INTEGRATING TRAINING NEEDS ANALYSIS IN EXISTING
STAFF MANAGEMENT INFORMATION SYSTEM

A thesis submitted to the Graduate School in fulfillment
of the requirements for the degree
Master of Science (Information Technology)
Universiti Utara Malaysia

By:
ZAKIAH BT. MAHMUD

©Zakiah bt. Mahmud, June 2002
All rights reserved
GRADUATE SCHOOL
UNIVERSITI UTARA MALAYSIA

PERMISSION TO USE

In presenting this thesis in partial fulfillment of the requirements for a post graduate 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 purposes may be granted by my supervisors(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 address to:

Dean of Graduate School
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman
ABSTRAK

ABSTRACT

The purpose of this project is to develop a prototype system for human resource management, which can be used in teacher’s training college in Malaysia. This system is different with the existing system due to the capabilities of analyzing the staff training needs using the online training analysis form and based on the training records stored in the system. The prototype system has been developed using the web-based relational database. A model of system prototype has been developed using Unified Modeling language (UML). This project also discusses the architecture of the prototype system. The actual system performance has been tested based on the system requirements. The aim of this evaluation is to see the level of functionality and operability of the system. Finally, the project discusses some problems and limitations that were discovered during the system testing, and some recommendations to overcome these are proposed.
ACKNOWLEDGEMENTS

First and foremost, I would like to praise to God the Almighty for giving me the time and strength to finish this project and for all that has bestowed on me. It is with His ascendancy the study is completed.

I would like to express my sincere gratefulness and gratitude to my supervisor, Associate Professor Nazib bin Nordin for his invaluable guidance, encouragement and advice during this project.

My thanks also go to the supporting staff of the computer laboratory of Sekolah Teknologi Maklumat, for their cooperation and helpfulness.

Last but not least, my grateful thanks to all my family especially my beloved children and friends for their cooperation and support on doing this project. Thank you.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERMISSION TO USE</td>
<td>i</td>
</tr>
<tr>
<td>ABSTRACT (BAHASA MALAYSIA)</td>
<td>ii</td>
</tr>
<tr>
<td>ABSTRACT (ENGLISH)</td>
<td>iii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iv</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>ix</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>x</td>
</tr>
<tr>
<td>CHAPTER ONE: INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1.1 Human Resource Information System</td>
<td>2</td>
</tr>
<tr>
<td>1.2 Training Needs</td>
<td>4</td>
</tr>
<tr>
<td>1.3 Problem Statement</td>
<td>6</td>
</tr>
<tr>
<td>1.4 Objectives</td>
<td>6</td>
</tr>
<tr>
<td>1.5 Project Significance</td>
<td>7</td>
</tr>
<tr>
<td>1.6 Project Scope</td>
<td>7</td>
</tr>
<tr>
<td>1.7 Hardware and Software Requirements</td>
<td>8</td>
</tr>
<tr>
<td>1.8 Summary</td>
<td>9</td>
</tr>
<tr>
<td>CHAPTER TWO: REVIEW OF RELATED LITERATURE</td>
<td>10</td>
</tr>
<tr>
<td>2.1 The University-wide Payroll Personnel System (PPS)</td>
<td>16</td>
</tr>
<tr>
<td>2.2 HRMIS in Malaysia Public Sector</td>
<td>19</td>
</tr>
</tbody>
</table>
CHAPTER FIVE: STAFF MANAGEMENT INFORMATION SYSTEM FOR
TEACHER TRAINING COLLEGE................................................................. 53

5.1 Overall Architecture of Staff Management Information System ........... 53

5.2 INCEPTION PHASE............................................................................ 56
  5.2.1 Modelling Use Case for the training management subsystem .......... 56
  5.2.2 Definition of the Actors.............................................................. 57
  5.2.3 Definition of the Use Case.......................................................... 58
  5.2.4 Conceptual Model .................................................................... 61
  5.2.5 Contracts for system operations.................................................. 63

5.3 ELABORATION PHASE ................................................................. 70
  5.3.1 Collaboration diagram ............................................................... 70
  5.3.2 Activity diagram........................................................................ 76
  5.3.3 Class diagram............................................................................ 78

5.4 CONSTRUCTION PHASE ............................................................... 80
  5.4.1 Packages in the system.............................................................. 80

5.5 Summary......................................................................................... 84

CHAPTER SIX: EVALUATION.............................................................. 85

6.1 System Requirement Testing and Results........................................ 85

6.2 Evaluation....................................................................................... 87

6.3 Summary......................................................................................... 88

CHAPTER SEVEN: CONCLUSION......................................................... 89
LIST OF TABLE

Table 7.1: Actual System Performance.............................................................. 86
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1.1</td>
<td>Practical and systematic approach to training</td>
<td>5</td>
</tr>
<tr>
<td>Figure 2.1</td>
<td>HRIS Model</td>
<td>11</td>
</tr>
<tr>
<td>Figure 2.2</td>
<td>HRIS Database Illustration</td>
<td>15</td>
</tr>
<tr>
<td>Figure 2.3</td>
<td>Current University HR Systems Architecture</td>
<td>17</td>
</tr>
<tr>
<td>Figure 2.4</td>
<td>Satellite systems supplementing PPS</td>
<td>19</td>
</tr>
<tr>
<td>Figure 2.5</td>
<td>HRMIS Components</td>
<td>24</td>
</tr>
<tr>
<td>Figure 2.6</td>
<td>Korea Human Resource System</td>
<td>26</td>
</tr>
<tr>
<td>Figure 3.1</td>
<td>The lifecycle of the Rational Unified Process</td>
<td>30</td>
</tr>
<tr>
<td>Figure 3.2</td>
<td>Activities, Artifacts, and Workers</td>
<td>33</td>
</tr>
<tr>
<td>Figure 3.3</td>
<td>An Example of a use case diagram</td>
<td>35</td>
</tr>
<tr>
<td>Figure 3.4</td>
<td>An example of Class Diagram</td>
<td>37</td>
</tr>
<tr>
<td>Figure 3.5</td>
<td>An example of a class diagram – inheritance</td>
<td>38</td>
</tr>
<tr>
<td>Figure 3.6</td>
<td>An example of Sequence Diagram</td>
<td>39</td>
</tr>
<tr>
<td>Figure 3.7</td>
<td>An example of an activity diagram</td>
<td>40</td>
</tr>
<tr>
<td>Figure 4.1</td>
<td>Training as a part of the business system</td>
<td>43</td>
</tr>
<tr>
<td>Figure 4.2</td>
<td>The Instructional Systems Design (ISD) Model</td>
<td>45</td>
</tr>
<tr>
<td>Figure 4.3</td>
<td>The training needs assessment process</td>
<td>47</td>
</tr>
<tr>
<td>Figure 4.4</td>
<td>Overview Of The Training Needs Analysis Process</td>
<td>48</td>
</tr>
</tbody>
</table>
Figure 4.5: Needs identification ................................................................. 50

Figure 5.1. Conceptual System Architecture For Staff Management Information

                                                      System ................................................................. 54

Figure 5.2: Architecture of Web Application .............................................. 56

Figure 5.3: Use case diagram ................................................................. 57

Figure 5.4: Diagram for the conceptual model ........................................... 62

Figure 5.5: Collaboration diagram: View training information ..................... 70

Figure 5.6: Collaboration diagram: View evaluation form ........................... 70

Figure 5.7: Collaboration diagram: View score ......................................... 71

Figure 5.8: Collaboration diagram: View analysis report ............................ 71

Figure 5.9: Collaboration diagram: Register training programmes ................. 72

Figure 5.10: Collaboration diagram: Delete training programmes .................. 72

Figure 5.11: Collaboration diagram: Update training information .................. 72

Figure 5.12: Collaboration diagram: Register evaluation form ..................... 73

Figure 5.13: Collaboration diagram: Update evaluation form ....................... 73

Figure 5.14: Collaboration diagram: Update score ..................................... 73

Figure 5.15: Collaboration diagram: Delete score ..................................... 74

Figure 5.16: Collaboration diagram: Update training analysis ...................... 74

Figure 5.17: Collaboration diagram: Delete training analysis ....................... 75

Figure 5.18: Collaboration diagram: Submit evaluation form ....................... 75

Figure 5.19: Activity diagram for training analysis process ......................... 77
Figure 5.20: Class diagram for training management subsystem ........................................ 79
Figure 5.21: Package diagram for system concept ................................................................. 80
Figure 5.22: Database package diagram ................................................................................... 81
Figure 5.23: Package diagram for training administrator ........................................................ 81
Figure 5.24: Package diagram for maintenance ........................................................................ 82
Figure 5.25: Package diagram for training analysis management .............................................. 83
Figure 5.26: Package diagram for staff ..................................................................................... 83
CHAPTER 1

INTRODUCTION

This project is initiated upon the request of course TZ6996 as one of the graduation requirements of MSc (IT). The purpose of this project is to redesign existing staff management information system used in Teacher’s Training College to a web-based database application. Rational Unified Process methodology will be used and Unified Modeling Language (UML) is chosen for a notation. A prototype system named Sistem Maklumat Pengurusan Staf Maktab/Institusi Perguruan has been developed. The system has the capabilities to analyze and identify the training needs for the staff development in Teacher’s Training College.

The first part of this chapter gives an overview about the human resource information system and the training needs. The next part briefs on problem statement, objectives, project scope, and hardware and software requirements.
The contents of the thesis is for internal user only
BIBLIOGRAPHY


92


KPMG Consulting (July 25, 2001). *Final Report of University of California HRIS Needs Assessment*. Available at:

http://www.ucop.edu/irc/nba/hris/082801report.pdf


Rockwell Automation (2002). *Training Needs Analysis - Adding Value to Training*. Available at: http://www.rockwellautomation.co.uk/training/tna.htm


95

