THE REQUIREMENT MODEL OF PLOUGHING INCENTIVE INFORMATION SYSTEM

A project submitted to the Dean of Postgraduate Studies and Research in partial fulfilment of the requirement for the degree

Master of Science of Information Technology

Universiti Utara Malaysia

By

Norfazlin Rashid

Copyright © 2012 Norfazlin Rashid. All rights reserved
DEAN OF AWANG HAD SALLEH GRADUATE SCHOOL OF ARTS AND SCIENCES

PERMISSION TO USE

In presenting this project in partial fulfilment 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 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 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
of Arts and Sciences
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman
Malaysia
ABSTRAK

ABSTRACT

The aim of this study is to propose a requirement model that serves as a basis in developing a system to manage ploughing incentive recipients’ information. Ploughing incentive is given by the Malaysian Government to paddy growers to help ease the cost of land preparation or ploughing. The distribution of incentive is done via agencies such as Muda Agricultural Development Authority (MADA) and its mechanism which are the district farmers association or Pertubuhan Peladang Kawasan (PPK). Eligible farmers would be given coupons for each of their land plots that are entitled to receive the incentive. Ploughing work can only be done by registered ploughing service providers which are in effect tractor owners. The assignment of ploughing work is done by the PPK. MADA would then disburse payment of the incentive directly to the tractor owners based on the claims and reports furnished by PPKs. The current manual practice of reporting provides the opportunity of issues such as late payment and omission. A computerized system that would cater the information of ploughing incentive receivers would be the answer to such problem. Since there is currently no such system, a requirement model will be produced which will then be a blueprint in developing the system. The requirement of the system will be gathered from one PPK in Kedah through observation, document analysis and interviews. Finally, the requirement model which comprises of two actors and 17 use cases is validated by users using a prototype and test scripts.
ACKNOWLEDGMENT

In the name of Allah, the Most Gracious and the Most Merciful. Peace be upon His beloved Prophet Muhammad (S.A.W) and his family.

All praises to Allah, with His grace and benevolence, this project is finally completed. I would like to extend my gratitude to all the people who have given me support and enlightenment, throughout the journey of my studies. First and foremost, to my dear family: Hizam Abdul Sukor, whose loving support makes it possible for me strive while being a student, a mother, a wife and holding a job; My parents, who eternally have me in their prayers; My parents-in-law who are always there to care for my three darlings in all those times of absence.

I am also extremely grateful to my supervisor, Dr Mohd Syazwan Abdullah, for his continuous insights, guidance and thoughtfulness given in completing this project. This project would also be meaningless without the cooperation of all the staff in PPK Sanglang, especially Mr. Asynurulhisham Abdul Razak, Ms. Yati Yusuf, Busra Abu Bakar dan Yang Baizura Yusoff who are ever so willing to assist and provide feedback for this project. Thank you so much.

Finally, thank you to all my friends, colleagues and lecturers who have been very helpful during my days of study, directly or not. May all of us be granted a marvellous life, here and in the Akhirat.

Norfazlin Rashid
# TABLE OF CONTENTS

PERMISSION TO USE .......................................................................................................................... ii
ABSTRAK ........................................................................................................................................... iii
ABSTRACT ........................................................................................................................................ iv
ACKNOWLEDGMENT .................................................................................................................... v
TABLE OF CONTENTS ................................................................................................................... vi
LIST OF TABLES .......................................................................................................................... viii
LIST OF FIGURES ....................................................................................................................... ix
LIST OF ABBREVIATIONS ........................................................................................................ xii
CHAPTER ONE INTRODUCTION ................................................................................................. 1
  1.1 Background ................................................................................................................................. 1
  1.2 Problem Statement ...................................................................................................................... 4
  1.3 Research Questions .................................................................................................................... 5
  1.4 Project Objectives ..................................................................................................................... 5
  1.5 Scope of Project ......................................................................................................................... 5
CHAPTER TWO LITERATURE REVIEW ....................................................................................... 7
  2.1 Overview of Requirement Model Development ...................................................................... 7
  2.2 Existing work on agricultural information system ................................................................. 8
    2.2.1 The Management of Public Sector Record Project (MPSR) .............................................. 8
    2.2.2 Agricultural Information Application System (SAMP) .................................................. 9
    2.2.3 Agro-investment Application and Information System (SIAPP) ................................. 10
    2.2.4 Kenyan Agricultural Knowledge and Information System (AKIS) ............................. 11
    2.2.5 Indian Agriculture Information System Network Project (AGRISNET) ................. 12
  2.3 Summary ................................................................................................................................... 13
CHAPTER THREE PROJECT METHODOLOGY .......................................................................... 14
  3.1 Proposal Phase .......................................................................................................................... 14
  3.2 Planning Phase ........................................................................................................................ 15
    3.2.1 Document analysis ............................................................................................................. 15
    3.2.2 Interviews ......................................................................................................................... 16
    3.2.3 Object-oriented approach to model requirement ............................................................ 16
  3.3 Execution Phase ....................................................................................................................... 17
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table No.</th>
<th>Name of Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>User requirement list of Ploughing Incentive Information System</td>
<td>21</td>
</tr>
<tr>
<td>4.2</td>
<td>List of Use Case Specifications</td>
<td>24</td>
</tr>
<tr>
<td>5.1</td>
<td>Test Script for System Administrator – Login</td>
<td>63</td>
</tr>
<tr>
<td>5.2</td>
<td>Test Script for System Administrator – Manage System Users and Company’s Profile</td>
<td>64</td>
</tr>
<tr>
<td>5.3</td>
<td>Test Script for System Administrator – Manage Tractor Providers, Assign Work, View Report and Logout</td>
<td>64</td>
</tr>
<tr>
<td>5.4</td>
<td>Test Script for Clerks</td>
<td>66</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure No.</th>
<th>Name of Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Parties involved in implementing the ploughing incentives</td>
<td>2</td>
</tr>
<tr>
<td>2.1</td>
<td>Login page of SAMP</td>
<td>10</td>
</tr>
<tr>
<td>2.2</td>
<td>Login page of SIAPP</td>
<td>11</td>
</tr>
<tr>
<td>3.1</td>
<td>Phases of project methodology</td>
<td>14</td>
</tr>
<tr>
<td>4.1</td>
<td>Use Case Diagram</td>
<td>22</td>
</tr>
<tr>
<td>4.2</td>
<td>Sequence Diagram for Use Case Login Basic Flow</td>
<td>25</td>
</tr>
<tr>
<td>4.3</td>
<td>Sequence Diagram for Cancel Login</td>
<td>25</td>
</tr>
<tr>
<td>4.4</td>
<td>Sequence Diagram for Username and Password does not match</td>
<td>26</td>
</tr>
<tr>
<td>4.5</td>
<td>Sequence Diagram for Basic Flow of Use Case Manage System users</td>
<td>27</td>
</tr>
<tr>
<td>4.6</td>
<td>Sequence Diagram for Use Case Manage System Users: Delete User</td>
<td>28</td>
</tr>
<tr>
<td>4.7</td>
<td>Sequence Diagram for Use Case Manage System User: Reset Password</td>
<td>29</td>
</tr>
<tr>
<td>4.8</td>
<td>Sequence Diagram for Manage System User: Cancel Operation</td>
<td>30</td>
</tr>
<tr>
<td>4.9</td>
<td>Sequence Diagram for Viewing and Editing Company’s Profile</td>
<td>31</td>
</tr>
<tr>
<td>4.10</td>
<td>Sequence Diagram for Use Case Manage Company’s Profile: Mandatory Field is Empty</td>
<td>32</td>
</tr>
<tr>
<td>4.11</td>
<td>Sequence Diagram for Basic Flow of Managing Tractor Providers</td>
<td>33</td>
</tr>
<tr>
<td>4.12</td>
<td>Sequence Diagram for Use Case Manage Tractor Providers: Delete Tractor Provider</td>
<td>34</td>
</tr>
<tr>
<td>4.13</td>
<td>Sequence Diagram for Editing Tractor Provider details</td>
<td>35</td>
</tr>
<tr>
<td>4.14</td>
<td>Sequence Diagram for Use Case Assign Ploughing Work – Basic Flow</td>
<td>36</td>
</tr>
<tr>
<td>4.15</td>
<td>Sequence Diagram for Deleting Work Assignment</td>
<td>37</td>
</tr>
<tr>
<td>4.16</td>
<td>Sequence Diagram for Use Case View Reports Basic Flow</td>
<td>38</td>
</tr>
<tr>
<td>4.17</td>
<td>Sequence Diagram for Use Case Log Out: Basic Flow</td>
<td>39</td>
</tr>
<tr>
<td>4.18</td>
<td>Collaboration Diagram for Use Case Login Basic Flow</td>
<td>40</td>
</tr>
<tr>
<td>4.19</td>
<td>Collaboration Diagram for Cancelling Login</td>
<td>40</td>
</tr>
</tbody>
</table>
4.20 Collaboration Diagram for Username and Password Not Match ........................................ 41
4.21 Collaboration Diagram for Use Case Manage System Users: Basic Flow ........................................ 42
4.22 Collaboration Diagram for Use Case Manage System Users: Delete Users ........................................ 43
4.23 Collaboration Diagram for Use Case Manage System User: Reset User’s Password ........................................ 44
4.24 Collaboration Diagram for Use Case Manage System User: Cancel Operation ........................................ 44
4.25 Collaboration Diagram for Use Case Manage Company’s Profile Basic Flow and Edit Profile ........................................ 45
4.26 Collaboration Diagram for Use Case Manage Company’s Profile: Exception Flow Mandatory Field is Empty ........................................ 46
4.27 Collaboration Diagram for Use Case Manage Tractor Provider: Basic Flow ........................................ 47
4.28 Collaboration Diagram for Use Case Manage Tractor Provider: Delete Tractor Provider ........................................ 48
4.29 Collaboration Diagram for Use Case Manage Tractor Provider: Edit Tractor Provider ........................................ 49
4.30 Collaboration Diagram for Use Case Assign Ploughing Work: basic Flow ........................................ 50
4.31 Collaboration Diagram for Use Case View Assign Ploughing Work: Alternative Flow A1 Delete Work Assignment ........................................ 51
4.32 Collaboration Diagram for Use Case Log Out ........................................ 51
4.33 Collaboration Diagram for Use Case View Reports: Basic Flow ........................................ 52

5.1 Login Form ........................................ 54
5.2 Username and password does not match ........................................ 54
5.3 Main Page after Login ........................................ 54
5.4 Add New Tractor Provider ........................................ 55
5.5 List of Registered Tractor Owner ........................................ 56
5.6 Details of Tractor Owner ........................................ 56
5.7 Deleting a tractor Owner ........................................ 57
5.8 List of Available Work Assignments ........................................ 58
5.9 One Work Assignment (Form 4) ........................................ 58
5.10 Print Preview of Form 4 ........................................ 59
5.11 List of Work Assignments of a Tractor Owner (Form 5a) ........................................ 59
5.12 Print Preview of Form 5a ........................................ 60
5.13 Summary of Work of All Tractor Providers (Form 5b) ........................................ 60
5.14 Summary of Work of All Tractor Providers (Form 5b)
   Print Preview ................................................................................. 61
5.15 Deleting a Work Assignment ...................................................... 62
5.16 Manage Company’s Profile ......................................................... 62
**LIST OF ABBREVIATIONS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRISNET</td>
<td>Indian Agriculture Information System Network Project</td>
</tr>
<tr>
<td>AKIS</td>
<td>Kenyan Agricultural Knowledge and Information System</td>
</tr>
<tr>
<td>IC</td>
<td>Identity Card</td>
</tr>
<tr>
<td>KADA</td>
<td>Kemubu Agricultural Development Authority</td>
</tr>
<tr>
<td>LPP</td>
<td>Lembaga Pertubuhan Peladang (Farmers Association Authority)</td>
</tr>
<tr>
<td>MADA</td>
<td>Muda Agricultural Development Authority</td>
</tr>
<tr>
<td>MoA</td>
<td>Ministry of Agriculture and Agro-based Industry</td>
</tr>
<tr>
<td>MPSR</td>
<td>Management of Public Sector Record</td>
</tr>
<tr>
<td>OO</td>
<td>Object-Oriented</td>
</tr>
<tr>
<td>PIIS</td>
<td>Ploughing Incentive Information System</td>
</tr>
<tr>
<td>PPK</td>
<td>Pertubuhan Peladang Kawasan (District Farmers’ Association)</td>
</tr>
<tr>
<td>SAMP</td>
<td>Agricultural Information Application System (SAMP)</td>
</tr>
<tr>
<td>SIAPP</td>
<td>Agro-Investment Application and Information System</td>
</tr>
<tr>
<td>UML</td>
<td>Unified Modelling Language</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nation Development Programme</td>
</tr>
</tbody>
</table>
CHAPTER ONE
INTRODUCTION

1.1 Background

Modern governments are utilizing information technology to fulfil their basic duties in better serving the public interest. Although some researchers such as Davenport (1994) and Thornton (2001) say that information technology may not necessarily be beneficial to an organization’s performance (as cited in Quintas, 2005), it is a common perception that information technology provides us with the ability to work on large amount of data in less amount of time. This implicitly suggests that incorporating computerized information system will help organizations work better. Using computerized information systems, decisions can be made faster and in many cases, service efficiency is increased, routine tasks are done automatically and data analysis are quicker and more accurate (Roper & Millar, 1999). The International Council of Archives (1997) also stresses the importance of managing government information and record electronically to increase governments’ accountability.

Malaysia is also moving towards establishing a modern government. Computerized information system is increasingly used to facilitate services provided to the mass public. Initially conceptualized in 1996 under the Multimedia Super Corridor (MSC), Malaysia is envisioned to be a knowledge-based society by the year 2020. One of the flagships under MSC is the e-Government which aims to transform administrative process and service delivery through the use of ICT. However, not much focus has been given to the agricultural sector yet. As an effort to contribute in this area, this study aims to come up with the requirement model of a system to manage ploughing incentives for paddy farmers.
The contents of the thesis is for internal user only
REFERENCES


