

Mobile Reservation System for Hotels in Malaysia

A thesis submitted to the Faculty of Information Technology in partial fulfillment of the requirements for the degree Master of Science (Information and Communication Technology)

By

Nojeera Malee

(Matric No: 86138)

© Nojeera Malee, 2009. All rights reserved.

PK
6/5/09
11/6
11/10/09
11/10/09



**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, certify that)

NOJEERA MALEE
(86138)

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

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

MOBILE RESERVATION SYSTEM FOR HOTELS IN MALAYSIA

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

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

Nama Penyelia Utama
(Name of Main Supervisor): **MR. MOHD SAMSU SAJAT**

Tandatangan
(Signature) :

Tarikh
(Date) :

15/11/09

PERMISSION TO USE

In presenting this thesis 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 the Graduate School. It is understood that any copying or publication or use of this thesis 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 thesis.

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 Graduate School
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman.

ABSTRACT

Wireless Networks and mobile computing had been explored growth up, millions of users and explores its usage in many ways depend on their desire to fulfill their needs. As can see for instance a traveler (tourist or a businessman) has to travel quite frequently to the different places around the world. One of the technologies used called WAP (Wireless Application Protocol) has enabled mobile service providers to offer another step forward the promise of mobility to its customers in a very useful way. Hotels operate around the clock or 24 hours a day to fulfill traveler's demand and providing an excellent service to their customers in all areas. It is envisaged that the objectives of my paper are:

- i. to design the system requirements for Mobile Hotel Reservation System (MHRS) for Hotels in Malaysia that will include all information of hotels;
- ii. to develop MHRS in Malaysia which will help tourists find accommodations, hotels and any related information from the convenience of their mobile devices;
- iii. to propose new and useful system or tools by the use of mobile devices for hotels reservation in Malaysia; and
- iv. to facilitate travelers with a self service system for hotel reservation.

As travelers are always on the move, so should be with hoteliers to adopt new technologies to get a hold of customers' attention and make it easy and satisfaction for them.

ACKNOWLEDGEMENT

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

My most profound thankfulness goes to my supervisor Mr. Mohd Samsu bin Sajat for his kindness advices and creativity encouraging guidance to this study. Moreover, I would like to thank deeply to Dr. Nur Laily for her guidance and support to encourage me to complete my final project or this study.

Special appreciation also goes to my friends and my Master degree of ICT seniors who had given me emotional and physical support during my study.

Finally, I wish to thank all my dearest family members, especially my father, mother, and brothers.

TABLE OF CONTENTS

PERMISSION TO USE	i
ABSTRACT	ii
ACNOWLEDGEMENT	iii
TABLE OF CONTENTS	v
LIST OF TEBLES	ix
LIST OF FIGURES	x
LIST OF ABBREVIATIONS	xi

LIST OF CONTENT

CHAPTER 1 INTRODUCTION	1
1.1 Introduction	1
1.2 Problem Statement	2
1.3 Research Question	3
1.4 Research Objectives	3
1.5 Scope and Limitation	4
1.6 Significant of the Study	4
1.7 Organization of Report	4
1.8 Summary	5
CHAPTER 2 LITERATURE REVIEW	7
2.1 Introduction	7
2.2 History of WAP	7
2.3 Wireless Application Protocol	8
2.3.1 Language and Tools for Content Development	10
2.3.2 Architecture	12
2.3.2.1 Architecture of WAP Gateway	13
2.3.2.2 User Interfaces	16
2.3.2.2.1 Input Design	17

2.3.2.2.2 Output Design	18
2.4 Hotel and Management	18
2.4.1 Front Office	19
2.4.2 Reservation System and Operation	19
2.5 Current Technology for Hotel Reservation	20
2.5.1 Property Management System	20
2.5.2 Web Service	20
2.5.3 Weakness of Current Reservation System	21
2.6 Mobile Reservation System	22
2.7 Previous Related Works	23
2.8 Conclusion	29
CHAPTER 3 RESEARCH METHODOLOGY	31
3.1 Introduction	31
3.2 Step 1: Awareness of Problem	31
3.2.1 Sampling Procedures	32
3.3 Step 2: Suggestion	33
3.4 Step 3: Development	34
3.4.1 System Design	34
3.4.2 Mobile Hotel Reservation Functional Requirements	35
3.4.3 Mobile Hotel Reservation Software Requirements	35
3.4.4 Non Functional Requirement	36
3.4.5 Use case Diagram for Mobile Hotel Reservation System	36

3.4.6 System Implement	37
3.4.7 Testing	38
3.4.8 System Maintenance	38
3.5 System Evaluation	39
3.6 Conclusion	39
3.7 Summary	40
CHAPTER 4 FINDING AND RESULT	42
4.1 Introduction	42
4.2 Requirements Gathering	42
4.2.1 Fieldwork/ Data Collection	44
4.2.1.1 Section A: Demographic Information	44
4.2.1.1.1 Gender	44
4.2.1.1.2 Type of Tourists	45
4.2.1.1.3 Age	46
4.2.1.1.4 Income	47
4.2.1.2 Section B: Behavior on Mobile Usage upon WAP	49
4.2.1.2.1 Mobile (WAP)	49
4.2.1.2.2 Mobile (WAP Enabled)	50
4.2. 1.2.3 Information Access Usage	52
4.2.1.3 Section C: Users Attitude and Experience of Hotel Reservation	54
4.2.1.3.1 The Frequent of Travel	54
4.2.1.3.2 Hotel Booking Procedures	57
4.2.1.3.3 Problem Facing	58
4.2.1.4 Section D: Users idea toward using Mobile Phone (WAP) for Hotel Reservation	60

4.2.1.4.1 The use of Mobile Phone (WAP)	60
4.2.1.4.2 Hotel Booking Criterion	61
4.2.1.4.3 Hotel Booking via Mobile Phone Idea	64
4.3 Structuring Prototype Requirements	65
4.3.1 System Prototype	66
4.3.2 System's Screen Capture	66
4.3.2.1 User Manual	66
4.3.2.1.1 Welcome Page	66
4.3.2.1.2 Destination Page	67
4.3.2.1.3 Hotel Information Page	68
4.3.2.1.4 Reservation Information Page	69
4.3.2.1.5 Room Information Page	70
4.3.2.1.6 Credit Information Page	71
4.3.3 System Evaluation	75
4.3.3.1 System Content	76
4.3.3.2 System Design	77
4.3.4 System Requirement	80
4.4 Summary	80
CHAPTER 5 CONCLUSION	81
5.1 Introduction	81
5.2 Discussion	81
5.3 Contribution of Study	85
5.4 Future Studies	85
5.5 Conclusion	86
References	87
Appendix A	92
Appendix B	97

LIST OF TABLES

Table 3.1 List of Software	35
Table 4.1 Gender Compositions of Respondents	45
Table 4.2 Type of Tourists Composition of Respondents	45
Table 4.3 Age Composition of Respondents	47
Table 4.4 Income Composition of Respondents	48
Table 4.5 Mobile Owners Composition of Respondents	49
Table 4.6 WAP Enabled Composition of Respondents	50
Table 4.7 WAP Enabled Usage Composition of Respondents	51
Table 4.8 WAP Enabled Usage Composition of Respondents	51
Table 4.9 Information Access Composition of Respondents	52
Table 4.10 Frequency Travel Composition of Respondents	54
Table 4.11 Hotel Booking Composition of Respondents	56
Table 4.12 Last Experience Composition of Respondents	57
Table 4.13 Problem Composition of Respondents	59
Table 4.14 Make use WAP in Mobile	60
Table 4.15 Importance Points of view toward Hotel booking Composition of Respondents	62
Table 4.16 Importance Points of view toward Hotel booking via Mobile Composition of Respondents	63
Table 4.17 Identification	76
Table 4.18 User expectations	76

Table 4.19 Relevant information for Hotel Reservation	76
Table 4.20 System Objectives	77
Table 4.21 System fulfillment	77
Table 4.22 System feedback	78
Table 4.23 System Helpful	78
Table 4.24 System User friendly, easy to be used, complicated	79
Table 4.25 Information of each hotel in Malaysia	79
Table 4.26 Time Consuming	79
Table 4.27 overall satisfaction with system	80

LIST OF FIGURES

Figure 2.1: WAP Transaction	10
Figure 2.2: WAP-Enabled Devices	10
Figure 2.3: WAP Architecture	11
Figure 2.4: Messaging Interface	13
Figure 2.5: WAP Gateway	13
Figure 2.6: WAP Program Model	15
Figure 2.7: WAP Content in Compact Binary	16
Figure 2.8: Sample of Web Site First World Hotel Booking Online	22
Figure 2.9: The proposed or related work of Hotel Reservation	24
Figure 2.10: Data Flow in the Reservation Module	27
Figure 2.11: View of the First-card of WAP enables (IHR) Intelligent Hotel Portal	27
Figure 2.12: WAP launched by hotels.com	28
Figure 3.1 Research Design Methodology	31
Figure 3.2: Use case Diagram for the Mobile Hotel Reservation for Tourist and Local People	37
Figure 4.1: Gender Compositions of Respondents	45
Figure 4.2: Type of Tourists Composition of Respondents	46
Figure 4.3: Age Composition of Respondents	47
Figure 4.4: Income Composition of Respondents	48
Figure 4.5: Mobile Owner Composition of Respondents	49
Figure 4.6: WAP enabled Composition of Respondents	50

Figure 4.7: Access WAP enabled Composition of Respondents	51
Figure 4.8: WAP enabled Usage Composition of Respondents	52
Figure 4.9: Frequency Travel Composition of Respondents	55
Figure 4.10: Last Experience Composition of Respondents	58
Figure 4.11: WAP Usages Composition of Respondents	61
Figure 4.12: Idea of proposed hotel booking via mobile phone by using WAP Composition of Respondents	65
Figure 4.13: Welcome Page	67
Figure 4.14: Destination page	68
Figure 4.15: Hotel Information Page	69
Figure 4.16: Reservation information application page	70
Figure 4.17: Room information application page	71
Figure 4.18: Payment page	72
Figure 4.19: End page	73
Figure 4.20: Error page	74
Figure 4.21: Message prompt up if incomplete information	75

LIST OF ABBREVIATIONS

AIML = Artificial Intelligence Markup Language

GPRS = General packet radio service

HTML = Hyper Text Markup Language

IHR = Intelligent Hotel Portal

MHRS = Mobile Hotel Reservation System

PMS = Property Management System

OMA = Open Mobile Alliance

SDLC = Systems Development Life Cycle

SPSS = Statistical Package for Social Sciences

UPR = Uniform Resource Locator

UML = The Unified Modeling Language

XSP = extensible Server Pages

XML = eXtended Markup Language

XHTML = Extensible Hypertext Markup Language

WAP = Wireless Application Protocol

WDP = WAP datagram protocol

WTP = WAP transaction protocol

WML = Wireless Markup Language

WTLS = the Wireless Transport Layer Security

WWW = World Wide Web

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Today world Internet or Web service technology becomes important for living life to provide many kinds of services that facilitate the users to fulfill their needs. Users can search for any information, do reservation on any hotels or airline, or do online shopping etc. but still it is rather difficult to use and often require service consumers to spend too much time manually browsing and selecting service descriptions (Crasso, 2008).

WAP (Wireless Application Protocol) defined as a worldwide standard for the delivery and presentation of wireless information to mobile phones and other wireless devices. As the world are moving towards a net-centric world, where Internet is becoming a world environment, along with the physical environment which acquires information and knowledge from Internet, WAP had been designed to enable the user to access those information via mobile phones in a small display and limited keys on the keypad (Talukder, 2005). Frick (1999) said that WAP devices have a variety of interfaces; output can be displayed as text, formatted text, or graphics. Input is provided by touch screens and/or buttons. Moreover, WAP is an application environment and a set of communication protocols for wireless devices designed to give manufacturer,

The contents of
the thesis is for
internal user
only

References

- Anckar, B., Olofsson, S. & Walden, P. (2001) Overcoming Online Booking Barriers with A Software Agent Approach. Global Co-Operation in the New Millennium. Bled, Slovenia.
- Baloch, H.Z, (2003). "ONLINE Intelligent HOTEL RESERVATION (IHR) USING_WAP-ENABLED MOBILE DEVICES" Member of IEEE". Faculty of Information Science and Technology. Multimedia University, Malacca Campus, Malaysia.
- Beard, C., Leckie, S. & Pomfret, G. (2000). Adventure Tourism the New Frontier. Butterworth-Heinemann, Burlington.
- Crasso, M. A. Z., Marcelo Campo. (2008). "Easy web service discovery: A query-by-example approach." 71(2): 144-164
- Chan, P. P. W. L., M.R.; (2008). "Dynamic Web Service Composition: A New Approach in Building Reliable Web Service." 20 - 25
- Ciarán Bryce , M. P., Karsten Tolle,Peter Werner,Roberto Zicari (2003). "Agent-based services for information portals." 1191 - 1198
- Coltman, M.M. , (1989). Cost Control for the Hospitality Industry. Van nostrand veinhold. United states of America . Newyork.
- Deitel, H.M., Deitel, P.J., Nieto. T.R. & Steinbuhler, k., (2002). Wireless Internet & Mobile Business – How to Program. Prentice-Hall, Inc. Upper Saddle River, New Jersey.
- DNA for Next Generation Mobile Network. "TeleDNA WAP Gateway" retrieved on 9th November 2009. ULR: http://www.teledna.com/pages/PDF/WAPGw_21271.v.2.0_web.pdf
- Elliott, G. & Phillips, N. (2004). Mobile Commerce and Wireless Computing Systems. Pearson Education Limited. England.
- Eband, V. (2009).The Problems of Using The Internet to book A hotel. Retrieved on 9th November 2009.URL:http://www.streetdirectory.com/travel_guide/216576/hotels_and_hostels/the_problems_of_using_the_internet_to_book_a_hotel.html
- First World Hotel, Genting Highlands retrieved on 9th November 2009 from ULR: http://www.agoda.com.my/asia/malaysia/genting_highlands/first_world_hotel.html

- Forum Nokia: "Smart Messaging in CDMA" version 1.0; May 5, 2003. URL:
http://idkf.bogor.net/bio2/mobiledocs/smart_messaging_in_cdma_v1_0_en.pdf
- Frick, O. (1999). WAP-Designing for Small User Interfaces. SAP Corporate Research, CEC Karlsruhe, Germany.
- Furht, B. & Llyas, M. (2003). Wireless Internet Handbook. Technologies, Standards and application, United State of America.
- Giorgis, R. S. D. & Agurto, N. R. A. (2004). New UML 2.0 based models to design WAP applications. University of Valparaiso, Chile.
- Hayer, D.K. & Ninemeier, J.D. (2004). Hotel Operations Management, Upper Saddle River New Jersey.
- Infogile: "Information Retrieval on Mobile Wireless System and WAP". August 2006. URL:
<http://www.infogile.com/pdf/wap.pdf>
- Kwon, E., Cho, Y. & Chae, K. (2001). Integrated Transport Layer Security : End-to End Security Model between WTLS and TLS. Kaywon School of Art and Design, Yongdong University, Ewha Womans University.
- Lankton, N. K. W., E.V.; (2007). "Antecedents and Dimensions of Online Service Expectations." 54(4): 776 - 788
- Mallick, M. (2003). Mobile and Wireless Design Essentials. Wiley Publishing, Inc. Canada.
- Marcussen, C. H. (2003). Early adopters of WAP for hotels – A series of European case studies. Centre for Regional & Tourism Research, Born Denmark.
- Mitrovic, N. & Mena, E. (2001). Adaptive User Interface for Mobile Devices. University of Zaragoza. Spain.
- OMA (Open Mobile Alliance), January 21, 2000. Retrieved on 9th November 2009. URL :
<http://www.wapforum.org/new/2000012153Sca.htm>
- Ping, N. & Hu, Z. (2005). Wireless Application Protocol – WAP. WAP :Lecture
- Risum, D. (2008). Running a Four-Star Hotel Demands Structure and Careful Planning. HO-Radisson Copenhgn-A4, Denmark.

- Rooney, S. (2002). Design and implementation of a WAP application for an Enterprise with M-Commerce functionality. MSc In Computing. Tallaght Institute of Technology.
- SAP Design Guild - Innovation: Article "WAP - Designing for Small User Interfaces" retrived on 9th November 2009. URL: http://www.teco.edu/~albrecht/publication/draft_docs/design-guide-sap-wap.pdf
- Skelton, G.W. (2003). Wireless Application Development. Thomson Course Technology. Canada. 31-38
- Singelee, D. & Preneel, B. (2003). the wireless application protocol (WAP). Cosic Internet Report.
- Smith, M. A. (2004). "Portals: toward an application framework for interoperability." 47(10): 93 - 97
- Schmidt, A. & Schröder, H. & Frick, O. (2000). WAP - Designing for Small User Interfaces. TecO, University of Karlsruhe & SAP Corporate Research, CEC Karlsruhe, Germany. 1-2
- Talukder, K. A. (2005). Mobile Computing Technology, Application and Service Creation. International Institute of Information Technology Bangalore. Delhi.
- Technology News: "Will WAP Deliver the Wireless Internet?". Neal Leavitt. Retrieved on 9th November 2009. URL: <http://www.leavcom.com/pdf/WAPstory.pdf>
- The international Engineering Consortium. Wireless Application Protocol (WAP). Web ProForum Tutorials. Http:// www.ice.org. 2-15
- TravelChinaGuide.com. Travel Comments. 13-6-2008. Retrieved on 9th November 2009. URL: <http://www.travelchinaguide.com/hotel/xian-hotel-xian.htm>
- Tummala, S. (2003). Wireless Application Protocol. Amtex System. London.
- Walker, J.R. (2007). Hospitality Management. University of South Florida. Pearson Education New Jersey.
- WAP Architecture: "Wireless Application Protocol Architecture Specification WAP-210-WAPArch-20010712" version 12th July 2001. URL: <http://www.openmobilealliance.org/tech/affiliates/wap/wap-210-waparch-20010712-a.pdf>
- WAP Forum: "A Brief History of WAP". 8th December 2004, URL: http://inspiredbloggers.blogspot.com/2004/12/brief-history-of-wap_110252445307049372.html
- WAP Form: "Mobile Phone R320 Design Guidelines for WAP Services". January 2000. URL: http://lco.nard.free.fr/technic/r320_design_guidelines_b.pdf

WAP Forum: "Wireless Application Protocol WAP 2.0 Technical White Paper". January 2002. URL:

http://www.wapforum.org/what/WAPWhite_Paper1.pdf

WAP Forum: "Wireless Transport Layer Security" Wireless Application Protocol. Version 6th April

2001. URL: <http://www.openmobilealliance.org/tech/affiliates/wap/wap-261-wtls-20010406-a.pdf>

WAP Forum: "Wireless Application Protocol" White Paper. June 2000. URL:

http://www.wapforum.org/what/WAP_white_pages.pdf

WAP Review retrieved on 9th November 2009 from <http://wapreview.com/?id=489>

WAP Overview: "An Overview of the Wireless Application Protocol to the IAB" IBM. A J Angwin.

March 2000 URL: <http://www.iab.org/documents/workshops/IAB-wireless-workshop/talks/iab-wap-1.pdf>

WAP WCOMP: "Wireless Application Protocol Wireless Control Message Protocol Specification".

Version 4th August 1999. URL:

<http://mobile.yqie.com/service/wap/source/wap/download/spec-wcmp-19990804.pdf>

WAP Wireless Communication, retrieved on 9th November 2009 from

<http://www.protocols.com/pbook/wap.htm>

WAP WINA Process Document: "Wireless Application Protocol WAP Interim Naming Authority

Process Document". Version 4th February 2002. URL:

<http://www.wapforum.com/Tech/omna/WINA20020204v01.pdf>

Webb, C. (2002). Cracking the code WAP, Bluetooth, and 3G programming. Hungry Minds, Inc. New

York. 2-9

What is WAP?, retrieved 10th November 2009 from http://www.mobileinfo.com/WAP/what_is.htm

WiredHotelier.com. News. 6 September 2001. Retrieved on 9th November 2009

URL: <http://www.wiredhotelier.com/news/4009061.html>

Wikipedia, *WAP – Wireless application protocol*, retrieved on 9th November 2009 from

<http://en.wikipedia.org/wiki/WAP>