

MODELING E-GOVERNMENT WITH UML

by

Tam Wai Keong

Master of Science in Software Engineering

2002



Faculty of Science and Technology
University of Macau

TABLE OF CONTENTS

<i>List of Abbreviations</i>	<i>vi</i>
<i>List of Figures</i>	<i>vii</i>
<i>List of Tables</i>	<i>x</i>
CHAPTER 1 INTRODUCTION	1
1.1 Motivation and Objectives.....	1
1.2 Thesis Organization.....	2
CHAPTER 2 CONCEPTS REVIEW	4
2.1 E-government	4
2.1.1 What is E-government?	4
2.1.2 Benefits of the Electronic Government	4
2.1.3 The Goal of E-government.....	5
2.1.4 The Areas of E-government	6
2.1.5 Examples of Electronic Government Services	6
2.1.6 Survey of E-government Applications in the World	6
2.2 Technology for E-Government Development	20
2.2.1 The Smart Card Technology.....	20
2.2.1.1 Types of Smart Card.....	20
2.2.1.2 Smart Card Applications	21
2.2.1.3 Smart Card Standards	23
2.2.1.4 Smart Card Security.....	24
2.2.2 E-government Security	25
2.2.3 Programming Languages for E-government	25
2.2.3.1 Active Server Page (ASP)	25
2.2.3.2 Java	28
2.2.3.3 WAP/WML	28
2.2.3.4 XML	29
2.2.4 System Architecture for E-government.....	30
2.3 UML	31
2.3.1 What is UML?	31
2.3.2 Why Using UML to Model E-government?.....	31
2.3.3 The Basic Diagrams of the UML	32

CHAPTER 3 E-TASK.....	37
3.1 Introduction	37
3.1.1 Definition of E-task Service	37
3.1.2 Examples of E-task Services	37
3.2 Cast Study – Help Desk System (G2E Service).....	37
3.2.1 Introduction to Help Desk System.....	37
3.2.2 Requirement Analysis & System Design	38
3.2.3 Implementation.....	42
3.2.4 Testing	48
3.2.5 Sample Run.....	49
CHAPTER 4 E-VOTING	55
4.1 Introduction	55
4.1.1 Definition of E-voting Service	55
4.1.2 Examples of E-voting Services.....	55
4.2 Case Study – Internet Voting.....	55
4.2.1 Introduction to Internet Voting.....	55
4.2.2 Internet Voting Plan around the World	56
4.2.3 The Internet Voting System Environment.....	56
4.2.4 Requirement Analysis & System Design	57
4.2.5 Implementation.....	63
4.2.6 Testing	66
4.2.7 Sample Run.....	67
CHAPTER 5 E-PAYMENT	73
5.1 E-payment for Online Government Shopping Service.....	73
5.1.1 Definition of E-payment for Online Government Shopping Service.....	73
5.1.2 Examples of E-payment for Online Government Shopping Services	73
5.1.3 UML Diagrams.....	73
5.2 E-payment for Government Bill Service.....	77
5.2.1 Definition of E-payment for Government Bill Service	77
5.2.2 Examples of E-payment for Government Bill Services	77
5.3 Case Study – Macau SAR Personal Income Tax	78
5.3.1 Introduction to Macau SAR Personal Income Tax.....	78
5.3.2 Requirement Analysis & System Design	78
5.3.3 Implementation.....	83

5.3.4 Testing	87
5.3.5 Samples Run	88
CHAPTER 6 E-APPLICATION.....	95
6.1 Introduction	95
6.1.1 Definition of E-application Service	95
6.1.2 Examples of E-application Services	95
6.2 Case Study – Application for Registration of a New Restaurant	96
6.2.1 Introduction to Application for Registration of a New Restaurant	96
6.2.2 Requirement Analysis & System Design	96
6.2.3 Implementation.....	101
6.2.4 Testing	104
6.2.5 Sample Run.....	105
CHAPTER 7 E-APPOINTMENT.....	110
7.1 Introduction	110
7.1.1 Definition of E-appointment Service.....	110
7.1.2 Examples of E-appointment Services.....	110
7.2 Use Case Diagram for E-appointment System	110
7.3 Class Diagram for E-appointment System	111
7.4 Sequence Diagram for Making Appointment.....	112
7.5 Activity Diagram for Making Appointment.....	113
7.6 Component Diagram for E-appointment	113
CHAPTER 8 CONCLUSION.....	114
8.1 Thesis Conclusion.....	114
8.2 Contributions	115
8.3 Suggestions for Future Works	115
References	117
<i>Appendix A. Structural Diagram Of The Government Of Macau SAR.....</i>	<i>119</i>