# DESIGN AND DEVELOPMENT OF PROPERTY PROMOTION APPLICATIONS USING MULTIMEDIA INTERACTIVE BASED MOBILE IN DAGO VILLAGE PROPERTY

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## ABSTRACT

Dago Village is a residential area and an integrated tourist who tried to adopt the various elements ' local wisdom ' which is environmentally friendly. The tight competition between the property with one another in terms of the promotion. While the media promotion done marketing for these are still limited to 2D, the media can not give an overview of the unit villa with nice and clear so as to reduce the interest of prospective buyers. In addition when the promotion lasts still use manual recording if there is order, recording the manual can result in a delay in reporting.

Therefore to assist in conducting marketing promotions can use interactive multimedia recording and performing booking villa. The approach used is the method of Object Oriented Programming (OOP), design and analysis tools include, BPMN, xampp, usecase, activity diagrams, class diagrams, and sequence diagrams.

Based on the results of the study, with the promotion of this multimedia application can facilitate marketing of doing promotion unit villas and facilitate the marketing of doing logging transaction booking villa.

**Keywords** : Villa, Promotion Media, Interactive Multimedia, booking.

## 1. INTRODUCTION

Dago Village is a residential area and an integrated tourist who tried to adopt the various elements ' local wisdom ' which is environmentally friendly. Located at an altitude of 1000 m above sea level (above sea level), the masterplan of the area is largely open land will preserved green se'hijau ', seasri and sealami as possible. Investigation Data from the Ministry of Public Housing and Worked through the Directorate of Housing Financing estimates until the year 2025 the figure needs a house in Indonesia reached 30 million units. The need for housing up to the year 2025 is estimated to reach more than 30 million units, making the needs of the new home is estimated at 1.2 million units per year. [1]

Based on the results of the interview with Mr. Hilman Earn as Manager Marketing Dago Village Property stated that the community needs to buy a House are increasingly growing today, it makes the intense rivalry between the properties to each other in terms of promotion, but there are some problems found that media promotion conducted by the marketing for these are still limited to use flyers, baligho and a website that displays the image in the form of 2-dimensional the media, cause what is submitted by the Marketing could not give an overview of the unit villa with nice and clear so as to reduce the interest of prospective buyers. In addition, when the promotion lasts Marketing difficulties in doing the recording of prospective consumers who want to pay DP (down payment) first, thus causing the recording of payments does not response well and result in the slow pace of reporting the availability of villa already filled.

From some of the research that's been done on the use of 3D media, found the fact that the use of interactive multimedia using 3D more informative and interesting in providing information, in addition to showing more detail, 3d media is also able to reconstruct a form of real objects into visual form realistically.

Based on these problems, part Marketing need a mobile application that can become an alternative media to conduct promotional activities and perform record keeping DP (down payment) when doing long distance promotion. This application using interactive multimedia and virtual so that prospective buyers can view interior and facilities such as real, so as to facilitate the Marketing in explaining information about villa more appealing, and details such as real. then in this study the author will build an application "application design and development using the property promotion of interactive multimedia based mobile in dago village property".

### 1.1 Virtual Reality

Virtual Reality (VR) or virtual reality is a technology that allows a user can interact with an environment that simulated by the computer (computer-simulated environment), an environment that actually copied or really an environment that exists only in imagination (Sihite, 2013). The concept of VR refers to a system of principles, methods and techniques used to design and create software products for use by the help of some computer system multimedia system with a special device. [2]

*Virtual reality systems can be divided into several, namely:*

1. *Immersive VR;*
2. *Simulasi VR;*
3. *Teleplesence VR;*
4. *Augmented Reality VR;*
5. *Desktop VR*

### 1.2 Luther Sutopo Method

Multimedia development conducted based on 6 stages, namely, concept, design, collecting material, assembly, testing, and distribution. The sixth stage does not have to be sequential in practice. Each stage can mutually exchange position, though once the stage of concept indeed should be the first thing done. Here is a picture of luther sutopo method [3].

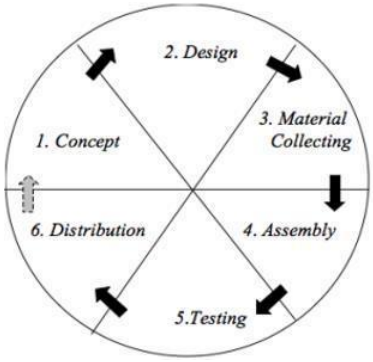



**Image 2.** Luther Sutope Development

Penjelasan dari setiap tahapannya adalah sebagai berikut :

a. Concept
   The stage concept i.e. determining objectives, including identification of audiences, the kinds of applications (presentations, interactive, and others), the purpose of the application (information, entertainment, training, etc.) and general specifications. Basic rules for the design are also determined at this stage as the size of the application, the target, and others.
b. Design
   Stage design is to create specifications in detail about the architecture project, style, and material needs for the project. The specifications made quite detailed so that at a later stage, i.e. collecting materials and assembly of the new decision is not required, but using what is already determined at the stage of design.
c. Material Collecting
   Material Collection can be done in parallel with the stages of assembly. At this stage done gathering ingredients such as clipart images, animations, audio, here the making of images, photographs, graphics, audio and other things needed for the next stage.
d. Assembly
   The assembly stage is a stage where the whole multimedia object is created. The manufacturer of the application based on the storyboards, the flowchart view, the navigation structure, or the diagram object that derives from the stage of design.
e. Testing
   This stage of testing is done after finishing the stage of manufacture and all data have been entered. First of all carried out testing modular to ensure whether the results as desired.
f. Distribution
   When a multimedia application will be used with different machines, use of the doubling of floppy disk, CD-ROM, or the distribution network is indispensable. This stage is also the stage where the evaluation of a multimedia product is done. The evaluation is done with, will be able to dikebangkan a better system for the future.

### 1.3 System Description

Applications that will be built is based on android and the website, but here is an overview of the architecture of the system that will be built. The system has two interfaces i.e. a FrontEnd and a BackEnd.

The frontend is part of the application that will be used by Marketing to do promotions and doing the recording. The backend is a part of the application that is fully utilized by Marketing Admin to process data villa, booking data, and data Marketing. As for the system architecture to be built can be seen in the following figure.

1. Oveall System Architecture
   The following is from the overall system architecture:
   1. marketing and Marketing marketing to connect with the internet.
   2. marketing Login through mobile applications.
   3. marketing do the promotion by using features that are already provided, then
   4. All data processing conducted by marketing, will
   5. In the manage by Marketing marketing at the backend.
   6. Do a request to a database through a web server which is already available online

.

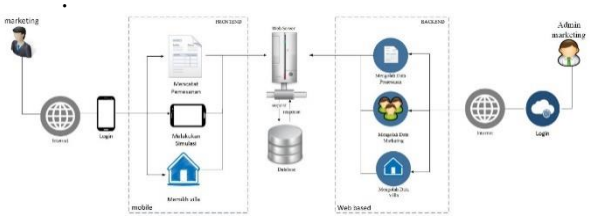


**Image 3.** *Overall System architecture will be built*

2. Architecture Sistem *Backend*
   Here is the architecture of the system from the Backend:
   1. marketing to connect with the internet.

2. marketing Login through mobile applications.
3. marketing do the promotion by using features that are already available.
4. All data processing conducted by marketing, will
5. Do a request to a database through a web server which is already available online
6. The Web Server will do a request to the database.

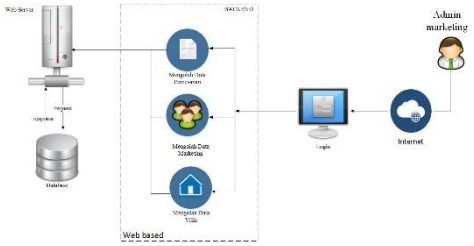



**Image 4.** Architecture Sistem *Backend*

3. Frontend system architecture

Here is the system architecture of the Frontend:

1. Parts sales open mobile applications
2. Sales connect device in order to connect to the internet.
3. sales Section to access the application.
4. Parts sales do data processing via the internet connected application, the next request to the webserver will do.
5. Web Server will do a request to the database.

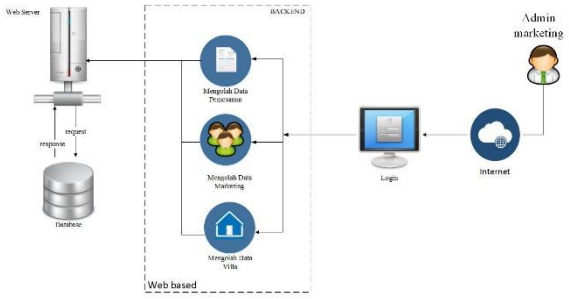



**Image 5.** Sistem *Backend* Architecture

### 1.4 Multimedia Interactive Analysis

This analysis is required to provide ease in doing the submission information property villa using interactive multimedia. The application that will be created is filled with some of the required components in the creation of interactive multimedia applications, among other things:

**Table 1.** 3d Virtual components used

| No | Multimedia Component | Function |
|---|---|---|
| 1 | Grafik ( Image ) | The image is used to present a good appearance, and capable in delivering many words at once. |
| 2 | Teks | The text is the easiest multimedia data to be stored, identified, understood, to introduce specifications villa |
| 3 | Animation | Animation is a collection of images that are displayed alternately and sequentially moving so it looks and lives. |
| 4 | Audio | The audio has an important role in the delivery of a form of information. |
| 5 | Controller | The controller is used to control the camera in the tools unity |

#### 1. Grafis Component

Component images are indispensable to support the visualization. The graphics used for the backgrounds, buttons, description of some explanation.

a. Background

The background used for the creation of interactive multimedia applications using images with a how to set the texture type into a Sprite (2D and UI)

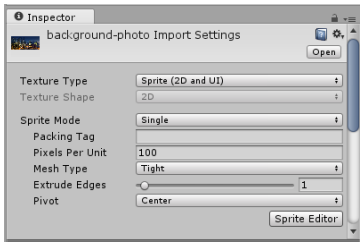



**Image 6.** Background Implementation

The following is a graphical component implementation into the background after a few settings from tools Unity 3d:




**Image 7.** Image implementasi background

b. Objek Villa

At this stage the objects already created in the export file into the form. FBX. This file can be manipulated further merger and arrangement of objects, then do the addition of lighting at a later stage using a Lightmap that is present on the Unity 3D tools.

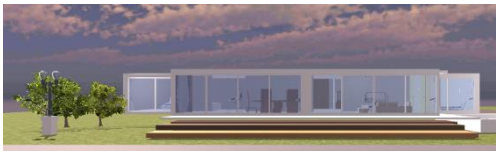


**Image 8.** Objek Villa

**2. Text Component**

Used to describe the specification of the villa, in order to be known by users of the application deep knowing detail villa clearly and detailed, the following description text used within the application.

a. font : Times New Roman
b. Size : 30
c. Font Color : #FFFFFF




**Image 9.** Implementation of text in interactive multimedia

**3. Komponen Animasi**

The role of the animation is very important in applications that are created as it can attract potential buyers when promotion took place, here is the animation used in the application. Animation used in this application is to open and close the door when the characters approached the door of the villa.

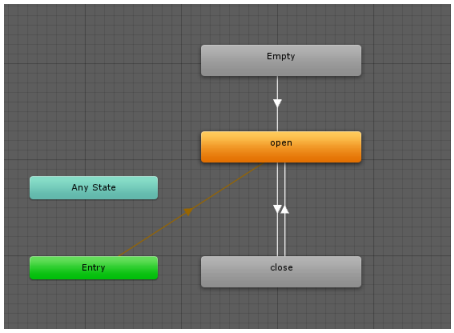



**Image 10.** *Animator Buka Tutup Pintu*

The following is an implementation of the animated open close door after a few settings from tools Unity 3d:



**Image 11.** *Implementasi Animasi*

**4. Komponen Audio**

The audio has a role in adding to the characteristics of a multimedia presentation, audio format uses an audio file that is already available on the asset store in unity, to be played when showing scene virtual tour

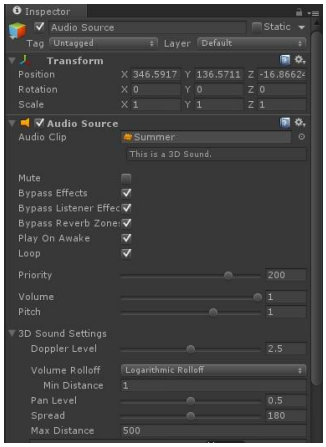



**Image 12.** Settting Audio

5. Komponen Controller

After the Scene and objects formed, then to be able to do the virtual tour needed a controller for regulating the movement of the camera, in the application, prospective buyers can see the State villa virtual Controller which is used is a First Person Controller display as actor/camera. Here's how the placement of the First Person Controller in the application:

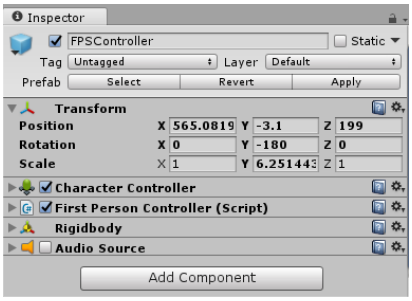



**Image 13.** Setting First Person Controller

The following is an implementation of the FPS controller after a few settings from tools Unity 3d:

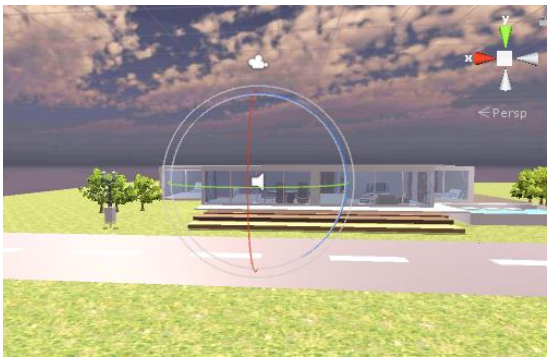



**Image 14.** Implementasi FPS Controller

## C Use Case

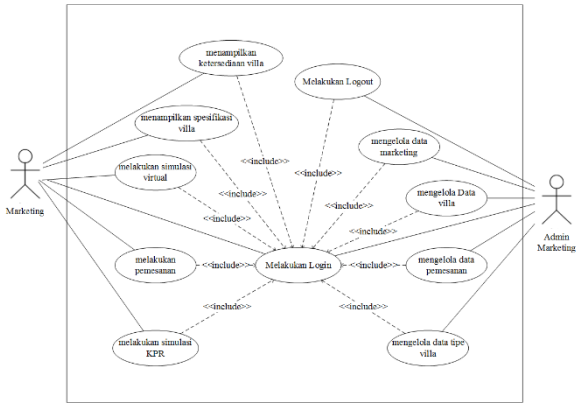



**Image 15.** *Use Case Diagram*

## D. Scenario *Use Case*

### a. *Use Case Scenario* Melakukan *Login*

The following is a table of the Use Case Scenario Login on the system that is being built, the following table describes the actions of use case Login

**Table 2.** *Requirement* A.1

| *Requirement* A.1 |
|---|
| The data entered by User Login consists of a Username, password. |

**Table 3**. *Use Case Scenario* Melakukan *Login*

| *Use Case Name* | *Login* | |
|---|---|---|
| *Related Requirements* | Requirement A.1 | |
| *Goal Context* | *Sales managed to enter in sisem* | |
| *Preconditions* | - | |
| *Successful End Condition* | Featuring an early appearance (home). | |
| *Failed End Condition* | Displays an error message Login | |
| *Primary Actor* | *Sales admin* and *Sales* | |
| *Trigger* | *Sales* menekan tombol *Login* | |
| *Included Case* | - | |
| *Main Flow* | *Step* | *Action* |
| | 1. | Open the application |
| | 2. | The system displays the Login form |
| | 3. | *Sales fill the Login form* |
| | 4. | *Sales Login button* |
| | 5. | *Verify that the system has been in the inputkan Sales of fom already provided* |
| | 6. | The system displays the main menu |
| *Extension* | *Step* | *Branching Action* |
| | 4.1 | Error message the Username and Password are not registered |

## E. Activity Diagram

The following is an overview of the use case scenario Login described in an activity diagram Login.

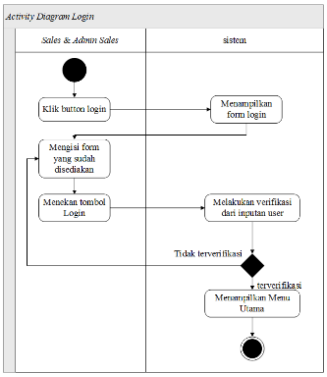



**Image 16.** *Activity Diagram* Melakukan Login

## F. Class Diagram

The class diagram is a diagram that is used to display some of the classes that exist in the application to be built. Class diagram gives an overview of the application and the relationships that exist. As for the class diagram in this application are as follows:

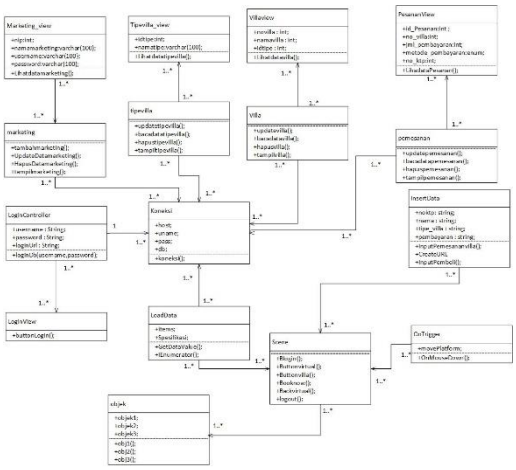


**Image 17.** *Class Diagram*

## G. Sequence Diagram

Sequence diagrams are used to describe the behavior of a scenario. This diagram shows a number of examples of objects in the message (message) which is placed between the objects in the use case.

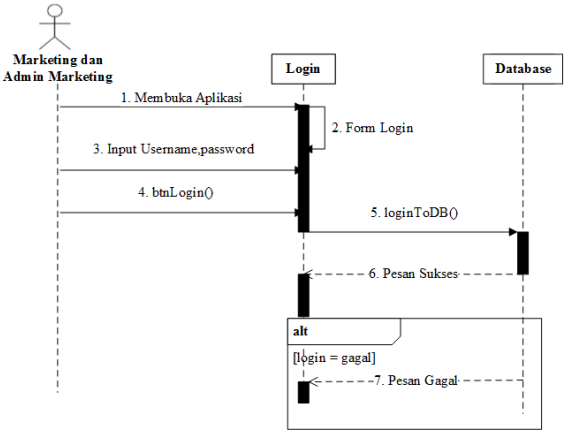
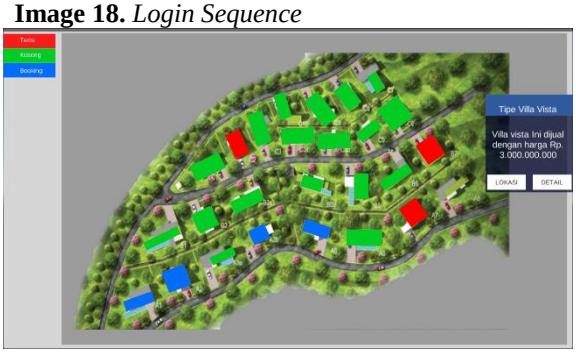



**Image 18.** *Login Sequence*




## H. Structure Menu Design

Menu structure in the design and development of applications using the property promotion of interactive multimedia based mobile in dago village property has 2 main menu i.e. main menu main menu admin Marketing and Marketing. Here is the design of the structure of the main menu of Marketing, in the Figure 19 are shown the relationship between the menu from the main menu Marketing.

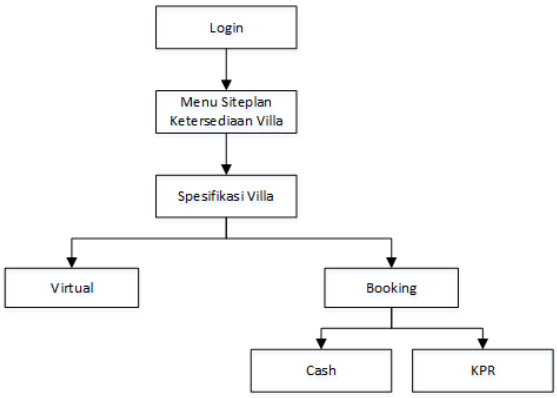



**Image 19.** Main Menu Structure Sales

Here is the design of the structure of the main menu teacher, in Figure 3.33 demonstrated relationship between the menu from the main menu admin Marketring

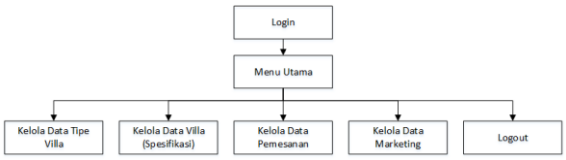



**Image 20.** Main Menu Admin Sales

## 2.1 User Interface Implementation

In application development, there is a user interface that is used to build applications using the property promotion of interactive multimedia based mobile in dago village, table implementation class can be seen as follows



**Image 21.** Login User Interface

**Image 22.** Villa Interface

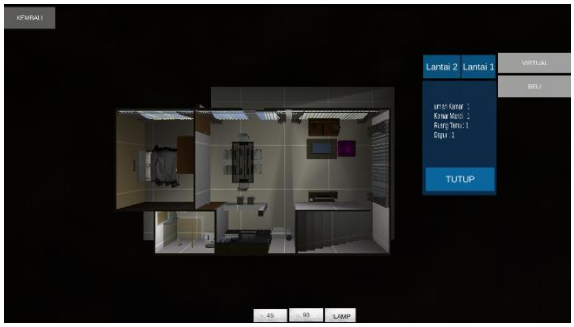



**Image 23.** Spesification User Interface

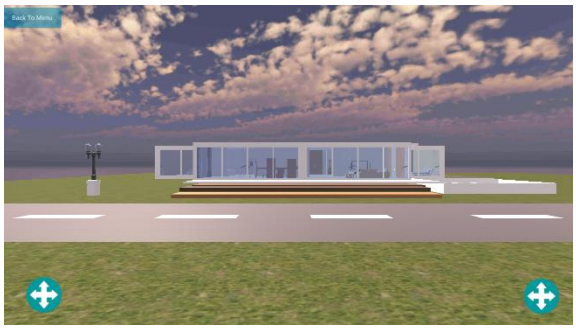


**Image 24.** Virtual Tour User Interface

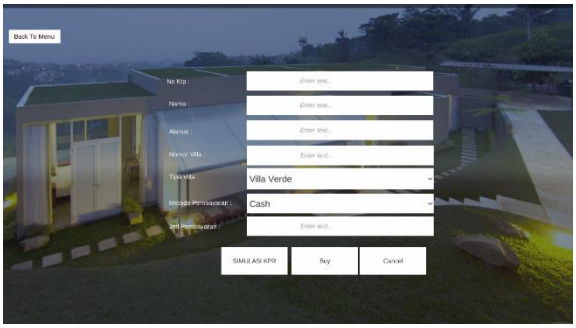



**Image 25.** Order User Interface

## 2.2 Alpha Testing

Testing conducted by testing each process use case diagram and possible errors that occurred for each process. This testing is done using a Black Box, that is done by observing the input to the system and output of the system. Scenario testing will be done on this application can be seen in Table

**Table 4.** Testing Scenario

| No | Tested Components | Testing Plan | Testing Type |
|---|---|---|---|
| 1 | login | Enter your username and password | *Black Box* |
| | | Choose the "Login" button | *Black Box* |

### 2.2.1 Case and test result

Testing conducted by testing each process use case diagram and possible errors that occurred for each process. This testing is done in a Black Box, that is done by observing the input to the system and output of the system.

**Table 5.** Testing Scenario

| Cases and test results (Data) | | | |
|---|---|---|---|
| **Actions /Data Input** | **Expected** | **Observation** | **Conclusion** |
| Username : admin Password : admin | InputField Username and Password can be filled in with the correct | Username and Password InputField filled in accordance with the data input | [ √ ] Received [ ] Rejected |
| Login | The data of the username and password are correct then the main menu will display | the usernames and passwords of appropriate Data and then displays the main menu | [ √ ] Received [ ] Rejected |

### 2.2.2 Alpha Testing Conclusion

Based on the results of testing a black box has done with cases that have been tested, then it can be inferred that in the promotion of this application object properties can run well and there are no errors on the existing functional process i.e. login, showing the availability of the villa, villa specifications display, perform virtual, booking, do MORTGAGES, manage data marketing, manage data specification villa, manage booking, manage data type villas and do logout runs as desired.

## 2.3 Beta Testing

Interview to the user of the system is done with the aim to find out whether the application of this promotion is in compliance or not. This interview was done to marketing and admin marketing.

**Table 6.** Pertanyaan kepada marketing

| | |
|---|---|
| Goal 1: create a media promotion using interactive multimedia to assist in presenting the marketing promotion and information villa with a good, clear and detailed. | |
| 1. According to you, is a visualization object villa already on this application object can represent the actual villa? | |
| Answer: | according to Interviewees marketing visualization object villa is already good enough. |

| | |
|---|---|
| 2. What are the specifications of the delivered content is in compliance with the needs of promotion marketing dago village? | |
| Answer: | according to the marketing information Resource specifications submitted applications can already represent the actual promotional information. |
| 3. is using interactive multimedia information delivery process can make villa more interactive and informative? | |
| Answer: | according to the marketing Resource delivering information villa so different from that normally only use 2D media only. |
| 4. 4. According to you, you, the utilization of the virtual tour is appropriate for use as a media promotion? | |
| Answer: | according to the marketing Resource with features the virtual tour is right to help the media promotion |
| 5. Whether the presence application can shorten the time in doing the promotion to potential consumers? | |
| Answer: | according to speaker: marketing, promotional media applications can shorten the time in explaining to potential consumers |
| Goal 2: Help perform the recording of the purchase of a villa for marketing when doing promotion. | |
| 6. According to you, what is the form that is in the application already represents to Transact the purchase unit villa? | |
| Answer: | according to the marketing Resource form in the application can already represent the transaction process |
| 7. According to you, what is the registration form is in compliance with the company's needs? | |
| Answer: | according to marketing speaker: registration form is in compliance with the needs of the company. |
| 8. According to you, what is MORTGAGE simulation feature can help prospective consumers to be able to see the price of the villa? | |
| Answer: | according to Interviewees marketing MORTGAGE simulation feature helps prospective consumers to see the price of the villa with a wide choice of credit way |
| 9. is this application can help in doing the recording of transactions? | |
| Jawaban Narasumber : | marketing applications can help doing the recording of transactions. |
| 10. According to you, whether this application can be helpful in doing the promotion? | |
| Answer: | this application outline can help do the promotion. |

### 2.3.1 Beta Test Result Conclusion

Part I with the purpose of: making media promotion using interactive multimedia to assist in presenting the marketing promotion and information villa with a good, clear and detailed. The conclusion is that the application of the media promotion using interactive multimedia can provide interesting and informative information visualization unit the villa on the application may represent an existing villa in place to perform promotional activities remotely

Part II with the aim: help perform the recording of the purchase of a villa for marketing when doing promotion. The conclusion is that the existing form on the application is in compliance with the needs of the company and order form can already represent transactions villa coupled with MORTGAGE simulation features to show how to perform a credit on purchasing of units villa

## 3. CLOSING

### 3.1 Conclusion

Based on the results of the research, analysis, design and implementation and testing of the system, then the obtained conclusions against the application "application design and Development using the property promotion of interactive multimedia based mobile in dago village property" is as follows:

1. Application Media promotion dago village property can provide information that is informative and interesting.
2. Application Media promotion dago village property can do the recording of transactions to help marketing dago village.

### 3.2 Advice

Based on the above conclusions, the application promotion of the villa with multimedia technologies and virtual tour is still a lot of shortcomings. Therefore it needs to be done to further development and refinement. Based on the conclusions above, then the advice that can be expressed in the future in order to be an improvement and considerations are as follows:

1. Use the camera 360 degrees, aimed at getting a more photorealistic results object.

2. Show photo promotion into the application of the previous media.
3.3D objects can call a villa from the database.
So the author can give suggestions, hopefully these suggestions can be used as input material that can be useful for authors

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