

Model for Mobile Application Development on Traveling Guide: A General Proposal

U. Ependi

*Software Engineering Research Group
Faculty of Computer Science
Universitas Bina Darma
Palembang, Indonesia
u.ependi@binadarma.ac.id*

A. Muzakir

*Software Engineering Research Group
Faculty of Computer Science
Universitas Bina Darma
Palembang, Indonesia
arimuzakir@binadarma.ac.id*

Fatoni

*Software Engineering Research Group
Faculty of Computer Science
Universitas Bina Darma
Palembang, Indonesia
fatoni@binadarma.ac.id*

M. Bunyamin

*Software Engineering Research Group
Faculty of Computer Science
Universitas Bina Darma
Palembang, Indonesia
muhammad.bunyamin@binadarma.ac.i*

D. Irawan

*Software Engineering Research Group
Faculty of Computer Science
Universitas Bina Darma
Palembang, Indonesia
dedi.irawan@binadarma.ac.id*

I. Effendy

*Software Engineering Research Group
Faculty of Computer Science
Universitas Bina Darma
Palembang, Indonesia
irman.effendy@binadarma.ac.id*

Abstract— The increase in tourist visits has an impact on providing information on tourist destinations and all related to tourism trips. The information is still inadequate, especially about the purpose of tourist attractions and accommodation or infrastructure for tourist travel. The lack of information will impact the decline in tourist visits to the province of South Sumatra. The efforts that have been made by the government of South Sumatra Province does not maximize. In this research, we made a proposed model based on a mobile application in the travel guide in the Government of South Sumatra. This model will help the Government in making policies in digital tourism. We use mobile smartphone media that are currently used by more than 90% of the people in searching for information related to tourism. Our proposed approach utilizes the stages in mobile development, in general, using the Mobile-D development method, the overall architectural model, and configuration. The result is the application of the model to the use. The implementation was carried out to see how important the model could be developed and implemented in South Sumatra.

Keywords— *software development, mobile platform development, model for a travel guide, architecture model*

I. INTRODUCTION

Nowadays, tourism is an important economic and social activity in many countries. For these, around the world, several works have been done with the objective to investigate environmental, sociocultural, and economic impacts to solve the negative effects and to maximize the benefits of tourism. To achieving this, each country should promote its tourism activity and provide information, services, and security to travelers. Tourism is a travel activity that is carried out with a recreational purpose and vacation to eliminate fatigue, drive boredom away, and new experiences. Planning travel (trip) is usually closely related to tourism [1]. A fun and satisfying tourism destination that provides entertainment is the priority in travelling. For most people, travelling is a journey to find new experiences with the goal of new places. It is not easy to obtain complete, accurate and updated information about the destination of the tourism destination objects to be visited. Information tourism destination should be considered while in the destination area are seeing the correctness of information about accommodation, facilities, and infrastructure in the

tourism destinations [2]. While travelling, accommodation, and transportation are very important because they affect the satisfaction of travelers during the trip [3]. Accommodation and facilities for travelling infrastructure include hotels, restaurants, travelers, attractions, transportation systems, and souvenirs [4].

South Sumatra Province is one of the provinces in Indonesia which long ago known as the center of the Kingdom of Sriwijaya and has several favorite tourism objects in Indonesia. At present, South Sumatra Province is trying to improve the tourism sector, which is reflected by the establishment of universities in the field of tourism [5]. In promoting of the tourism sector, the government of South Sumatra Province has done several things, including the organization of a national and international events. The impact of the promotion that has been carried out is an increase in the number of traveler's visits, both domestic and international travelers [6]. Increasing travelers' visits have an impact on providing information on tourism destinations and all that is related to tourism. Now, tourism information is available on the government website through the provincial tourism service. Information about tourism is also available on the application in Play Store as in Table 1, but only provides information on tourist destinations while the information needs not only a tourist destination but also all related to travel such as accommodation/tourism infrastructure. The lack of information will lead to a decline in the interest of travelers to visit South Sumatra Province. The efforts that have been carried out by the government of South Sumatra Province have not been maximized. For this reason, it is necessary to build a tool to provide tourism information in the form of travel guides.

In this research, we proposed a model for mobile application on a travel guide in the Government of South Sumatra. This model will help the Government in making policies in digital tourism. Mobile devices (smartphones) are used for the implementation of the model because currently, almost 90% of society is used to find information related to tourism [7-8]. For this reason, we identified regulation and the challenges of developing mobile-based applications. The challenges in developing mobile-based applications currently focus on three platforms, namely based on Mobile web, Android, and iOS.

In conducting this research, the method used is the method of developing a mobile application. There are several types of development methods specifically for mobile development, namely MASAM, SLeSS, and Mobile D. MASAM is a development method that is carried out based on the agile framework, but the steps of work and implementation are very similar to Mobile D [9]. This method was first discovered in 2008 with the work process, namely preparation, embodiment, development, and commercialization [10] and suitable for development in small companies. SLeSS is a development method from SCRUM; this method has five steps of work, namely definition, measurement, analysis, improvement, and control [11]. SLeSS was first discovered in 2011, and its use was specifically for embedded software development, whereas Mobile D is one of the pioneering methods in the field of mobile application development processes. The Mobile D method can be done in teams with several members from 10 people, and the processing time is relatively short, namely in less than ten weeks [12]. Mobile-D appeared for the first time in 2004; it is a development method that prioritizes speed, both in the development and the change processes [13], which has five stages, namely: explore, initialize, production, stabilize, system test, and fix, as shown in Fig. 1.

At the beginning of this paper, it discussed the process of developing a mobile platform with the Mobile-D approach. Furthermore, in the second session, describe the general model of architecture that can be used by the Government of South Sumatra in forming the rules of the travel guide. The proposed architectural model covers application containers (application servers and database servers), tourism departments (regencies or cities), users (society and travelers can do) (complete models see figure 2).

II. CHALLENGES

In this section, we identify what challenges needed in running the model for mobile application development related to travelers' users in South Sumatra. These Challenges can be proven by just a few applications available on the Android Play Store and IOS Appstore that provide information about tourism in South Sumatra. Most applications are only limited to tourism information without giving details information about the B2B (business to business) process.

A. Difference between Mobile Platforms

Difference between mobile platforms is the first reason that is a topic in mobile development. Many users or communities use different platforms such as mobile web, Android, or iOS.

B. Internet Access

Internet access in South Sumatra is a problem that has until now become a phenomenon in the community. The current inequality of internet access in each region in South Sumatra still occurs mainly in areas that have tourism potential to be visited by travelers.

C. Unorganized Travel Guide

In South Sumatra, there are many tourism potentials that can be visited by travelers, but this is constrained by inadequate travel guide access and infrastructure. Travel guides mostly come from outside South Sumatra, so they are not well organized, making it difficult for travelers to visit tourism in South Sumatra. For this reason, it is necessary to

make a rule and a model that can be used by the Government of South Sumatra to improve tourist destinations.

III. PROPOSED APPROACH

In this section, we focus on proposals in building models in developing mobile platforms for travel guides. As explained in the previous section, we will take several steps. We describe these stages, namely the development process, the architectural model of the application, and the application configuration.

A. Process of Mobile Development Method

To complete this research, Mobile D is used as an application development process. The use of Mobile D is because this method does not require a large number of teams, and the processing time is shorter than the others. In addition, the product targets produced are not specific as in the MASAM and SLSS development methods. But the three models put forward the principle of agile [14]. These principles include (1) prioritizing customer satisfaction, (2) being always ready with changes (3) having periodic presentation of development results, (4) doing work as a team or together, (5) encouraging team members, (6) conducting collection of information relevant to the work, (7) prioritizing development work, (8) maintaining relationships with the main stakeholders of the sponsor, (9) prioritizing technical work, (10) simplifying work, (11) using the team itself in making architecture, analysis of needs and design, and (12) working effectively and periodically [15] [16] [17] [18].



Fig. 1. The Development process of mobile-D [19]

In this research, the process of developing mobile applications for travelling guides is carried out in accordance with Mobile D. The flow of research work processes as shown in Figure 1, namely: the first stage of exploring. This stage was carried out at the beginning of the development and determination of application users. In this research, there are several types of application target users. Namely tourism, South Sumatra, and travelers. Before starting the development of the application, interviews were conducted with stakeholders. In this case the government is represented by the Department of tourism and the communication and information service of South Sumatra Province. Interviews were conducted to get information about their wishes and needs related to the application that would be made. The second stage is initialize. the form or whatever features of the application were selected based on the type of user that had been determined in the explore phase. The third stage is production. The stage when the modelling or forming a process flow and database design is doing. The application process flow was described in the form of a business process diagram and translated by an application diagram architecture notation, while the database formation was described in an entity relationship diagram. The fourth and fifth stages is stabilize and test & fix the system. This process will be carried out continuously until the application is considered perfect.

B. Application Architecture Model

The application architecture is used to describe the business function requirements of the application.

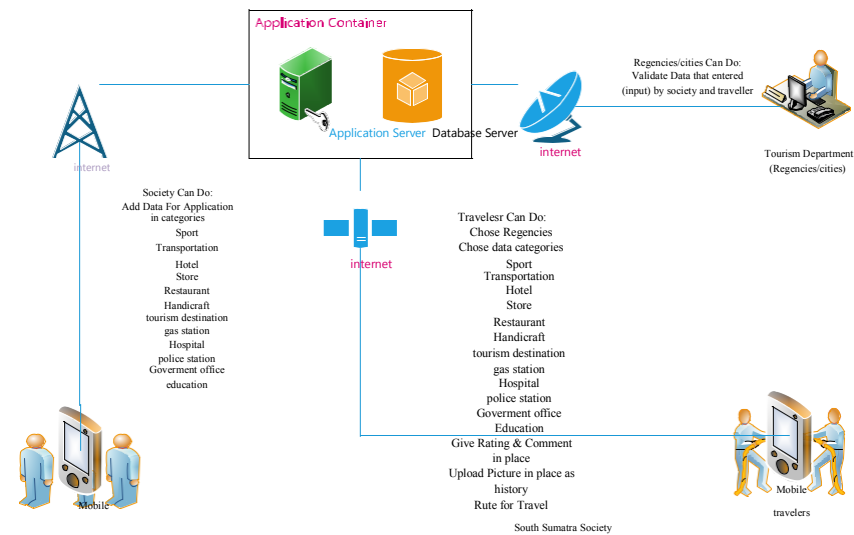


Fig. 2. Proposed model: travel guide architecture in South Sumatra

Application architecture is closely related to data and users described in the development of the mobile travel guide attached to the application, which can usually be described application in South Sumatra province uses physical logically and physically [20]. The application architecture description, as shown in Fig. 2.

Based on the application architecture, as shown in Fig. 2, there are three types of users, namely South Sumatra Society, Tourism Department (Regencies/Cities) and Travelers. The activities for each type of user can be explained as follows:

- South Sumatra Society: add information related to tourism trips in South Sumatra Province. Adding data is done in real time because the application travel guide reads the user's GPS position. When adding additional data, the user is asked to choose the regencies/city, place category, and photograph the location of the place. In adding data, there are twelve categories, namely sport, transportation, hotel, store, restaurant, handicraft, tourism destination, gas station, hospital, police station, government office, and education facilities.

- Travelers: search for travelers' destinations and things related to tourism in South Sumatra Province. The search for traveler's destination can be done by selecting the regencies/cities and then choosing the category of place to be seen. These categories include sports, transportation, hotels, stores, restaurants, handicrafts, tourism destinations, gas stations, hospitals, police stations, government offices, and education. After getting the destination, the travelers can see detailed information such as place names, descriptions, pictures and interactive menus. The menu in place details includes rate, route, and updates. Give rating is used to rate places by logging into Facebook accounts, routes to view travel routes, and updating to improve the position of the place if it is considered inappropriate. In addition, travelers can add pictures as a gallery to the location they visited.
- Tourism Department (Regencies/cities): validate data entered by the South Sumatra Society and verify images uploaded by travelers.

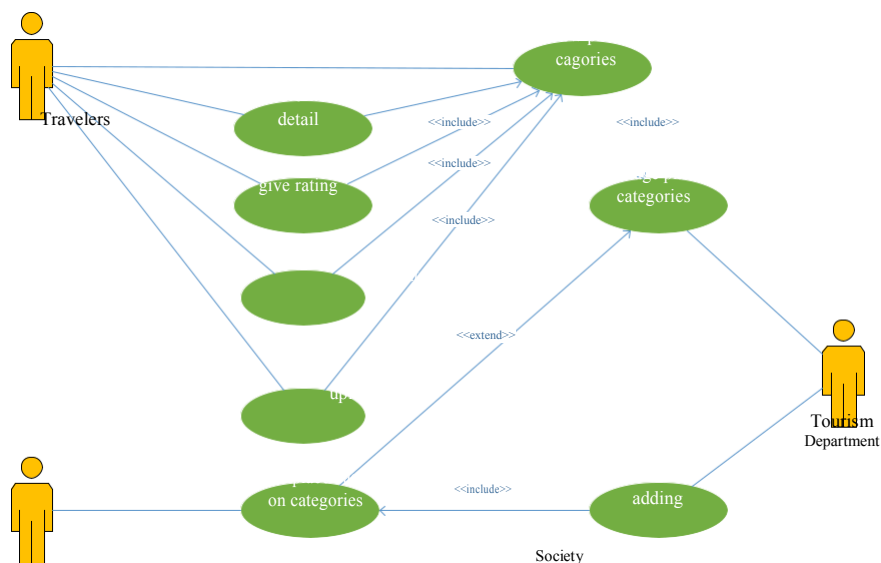


Fig. 3. Use Case Diagram

The three types of users shown in the application architecture have activities for each user which are depicted in the use case diagram as shown in Fig. 3. Based on the use case diagram than shown in Fig. 3 travelers have activities view place categories consisting of sport, transportation, hotel, store, restaurant, handicraft, tourism destination, gas station, hospital, police station, government office, and education facilities for each regencies/cities. Travelers can also rate, view travel routes and upload images as history. Society users can add places according to categories and activities as travelers can do. The tourism department can manage the place category data and validate or approve the addition of places by the society.

C. Configuration

This section will explain the configuration of the proposed model into the mobile application. The setting carried out starts from the identification of the objects involved. These objects include server and database applications, internet network infrastructure, and the society involved. We recommend decomposing the parts. These parts are platform-independent parts (PIP) and platform-dependent parts (PDP). PIP is an application part that does not depend on the specifics of a platform, for example, in the model-view-controller (MVC) section of the application. Whereas PDP is several parts that are directly involved (dependent) on specific platforms such as view (interface of client applications).

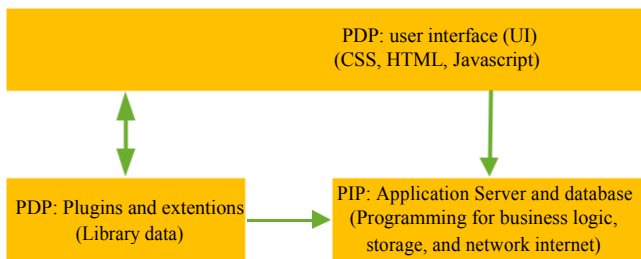


Fig. 4. Mobile application configuration

Fig. 4 is the proposed implementation of the model shown in Figure 2. Broadly speaking, this illustrates mobile multiplatform development technology that can be implemented on mobile web, Android, and iOS. The configuration is indeed more in PDP (platform-dependent parts) than in PIP (platform-independent components). This condition is because it involves different objects, so platform-dependent is needed, such as in the user interface (UI) and plugins/extension files of the supported library.

IV. EVALUATION

In the research that we did, this was indeed not too complex and detailed, but we did it by the reality that existed in the Government of South Sumatra, especially in the tourism sector. We are developed applications to see how important this model is to be developed and implemented in South Sumatra.

For travel guides in South Sumatra Province have grouped features based on the type of user, namely South Sumatra Society, Tourism Department (Regencies/Cities), and Traveler. The application features provided are based on the application architecture, as shown in Figure 2. In the main

menu of the application, there are the names of the regencies/cities in South Sumatra Province namely Ogan Komering Ulu (OKU), Ogan Komering Ulu Timur (OKU Timur), Ogan Komering Ulu Selatan (South OKU), Ogan Komering Ilir (OKI), Muara Enim, Lahat, Musi Rawas (Mura), Musi Banyuasin (Muba), Banyuasin (BA), Ogan Ilir (OI), Empat Lawang, Palembang, Pagaram, Lubuk Linggau, Prabumulih, Penukal Abab Lematang Ilir (PALI), and Musi Rawas Utara (Murata). The purpose of the menu name is to use the regencies/cities so that travelers can easily find travelers information in each regency/city in South Sumatra Province, as shown in Figure 5.

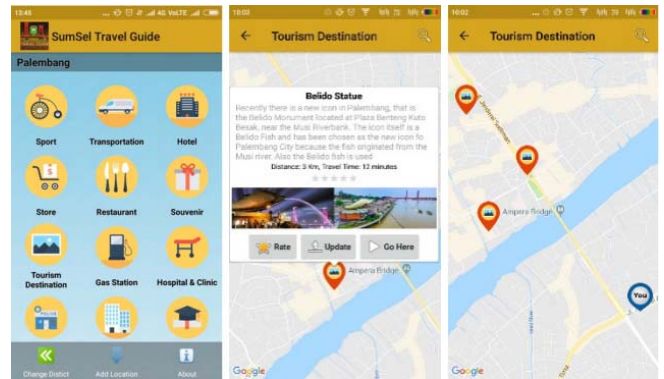


Fig. 5. Home screen and place categories

To see the comparison of applications produced with similar applications that already exist can be seen in Table 1. the comparison includes information and application features.

TABLE I. APPLICATION COMPARISON

Name	Publisher	Information	Features
Sumsel Travel Guide/ Palembang Guide (proposed)	Macangsakti	sports, transportation, hotels, stores, restaurants, handicrafts, tourism destinations, gas stations, hospitals, police stations, government offices, and education	Object Description, direction map, place rating, visitor comment, visitor photo upload, add (recommend) place
Sumsel Tourism	Cyborgitcenter	Tourism destination and hotels	Tourism destination description, hotel reservation
Pariwisata dan Kebudayaan Sumatra Selatan	DigitalCreative	Tourism destination	Tourism destination description
Exotica South Sumatra	Dinas Kebudayaan dan Pariwisata Sumatra Selatan	Natural, food, and culture tourism destination	Tourism destination description
Palembang In Your Hand	Dinas Kebudayaan dan Pariwisata Sumatra Selatan	Museum, Augmented Reality, and News	Museum description using Video and reading news

Available on Play Store

V. CONCLUSION

The proposal we offer through a mobile application-based model for travel guides in the Government of South Sumatra. This model will help the Government in making policies in digital tourism. In the proposed approach, we take advantage of the stages in developing mobile applications, in general, using the development method process (Mobile-D), the overall architectural model, and configuration. We identify the challenges that travelers need in South Sumatra. The challenges include differences in smartphone platforms, internet network access, and unorganized travel guides. Then to describe the general model of architecture that can be used by the Government of South Sumatra in forming a travel guide rule. The proposed architectural model includes application containers (database servers and databases), tourism departments (regencies or cities), users (society and travelers can do). The result of this research is to develop applications as a model validation to be developed and implemented in South Sumatra.

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