MOBILE TRANSLATOR GUIDE FOR TOURISM DESTINATION IN LANGKAWI (MTGTDL)

ADEL AHMED MOHAMMED ALHAJJ

UNIVERSITI UTARA MALAYSIA
2012

MOBILE TRANSLATOR GUIDE FOR TOURISM DESTINATION IN LANGKAWI (MTGTDL)

A project submitted to Dean of Research and Postgraduate Studies Office in partial Fulfillment of the requirement for the degree
Master of Science (Information Technology)
Universiti Utara Malaysia

By
Adel Ahmed Mohammed Al-hajj

© Adel Ahmed M.Alhajj. May 2012. All rights reserved

DEAN OF AWANG HAD SALLEH GRADUATE SCHOOL
UNIVERSITI UTARA MALAYSIA

PERMISSION TO 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 thesis in any manner, in whole or in part, for scholarly purpose may be granted by my supervisor(s) or, in their absence by the Dean of Awang Had Salleh Graduate School of Arts and Sciences. 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 project, in whole or in part, should be addressed to

Dean of Awang Had Salleh Graduate School College of Arts and Sciences
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman
Malaysia

Abstract

Mobile devices can be used anywhere and anytime. Relying on this characteristic, this search aims to introduce mobile electronic translator guide for tourism destination in Langkawi in order to ease the communication between the who are talking in different languages to have easy access to places of interest in Langkawi and facilitate the user to use this application without internet. Facilitating or enhancing the communication leads to convergence of cultures. As long as the research deals with Malaysians and tourists who talk Arabic language, the prototype created will be useful for both sides where. Learning common phrases will urge users to have information about a specific language

Dedication

إهداء

أهدي هذا العمل المتواضع

إلى أبي الذي لم يبخل علي يوماً بشيء الذي علمني النجاح والصبر,,,,

إلى أمي التي زودتني بالحنان والمحبة,,,,,

إلى من وقفت بجانبي في السرا ء والضرا ء و تحملت معاناة لغربه من أجلي ,,, زوجتي الحبيبه

إلى اخي الغالي الذي كان عونا لي دائما في مسيرة دراستي مرادو,,,,,

إلى من وقف بجانبي في دراستي ولم يبخل عليا بنصائحه الغاليه د. خالد ناصر الحاج ,,,,,,,

إلى من أخي الغالي من دعمني بنصائحه نبيل,,,,,

إلى الذي انسا وحشتي ابني الغالي عمار,,,,,

إلى أهلي وأحبابي الذين لم ينسوني في غربتي ,,,,,,

عادل أحمد محمد الحاج

Acknowledgement

Praise to Allah for his guidance and blessing for giving me the strength and perseverance to complete this project.

I would foremost like to thank my parents, for providing me with the opportunity to pursue my goals for their love and affection and a great effect for achieving my study.

I would like to express my deep and sincere gratitude to my supervisor, **Dr. Khairudin Kasiran .** His wide knowledge and his logical way of thinking has been of great value for me. His encouragement and personal guidance has provided a good basis for the present thesis.

I would like to thank my second supervisor, **Dr. Abdul Jaleel Kehinde Shittu** for his guidance and constant motivation that has enabled me to complete my project work.

I owe my loving thanks to my wife and my son. They have lost a lot due to my study abroad. Without their encouragement and understanding, it would have been impossible for me to finish this study.

I would like to thanks my big brother Murad for constant motivation that has enabled me to complete my project work and my special gratitude is due to my brothers, sisters and friends.

Table of Contents

PERMISSION TO USE ..... **I**
Abstract ..... **II**
Dedication ..... **III**
Acknowledgement ..... **IV**
CHAPTER ONE **1**
INTRODUCTION **1**
1.0 Introduction 1
1.1 Research Problem 3
1.2 Research Questions 4
1.3 Research Objectives 4
1.4 Research Scope 5
1.5 Research Significance 5
1.6 Summary 6
CHAPTER TWO **7**
LITERATURE REVIEW **7**
2.1 Tourism M-commerce overview 7
2.2 M-Tourism 8
2.3 E-Tourism 8
2.4 ICT for Tourism 9
2.5 The impact of ICT on Tourism 10
2.6 Cultural Differences 11
2.7 Mobile Technologies 13
2.8 Mobile phone 13
2.9 Mobile Usability 16
1-Meet users' needs quickly. 17
2.10 Mobile Applications 19
2.11 Mobile Services 20
2.12 Mobile Guide Service 21

2.13 Android 22
2.14 Java 2 Platform, Micro Edition (J2ME) 23
2.15 Architecture of J2ME 24
CHAPTER THREE **26**
RESEARCH METHODOLOGY **26**
3.1 Introduction 26
3.2 Awareness of Problem 29
3.2.1 Data collection 29
3.2.2 Interview 30
3.3 Suggestion 30
3.4 Development 31
3.4.1 System Development 31
3.5 Evaluation 31
3.5.1 Questionnaire 32
3.6 Conclusion 34
CHAPTER FOUR **35**
SYSTEMS ANALYSIS **35**
4.1 Introduction 35
4.2 Requirements 35
4.2.1 Functional Requirements 36
4.2.2 Non- Functional Requirements 37
4.2.3 Hardware and Software Requirements 38
4.3 System Analysis 38
4.4 Sequence Diagram 40
4.4.1 Sequence Diagram for Hotels By Listing 41
4.4.2 Sequence Diagram for Restaurants By Listing 42
4.4.3 Sequence Diagram for Places of Tourism By Listing 43
4.4.4 Sequence Diagram Common Phrase for Greeted By Listing 44
4.4.5 Sequence Diagram Common Phrase for Emergency By Listing 45
4.4.6 Sequence Diagram Common Phrase for Health Care by Listing 46
4.4.7 Sequence Diagram Common Phrase for currency conversion by Listing. 47
4.4.8 Sequence Diagram Interface for Hotels in Arabic by Listing 48
4.4.9 Sequence Diagram Interface for Restaurants in Arabic by Listing 49

4.4.10 Sequence Diagram Interface for places of tourism in Arabic by Listing ,,,

CHAPTER SIX **77**
CONCLUSIONS **77**
6.1 Introduction 77
6.2 Conclusion of the study 77
6.3 Study contribution 78
6.4 Future works 78
6.5 Recommendation 78
7.0 REFERENCES **79**

List of Tables

Table 3.1 References factors 33
Table 4.1 Functional Requirement 36
Table 4.2 Non-Functional Requirement 37
Table 4.3 Hardware and Software Requirements 38
Table 5.1 Shows descriptive usefulness. 68
Table 5.2 Shows descriptive Ease of Use. 69
Table 5.3 Shows descriptive Flexibility. 70
Table5.4 Shows descriptive Satisfaction. 71
Table5.5 Shows descriptive of all usability. 73

List of Figures

Figure 2.1 E-Tourism Concept and E-Tourism Domains 11
Figure 2.2 Consumer Services 14
Figure 2.3 The New Generation of Mobile Phones 15
Figure 2.4 Android system architecture 22
Figure 2.5 Structure of J2ME system 24
Figure 3.1 The general methodology of the design science research 28
Figure 4.1 Use Case Diagram for the MTGTDL 39
Figure 4.2 Sequence Diagram for Hotels By Listing 41
Figure 4.3 Sequence Diagram for Restaurants By Listing 42
Figure 4.4 Sequence Diagram for Places of Tourism By Listing 43
Figure 4.5 Sequence Diagram Common Phrase for Greeted By Listing 44
Figure 4.6 Sequence Diagram Common Phrase for Emergency By Listing 45
Figure 4.7 Sequence Diagram Common Phrase for Health Care by Listing 46
Figure 4.8 Sequence Diagram Common Phrase for currency conversion by Listing 47
Figure 4.9 Sequence Diagram Interface for Hotels in Arabic by Listing 48
Figure 4.10 Sequence Diagram Interface for Restaurants in Arabic by Listing 49
Figure 4.11 Sequence Diagram Interface for places of tourism in Arabic by Listing 50
Figure 4.12 Sequence Diagram Interface Common Phrase Arabic for Greeted in Arabic by Listing 51
Figure 4.13 Sequence Diagram Interface Common Phrase Arabic for Emergency in Arabic by Listing 52
Figure 4.14 Sequence Diagram Interface Common Phrase Arabic for Health Care in Arabic by Listing 53
Figure 4.15 Sequence Diagram Interface Common Phrase Arabic

for currency conversion in Arabic by Listing 54
Figure 4.16 Sequence Diagram Interface Hotels Star by Searching 55
Figure 4.17 Sequence Diagram Interface Search hotels by places 56
Figure 4.18 Sequence Diagram Interface Search hotels by Type of Accommodation (Motels) 57
Figure 4.19 Sequence Diagram Interface Search hotels by Type of Accommodation (Chalet) 58
Figure 4.20 Sequence Diagram Interface Search Malaysia Restaurants 59
Figure 4.21 Sequence Diagram Interface Search Arabic Restaurants 60
Figure 4.22 Sequence Diagram Interface Search Place of Tourism (Cable Car) 61
Figure 4.23 Home Page for MTGTDL 62
Figure 4.24 By Search Page for MTGTDL 63
Figure 4.25 Show list Page for MTGTDL 64
Figure 5.1 Descriptive Statistic Mean for Usefulness 69
Figure 5.2 Descriptive Statistic Mean for Ease of Use 70
Figure 5.3 Descriptive Statistic Mean for Flexibility 71
Figure 5.4 Descriptive Statistic Mean for Satisfaction 72
Figure 5.5 Respondent Profile (Age) 74
Figure 5.6 Respondent Profile (Nationality) 75
Figure 5.7 Respondent Profile (Marital Status) 75
Figure 5.8 Respondent Profile (Using Mobile Phone) 76

List of Appendices

Appendix A Interfaces The Prototype 84

CHAPTER ONE

INTRODUCTION

1.0 Introduction

Mobile devices were one of the greatest technology have that been discovered. Certainly, the mobile devices are used and involved in many fields and services. One of these fields is the tourism service. The services of mobile tourism has become a vital tool for supporting tourists in the world (Tan, Goh, Theng and Foo, 2007).

Tourists have already adopted many new technologies, e.g.web, mobile phones and digital cameras. This suggests that there are opportunities for new tourist systems that fit tourist practice (Brown & Chalmers, 2003).

Use of information technology became a key strategy to enhance and improve benefits of competitions in all parts of the world. In addition, the information technology are very important in the development of hospitality services in order to cope with the wishes and needs of tourists (Lam et al, 2007; Wang and Qualls,2007; Duffy,2010).

Mobile devices are used to serve the interactions between local people and tourists (Lee and Watson, 1993; Munro, 1998). Although tourism presents a number of barriers to introduce new technology in particular the need for devices to be sufficiently mobile tourists have already adopted many new technologies, e.g. the web, mobile phones and digital cameras. This suggests that there are opportunities for new tourist systems that fit tourist practice (Brown & Chalmers, 2003).

The contents of the thesis is for internal user only

7.0 REFERENCES

Aken, V., J, & K. (2007). Design Science and Organization Development Interventions: Aligning Business and Humanistic Values. *The Journal of Applied Behavioral Science*.

Al-adaileh, & R. (2008). Essentials of Management information System.

Ali, M. A. T. A., Berri, J., & Zemerly, M. J. (2008). *Context aware mobile Muslim companion*. Paper presented at the CSTST '08 Proceedings of the 5th international conference on Soft computing as transdisciplinary science and technology. http://dl.acm.org/citation.cfm?id=1456335

Andersen, K. V., & Henriksen, H. Z. (2006). *Impact analysis of e-tourism in Bhutan*.

Ardakan, M. A., & Mohajeri, K. (2009). Applying Design Research Method to IT Performance Management: Forming a New Solution. *Applied Sciences, 9*(7), 1227-1237.

Brown, B., & Chalmers, M. (2003). Tourism and mobile technology. *ECSCW'03 Proceedings of the eighth conference on European Conference on Computer Supported Cooperative Work*, 335 - 354.

Bucolo, S. (2004). *Understanding Cross Cultural Differences During Interaction Within Immersive Virtual Environments*. Paper presented at the Virtual Reality Continuum and its Applications in Industry, Nanyang, Singapore. http://eprints.qut.edu.au/24984/

Buhali, & D. (2003). E-Tourism Information Technology for Strategic Tourism

Buhalis, & Dimitrios. (1998). *Strategic use of information technologies in the tourism industry*. Retrieved from http://epubs.surrey.ac.uk/1123/

Butler. (2011). Changing the mobile landscape. *IEEE Computer Society, 10*(1), 4-7.

Cheverst, K., Mitchell, K., & Davies, N. (2002). The Role of. Adaptive Hypermedia in a Context-Aware Tourist Guide. *Communications of the ACM - The Adaptive Web 45*, 47 - 51.

Computing, M. (2005). Retrieved date 5-3-2009 from http://searchmobilecomputing.techtarget.com/sDefinition/0,,sid40_gci213337,00.html

Cramton, C. D. (2001). The Mutual Knowledge Problem and Its Consequences for Dispersed Collaboration. *Organization Science, 12*(3), 346-371.

Daniel. (2006). *Usability guidelines for designing mobile learning portals*. Paper presented at the Mobile technology applications systems. http://www.mendeley.com/research/usability-guidelines-designing-mobile-learning-portals/

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *Management Information Systems Research Center, University of Minnesota, 13*(3), 319 of 319-340.

Dunckley, Smit, & Howard. (1999). Designing for Shared Interfaces with diverse user groups. 630.636.

Garretson. (October 13,1999). Palm Computing, Symbian to Team. Retrieved date 3-3-2009 from Computerworld http://www.computerworld.com/cwi/story/0,1199,NAV47_STO29169.00.html(current January 20,2002)

Herbsleb, J. D., Mockus, A., Finholt, T. A., & E, R. (2000). Distance, dependencies, and delay in a global collaboration. *CSCW '00 Proceedings of the 2000 ACM conference on Computer supported cooperative work*, 319 - 328.

Herman, L. (1996). Towards effective usability evaluation in Asia: cross-cultural differences. *IEEE*, 135-136.

Herstad , J., D.V, Thanh, & S.Kristoffersen. (1998). Wireless Markup Language as a Framework for Interaction with Mobile Computing Communication Devices.

Hornbæk, K., & Law, E. L.-C. (2007). *Meta-analysis of correlations among usability measures*. Paper presented at the on Human factors in computing systems. http://dl.acm.org/citation.cfm?id=1240722

Hussain, A., & Ferneley, E. (2008). Usability metric for mobile application: a goal question metric (GQM) approach. *iiWAS '08 Proceedings of the 10th International Conference on Information Integration and Web-based Applications & Services*, 567-570.

IBM. (2006). Mobile Content Services: Delivering next-generation content servicecapabilities, from Retrieved date 4-4-2009 from http://www.03.ibm.com/industries/media /doc/content/bin/Ped_8Mobile Content Services_White_Paper_09_2006.pdf

Jerome, & M., D. (2008). *Android: A Programmer's Guide*. Chicago: United States of America: McGraw- Hill Companies.

Kayan, S., Fussell, S. R., & Setlock, L. D. (2006). Cultural differences in the use of

instant messaging in Asia and North America. *CSCW '06 Proceedings of the 2006 20th anniversary conference on Computer supported cooperative work*, 525-528.

Kim, J. H., & Lee, K. P. (2005). *Cultural difference and mobile phone interface design: icon recognition according to level of abstraction* Paper presented at the Human computer interaction with mobile devices & services.

Koller, A., Foster, G., & Wright, M. (2008). *Java Micro Edition and Adobe Flash Lite for arcade-style mobile phone game development: a comparative study*. Paper presented at the conference of the South African Institute of Computer Scientists and Information Technologists on IT research in developing countries: riding the wave of technology.

Kothari , c. (1985). Research Methodology: Methods and Techniques .

Lam, T., Cho, V., & Qu, H. (2007). A study of hotel employee behavioral intentions towards adoption of information technology. *International Journal of Hospitality Management*, *26*(1), 49–65.

Lee, J. R. E., & Watson, D. R. Final Report to the Plan Urbain: Public Space as an Interactional Order. *Manchester, Department of Sociology, University of Manchester*.

Lee, S., & Connolly, D. J. (2010). The impact of IT news on hospitality firm value using cumulative abnormal returns (CARs). *International Journal of Hospitality Management*, *29*(3), 354–362.

LEUNG, C. H., CHAN, Y. Y., & CHAN, C. S. C. (2003). *Analysis of mobile commerce market in Hong Kong*. Paper presented at the ICEC '03 Proceedings of the 5th international conference on Electronic commerce. http://dl.acm.org/citation.cfm?id=948058

Lewis, J. R. (1995). IBM Computer Usability Satisfaction Questionnaires: Psychometric Evaluation and Instructions for Use. *Intrinational Jurnal of Human-computer Interaction, 7*(1), 57 -78.

Li, S., & Knudsen, J. (2005). *Beginning J2ME: From Novice to Professiona* (3rd ed.).

Lund, A. M. (2001). Measuring Usability with the USE Questionnaire. STC Usability SIG Newsletter. Retrieved from WWW.HCIBIB.ORG on 22/09/2009.

McDougall, P. (2008). Microsoft Adds Adobe's Flash Lite to Windows Mobile. InformationWeek. retrieved 10-January-2009 from http://www.informationweek.com/news/mobility/messaging/showArticle.jhtml articleID=206904112.

Micro Soft, c. (2010). Marketplace for Mobile. Retrieved May 29, 2010, from

windowsphone:http://developer.windowsphone.com/resources/enus/marketplacep rohibitedAp plicationTypes.Pd.

Morales, C., & Nelson, D. (2007). Mobile 3D Game Development: From Start to Market (Charles River Media Game Development.

Munro, A. (1998). *Fringe benefits: an ethnographic study of social navigation at the Edinburgh Festival. Stockholm*.

Nations, U. (2008). Paper presented at the Conference on Trade and Development. Available at: http://www.unctad.org/Templates/StartPage.asp?intItemID=2068 [Accessed September 15th 2008]

Nielsen, J. (August 25, 2003). Usability 101: Introduction to Usability. Alertbox. Retrieved date 2-2-2009 from http://www.useit.com/alertbox/20030825.html.

Nielsen , J. (June 26, 2006). Studies: How Many Users to Test. Alertbox. Retrieved date 2-2-2009 from http://www.useit.com/alertbox/quantitative_testing.html

Ozkirimli, U. (2000). Theories of Nationalism: A Critical Introduction.

PC, P. (2007). In Encyclopædia Britannica. Retrieved date 6-4-2009 from Encyclopedia Britannica Online: http://www.britannica.com/eb/article-9374440

Ren, W., & Yu, D. (2011). *Research on encryption technology based on J2ME socket network communication*. Paper presented at the Mechatronic Science, Electric Engineering and Computer (MEC), 2011 International Conference on Mechatronic Science, Electric Engineering and Computer (MEC). http://ieeexplore.ieee.org/xpl/articleDetails.jsp?reload=true&arnumber=6025874&contentType=Conference+Publications

Rhodes, G. (2006). *Macromedia Flash Professional 8 Game Development (Charles River Media Game Development)*

Salwani, M. I., Marthandan, G., Norzaidi, M. D., & Chong, S. C. (2009). *E-commerce usage and business performance in the Malaysian tourism sector: empirical analysis* (Vol. 17).

Schmidt, B. N., A., Poslad, Zip, A. . (2001). Personalized and Location-based MobileTourism Services ,Keluvords: mobile users.

Sreenivasan, J., & Noor, M. (2010). A conceptual framework on mobile commerce acceptance and usage among Malaysian consumers. *WSEAS Transactions on Information Science and Applications, 7* (5), 661-670

Sreenivasan, J., & Noor, M. N. M. (2010). A conceptual framework on mobile commerce acceptance and usage among Malaysian consumers: the influence of location, privacy, trust and purchasing power. *WSEAS Transactions on Information Science and Applications, 7*(5), 661-670.

Tan, E. M.-Y., Goh, D. H.-L., Theng, Y.-L., & Foo, S. (2007). *An analysis of services for the mobile tourist*. Paper presented at the Mobility '07 Proceedings of the 4th international conference on mobile technology, applications, and systems and the 1st international symposium on Computer human interaction in mobile technology. http://dl.acm.org/citation.cfm?id=1378142

Vaishnavi, V., & Kuechler, B. (2004). Design Research in information system. Retrieved date 7-January -2009 from http://home.aisnet.org/displaycommon.cfm?an=1&subarticlenbr=279

Vaishnavi, V. K., & Jr, W. K. (2008). Design Science Research Methods and Patterns: Innovating Information and Communication Technology.

Werthner, H., & Ricci, F. (2004). E-Commerce and Tourism. Communications of the ACM. *47*(12), 101-105.

Zhang, X. (2009). *Design of mobile electronic commerce system based on J2ME* Paper presented at the International Conference on Communication Software and Networks. http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=05076974