

## THESIS^ APPROVAL STATUS FORM

JUDUL: Melaka Sentral Walkthrough System

SESI PENGAJIAN: 2004/05

Saya NORMASNIZA BINTI MAT GHANI  
(HURUF BESAR)

mengaku membenarkan tesis (PSM/Sarjana/Doktor Falsafah) ini disimpan di Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dengan syarat-syarat kegunaan seperti berikut:

1. Tesis adalah hakmilik Kolej Universiti Teknikal Kebangsaan Malaysia.
2. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan untuk tujuan pengajian sahaja.
3. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan tesis ini sebagai bahan pertukaran antara institusi pengajian tinggi.
4. \*\* Sila tandakan (/)

       SULIT (Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub di dalam AKTA RAHSIA RASMI 1972)

       TERHAD (Mengandungi maklumat TERHAD yang telah ditentukan oleh organisasi/badan di mana penyelidikan dijalankan)

/  TIDAK TERHAD

  
(TANDATANGAN PENULIS)

  
(TANDATANGAN PENYELIA)

Alamat tetap : 104 A Kg Titian Baru,  
21070 K. Terengganu,  
Terengganu Darul Iman.

Pn. Halizah Basiron  
Nama Penyelia

Tarikh : 24 Nov, 2005

Tarikh : 24 Nov, 2005

CATATAN: \*\* Jika tesis ini SULIT atau TERHAD, sila lampirkan surat daripada pihak berkuasa.

^ Tesis dimaksudkan sebagai Laporan Projek Sarjana Muda (PSM)

# **MELAKA SENTRAL WALKTHROUGH SYSTEM**

**NORMASNIZA BINTI MAT GHANI**

This report is submitted in partial fulfillment of the requirements for the  
Bachelor of Computer Science (Interactive Media).

**FAKULTI TEKNOLOGI MAKLUMAT DAN KOMUNIKASI  
KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA  
2005**

**ADMISSION**

I hereby declare that this project report entitle

**MELAKA SENTRAL WALKTHROUGH SYSTEM**

is written by me and is my own effort and that no part has been plagiarized without citations.

STUDENT : \_\_\_\_\_ Date : \_\_\_\_\_  
(NORMASNIZA BINTI MAT GHANI)

SUPERVISOR :  \_\_\_\_\_ Date : \_\_\_\_\_  
(PN. HALIZAH BINTI BASIRON)

## DEDICATION

To my beloved parents,  
thank you for your fully support and motivation.

## ACKNOWLEDGEMENTS

### *IN THE NAME OF ALLAH, (AL MIGHTY) THE GRACIOUS, THE MOST MERCIFUL.*

Big thanks to God and warmly thanks to Puan Halizah binti Basiron for giving assistant and attention to complete this project successfully. Thank you for spending time to answer all e-mails, calls and also during our meetings.

I would also like to thank my beloved parents who have been giving me support and motivation throughout my project. I had been exposed to the real environment where I had learned many new things from the task been given to me. I also got to learn how to work individually and learn to communicate with other people and at the same time tried to build self confidence within myself. I had been disciplined to follow rules and regulations of KUTKM guideline to finish this project. This include how to manage and submit every chapters of report at given time, as well as timekeeping skills.

I would like to thank the management of Melaka Sentral, especially to Mr Badrul Hisam bin Md Shah for his willing to spend time with me to be interviewed. Thank you for spending times to answer all the questions and also give permission to take pictures in Melaka Sentral. Lastly I would like to thank everyone who helped me to finish up this report and also help me to complete my PSM project as scheduled.

## ABSTRACT

KUTKM has made compulsory to every final year student to finish a final project for final year. This assignment called PSM (Projek Sarjana Muda), and the main purpose of this project is to produce the intellectual student with quality project. This project also teach students regarding all information systems projects move through the four phases of planning, analysis, design and implementation and also include all project requirement analysts to gather requirement, model business needs, and to understand of organizational behavior concepts. The project that has been developed is Melaka Sentral walkthrough virtual reality and the concept chosen is stand alone. For the main menu's virtual reality contents, it consists of two main aspects which are exterior and interior. Meanwhile, for Melaka Sentral virtual reality contents, it consists of plan of Melaka Sentral. The software used for this project are Adobe Photoshop and Macromedia Flash Professional 2004 for drawing images and 3D Studio Max for modeling. The requirement software for rendering application is also 3D Studio Max. However, the simulation of Melaka Sentral Walkthrough and the interactivity is using Eon Studio.

## ABSTRAK

KUTKM telah mewajibkan kepada semua pelajar ICT untuk menyiapkan satu projek tahun akhir. Projek ini di kenali sebagai Projek Sarjana Muda (PSM) dan bertujuan untuk melahirkan pelajar yang intelektual dalam menghasilkan sesebuah projek yang berkualiti. Projek ini juga mengajar pelajar untuk lebih memahami tentang keperluan maklumat dalam membina sesebuah projek, terdapat 4 fasa utama iaitu rancangan, analisis, rekabentuk, dan implementasi dan juga termasuk kesemua projek analisis iaitu mengumpul keperluan, model perniagaan yang dikehendaki, dan juga memahami tentang ciri-ciri sesebuah organisasi. Projek ini adalah mengenai Melaka Sentral –walkthrough virtual reality dan hasil akhir sistem ini adalah konsep stand alone. Untuk menu utama, virtual reality akan dibahagi kepada dua iaitu bahagian luar bangunan dan bahagian dalam bangunan. Sementara itu, Melaka Sentral virtual reality juga merujuk kepada plan bangunan Melaka Sentral itu sendiri. Software yang diperlukan dalam membangunkan projek ini adalah Adobe Photoshop dan Macromedia Flash Professional 2004 untuk membuat rekabentuk dan 3D Studio Max untuk modeling. Software untuk aplikasi rendering pula juga menggunakan 3D Studio Max. Manakala, simulasi dan interaktif untuk Melaka Sentral Walkthrough adalah menggunakan Eon Studio

## TABLE OF CONTENTS

CHAPTER	SUBJECT	PAGE
	<b>ADMISSION</b>	<b>ii</b>
	<b>DEDICATION</b>	<b>iii</b>
	<b>ACKNOWLEDGEMENTS</b>	<b>iv</b>
	<b>ABSTRACTS</b>	<b>v</b>
	<b>ABSTRAK</b>	<b>vi</b>
	<b>TABLE OF CONTENTS</b>	<b>vii</b>
	<b>LIST OF TABLES</b>	<b>xi</b>
	<b>LIST OF FIGURES</b>	<b>xii</b>
	<b>LIST OF ABBREVIATIONS</b>	<b>xiv</b>
	<b>LIST OF APPENDICES</b>	<b>xv</b>
<b>CHAPTER 1</b>	<b>INTRODUCTION</b>	
	1.1 Project Background	1
	1.2 Problem Statements	3
	1.3 Objectives	3
	1.4 Scopes	4
	1.5 Project Significant	5
	1.6 Expected Output	6
	1.7 Conclusion	6
<b>CHAPTER 2</b>	<b>LITERATURE REVIEW AND PROJECT METHODOLOGY</b>	
	2.1 Introduction	7
	2.2 Fact Finding	8
	2.2.1 Case Study	9
	2.2.2 What is Virtual Reality	9
	2.2.2.1 Types of Virtual Reality Systems	11
	2.2.3 What is Walkthrough	14
	2.2.4 Architecture	15
	2.2.5 How far people know about Melaka	17



	Sentral	
2.2.6	How CD-ROM gave more impact than other type of delivering medium	18
2.2.7	How interaction of creativity and presentation impact people and communities (Human Computer Interaction Perspective)	19
2.3	Project Methodology	20
2.3.1	Analysis	22
2.3.2	Design	23
2.3.3	Development	23
2.3.4	Implementation	25
2.3.5	Evaluate	26
2.4	Project Requirement	28
2.4.1	Software Requirement	28
2.4.2	Hardware Requirement	30
	2.4.2.1 Minimum System Requirement	30
2.5	Project Schedule and Milestone	31
2.6	Conclusion	32

## CHAPTER 3

	<b>ANALYSIS</b>	
3.1	Introduction	33
3.2	Problem Analysis	34
	3.2.1 Interview	34
	3.2.2 Observation	35
	3.2.3 Questionnaire	35
3.3	Content Analysis	36
	3.3.1 Functional Requirement	36
	3.3.2 Non-Functional Requirement	37
3.4	Comparing Hypermedia and Virtual Reality	41
	3.4.1 Hypermedia Characterize	
	3.4.2 Virtual Reality Characterize	41
3.5	User Requirement	43
	3.5.1 Resources	44
	3.5.2 Software Requirement	44
	3.5.2.1 Virtual Reality Platform	44
	3.5.2.2 3Ds Studio Max 7.0	44
	3.5.2.3 Adobe Photoshop CS	47
	3.5.2.4 Adobe Illustrator CS	49
	3.5.2.5 Macromedia Flash 2004	49
	3.5.2.6 Macromedia Dreamweaver 2004	49
	3.5.2.7 Sound Forge 6.0	51
	3.5.2.8 Microsoft Visio	52
	3.5.2.9 Microsoft Word	52
3.5.3	Hardware Requirement	52

	3.5.3.1 System Requirement	52
3.6	Conclusion	54
<b>CHAPTER 4</b>	<b>DESIGN</b>	
4.1	Introduction	55
4.2	Raw Data	56
4.3	System Architecture	60
	4.3.1 The Menu	61
4.4	Preliminary Design	62
4.5	User Interface Design	62
	4.5.1 Text	63
	4.5.2 Graphic	63
	4.5.3 Audio	64
	4.5.4 The Use Colour	64
	4.5.5 Interface Design	65
4.6	Navigational Structure	71
4.7	Input Output Specification	72
	4.7.1 Input Specification	73
	4.7.2 Hardware Output	73
4.8	Conclusion	74
<b>CHAPTER 5</b>	<b>IMPLEMENTATION</b>	
5.1	Introduction	75
5.2	Software Development Environment Setup	76
	5.2.1 Production of Texts	76
	5.2.2 Production of Graphics	77
	5.2.3 Production of Audio	78
	5.2.4 Production of Animation	80
	5.2.5 Production of Integration	82
5.3	Software Configuration Management	82
	5.3.1 Configuration Environment Setup	82
	5.3.2 Version Control Procedure	82
5.4	Implementation Status	84
5.5	Conclusion	84
<b>CHAPTER 6</b>	<b>TESTING</b>	
6.1	Introduction	86
6.2	Test Plan	87
	6.2.1 Test Organization	88
	6.2.2 Test Environment	89
	6.2.3 Test Schedule	91
6.3	Test Strategy	91
	6.3.1 Classes of Tests	92
6.4	Test Design	94
	6.4.1 Design Simulation	94
	6.4.2 Test Description	95

	6.4.3	Test Data	96
	6.5	Test Result and Analysis	97
	6.6	Conclusion	98
<b>CHAPTER 7:</b>	<b>PROJECT CONCLUSION</b>		
	7.1	Observation on Weaknesses and Strengths	99
	7.2	Propositions for Improvement	100
	7.3	Contribute	100
	7.4	Conclusion	101
<b>REFERENCES</b>			<b>102</b>
<b>APPENDICES</b>			<b>104</b>

**LIST OF TABLES**

<b>TABLE</b>	<b>TITLE</b>	<b>PAGE</b>
2.1	List of software requirements	30
3.1	List of hardware requirements	53
5.1	Production of texts	77
5.2	Production of graphics	78
5.3	Production of audio	79
6.4	Test Environment by listed hardware and software requirement schedule	90
6.5	Tests schedule	91
6.6	Classes of Tests	93
6.7	Test Result and Analysis	98

## LIST OF FIGURES

FIGURE	TITLE	PAGE
2.1	VR Environment in a house	15
2.2	VR Environment in a building	16
2.3	VR Environment in a office	17
2.4	Usability and user experience goals	20
2.5	ADDIE Model	22
2.6	Development methodology for VR Melaka Sentral	27
3.1	Diagram of Melaka Sentral for VR system	38
3.2	VR house(website)	39
3.3	House Walkthrough	39
3.4	Southern Medical Center Walkthrough view from outside	40
3.5	Southern Medical Center Walkthrough view from inside	40
4.1	Entrance to Melaka Sentral	57
4.2	Roofs in Melaka Sentral	58
4.3	Front sides in Melaka Sentral	58
4.4	Pillars in Melaka Sentral	59

4.5	Platform bus in Melaka Sentral	59
4.6	Ticket counters in Melaka Sentral	60
4.7	System Architecture: System Diagram	61
4.8	Interface of Melaka Sentral Walkthrough System	65
4.9	Gallery interface shown the Melaka Sentral Pictures	66
4.10	Architecture of Melaka Sentral.	66
4.11	Units setup must be set before creating modeling.	67
4.12	Model of Playground in Melaka Sentral.	67
4.13	Importing materials into 3D Studio Max.	68
4.14	Model of Melaka Sentral in 3D Studio Max, this image shown from the right angle.	68
4.15	Model of Melaka Sentral in 3D Studio Max, this image shown the Melaka Sentral from outside.	69
4.16	Model of cars in 3D Studio Max.	69
4.17	Editing materials by using Adobe Photoshop software.	70
4.18	Materials are creating in 3D Studio Max, and then edit in Adobe Photoshop software as a material for mapping a model.	70
4.19	Navigational Structure: Flow chart	72
5.1	Editing an audio in Sonic Foundry	79
5.2	Production of animation in Macromedia Flash Professional 2004	80
5.3	Production of animation in Eon Studio	81

**LIST OF ABBREVIATIONS**

<b>ABBREVIATION</b>	<b>DEFINITION</b>
KUTKM	Kolej Universiti Teknikal Kebangsaan Malaysia
PSM	Projek Sarjana Muda
VR	Virtual Reality
3D	3 Dimensional
CD	Compact Disc
PC	Personal Computer
HCI	Human Computer Interaction
HTML	Hypertext Markup Language
GUI	Graphic User Interface
HTTP	Hypertext Transfer Protocol
OS	Operating System
Mhz	Mega Hertz
GB	Giga Byte
RAM	Random Access Memory
CAD	Computer Aided Design
WoW	Window on a World
ICT	Information and Communication Technology

**LIST OF APPENDICES**

<b>APPENDIX</b>	<b>TITLE</b>	<b>PAGE</b>
A	Storyboard	104
B	Gantt Chart for PSM I	111
	Gantt Chart for PSM II	112
C	User Manual	113
D	Questionnaire	118



## CHAPTER I

### INTRODUCTION

#### 1.1 Project Background

This chapter describes about the system that was been developed. In this chapter, the illumination about the project background included objectives, problem statements, scope, project significant, and also the expected output of the system. The following chapters are describing the details about the developed system.

This system has been developed for the Melaka Sentral terminal which is located at Peringgit, Melaka. This terminal has been opened for business since 14th. May 2004. Melaka Sentral is an ultra-modern air conditioned bus (express & local) terminal similar to the Kuala Lumpur International Airport (KLIA). The taxi terminal is also located next to the bus terminals. This bus station is also one of the common transportation for public whether people in Malacca or from outside Malacca and the bus platform is separated into two platforms; international and domestic. Because of this function, Melaka Sentral is the focus location whether for local people or people from outside Malacca. The architecture of this terminal was inspired by combination of Malaysia tradition and modern styles. This wide single storey building has been design with high roof and opening light structure. The building has different sections for bus and taxi.

Each section has been designed with a tropical garden in the middle cavity. This section completes with facilities such as cafeteria, restaurants, and shops. Every section is been provided by an information counter for public. There are twenty four ticket counters and twenty four bus platforms for bus express services. However, for domestic services, there is twelve counters ticket and eighteen bus platforms. Besides, taxi services for domestic and international journey.

The title of this project is Melaka Sentral Walkthrough System. The concept of this system is walkthrough that it will view the real environment in Melaka Sentral based on Virtual Reality (VR) technology. The system focuses on the architecture of Melaka Sentral building and navigates users to understand about each location in Melaka Sentral. The purpose of this virtual reality for Melaka Sentral is to introduce Melaka Sentral terminal to public. Beside that, many shops that can attract tourists to visit Melaka Sentral. The system can be used as one of alternatives to promote Melaka Sentral.

This project used a conventional computer monitor to display the visual world. This is called Desktop Virtual Reality or a Window on a World (WoW). This concept traces its lineage back through the entire history of computer graphics. A variation of the WoW approach merges a video input of an user's silhouette with a 2D computer graphic. The user watches a monitor that shows his body's interaction with the world. This project used the WoW concept, which is the virtual reality display on monitor and users interact by using mouse and keyboard. The concept of this project is stand alone and also called the interactive Compact Disk (CD interactive).

## 1.2 Problem statements

Currently, the methods of introducing Melaka Sentral are by kiosk, template, magazine, newspaper and internet. These methods are basically normal to public people who are not too interested to read articles on internet, newspaper, magazine or template. People can only read the articles and see the photo of Melaka Sentral and do not know the real environment in Melaka Sentral. Melaka Sentral was opened for business from 15th. May 2004, and it is still new to public. On the other hand, there is not yet to have virtual reality about Melaka Sentral and this virtual reality is a new method to acquaint Melaka Sentral to public. Why this virtual reality of Melaka Sentral should be developed Melaka Sentral is one of the new destinations that were built to show advancement in Malacca. It's also an interesting place to promote Melaka Sentral for tourism purposes. Besides that, the virtual reality can show the sophisticated architecture of Melaka Sentral by using 3D environment application.

## 1.3 Objective

Objectives of this system are:

- To introduce Melaka Sentral to the public.
  - Melaka Sentral already has a kiosk, but still not has virtual reality yet.
- To develop a virtual reality for Melaka Sentral.
  - The virtual reality help people to know better about Melaka Sentral and also gain more information include

map for explain every location in Melaka Sentral. The system will view the environment in Melaka Sentral including bus platform, car parking, ticket counter and shops.

- The tools in virtual environment are user friendly, easy and enjoyable for users to use and also help users to understand each area in Melaka Sentral.
  
- To overview Melaka Sentral to tourist.
  - Melaka Sentral is which one of interesting place to visit because there a lot of shops besides functioning as bus station.
  
- To vary the methods of introduce Melaka Sentral beside templates, articles, kiosk and others.
  - The interface of this virtual reality was developed in interactive mode, which user can move the mouse to view the walkthrough whether to left, right, front and back.

#### 1.4 Scopes

The main purpose of this project is to introduce Melaka Sentral to public, and it is suitable to be watched by all levels of people. This system was developed for users who want to get more information about Melaka Sentral. This system involves with Malacca tourism because Melaka Sentral is one of interesting destination to visit by tourists besides its function as a bus station. The system also displays the map of Melaka Sentral and shows the direction for every location in Melaka Sentral including

bas terminal (domestic and international), shops, toilet, ATM machine, and ticket counters. The viewer will start from outside, which is view the whole building of Melaka Sentral including parking area. Then, walkthrough starts from the main entrance door of Melaka Sentral and shows the interior design of building including shops, bus counter, bus platform (internal and domestic location) and others important location such as toilet, ATM machines, and taxi stand. This virtual environment also has interactive functions such as the users can control movements by using mouse to move to front, right, left, and back.

### **1.5 Project significant**

The virtual reality of Melaka Sentral functions as CD interactive application to introduce Melaka Sentral in an interesting way and also gives some information about Melaka Sentral. The system also involves in Malacca tourism because the main purpose of this system is to introduce the Melaka Sentral to public and also a place for tourism. The advantage of this system is to produce an interesting product by using new technique and sophisticated applications. This system is using Eon Reality (Eon Studio) software beside 3D Studio Max, Adobe Photoshop, Adobe Illustrator and others related software.

## 1.6 Expected output

At the final stage of this project, the virtual reality simulation will be included on the current course CD ROM. It will run directly from the CD ROM as a FLASH projector file in a browser window. The simulation will also be available from the current course CD ROM. The delivery product as CDs can be play on CD ROM drive.

## 1.7 Conclusion

In conclusion, the virtual reality of Melaka Sentral is to vary the methods to introducing the Melaka Sentral. This virtual reality of Melaka Sentral will view the real environment in Melaka Sentral by using interesting application.

## **CHAPTER II**

### **LITERATURE REVIEW AND PROJECT METHODOLOGY**

#### **2.1 Introduction**

This chapter explains in detailed about literature review and project methodology which related to this virtual reality system. Virtual reality is the simulation of a real or imagined environment that appears as a three-dimensional (3-D) synthetic space that has dynamic properties specified by software. The Virtual Reality is a system that enables one or more users to move and react in a computer-simulated environment. Various types of devices allow the users to sense and manipulate virtual objects much as they would with real objects. This natural style of interaction gives participants the feeling of being immersed in the simulated world. Virtual worlds are created by mathematical models and computer programs. This chapter explains about the virtual environment of Melaka Sentral system, all research and information which collected from books, internet and other sources may be useful to this project.

## 2.2 Fact and Finding

This section concentrates on different perspectives related to the system developed. The Melaka Sentral Terminal was launched on 14th. May 2004, there not many advertisements that had been done to promote Melaka Sentral as a new terminal replacing the old bus station, the Sentral Station. The Sentral Station for both local and express buses moved from Jalan Tun Ali to Kg. Peringgit just off Jalan Tun Razak about 5 kilometres or so on the north side of the city. Old timers and locals are sure to miss the convenience and hustle and bustle of the old Sentral Station. Unfortunately many tourists who used to be able to walk to their hotel from the bus station will now need to take another bus into town or a taxi (approximately RM 15-20) making the trip into town much more expensive. The new Station Sentral is really quite impressive. The new terminal building is about the size of a small regional airport in the west and every bit as modern. With about 60 berths to embark and disembark and a huge parking lot for waiting buses not to mention wide roads leading into and out of the station, this is certainly a much better first (and last) impression of Melaka.

From review that has been done at the Melaka Sentral Terminal, there are several information that has been identify such as current system application, the structure of Melaka Sentral and what are advertisements that had been done to promote Melaka Sentral. The current system in Melaka Sentral Terminal is a kiosk system that was located in front of Melaka Sentral office. The kiosk system is commonly used to give information to users, but it is not shown the real environment or describing the real area in Melaka Sentral. The kiosk system only provides the information that was appears by using pictures and texts to explain the direction in Melaka Sentral. This virtual reality system wills focuses on how far people have the interest about virtual reality application.