

Design and Development of mobile Hotel Room Reservation:

From EDC (UUM) Perspective

A thesis submitted to the Graduate School in Partial

Fulfilment of the Requirements for the Degree

Master of Science (Information Technology)

Universiti Utara Malaysia

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2008

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ABSTRACT

In today's business environment the use of mobile applications is beginning to play an ever increasing important role. Many people use and interact with mobile devices each day both in their business and in their personal lives (residences). Tomorrow's mobile business environment will be a force that can influence the competitive nature of business and the hospitality industry as well.

This paper discusses a prototype development of mobile technology in the perspective of EDC- UUM (Executive Development Center-Universiti Uatra Malaysia). The prototype is evolving with the numerous changes that are occurring in the related technology as well as the changes that are occurring in the hospitality industry.

ACKNOWLEDGEMENT

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

First, I would like to express my appreciation to Allah, the Most Merciful and, the Most Compassionate who has granted me the ability and willing to start and complete this study. I do pray to His Greatness to inspire and enable me to continue the work for the benefits of humanity.

My most profound thankfulness goes to my supervisor Dr Nor Laily Hashim for his scientifically proven and creativity encouraging guidance.

Last but not least, I wish to thank all my dearest family members, especially Dad HJ.Ibrahim, Mum, and my great brothers, sisters and cousins. Also thank you to my lecturers and friends who have given me emotional support during my study.

Thank you UUM.

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Chapter One

INTRODUCTION

1.0 Introduction

Long ago, locals and visitors used to make their hotel reservations manually. With the high advancement in technology, they transcend to make their reservations using telephone or Internet. Even though, with these facilities (telephone and Internet), it is still hard for the travellers and tourists to find suitable hotels.

Mobile services are part of the introduction of new technology. The early introduction of mobile commerce in the late 90s has turned out to be counter-productive for a serious industrial adoption offered by mobile technology. In addition, within this rapidly changing world, people spend more and more time with the coordination of information. In spite of the large amount of technical tools available, like phone, fax, email or the WWW, there are research studies showing that for many people this overload of information and communication activities is simply too much (Caglyan, 1997).

Many scholars and industry representatives turned their attentions towards the promises of electronic wireless media, envisaging that the next or real phase of e-commerce growth will be in the area of mobile commerce. Consequently, Keen and Mackintosh (2001) stress that mobile commerce (m-commerce) is marking the start of another era of

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References:

- Bonn, A. et al. (1998). "Conceptualizing Web Site Quality and its Consequences in the Lodging Industry." *International Journal of Hospitality Management* 22(2): 161-175. Elsevier B.V.
- Bennt S. and McRobb S. (2002). *Object Oriented system Analysis and Design Using UML*
- Chen, T. a. (2002). *Developing a Mobile Information Service* .
- Carlsson, C., Carlsson, J., Denk, M., Walden, P., (2005): "Mobile Commerce: Insights from Expert Surveys in Austria and Finland", Proc. 18th Bled eConference "eIntegration in Action", Bled, Slovenia, June 6 - 8, 2005.
- Caglyan, H. (1997) *The Agent Source book*. Wiley & Sons.
- Cheverst, K., Davies, N., Mitchell, K., Friday, A. & Efstratiou, C. (2000). *Proceeding of Developing a Context-aware Electronic Tourist Guide: Some Issues and Experiences*, Lancaster University, pp. 1-8.
- Chung, T. & R. Law (2003). "Developing a Performance Indicator for Hotel Websites." *International Journal of Hospitality Management* 22(1): 119-125. . Elsevier B.V.
- Coyle, F. (2001). *Wireless Web: A manager's guide*. Addison-Wesley Publishing.
- Darrell Mann, (2000) "Application of TRIZ Tools in a Non-Technical Problem Context", <http://www.triz-journal.com/archives/2000/08/a/index.htm>.
- Elliott, G. & Phillips, N. (2004). *Mobile commerce and wireless computing systems*. Person Education, Addison-Wesley Publishing
- Franklin, S. and Graesser, A. (1996). "Is it an Agent, or just a Program? A Taxonomy for Autonomous Agents." In *Proceedings of the Third International Workshop on Agent Theories, Architectures, and Languages*. Springer-Verlag.
- Genesereth, M. and Ketchpel, S. (1994). "Software Agents." *Communications of the ACM*, 37(7): pp.48-53.
- Ghezzi, E. A., Robert, N. & Wilson, H. B. (1991). *Fundamentals of Software Engineering*. New Zealand: Prentice-Hall.
- Gursoy, D. & W. T. Umbreit (2004). "Tourist Information Search Behavior: Cross-cultural Comparison of European Union Member States." *International Journal of Hospitality Management* 23(1): 55-70.

- Heng Xu, Hock Hai Teo, Hao Wang, (2003) Foundation of SMS Commerce Success: Lessons from SMS Messaging and Co-opetition, *Proc. 36th IEEE Conf. on System Sciences*.
- Hoffer, Jeffrey A., Joey F. George, and Joseph S.Valacich, (1999), *Modern Systems Analysis and Design*, 2nd Edition. Addison Wesley Longman, Inc., Reading, MA.
- IBM Rational Functional Tester (2005): An advanced, automated functional and regression testing tool: [http://www 306.ibm.com/software/rational/offerings/testing.html](http://www306.ibm.com/software/rational/offerings/testing.html)
- Jan Ondrus, Yves Pigneur, (2005) A Disruption Analysis in the Mobile Payment Market, *Proc. 38th IEEE Conf. on System Sciences*.
- Janne Lukkari, Jani Korhonen, Timo Ojala, (2004) SmartRestaurant: mobile payments in context-aware environment, *Proc. 6th ACM Conf. on Electronic commerce*, 575-582.
- Jones, S. (1999) “*TRUST-EC: Requirements for Trust and Confidence in E-Commerce*”, European Commission, Joint Research Centre.
- Kang, M. (1998). *The perception and adoption behavior of business travelers toward the World Wide Web for hotel information*. Unpublished thesis, Purdue University.
- Kargl, F. Illmann, T, Weber, M., Ribhegge, S. (1999) Dynamic User Interfaces with Java. Proceedings of Webnet 99. Honolulu, USA.
- Kargl, F, Illmann, T, Weber, M. (1999) Evaluation of Java Messaging Middleware as a Platform for Software Agent Communication. Java Information stage JIT'99. Düsseldorf, Germany.
- Kargl, F., Illmann, T, Raschke, A., Schlott, H., & Weber, M. (2001). WAPcam - using a WAP application in student education, SIGGROUP Bulletin, pp. 12-15. <http://citeseer.ist.psu.edu/kargl01protecting.html>
- Keen, P., and Mackintosh, R. (2001), *The Freedom Economy: Gaining the M-commerce Edge in the Era of the Wireless Internet*. Berkeley, CA: Osborne/McGraw-Hill.
- Kini, A. Choobineh, J. (1998) “Trust in Electronic Commerce: Definition and Theoretical Consideration”, *Proceedings of the 31st International Conference on System Sciences*, IEEE Press.
- Law, R., & Leung, R.,(2000). “A study of airline’s online reservation services on the Internet”. *Journal of Travel Research*, 39 (2), 202-211. 2000 SAGE Publications.

- LeBozec, C., M. C. Jaulent, et al. (2002). "Unified Modelling Language and Design of a case-based retrieval System in medical imaging " Retrieved March 10, 2008, from <http://www.amia.org/pubs/symposia/D004957.pdf>
- Lieslehto, K. (2000). "WAP Application for PID Controller Tuning", *Proceedings of the 2000 IEEE International Symposium on Computer-Aided Control System Design*, Anchorage, Alaska, USA, pp. 168-172. Computer Society Press.
- Litvin, S. & J. Crofts (2003). "A Framework for Online Sales Negotiations of Hospitality and Tourism Services." *Information Technology in Tourism* 6(2): 91-98. Cognizant Communication Corporation Publication
- Lopez, M. (2000) "How to Use Linguistic Instruments for Object-Oriented Analysis" IEEE software
- Maes, P. (1994). "Modelling Adaptive Autonomous Agents." *Artificial Life Journal*, 1(1 & 2).
- Millman, R. (2000) "Why WAP is failing to win over users" (WWW-site 26.1.2001) Network News <http://www.vnunet.com/Features/1111179>.
- Niina Mallat, Matti Rossi, Virpi Kristiina Tuunainen, (2004) Mobile banking services, *Communication of the ACM*, 47(5), 42-46.
- Palmer, J. (1999). "Digital newspapers explore marketing on the Internet" *Communications of the ACM*, v42, p.33-40. ACM New York.
- Palowireless Resource Center (2003). Retrieved 13 march 2003 from: <http://www.palowireless.com/wap/visualtools.asp>
- Pierce, J and Mahaney, H (2004) "Opportunistic Annexing for Handheld Devices: Opportunities and Challenges", Human-Computer Interface Consortium. Proceedings of the 2005 symposium on Interactive 3D graphics and games. Washington, District of Columbia
- Philippe Kruchten, *Rational Unified Process—An Introduction*, Addison-Wesley, 1999.
- Pousttchi, K. Martin Schurig, M. (2004) Assessment of Today's Mobile Banking Applications from the View of Customer Requirements, *Proc. 37th IEEE Conf. on System Sciences*
- Ramon Torres, (2000) "BT Cellnet's WAP Success"(WWW-site 26.1.2001) [http://mobyloginas.ediththispage.com/stories/storyReader\\$35](http://mobyloginas.ediththispage.com/stories/storyReader$35)
- Sean, R. D., John, G. M. & Annette, C. D. (2005). Use of SMS text messaging to improve out patient attendance.

- Shifflet, B. (1999). "Managing Customer Behavior Dynamics in the Multi-channel E-business Environment: Enhancing Customer Relationship Capital in the Global Hotel Industry." *Journal of Vacation Marketing* 9(2): 164-173.
- Stamboulis, Y. & P. Skayannis (2003). "Innovation Strategies and Technology for Experience-based Tourism." *Tourism Management* 24 (1): 35-43. Rosen School of Hospitality Management, University of Central Florida, Orlando, FL, USA
- Starkov, M., 2002, The internet: Hotelier's best ally or worst enemy? What went wrong with direct web distribution in hospitality? Accessed 23 March 2005
http://www.hotelonline.com/NEWS/PR2002_4th/Oct02_InternetAlly.html,
- Tétard, F. & Patokorpi, E. (2004). "Design of a Mobile Guide for Educational Purposes" In *Mobile human -computer interaction - mobileHCI, 6th International Symposium* (Vol. 3160). Glasgow, UK: Springer Berlin/Heidelberg.
- Truong N. T. and S. J. (2005). Software engineering: applications, practices and tools (SE): Verification of behavioural elements of UML models using B. 2005 ACM symposium on Applied computing SAC '.
- Valacich, J.S., George, J.M. and Hoffer, J.A. (2004). *Essentials of Systems Analysis and Design*, Prentice Hall, Upper Sadder River, NJ.
- Vassos, T. (1996). "Strategic Internet Marketing", *Journal of End-User Computing*, v17, No.4, p.12-15. Que; 1st edition (January 15, 1996)
- Weber, K., & Roehl, W. S. (1999). Profiling people searching for and purchasing travel products on the World Wide Web. *Journal of Travel Research*, 37(3), 291–298.
- J. Youll, J., J. Morris, R. C. Krikorian, P. Maes (2000) Impulse: Location-based Agent Assistance, Software Demos, Proceedings of the Fourth International Conference on Autonomous Agents (Agents 2000), Barcelona, Catalonia, Spain, June 3 - June 7, 2000.
- Webattack.com. (2003). WAP Development. Retrieved 12 march 2008 from <http://www.webattack.com/Shareware/webpublish/swwapdev.shtml>.
- Whitten J. L., Bentley L. D., et al. (2001). System Analysis and Design Methods

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