INTERACTIVE CUSTOMIZING PRODUCT ORDERING SYSTEM

A thesis submitted to the Graduate School in partial fulfillment of the requirements for the degree of Masters of Science (Information Technology)

Universiti Utara Malaysia

by

Joanne Kua Swee Cheng

© Joanne Kua Swee Cheng, 2000. All rights reserved.
Saya, yang bertandatangan, memperakukan bahawa
(I, the undersigned, certify that)

JOANNE KUA SWEE CHENG

calon untuk ijazah
(candidate for the degree of) Sarjana Sains(Teknologi Maklumat)

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

INTERACTIVE CUSTOMIZING PRODUCT ORDERING SYSTEM

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
(Name of Supervisor) : Prof. Madya Nazib Nordin

Tandatangan
(Signature) :

Tanggal
(Date) : 11th Oktober 2000
PERMISSION TO USE

In presenting this project in partial fulfilment of the requirements for a post graduate degree from the Universiti Utara Malaysia, I agree that the Universiti 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 purposes may be granted by my supervisor or, in their absence, by the Dean of the Graduate School. 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 paper.

Requests for permission to copy or to make other use of material in this project in whole or in part should be addressed to:

Dean of Graduate School
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman
Projek ini bertujuan untuk membangunkan satu sistem tempahan interaktif yang membenarkan pengguna membuat pilihan untuk membantu industri kek tempatan. Satu teknologi imej Internet iaitu Metastream 3.0, telah digunakan untuk membangun bahagian grafik sistem tersebut. Tujuannya adalah untuk meningkatkan keyakinan pengguna terhadap imej komputer dalam menentukan kualiti sesuatu produk dan untuk membenarkan pengguna membuat pilihan. Sebagai usaha pertama di Malaysia, projek ini telah menunjukkan kebolehan pengaplikasian teknologi tersebut dalam bidang ini. Walau bagaimanapun, prestasi sistem ini dapat ditingkatkan di masa hadapan dengan meletakkan sistem ini di Internet.
ABSTRACT  (ENGLISH)

This project is aimed at developing an interactive customizing product ordering system to aid the local bake goods industry. A new 3D Internet imaging technology, Metastream 3.0, was used to develop the graphical part of the system. The purpose was to increase consumer’s confidence in relying on computer images to determine the quality of a product and to allow customization. Being the first attempt to use Metastream 3.0 in developing a system for bake goods in Malaysia, the project had succeeded in initiating an application in this area. Further works such as to upload the system to the Internet could be performed to improve the performance of the system.
ACKNOWLEDGEMENTS

First of all, I would like to thank my supervisor, Assoc. Prof. Nazib Nordin for all his help, encouragement and patience throughout the development of this project. I would also like to thank a friend who introduced me to Metastream technology, for this project wouldn’t be as good without his advice. Last but not least I would like to thank my family members for their undying love and support.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>PERMISSION TO USE</td>
<td>i</td>
</tr>
<tr>
<td>ii</td>
<td>ABSTRACT (BAHASA MALAYSIA)</td>
<td>ii</td>
</tr>
<tr>
<td>iii</td>
<td>ABSTRACT (ENGLISH)</td>
<td>iii</td>
</tr>
<tr>
<td>iv</td>
<td>ACKNOWLEDGEMENTS</td>
<td>iv</td>
</tr>
<tr>
<td>x</td>
<td>LIST OF TABLES</td>
<td>x</td>
</tr>
<tr>
<td>xi</td>
<td>LIST OF FIGURES</td>
<td>xi</td>
</tr>
<tr>
<td>1</td>
<td>CHAPTER ONE: INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1.1</td>
<td>Problem statement</td>
<td>1</td>
</tr>
<tr>
<td>1.2</td>
<td>Objectives</td>
<td>5</td>
</tr>
<tr>
<td>1.3</td>
<td>Significance of Project</td>
<td>7</td>
</tr>
<tr>
<td>1.4</td>
<td>Summary</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>CHAPTER TWO: BACKGROUND: INTERNET IMAGING TECHNOLOGIES</td>
<td>9</td>
</tr>
<tr>
<td>2.1</td>
<td>Review</td>
<td>9</td>
</tr>
<tr>
<td>2.2</td>
<td>FlashPix</td>
<td>11</td>
</tr>
<tr>
<td>2.2.1</td>
<td>FlashPix Features</td>
<td>12</td>
</tr>
<tr>
<td>2.2.2</td>
<td>Required Software</td>
<td>13</td>
</tr>
<tr>
<td>2.2.3</td>
<td>FlashPix and Business Case</td>
<td>14</td>
</tr>
<tr>
<td>2.3</td>
<td>QuickTime VR</td>
<td>14</td>
</tr>
<tr>
<td>2.3.1</td>
<td>QuickTime VR Elements</td>
<td>15</td>
</tr>
<tr>
<td>2.3.2</td>
<td>Required Software</td>
<td>16</td>
</tr>
<tr>
<td>2.3.3</td>
<td>QuickTime and Business Case</td>
<td>16</td>
</tr>
</tbody>
</table>
CHAPTER THREE: METASTREAM 3.0 TECHNOLOGY

3.1 What is Metastream 3.0 28
3.2 System Requirements 29
3.3 Capabilities of Metastream 3.0 30
   3.3.1 Touch 30
   3.3.2 Look 30
   3.3.3 Design 31
   3.3.4 Present 31
   3.3.5 Teach 31
3.4 Metastream 3.0 Features and Benefits 32
   3.4.1 Real-Time Full Scene Antialiasing 32
3.4.2 Progressive Accumulation Antialiasing
3.4.3 Real-Time Projected Soft Drop Shadows
3.4.4 Real-Tie E-Lightmap™ Phong Renderer
3.4.5 Bump Mapping
3.4.6 MIP Mapping
3.4.7 Bilinear Filtering
3.4.8 Perspective Correct and SubPixel/Texel texture Mapping
3.4.9 32 bit, 16 bit, 8 bit Color Depth Interactive Renderer
3.4.10 8 bit Alpha Channel Textures
3.4.11 Realistic Procedural Materials
3.4.12 Real-Time Photoshop Blend Mode Support for Textures
3.4.13 DrawAnywhere Technology
3.4.14 Bi-Directional Scripting Between the Browser and MTS3
3.4.15 XML Based MTS3 Scene File Description
3.4.16 Media Hosting
3.4.17 Text and Bitmap Rollovers
3.4.18 Streaming
3.4.19 Scalable Multi-Resolution Playback
3.4.20 Trixels NT
3.4.21 Smart Cache
3.4.22 Pre-Fetching
3.4.23 Back-Face Culling
3.4.24 Animation
3.4.25 Interaction
3.4.26 Self Updating Component Architecture
3.5 Metastream 3.0 and Sales Benefits

3.5.1 Increased Sales

3.5.2 Increased Traffic

3.5.3 Reduced Products Returns

3.6 Metastream 3.0 Application

3.7 Summary

CHAPTER FOUR: PROJECT METHODOLOGY

4.1 What is Prototyping?

4.2 Rapid Evolutionary Prototyping Approach

4.3 Critical Software Development Process

4.4 Developer's System Requirements

4.4.1 Hardware Requirements

4.4.2 Software Requirements

4.4.2.1 Graphical Software Requirements

4.4.2.2 Web Page Software Requirements

4.5 Technologies Used in Web Page Components

4.6 Metastream 3.0 Content Creation Workflow

4.7 Summary

CHAPTER FIVE: REQUIREMENT ANALYSIS

5.1 Objectives

5.2 Use Case Diagram

5.2.1 Definition of Actors

5.2.2 Definition of Use Cases

5.2.2.1 Graphic Designer

5.2.2.2 Price Officer
5.2.2.3 Health Officer 59
5.2.2.4 Order Taker 59
5.2.2.5 Customer 60
5.3 Interactive Customizing Product Ordering System Requirements 60
  5.3.1 System Performance 61
  5.3.2 Functionality 62
5.4 Summary 64

CHAPTER SIX: DESIGN AND IMPLEMENTATION
6.1 System Architecture 66
6.2 Graphical User Interface 69
6.3 Testing and Results 71
6.4 Evaluation 73
6.5 Summary 74

CHAPTER SEVEN: CONCLUSION
7.1 Problems and Limitations 75
7.2 Future Design and Development Considerations 76
7.3 Summary 77

BIBLIOGRAPHY 78

APPENDIX 80
### LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 2.1</td>
<td>Comparison of Internet Imaging Technologies</td>
<td>26</td>
</tr>
<tr>
<td>Table 4.1</td>
<td>Rapid Evolutionary Prototyping Approach Development Phases</td>
<td>47</td>
</tr>
<tr>
<td>Table 4.2</td>
<td>Critical Software Development Processes</td>
<td>48</td>
</tr>
<tr>
<td>Table 4.3</td>
<td>Graphical Software Requirement</td>
<td>50</td>
</tr>
<tr>
<td>Table 4.4</td>
<td>Web Page Software Requirements</td>
<td>51</td>
</tr>
<tr>
<td>Table 4.5</td>
<td>Technologies Used in Web Page Components</td>
<td>52</td>
</tr>
<tr>
<td>Table 5.1</td>
<td>The Requirements for Sweet Dreams Interactive Customizing Product Ordering System</td>
<td>64</td>
</tr>
<tr>
<td>Table 6.1</td>
<td>System Performance</td>
<td>71</td>
</tr>
<tr>
<td>Figure 4.1</td>
<td>Generic View of Prototyping Process</td>
<td>45</td>
</tr>
<tr>
<td>Figure 4.2</td>
<td>Adapted Version of Rapid Evolutionary Prototyping Approach</td>
<td>46</td>
</tr>
<tr>
<td>Figure 4.3</td>
<td>General Workflow for Metastream 3.0 Content Creation</td>
<td>53</td>
</tr>
<tr>
<td>Figure 5.1</td>
<td>Use Case Diagram for the Design of Sweet Dreams System</td>
<td>57</td>
</tr>
<tr>
<td>Figure 6.1</td>
<td>Conceptual System Architecture</td>
<td>67</td>
</tr>
<tr>
<td>Figure 6.2</td>
<td>Graphical User Interface Design</td>
<td>70</td>
</tr>
</tbody>
</table>
Chapter 1  Introduction

This chapter discusses the aim of the project followed by the problem statement section which will introduce the problem gradually. Several issues concerning the importance of consumer confidence in relying on computer images and customization will be covered in this section. At the end of this section, the project and its nature will then be briefly touched. This will then be followed by the objectives and significance of the project.

1.1  Problem Statement

An ordering system via the internet is an example of how E-commerce can be implemented. E-commerce is changing altogether the traditional way of doing business. Today, consumers can buy a wide variety of products and services through the Internet without having to leave their premises.

In addition to goods and services that can be delivered electronically, the Internet is also used to sell physical goods. Some popular physical goods sold on the Internet are apparel, books, food, flowers, music and toys (Margherio, et. al., 1999).
The contents of the thesis is for internal user only
Bibliography


Cult3D official site. [www document]. URL. http://www.cult3d.com


Metastream official site. [www document]. URL. http://www.metastream.com


http://www.metastream.com

http://www.metastream.com

http://www.metastream.com