1UTeM INTERACTIVE MAP

MUHD AMMERUL FAIZAL BIN AINUL JAMILUS

This report is submitted in partial fulfillment for the requirement for the

Bachelor of Computer Science (Software Development)

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2017

BORANG PENGESAHAN STATUS TESIS*

JUDUL: 1UTeM INTERACTIVE MAP

SESI PENGAJIAN:2016/2017

Saya MUHD AMMERUL FAIZAL BIN AINUL JAMILUS
(HURUF BESAR)

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

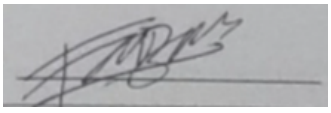
1. Tesis dan projek adalah hakmilik Universiti Teknikal Malaysia Melaka.
2. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan untuk tujuan pengajian sahaja.
3. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan tesis ini sebagai bahan pertukaran 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)

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

__/__ TIDAK TERHAD



(TANDATANGAN PENULIS) (TANDATANGAN PENYELIA)

Alamat tetap: 70, Jalan Tembaga Merah 3
Taman Sri Skudai, Skudai
81300 Johor

AZLIANOR ABDUL AZIZ
Nama Penyelia

Tarikh:24 Ogos 2017 Tarikh:24 Ogos 2017

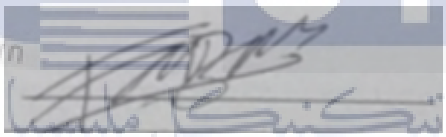
CATATAN: * Tesis dimaksudkan sebagai Laporan Akhir Projek Sarjana Muda (PSM)
** Jika tesis ini SULIT atau TERHAD, sila lampirkan surat daripada pihak berkuasa.

DECLARATION

I hereby declare that this project report entitled

1UTeM INTERACTIVE MAP

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



STUDENT: _____ Date: 24 August 2017
(MUHD AMMERUL FAIZAL BIN AINUL JAMILUS)

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

SUPERVISOR: _____ Date: 24 August 2017
(PUAN AZLIANOR BINTI ABDUL AZIZ)

DEDICATION

Thank to Allah S.W.T for the moment that I complete final year project within the time. Thank you to my beloved family with a great support and motivation that they give. At the same time, their guidance and encouragement are vital to outcome the result of the project.

I also dedicated my friends especially Nor Nurul Ain Binti Hassan for moral support and encouragement, my classmate Shammugam, Ardhi Surya and other for helping out my project with successful result.

And not to forget to my supervisor Puan Azlianor Binti Abdul Aziz who have supported me all the way from the beginning of this project.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

ACKNOWLEDGEMENTS

I am student University Technical Malaysia Melaka, UTeM need to succeed the Projek Sarjana Muda in the final year of the study. UTeM has been such a great platform for youngster who are eager to gain knowledge to totally live the actual environment of technicality.

My great appreciation towards my supervisor for Projek Sarjana Muda, Puan Azlianor Binti Abdul Aziz who guide me from the beginning. Your kindness and support in the completion of my Projek Sarjana Muda is very appreciated.

Not forget to my course mate that give support and cooperation to complete my Projekk Sarjana Muda. Your kindness in this completion of the project is very appreciated.

Lastly, my sincere graduate to my beloved family that always support, motivate and encourage me from the beginning of the project throughout my study period. Without them, I could had never complete this project.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

ABSTRACT

This web-based system is to improve the existing map that lone exists as static image with lack of information to the guider. This could lead misguidance to the location because of lack of information. Usually, the problem occurs when the first time visitor that need to send their child who are going to continue their study in Universiti Teknikal Malaysia Melaka (UTeM). As for the official UTeM website, it currently just showing the static map and less information for the visitor get. The main objective of the project is to enhance and update the current maps into an interactive map. In the same time, it will assist the visitor that also categorized as Viewer, in this project to be guided with an accurate information to each building. By using Rapid Application Development (RAD) as the methodology for this project development which is one of the Software Development Life Cycles (SDLC), a prototype is developed and tested before releasing it. With various test cases, many results can be analyzed for effectiveness. System ought to implicit as it can allow the viewer to use for heading to their destination and it likewise can save time from getting lost. With the assistance of an interactive map, the viewer will be able to discover enough information for a particular location.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

ABSTRAK

Sistem yang berasaskan laman web ini adalah untuk meningkatkan peta sedia ada yang wujud sebagai imej static dengan kekurangan maklumat kepada pengguna. Ini akan menyebabkan pengguna akan tersalah penggunaan kerana kekurangan maklumat mengenainya. Biasanya, masalah ini akan berlaku apabila pelawat bagi yang pertama kali dating untuk menghantar anak mereka yang akan meneruskan pembelajaran mereka di Universiti Teknikal Malaysia Melaka (UTeM). Bagi laman sesawang UTeM yang rasmi, ia hanya menunjukkan peta yang statik dan maklumat yang tidak jelas untuk pelawat menggunakannya. Objektif utaman projek ini adalah untuk meningkatkan dang mengemaskini pemetaan ke dalam satu peta yang boleh di interaksi dengan pengguna. Dalam masa yang sama, ia akan membantu pelawat untuk berpandukannya dengan satu maklumat tepat kepada setiap bangunan. Dengan menggunakan methodologi *Rapid Application Development* (RAD) sebagai kaedah untuk membangunkan projek ini, sebuah prototaip yang dibangun dan di uji sebelum memasarkannya. Dengan mengadakan kes ujian, banyak hasil dapat dianalisa untuk keberkesanan sistem tersebut. Dengan menggunakan peta yang interaktif, pengguna boleh menemui maklumat yang cukup untuk menuju ke lokasi yang di inginkan.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

TABLE OF CONTENTS

CHAPTER	SUBJECT		PAGE
	DECLARATION		**II**
	DEDICATION		**III**
	ACKNOWLEDGEMENTS		**IV**
	ABSTRACT		**V**
	ABSTRAK		**VI**
	LIST OF FIGURES		**XI**
	LIST OF TABLES		**XIII**
CHAPTER I	**INTRODUCTION**		
	1.1	Introduction	1
	1.2	Problem Statement	3
	1.3	Project's Objectives	3
	1.4	Project's Scope	4
	1.5	Project Significance	5

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

1.6 Expected Result 5

1.7 Summary 5

CHAPTER II LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction 7

2.2 Facts and Finding 8

2.2.1 Interactive Map Element 8

2.2.2 Interactive Map Products for World Wide Web 8

2.2.3 Existing System 9

2.3 Project Methodology 13

2.4 Project Requirement 14

2.4.1 Software Requirement 14

2.4.2 Hardware Requirement 14

2.5 Project Schedule and Milestones 14

2.5.1 Flow Chart System 15

2.5.2 Project Gantt Chart 16

2.6 Project Milestone 17

2.7 Summary 19

CHAPTER III ANALYSIS

3.1 Analysis of Current System 20

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

3.2	Analysis of Purposed System	21
3.3	Functional Requirement	22
3.4	Context Diagram	24
3.5	Data Flow Diagram (DFD)	25
3.5.1	DFD Level 0	25
3.6	Non-functional Requirement	25
3.7	Summary	26

CHAPTER IV DESIGN

4.1	Introduction	27
4.2	System Architecture	28
4.2.1	Sequence Diagram	29
4.3	Database Design	34
4.3.1	ER Diagram	34
4.3.2	Data Dictionary	35
4.4	Module Integration and Interface Design	39
4.4.1	Interface Design	39
4.4.2	Navigation Diagram	44
4.5	System Design	45
4.6	Summary	45

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

CHAPTER V IMPLEMENTATION

5.1 Introduction 46

5.2 Software Development Environment Setup 46

5.3 Software Configuration Management 48

5.3.1 Configuration Environment Setup 48

5.3.2 Version Control Procedure 49

5.4 Security Characteristic 50

5.4.1 Authentication 50

5.4.2 Authorization 50

5.4.3 Confidentiality 51

5.4.4 Availability 51

5.4.5 Data Integrity 51

5.5 Summary 51

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

CHAPTER VI TESTING

6.1 Introduction 53

6.2 Test Plan 53

6.2.1 Test Organization 54

6.2.2 Test Environment 54

6.3 Test Schedule 54

6.4 Test Strategy 55

6.5 Test Design 56

6.6	Test Description	56
	6.6.1 System Constraint	62
6.7	Test Case Result and Analysis	62
6.8	Summary	63

CHAPTER VII CONCLUSION

7.1	Introduction	64
7.2	Observation on Strength and Weaknesses	64
7.3	Commercial Values	66
7.4	System Limitation	66
7.5	Suggestion for System Improvement	67
7.6	Contribution	67
7.7	Conclusion	68

REFERENCES **69**

BIBLIOGRAPHY **70**

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

LIST OF FIGURES

DIAGRAM	TITLE	PAGE
Figure 2.1:	Main campus map that exist in the website	9
Figure 2.2:	Industrial campus map that exist in the website	10
Figure 2.3:	City campus map that exist in the website	10
Figure 2.4:	Main campus map blueprint that visitor need to downloaded	11
Figure 2.5:	Industrial campus map blueprint that visitor need to downloaded	12
Figure 2.6:	City campus map blueprint that visitor need to downloaded	12
Figure 2.7:	Rapid Application Development Cycle	13
Figure 2.8:	The flow chart for this project	15
Figure 2.9:	Project Gantt chart page 1	16
Figure 2.10:	Project Gantt chart page 2	16
Figure 3.1:	Use case UTeM Map current system	200
Figure 3.2:	Use case of 1UTeM Interactive Map	23
Figure 3.3:	Context diagram of 1UTeM Interactive Map	24
Figure 3.4:	Data Flow Diagram (DFD) Level 0 for 1UTeM Interactive Map	25
Figure 4.1:	1UTeM Interactive Map navigation diagram	28
Figure 4.2:	Sequence diagram for admin login page	29
Figure 4.3:	Sequence diagram for admin registration	30
Figure 4.4:	Sequence diagram for admin profile	30
Figure 4.5:	Sequence diagram of map's new information and update for admin	31
Figure 4.6:	Sequence diagram for viewer to view map and download a map	32
Figure 4.7:	Sequence diagram for admin to upload map	33
Figure 4.8:	ERD for 1UTeM Interactive Map	34

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

Figure 4.9:	Login interface for accessing 1UTeM Interactive map	39
Figure 4.10:	Registration interface for admin 1UTeM Interactive map	39
Figure 4.11:	Main Menu interface for 1UTeM Interactive map	40
Figure 4.12:	Profile and update profile for admin	40
Figure 4.13:	Map Menu for 1UTeM Interactive map	41
Figure 4.14:	Adding new information for 1UTeM Interactive map	41
Figure 4.15:	Update map information for 1UTeM Interactive Map	42
Figure 4.16:	Upload Map for inserting new map 1UTeM Interactive map	42
Figure 4.17:	Mapping Menu for 1UTeM Interactive map	43
Figure 4.18:	Displaying map to viewer and admin in 1UTeM Interactive map	43
Figure 4.19:	Navigation diagram for 1UTeM Interactive Map	44

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

LIST OF TABLES

TABLE	TITLE	PAGE
Table 2.1:	Project Milestone	17
Table 4.1:	Admin Table	35
Table 4.2:	Campus Table	36
Table 4.3:	Building Table	37
Table 4.4:	Ptj Table	38
Table 6.1:	Test Schedule	54
Table 6.2:	Login testing description	56
Table 6.3:	Admin registration test description	57
Table 6.4:	Update admin profile test description	58
Table 6.5:	New map information test description	58
Table 6.6:	Update map information test description	59
Table 6.7:	Upload map test description	60
Table 6.8:	View main campus map test description	60
Table 6.9:	View city campus map test description	61
Table 6.10:	View Technology campus map test description	61
Table 6.11:	Test result	62

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

CHAPTER I

INTRODUCTION

UNIVERSITI TEKNIKAL MALAYSIA MELAKA
UTeM
اونيۏرسيتي تيکنيکل ملسيا ملاک
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

1.1 Introduction

Universiti Teknikal Malaysia Melaka (UTeM) are well known among others University and industry. The student's compulsory to deliver final year project before they graduated. In the Faculty of Information and Communication Technology, students must finish and submit their thesis according to their enrolled courses.

This project is to improve the existing map that already exists as static image with lack of information to the guider. This could lead misguidance to the area because of absences of data. To improve the maps, it will be interface the client to lead them by having additional data of the area. The information of building includes the main office information such as for faculty, management building and student center. Interactive map is known as an interface for a map that interact the user with a good information to be deliver to them. With those interactive map, it can be update incase if there were any new changes.

Map is a platform that can guide human to the selected destination. A map consists of many destinations in the particular country and even in the state itself. Sometimes the map is use to search a destination for a first timer. In this event, outsider who was first time come to UTeM does not known well the location they want to reach out. The outsider can use this platform to assist them to reach their destination with the information of the building and location.

This system is managed by authorized administrators which are among the staff of UTeM. The registered administrators are able to manage the maps by using login information. In this regard, the administrators can view and updated the maps if there are changes in the information of the map. The administrators handle three different maps which are map located at city campus, technology campus and main campus. In other case, administrators can add new building information through the system.

For the use of users, this system can be guided user in easily without any misunderstanding. For admins, it can easily to manage it by helping outsider to know better the location of the UTeM and its campuses. Before the system develops, the existing system was only applying static graphic images and without any information were include inside the map. Also, the map only shows a pin point and only direction of the campus located.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

To secure the usage of the maps information, the admins required a password that will be encrypted prior to store into database. Each administrator information secured by the system. Else, the map information can only be updated or added by administrator who is manage the system. As for the user, user only viewed the map through the system and each of the building consists the information that they needed.

1.2 Problem statement

In existing UTeM maps were places into the official UTeM's website. Recently the problem occurred when outsider used the Maps in official website as a references to come to the UTeM. The major problems were the information of the location is less guided to the outsider which misguided issue. The problems consist of:

i. The outsider such as parents and visitor does not know well the location of the management building. Most problems occurred when the parents first time send their children for new registration. They need to query frequently either with the guard that patrolling the campus or students nearby.

ii. As for the outsider visitor always misguided through the campus. Most of the reason outsider came for was want to find the management building for important affairs.

iii. The current maps consist in the system were only a basic and static information of a graphic maps. Without any further information of in the map, visitor, outsider, and parents always lost in the campus. They are keep searching in the same places in the campus.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

1.3 Project's objectives

The main objective of the project 1UTeM interactive maps by using maps metric measured for campus in UTeM were consist of:

i. To enhance and update the current maps into interactive maps.
ii. To guide the user with an accurate information of the maps.

iii. To minimize time consuming in searching the specific building in the various campuses.

1.4 Project's scope

To develop and redesign the system, its can make a positive impact to the users to used which give benefits either to the admins nor user such as visitor, outsider and parents. With this system, user can expectedly arrive at destination without misguide to there at appropriate time. Other benefits can include in this system which consists of lot of information to the user to know well about UTeM.

Each user in this system has their responsibilities or roles, which are:

i. For an admin of the system, they can manage the system by focusing on appropriate and reliable information for the maps. Also, they can be maintained the details of the maps more precisely and accurate.
ii. For the user of the system, they only can view the maps which consist of information in more details so that they can be guided to their destination without hesitate which can help them from being misguidance.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

This system has developed several modules. The system modules were:

i. Login and registration for admin include recovery password
ii. Information management which managed building details of all UTeM Campus, and profile which included change of password.
iii. Interactive map design can generate interactive map with a label positioning for all UTeM Campus.
iv. Map guide creations were created a full page map with guided latest updated information for each UTeM campus.

1.5 Project significance

This projects' system will be beneficial to the users for allowing them to be guided which consists of accurate information of each building. In the same time, the user can minimize time consuming for searching the specific building in the various campuses. This would assist the user easily and can avoid them from misguided. This project will optimize and update the current map for UTeM official website.

1.6 Expected Results

The expected results for this system supposed to giveback response is where admin can access through the system without any problems. Second expected result should be building information are always up-to-date with accurate information. And this system is expected able to attract the user by having the interactive maps with full information. These expected results could lead a success the system developed, in example 1UTeM Interactive Map.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

1.7 Summary

The system focus on the problem that struggles for the user who are first time to come to the UTeM which they may not very familiar with the location of each building. By developing 1UTeM Interactive Map system, it would provide lots of information for each of the building in each campus including the office information for formal affair business. This can assist the user to be more guided to the location they wanted to go. Also, the map always up-to-date to the user as guide for them and it can reduce time to

arrive to the location in appropriate time. In the next chapter, it will explain how the system will work.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

CHAPTER II

LITERATURE REVIEW

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2.1 Introduction

In this chapter, it will be focus on literature review between facts and finding for this project. The facts that will be explaining either in history, project background or this projects' fact. For finding process, this will include how the project get the idea to be develop. a research need to be done to increase potential ideas to develop the project. It is depending on where the facts and finding need to find and gather. In facts and finding, the source to gather the information is depending either visit the library, surfing through the internet or purchasing reference book.

2.2 Facts and finding

2.2.1 Interactive map element

The effectiveness in map communication are need to refers to the most traditional map and their own design. The major difference that in the map elements are now better in GUIs'. Therefore, the objective in the map elements remain from changes but the design is more likely different from before. It can be designed far more complex and the subsequent can be present more information when someone trying to interact with them. The three key fundamentals need to remember when we are going to design it by refers to the map elements. Firstly, need to find a map and design the map based on elements that will associate to the communication objective rather using a simple default map element. Second, every map element does not need in all of the map.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2.2.2 Interactive map products for world wide web

Interactive map need to change how the user need to read as map-readers that really means by delivering cartographers. Every 16 physical storages are stored on the medium that transfer to multimedia material. In 16 different type that cartographer is used to distribute the cartography's multimedia. In this context, cartography are really means a lot to deliver the interactive map. Within two medium principles' that need to deliver the interactive map, one of it need to choose the very important medium each of the map. To store a physical data, it must need an internet that can give either an advantages nor disadvantages. When map product produce in larger scale and intense to graphical type, the physical storage can be distributed better. With mass produce mapping that related to the Internet, interactive map can be use worldwide.

The power in the interactive map have ability to respond through the input of the reader. The environment can be produce after the interactive map was created for a

multiple interaction between cartographer and the reader. The changes of the both parties can be interacted between the map and the map-reader.

2.2.3 Existing system

The existing map that will be refer to UTeM official website which is the information need to be send for the visitor to use as guiding to their location. The existing map actually using just an images in the website are literally on a static information without any interact to the visitor. Basically, the map only consists a direction to the visitor to came to UTeM but it did not show the information within the building status and information. In the same time, it did not friendly interact to the visitor when use it. If there are information for each building in the campus, the visitor need to download the map that consists an information for the building. Even it has been downloaded, the visitor still did not know which building they search for.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

Figure 2.1: Main campus map that exist in the website