

Designing Package Travel in Ex-Surakarta Region with Semantic Trip Planning

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Abstract— Planning your tour will lead to improper waste costs and travel time which can lead to failure of tourism planning has been prepared. Preparation of a tourism plan with attention to the linkages formed an attraction to other attractions, the location of attractions, many attractions to be visited on the costs involved, and the many attractions to be visited on the availability of time for sightseeing.

This study aims to build a smart website designing package tours that will visit for travelers candidates based on factors that have been mentioned. The study focused on the use of semantic web technologies to build planning travel package in the ex-residency of Surakarta.

Prototyping of research methods used to complete this research. This study began with an analysis of the existing system and also to collect data on the needs of potential tourists when making a tour itinerary. After the analysis, then formed the design of a model-based system of semantic web, namely travel package planning system in the ex-residency of Surakarta. The semantic model is constructed as a data representation attractions in the ex-Surakarta residency combined with secondary data from relevant agencies, such as the data restaurants, hotels, distances, coordinates the Global Positioning System (GPS) and other tourist sites. The data obtained were combined with Dijkstra algorithm to obtain the route plan your tour.

Models created a prototype or blueprint as a base development system. The system is built capable of displaying full information on travel plans in the area of the former residency of Surakarta, including tourist sites, related facilities such as hotels, restaurants once the tariff in accordance with the data obtained from the department of tourism. Planning trips made by tourists are generated based on the budget that is owned and tourist sites were selected.

Keywords: Design Package Travel, Trip Planning Semantic, Prototype

I. INTRODUCTION

Websites that promote tourist sites in the territory of the ex-Surakarta residency, both private websites (like blogs that share the experience of a tourist visit) as well as government websites can be categorized as websites that only provide static information. Said that because the website only displays the information "what" of the tourist sites. Some other websites display additional information such as a map of tourist sites of the embedded Google Map.

However, the static information is available on the website have not felt able to help visitors (potential tourists) to find more complete information when they want to travel to the tourist sites. Information "how to" reach the tourist sites are not available on most websites. Map of tourist sites

that appear also notable to provide value-added information regarding: (1) distance of the tourist sites with the location of visitors and also the travel time, (2) an attraction information linkages with other tourist attractions that are nearby, (3) the number of objects tours that can be visited and the costs involved in a package visit. Thus, there is not an appropriate tool for website visitors (potential tourists) to plan your tour. These tools are considered important for planning your tour of improper would cause the waste and the cost of travel time that can lead to failure of the travel planning has been arranged to thwart can event out itself (Indrasari and Wahyudi, 2013).

Yunita (2011) explains that the travel package planning problems, a travel plan with attention to the linkages formed an attraction to other attractions, attraction to the location, many attractions to be visited on the costs involved, and the many attractions that will a visit to the availability of time for sightseeing. This article will discuss about the model/prototype to help potential tourists in planning travel package in Region Ex-Surakarta with Semantic Trip Planning technologies.

II. THEORETICAL BASIS

2.1 Semantic Web

Semantic Web is a vision of Berners-Lee to make the web into meaningful data resources. This can be realized by using the infrastructure that is defined by the working group at the W3C. As already known, the current web using HTML as the main component. HTML makes the presentation and content of the web into one. This is a weakness of the current web because it causes the data can only be understood by humans and, in turn, will complicate the presentation, classification, search, cataloging, as well as human reasoning. W3C build infrastructure for the purpose of data that can be better understood machine. Some of the components that have been built of which is RDF (Resource Description Framework) and OWL (Web Ontology Language). Of course this is also the main component based on the other components that have been developed by the W3C that is XML (Extensible Markup Language) and URI (Uniform Resource Identifier) or HTTP (Hypertext Transfer Protocol).

Building a semantic web is basically a process to define the data to be meaningful and understandable by the machine (the sense understood here refers to the ability of the machine to describe the relationship between data and graph representation of the data). Defining the data is done by making the RDF data model. The RDF data

model can be used by different API (Application Programming Interface) like Jena from HP, 4Suite of Fourthought Inc. and others. Thus, the task of software developers will be easier to manage the data.

The word semantic stands for the meaning or something related to the study of meaning and changes of meaning. In the context of semantic web, semantic word indicates that the meaning of the data contained in the web can be understood not only by humans but also by machines (machine understandable). Tim Berners-Lee said that the semantic web is the protection of the current web in which information has the meaning defined better by seeking common perception among existing concepts that allow humans and computers can work together optimally, especially in the management and presentation of information. (Berner et al, 2001). According to the World Wide Web Consortium (W3C) Semantic Web is an illustration of an idea that the data contained in the web can be defined and are related in a way that can be used by machines, not just for display, but also for automated, integrated, and used in different applications. The term originated from the idea of the semantic web to provide data on the internet so that logical processes can be done with a machine. To that end, the semantic web, in addition to pure information, there is also a description of the connection information.

HEPP, et al (2006) on the publication concluded that the use of semantic web technologies and ontologies can be used as a repository of knowledge (concepts, entities, and rules) in tourism-related E-Commerce. The knowledge base of the tourist locations are stored in a semantic model of the web. While Hendriksson (2005) concluded that the combination of semantic web technologies and ontologies on a platform to exchange information electronically does not require changes to the structure of the data in the system. This statement is reinforced by research Siricharoen (2010) which says that e-tourism is the right application for the application of semantic web technologies as it is based on information available on the internet. Ontology which is the foundation of knowledge in semantic web could help organizing, browsing, searching and intelligent access to information and services available online.

2.2 Metode Pengembangan Sistem informasi

System Development Life Cycle (SDLC) adalah suatu kerangka yang menggambarkan kegiatan-kegiatan yang dilakukan pada setiap tahap pembuatan sebuah software. Terdapat banyak metode untuk mendeskripsikan SDLC ini, pada dasarnya setiap metode menggambarkan tahap-tahap sebagai berikut (bennet, et al., 2006) :

1. Identification, selection and planning

This stage is the preliminary stage of the development of a software. At this stage, developing a design of a software. The steps performed in this stage, among others :

- a. Identify users need.
- b. Selecting the need of the user identification process above, by adjusting the capacity of the available technology and efficiency.

- c. Planning system to be used in the software created. With the following requirements: functional requirements and non-functional, user requirements, system requirements, requirement documents and software

2. System Analysis

This stage is the stage of completion, which is aimed for obtaining the software and user requirements are more specific and detailed. The purposes of this phase are to determine the position and role of information technology that the most suitable with the requirement of company, and studying the functions of management and related business aspects that will affect or have a certain impact on the process of design, construction and software implementation. The analysis is divided into two systems are:

- a. Data modelling, includes Entity Relationship Diagram (ERD), Conceptual Data Model (CDM), dan Physical Data Model (PDM).
- b. Process modelling, with Unified Modeling Language.

3. System Design

After identification and analysis of the system, the next step is to translate these concepts into a system that is tangible. This phase includes the creation and development as follows.

- a. Form and report design (reports).
- b. Interface and dialogue design (message).
- c. Database and file design (framework).
- d. Process design (process structure).

At this stage will produce a document in the form of Software Architecture Document (SAD). SAD is a document that describes the architecture of software projects associated with the project.

4. System Implementation

This step begins with testing software that has been developed. Some of the testing phase is as follows by :

- a. Development, the testing errors per module by the programmer.
- b. Alpha testing, the error testing when the software combines with a user interface.
- c. Beta testing, the testing on actual data and environment. In the next stage, conversion system was done, which is applying the software to the actual environment to be used by organizations that ordered

III. RESEARCH METHOD

The research method based on the waterfall method (Pressman, 1994 in Bennett, et. Al., 2006)). The steps of the framework of this study are as described in Figure 1.

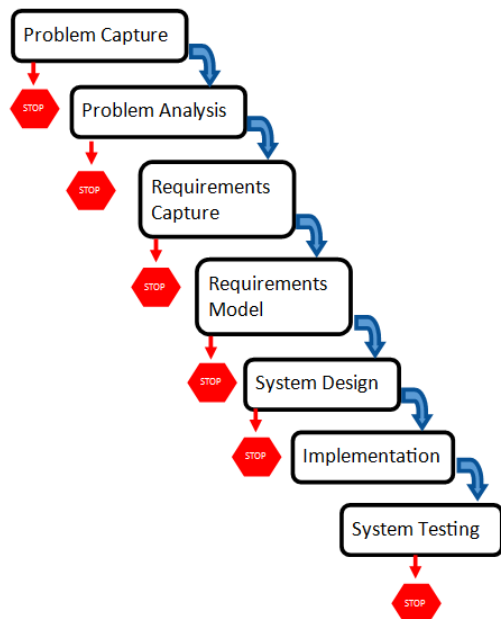


Figure 1 Flow Chart

This study begins with the observation of the problems were experienced by prospective tourists when looking for information to make a tour itinerary. The fact while the observations and problems that arise are analyzed by comparing the existing system with the addition of the benefits of the development system.

The next stage is understanding users need (potential tourists) against the tourism website and then modeling what the users need. The model is the basis for the creation of the system design, which consists of an activity diagram to get an idea of how the user interaction with the system and how the system gives a response to user input.

The final step of this research is to implement the design in the code so that the system can be accessed online by the user. Furthermore, the system is tested by using beta testing method and black-box testing to test the functionality of the system to produce the desired information.

IV. RESULT

4.1 Problem Capture

The study was conducted based on a prospective tourists who need to be a website that can help the prospective tourists in making a tour itinerary. In accordance with the flow chart of research that has been described in Figure 1, the first step in this research is to capture problem.

The results obtained at this stage, are as follows: (1) There are many of websites / blogs that promote tourist sites in the Surakarta ex-residence (2) Consists of a local government websites that display presence information of tourist sites in the Surakarta ex-residence and also the website/blog belongs to an individual who share the experience of traveling to the tourist sites are located in the Surakarta ex-residence. (2) The information available on the website / blogs that promote tourist sites in the Surakarta ex-residence has not been able to help prospective tourists make travel plans.

4.2. Problem Analysis

Website / blog that display tourism information in the Surakarta ex-residence only help potential tourists as a reference to add the knowledge about the tourist sites will be visited, because the information is available on the website / blog is simply information that explains what was there. Website / blog have not become a system that can help the prospective traveler to make travel plans to the tourist sites in the Surakarta ex-residence. Indrasari and Wahyudi (2013) in a publication outlining the importance of proper planning for not to cause the wasting time and travel costs.

4.3 Requirement Capture and Model

Based on interviews with potential tourists who are accustomed to hunting tourism information via the internet before visiting it, it is known that they wanted more information than most shown of existing website/blog tourism. The potential tourists want the information to help them make a travel plans.

When potential tourists make travel plans, the sequences are follows: (1) Establish the total travel time (both when in or traveling tourist location), (2) Determine the total cost allocated for tourism, (3) Specify the location as a tourist destination primary and if possible, plan a trip to the nearby tourist sites that maybe visited. If the order of the process of making travel plans undertaken by potential tourists that were made with the model/prototype, the system logic flow is as shown in Figure 2.

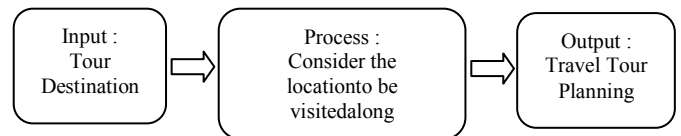
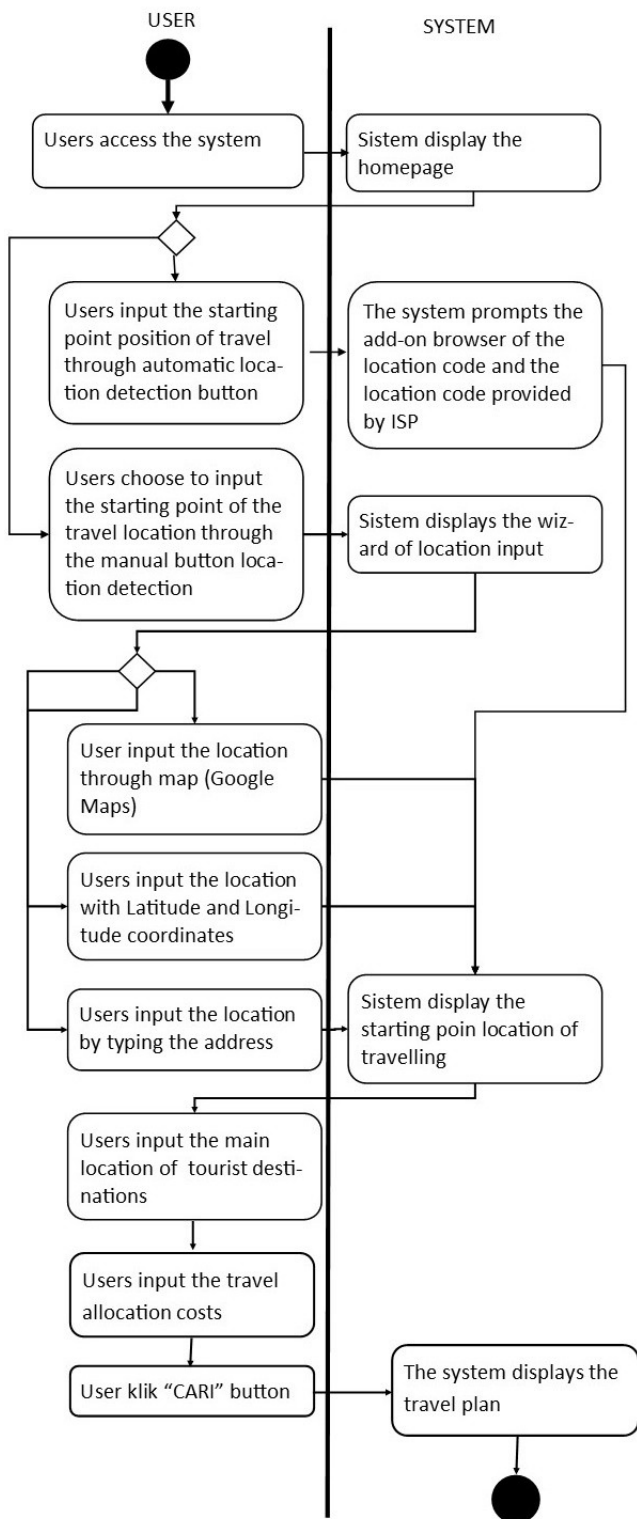


Figure 2. The flow logic model /prototype to be created

System Design

After understanding what the requirements will be a sightseeing trip planning system, the next research step is to make the system design. Now we are redesigning how the activity that occurs between the user access to the system to make a travel plan, as shown in figure 3.



Gambar 3. Aktivitas diagram yang terjadi pada sistem

The next step is the design of a database as a data storage that required by the system. Database used in the model/prototype of this travel planning system is a relational database by using the ontology concept. According

to Chandrasekaran and Josehson (1999) ontology is a theory about the meaning of an object, the properties of an object, and the object relationships that may occur in a domain of knowledge. Ontology is built to explain the description of the concepts and relationships that may be contained to an extent. In relation to the web, the ontology is used to describe a resource on the web. Technically, the ontology is represented in the form of classes, properties, and instances. In terms of the design of the ontology, this study applies the principle of re-use or utilize ontology created by Yunita (2011). Table 1 summarizes all the classes used in the ontology model of a travel planning system, while Table 2 shows the design of the properties that are used in all classes built.

Table 1. Class dan Subclass pada model ontologi

No.	Class	SubClass
1.	wisata	agrowisata alam budaya lainnya
2.	ruang hotel	-
3.	Hotel	-
4.	hotel Kelas	-
5.	jalan	-
6.	kota	-
7.	paket Wisata	-

Table 2. Properties design (slot) on the ontology model

No.	Property Name	Domain	Range	Category
1.	Connected	jalan	kota	Objective Property
2.	hasHotelClass	hotel	hotelKelas	Objective Property
4.	hasLocation	hotel, wisata	kota	Objective Property
5.	hasRuangHotel	hotel	ruangHotel	Objective Property
7.	hasJalan	kota	jalan	Objective Property
8.	isDirectedWith	kota	kota	Objective Property
...
18.	Length	jalan	string	Datatype Property
19.	rateRuangHotel	ruangHotel	string	Datatype Property
20.	Name	hotelKelas, hotel, ruangHotel, wisata, kota, jalan, paketWisata	string	Datatype Property

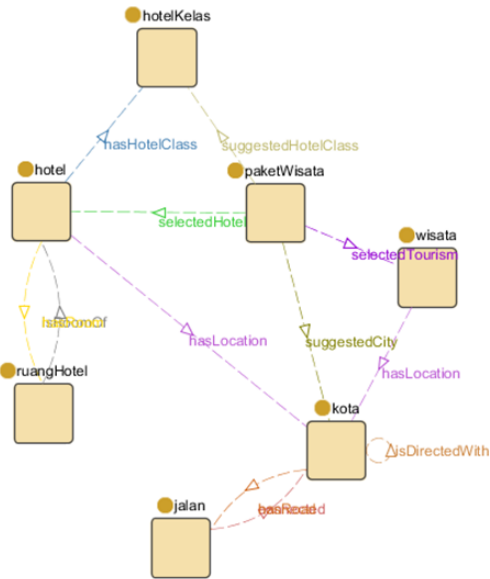


Figure 4. Relationship between class on the ontology model has been built

Figure 4 shows the relationship built between classes on the ontology models are made. For example **paketWisata** class has **selectedTourism** relationship with **tourist** class and **city** class has a self-relationship **isDirectedWith**. Thus the concept of ontology to describe relations at a site tour may be formed.

Implementation

The results obtained after the analysis and design phases, such as the homepage is a view to be accessed by the user, as shown in Figure 5. As Figure 6 and Figure 7 shows a page back office function to input the necessary data.

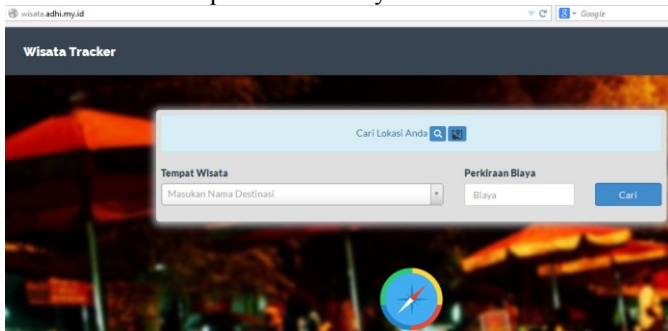


Figure 5. Homepage prototype system display

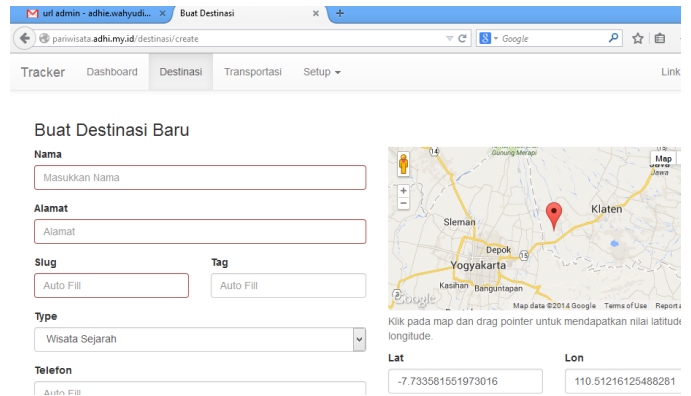


Figure 6. Back office page

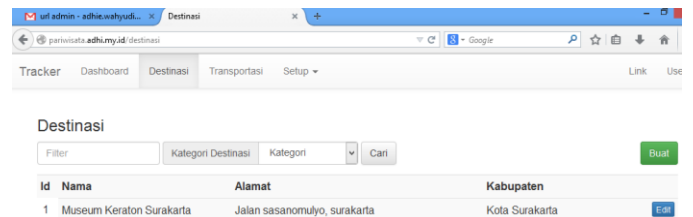


Figure 7. Back office page

Figure 8 shows wizard display when user entry the start location for travelling.

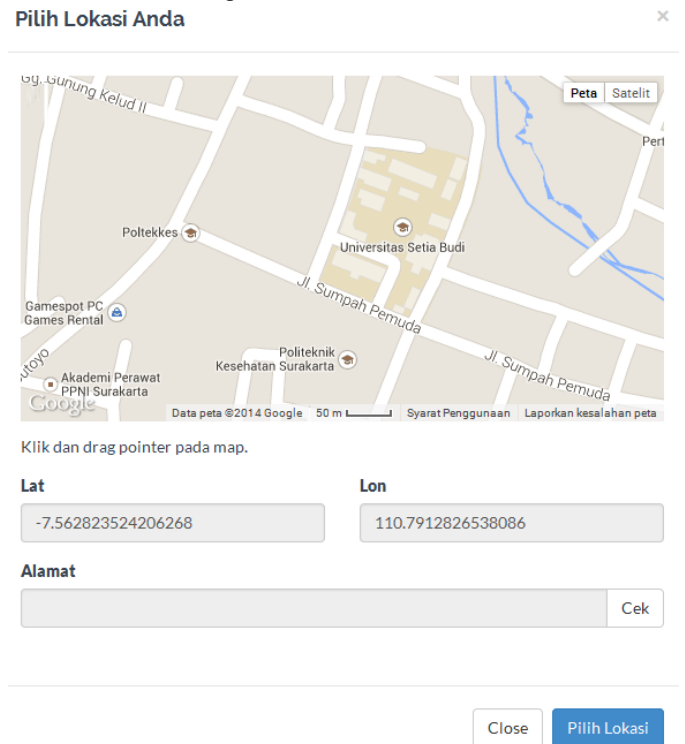


Figure 8. Wizard display

Figure 9 shows when the system presents tourism planning according to data was given by user.

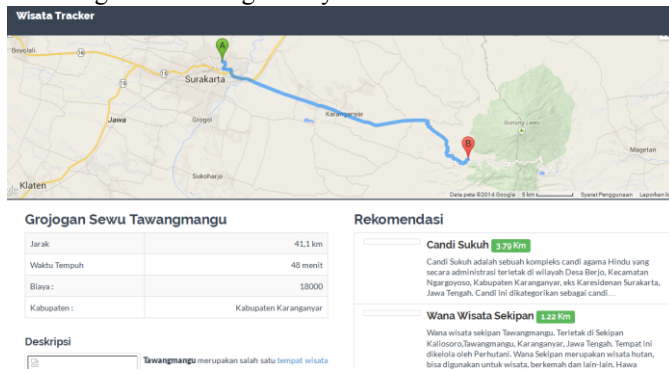


Figure 9. Recommendation tourism planning

V. CONCLUSIONS

Designed system can help potential tourists in tourism planning. The system was run in accordance with the functional and business rules that are designed and capable of displaying information appropriate to the input given by the user.

VI. SUGGESTION

With the increasing number of smartphone users, to improve operability, can be developed so that the system can be accessed through a smartphone application. Thus the system will be more easily accessible.

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