Dairi tourism so that it can be enjoyed by the wider community[2,4]. Which is able to display maps consisting of several map layers including tourist attractions, poms, hotels, and so on. And can help tourists determine the appropriate tourist destination using the Circular method in decision-making by calculating the weight of each criterion in accordance with several indicators, namely budget, type of tour, distance, and means of transportation[3]. Many foreign and local tourists do not know much about tourist sites in the Dairi area, because tourists do not know the tourist sites or their existence due to a lack of information from the Dairi area[5,6].

Currently, most local governments do not have an information system that can support the needs of fulfilling information through the internet, specifically map-based about the tourism potential of their respective regions[7]. Currently, the map information obtained is still manual in plain paper form, although some are displayed through a web browser, they are still only limited to the display of images and legends without including a database that shows the attributes of each object on the map[8].

This results in the map being read not providing complete map object information and making it difficult to update the object data[9]. Therefore, it is necessary to have an identification system for tourist sites that can provide easily digestible and integrated information for the community, investors who want to develop, or local governments to carry out development.

## 2 Method

In line with the objectives to be achieved in this study, namely GIS of tourism objects, this research conducts a study on the development models that have been implemented, then based on the results of the study from the system design model is developed into a Geographic Information System.



**Fig. 1.** GIS Research Design

The waterfall method or often called waterfall method is often called the classic life cycle, the name of this model is actually the Linear Sequential Model, which describes a systematic and sequential approach to software development, starting with the specification of user needs and continuing through the stages of planning, modeling, construction, and handing over the system to users.

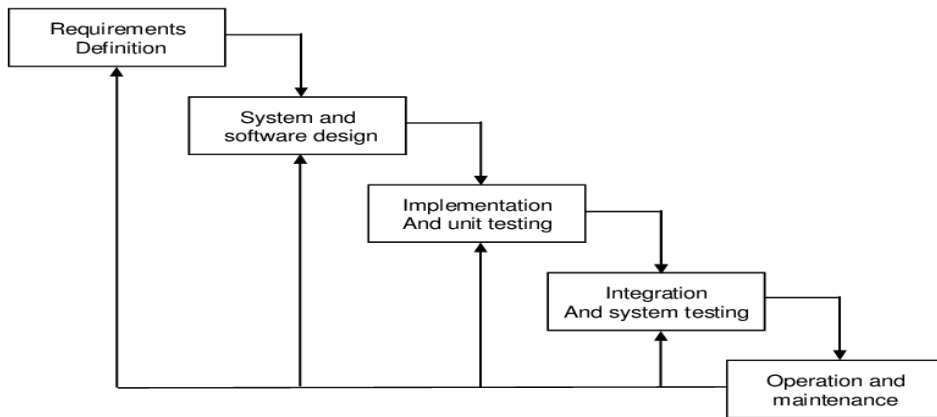


Fig. 2. Development Model

### 3 Results and Discussion

#### System Modeling

The analysis model must be able to achieve three main goals, namely describing what is needed by the customer, establishing the basis for the creation of the software design, and limiting the set of requirements that can be validated once the software is built.



Fig. 3. Model

This main menu form is the display of the Main Menu.

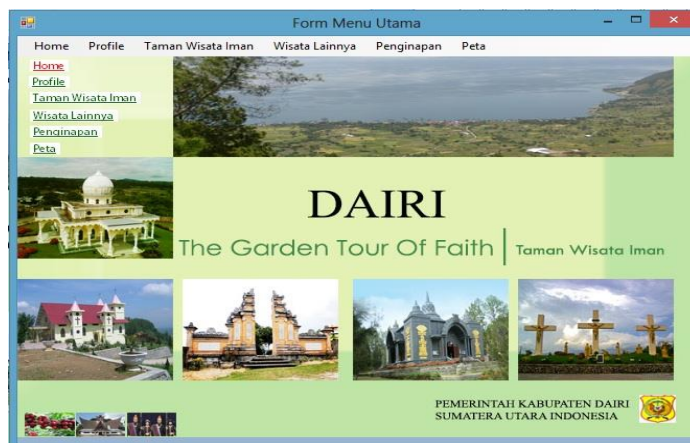
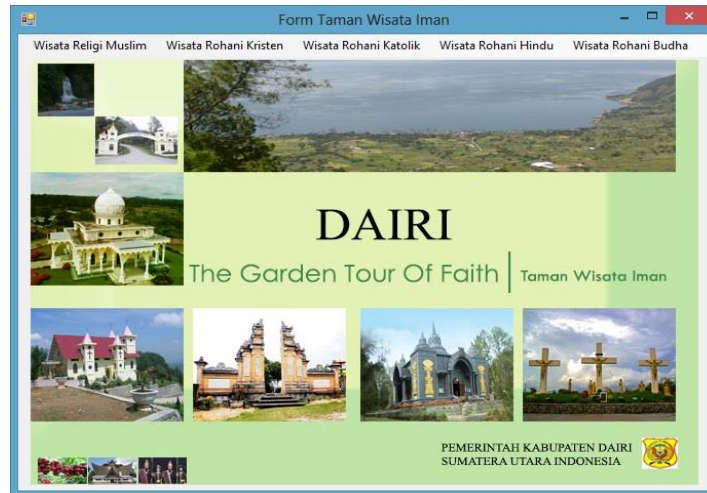


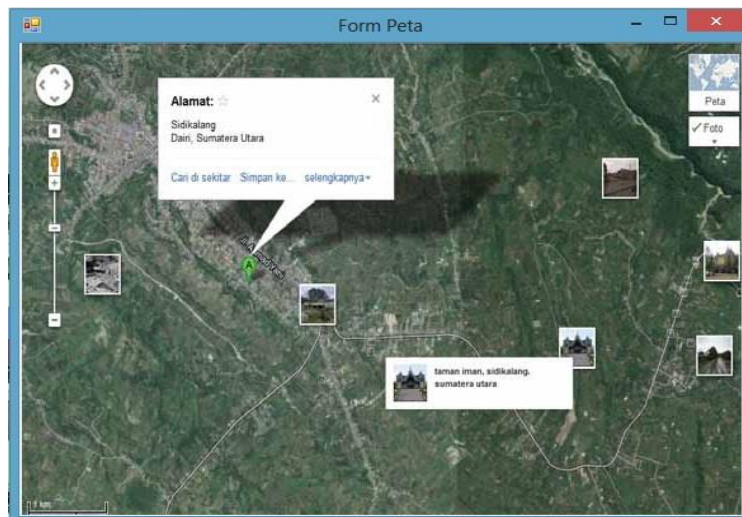
Fig. 4. GIS Main Menu Interface

The display of the Taman Wisata Iman menu has 5 choices of spiritual tourism objects in Taman Wisata Iman, the 5 choices are recognized religions in Indonesia.



**Fig. 5.** Taman Wisata Iman Menu Interface

The interface parts of the Taman Wisata Iman Menu can be seen The Main Menu presented includes the history of tourist attractions in Dairi Regency, namely, Muslim Religious Tourism, Protestant Christian Religious Tourism, Khatolic Religious Tourism, Hindu Religious Tourism and finally Buddhist Spiritual Tourism. The display of this Map menu allows users to access the map if the user wants to know the distance or location from the place of existence to the destination they want to go to. In this map menu, users can see all tourist locations in Dairi Regency, users will also know the distance and time to be traveled.



**Fig. 6.** Map Menu Interface

## 4 Conclusion

The conclusion obtained from the writing of this study is how to inform tourism areas in the District Dairi through a website that has been developed in such a way or even from brochures or instructions from someone who has been there. If the wider community has known tourist attractions in the area in the area, it will automatically make it easier for visitors or guests who will go to the area. The geographical information system of faith tourism uses the circular method to analyze the needs and components of the system used including hardware, software, and networks then a system design is carried out which includes interface design, database structure, and control element procedures followed by testing and maintenance of the program.

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