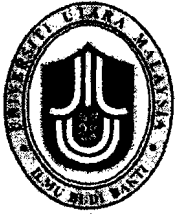


Mobile Application to Apply for Official Document (MAOD)

TAHANI SALIM ELHADI

Universiti Utara Malaysia 2011



**KOLEJ SASTERA DAN SAINS
(College of Arts and Sciences)
Universiti Utara Malaysia**

**PERAKUAN KERJA KERTAS PROJEK
(Certificate of Project Paper)**

Saya, yang bertandatangan, memperakukan bahawa
(I, the undersigned, certifies that)

TAHANI SALIM ELHADI
(806298)

calon untuk Ijazah
(candidate for the degree of) **MSc. (Information Technology)**

telah mengemukakan kertas projek yang bertajuk
(has presented his/her project of the following title)

MOBILE APPLICATION TO APPLY FOR OFFICIAL DOCUMENT

seperti yang tercatat di muka surat tajuk dan kulit kertas projek
(as it appears on the title page and front cover of project)

bahawa kertas projek tersebut boleh diterima dari segi bentuk serta kandungan dan meliputi bidang ilmu dengan memuaskan.
(that this project is in acceptable form and content, and that a satisfactory knowledge of the field is covered by the project).

Nama Penyelia
(Name of Supervisor) : **ASSOC. PROF. DR. WAN ROZAINI SHEIK OSMAN**

Tandatangan
(Signature) : Rozaini Tarikh (Date) : 27/2/2011

Nama Penilai
(Name of Evaluator) : **MR. NURNASRAN PUTEH**

Tandatangan
(Signature) : [Signature] Tarikh (Date) : 22/2/2011

PERMISSION OF USE

In presenting this project in partial fulfillment of the requirements for a postgraduate degree from Universiti Utara Malaysia, I agree that the University Library may make it freely available for inspection. I further agree that permission for copying of this project in any manner, in whole or in part, for scholarly purpose may be granted by my supervisors or, in their absence by the Dean of Postgraduate Studies and Research.

It is understood that any copying or publication or use of this project or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my project. Requests for permission to copy or to make other use of materials in this thesis, in whole or in part, should be addressed to

Dean of Postgraduate Studies and Research

College of Arts and Sciences (CAS)

Universiti Utara Malaysia

06010 UUM Sintok

Kedah Darul Aman.

DEDICATION

.... To My Family

ABSTRACT

Mobile application has taken an immense impact on organizations as it is able to input data and speed up the business process. Nowadays, handset manufacturers, mobile network operators and suppliers of mobile operating systems are opening storefronts on-line in attempts to capitalize on growing consumer demand. This study looks at the development of a mobile application that enables the student to apply for official document issued from the official document office of Awang Had Salleh Graduate School of Art and Sciences UUM. Within the study, the system requirement of users was developed as well as the prototype development of the mobile application. Furthermore, a usability testing was conducted to inquire about the functionalities of the system. Results of the usability test and recommendations for future research on the same topic were provided.

ACKNOWLEDGEMENTS

In the Name of Allah, the Most Gracious and Most Merciful

First and foremost, all praise to Allah for providing me with the strength, perseverance, and wisdom to have this work done on time.

I would like express my deepest gratitude to my supervisor **Assoc. Prof. Dr. Wan Rozaini bt Sheik Osman** for her intellectual guidance and kind support given to me during the period of this research.

I also like to extend my sincere gratitude to everybody, who taught me in this program.

I would like to thank my husband and my family for everything they did and the love they showered on me. If not for their dedication and sacrifices, I would not have come up to this level in life.

Last but not least, I would like to acknowledge all my colleagues and friends, who kept this period of study as enjoyable as possible.

TABLE OF CONTENTS

PERMISSION OF USE	I
DEDICATION	II
ABSTRACT	III
ACKNOWLEDGEMENTS	IV
TABLE OF CONTENTS.....	V
LIST OF TABLES.....	VIII
LIST OF FIGURES.....	IX
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.1 Background of the Study	1
1.2 Application for Official Document	2
1.3 Problem Statement	3
1.4 Research Question.....	3
1.5 Research Objectives	4
1.6 Significant of the Study	4
1.7 Scope of the Study.....	4
1.8 Organization of the Study.....	5
CHAPTER TWO.....	6
LITERATURE REVIEW.....	6
2.0 Introduction.....	6
2.1 Mobile Technology	6
2.2 Mobile Applications	7
2.3 The Concept of WAP	8
2.4 Related Research	10
2.5 Summary.....	13
CHAPTER THREE	14
RESEARCH METHODOLOGY	14
3.0 Introduction.....	14
3.1 The Study Methodology	14
3.2 Research Methodology Steps.....	16
3.2.1 Awareness of problem.....	16
3.2.2: Suggestion	16

3.2.3: Evaluation and Testing.....	17
3.3.1 Information Gathering.....	18
3.3.2 Software Requirement Specification	19
3.3.3 Analyze and Design System.....	19
3.3.4 Build Prototype System.....	19
3.3.5 Testing and Evaluate the System.....	19
3.4 Summary	20
CHAPTER FOUR	21
SYSTEM ANALYSIS AND DESIGN.....	21
4.1 Introduction.....	21
4.2 Mobile-Based for Official Document (MAOD) Application Requirements	21
4.2.1 The MAOD Functional Requirement	21
4.2.2 The MAOD the Non-Functional Requirements list.....	23
4.3 System Architecture	24
4.4 Modeling of MAOD System.....	24
4.4.1 MAOD Use Case Diagram.....	25
4.4.2 MAOD Use Cases Description.....	27
4.4.3 MAOD Sequence Diagrams	31
4.4.4 MAOD Class Diagram.....	34
4.5 Prototype Implementation &Screen Shoot Explanation.....	35
4.6 Summary	43
CHAPTER FIVE	44
RESULT AND DATA ANALYSIS.....	44
5.1 Introduction.....	44
5.2 Functionality Testing Evaluation	44
5.3 Instriments of the survey.....	45
5.4 Respondents' Information.....	46
5.5 The Items Analysis.....	47
5.6 Summary.....	49
CHAPTER SIX	50
CONCLUSION	50
6.1 Introduction.....	50
6.2 Objective Achievements.....	50

6.3 Recommendation and Limitations.....51
REFERENCE52

LIST OF TABLES

Table 4.1: MAOD list of the functional Requirements	23
Table 4.2: The MOAD Non-Functional Requirements	24
Table 4.3: Perform Log in use case Description	28
Table 4.4: Sign up use case Description	29
Table 4.5: Manage Profile use case Description	30
Table 4.6: Apply for doc use case specification.	31
Table 5.1: Respondents' Profile	45
Table 5.2: User Perception of Usability	46

LIST OF FIGURES

Figure3.1: Research Methodology Steps	16
Figure 3.2: System Development Research Process Model	19
Figure 4.1: MAOD Architecture	25
Figure 4.2: MAOD Use Case Diagram	27
Figure 4.2: Log in Sequence Diagram	32
Figure 4.3: Sign up use Sequence Diagram	33
Figure 4.4: Apply for Doc Sequence Diagram	34
Figure 4.5: Manage Profile Sequence Diagram	35
Figure 4.6: MAOD Class Diagram	36
Figure 4.7: MAOD Main Page interface	38
Figure 4.8: MAOD Log In interface	39
Figure 4.9: Sign Up Page	40
Figure 4.10: Apply for Document page interface	41
Figure 4.11: Student Page Status	42
Figure 4.12: Student Page Status (Server Side)	43

CHAPTER ONE

INTRODUCTION

The primary explanatory view of this study is present in this chapter, the background of the study that explains the present efficiency of mobile technology in relation to this study. The problem statement is also stated, significance of the study and the scope of the study are also discuss therein.

1.1 Background of the Study

Mobile phones are no longer just an ordinary telephony tools, they have functionally transformed into a mini-computer, which made them mobile technology now. Zhifang, Xiopeng and Xiang, (2010) affirmed that, with the useful features that are added to the recent developed mobile technologies such as; higher processers, faster memories, and faster and easiest internet connection, they can be used for calling, surfing the internet, calling, chatting, and lot of fun activities.

The high rate of mobile technology functionality and their unique mobility has made them personal pal to human being; this could be clearly seen in the way mobile technologies are serving as a very vivid ground to many business industry, organizations, and different kind of age groups. Ho and Syu (2010) revealed that the

The contents of
the thesis is for
internal user
only

REFERENCE

- Abkda, M. A. A. (2009). Mobile-based application for Bus ticketing service (Master's Thesis, Universiti Utara Malaysia College of Art and Science (CAS), 2010).
From: http://ep3.uum.edu.my/1918/1/ABKDA_Mohammed_Ali_Akkounni.pdf
- Abdalma, K. A. (2009). Mobile hajj guide for Malaysian pilgrims (Master's Thesis, Universiti Utara Malaysia College of Art and Science (CAS), 2010).
- Ali H. (2009). Design of mobile tracking application for postgraduate office at UUM (Master's Thesis, Universiti Utara Malaysia College of Art and Science (CAS), 2010). From: http://ep3.uum.edu.my/1615/1/Nooreddin_Mansoor_Ali_Hmedat.pdf
- Al-zoubi, Q. M. I. (2009). Mobile-based system for university's events (Master's Thesis, Universiti Utara Malaysia College of Art and Science (CAS), 2010). From: http://ep3.uum.edu.my/1628/1/Qusay_Mohammad_AlZoubi_801087_Final_Project.pdf
- Arora, P. K., & Sharma, A. K. (1994). Global positioning technology and application. *IEEE*, 784- 787.
- Atle Refsdal, K. S. (2008). Extending UML Sequence Diagrams to Model Trust-dependent Behavior with the Aim to Support Risk Analysis. *Electronic Notes in Theoretical Computer Science*, 197(2): 15-29.
- Barclay, K., & Savage, J. (2004). *Object-Oriented Design with UML and Java*. Burlington, USA: Elsevier Butterworth-Heinemann.
- Bennett, S., McRobb, S., & farmer, R. (2002). *Object-oriented System Analysis and Design 2nd Edition*. UK, McGraw Hill.
- Chen, J., & Kinshuk, J. (2005). Mobile Technology in Educational Services. *Journal of Educational Multimedia and Hypermedia*, 14(1), 91-111.
- Carlsson, C., Carlsson, J., & Walden, P. (2005). Mobile Services for the Hospitality Industry. *Paper presented at the Thirteenth European Conference on Information Systems*, Regensburg, Germany.
- Clark, S. (2009). Austrian mobile and rail operators develop VDV-based NFC ticketing
From: <http://www.nearfieldcommunicationsworld.com/2009/01/27/3660/austrianmobile-and-rail-operators-develop-vdv-based-nfc-ticketing/>
- Cheverst K, Davies N., Mitchell K., & Friday A. (2000). Experiences of developing and deploying a context-aware tourist guide: The guide project. *International Conference on mobile computing and networking*, Boston, ACM.
- Chung, L., Nixon, B. A., Yu, E., & Mylopoulos, J. (1999). *Non-Functional Requirements in Software Engineering*. Kluwer Academic Publishing.

- Dankers, J., Garefalakis, T., Schaffelhofer, R., & Wright, T. (2002). Public key infrastructure in mobile systems. *Journal of Electronics and Communication Engineering*.
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *International Journal of Human-Computer Interaction*, 7(1), 57.
- Dennis, A., Wixom, B.H., & Tegarden, D. (2005). *System analysis and design with UML version 2.0: an object-oriented approach with UML*, 2nd edition. Hoboken, NJ: John Wiley and Sons, Inc
- El-Alfy, E.-S. M. (2005). A General Look at Building Applications for Mobile Devices. *IEEE Distributed Systems Online*, 6(9), 5
- EMTEL (1999). Automated Campus Hazard Notification 911. From: <http://www.emtel911.com/Emergencyelecommunications/pdf/SchoolCall911-Case-Study.pdf>.
- Guillaume, D. (2009). De Lijn' shows the advantages of travelling in groups. From: <http://www.duvalguillaume.com/news/tag/de-lijn>
- HandsOn (2010) The computerworld honors program. From: <http://cwhonors.org/viewCaseStudy2010.asp?NominationID=161&Username=gsho>
- Ho, H. Y. & Syu, L. Y. (2010). Uses and gratification of mobile application users. *Journal of international conference on electronic and information engineering*.1, 315 – 319.
- Hoffer, J. A., George, J., & Valacich, J. (2002). *Modern Systems Analysis and Design*. New Jersey: Prentice Hall.
- Holzinger, A. (2005). Usability Engineering Methods for Software Developers. *ACM*, 48, 4.
- IEEE STD 830. (1998) . IEEE Recommended practice for Software Requirements Specifications. From: <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=720574&isnumber=15571>
- Johan, k. 2004 information system analysis and design. From: <http://www.cs.toronto.edu/~jm/3405/slides2/sequence D.pdf>.
- Kalkbrenner, G., & Nebojsa, F. (2001). Campus Mobil: Mobile Services for Campus and Student needs. From: <http://ls12.cs.unidortmund.de/~kalkbren/campusmobil.pdf>

- Lavanya, J., Goh, K.W., Leow, Y.H., Chio, M.T.W., Prabakaran, K., Kim, E., Kim, Y., & Soh, C.B (2006). Distributed Personal Health Information Management System for Dermatology at the Homes for Senior Citizens. *Proceedings of the 28th IEEE EMBS Annual International Conference*. 6312-6315.
- Laudon, K. C., & Laudon, J. P. (1995). *Management Information Systems: Organization and Technology*: Prentice-Hall, Inc. Upper Saddle River, NJ, USA.
- Lewis, J. R. (1993). *IBM computer usability satisfaction questionnaires: Psychometric evaluation and instructions for use* (Tech. Report 54.786). Boca Raton, FL: IBM Corp. <http://drjim.0catch.com/usabqtr.pdf>
- Lin, X. H., Choong, -Y. Y., & Salvendy, G. (1997). A Proposed Index of Usability: A Method for Comparing the Relative Usability of Different Software Systems. *Behaviour & Information Technology*, 16, 267-278.
- Lund, A. M. (2001). Measuring Usability with the USE Questionnaire. From: <http://hcibib.org/perlman/question.cgi?form=USE>
- Mallat, N., Rossi M., Tuunainen V. K., & Oormi A. (2008). An empirical investigation of mobile ticketing service adoption in public transportation. *Journal of Pers ubiquity compact*, 12, 57-65.
- Martin, F., & Kendall, S. (2000). *UML Distilled: brief guide to the standard object modeling language* (2nd ed.). Boston, USA: Addison-Wesley Longman Publishing Co.
- Muller, J., Lenhart T., Henrici D., Hillenbrand M., Muller P. (2004). Developing web application for mobile devices. *Distributed Frameworks for Multimedia Applications*, 346-350.
- Nilas, P., Sueset, T., & Muguruma, K. (2004). A PDA-based high-level human-robot, interaction. *Proceedings of IEEE conference on Robotics, Automation and Mechatronics*. 3, 1158 -1163.
- Nielsen, J., & Landauer, T. K. (1993). *A mathematical model of the finding of usability problems*. Proceedings of INTERCHI 1993, 206-213. New York, USA: ACM.
- Nielson, J. (2006). *Quantitative Studies : How many users to test Alertbox*. Retrieved July 03, 2010, from useit: http://www.useit.com/alertbox/quantitative_testing.html
- Nunamaker, J., Chen, M., & Purdin, T. (1991). System Development in Information Systems Research. *Journal of Management Information Systems*, 7(3), 89 –106.

- Nurul Zakiah, A., Ab. Razaq, C H. & Halina, M. D. (2009). Three layers design guideline for mobile application. *Journal of international conference on information management and engineering*. 422- 431.
- Phyoung, J. K. & Young J. N. (2003). Mobile agent system architecture for supporting mobile market application service in mobile computing environment. *Proceedings of the international conference on Geometric modeling and graphics (GMAG '03)*.
- Peter N. & Friedhelm N. (2005). Differential usability of paper-based and computerbased work documents for control room operators in the chemical process industry. *Journal of Human factors in design, safety, & management*, 3, 299-314.
- Online English WikiAnswers (Entry: official letter, Retrieved on the 8 October 2010, from; (http://wiki.answers.com/Q/What_is_formal_and_informal_letter))
- Schei, E., & Fritzner, T. C. (2002). MOWAHS: A Study of Applications for Mobile Work.
- Turban, E., Leidner, D., McLean, E., & Wetherbe, J. (2007). *Information Technology for Management: Transforming Organizations in the Digital Economy (6th ed.)*: John Wiley & Sons.
- Vaishnavi, V. & Kuechler, W. (2008). *Design Science Research Methods and Patterns: Innovating Information and Communication Technology*. Auerbach Publications.
- What-Is.Net (2006). What is a Mobile Technology? Retrieved on the 6th October 2010, from; (<http://www.what-isnetinfo/what-is-a-pda.html?gclid=CJ2toePA-CFQmJTAod3SWnYA>)
- Zhifang, L., Xiopeng, G., Xiang, L. (2010). Adaptive random testing of mobile application. *Journal of International conference on computer engineering and technology*. 2, 297 – 301.