Abstract

Expert system for Ellipse begins with company’s requirement of accumulating knowledge about its main product. To fulfill the requirement, integrated steps of building versatile expert system is needed. The Methodology used is top down classification of information engineering and expert system development life cycle. Top down classification produces entity analysis, organization vs. function, organization vs. location, business function vs. information subject, organization vs. business function, and organization vs. information subject analysis. Top down classification provides information regarding how the software will be used in organization. The expert system side begins with knowledge acquisition by interviewing an expert and reading manuals. Based on information gathering in knowledge acquisition, knowledge representation is built as a foundation for the knowledge base. The inference engine uses built-in backward chaining against knowledge base to give solutions to the problems. The goal of this thesis is to build a prototype of multi-user expert system for accumulating knowledge of main product of the company – Ellipse. The expert system will help company to build its intelligence capital, increase quality of services to clients, and equip all consultants with valuable knowledge.

Keywords: multi-user expert system, top down classification, expert, knowledge acquisition, knowledge representation, knowledge base, inference engine.
Table Of Contents

ACKNOWLEDGEMENTS ................................................................. Error! Bookmark not defined.

ABSTRACT ....................................................................................................................... i

TABLE OF CONTENTS........................................................................................................ 2

LIST OF TABLES ......................................................................................................... Error! Bookmark not defined.

LIST OF FIGURES ....................................................................................................... Error! Bookmark not defined.

CHAPTER 1 INTRODUCTION ..................................................................... Error! Bookmark not defined.

1.1. BACKGROUND .............................................................................. Error! Bookmark not defined.

1.2. PROBLEM DEFINITION ............................................................... Error! Bookmark not defined.

1.3. GOAL AND BENEFIT ...................................................................... Error! Bookmark not defined.

1.3.1. Goal ....................................................................................... Error! Bookmark not defined.

1.3.2. Benefit .................................................................................. Error! Bookmark not defined.

1.4. SCOPE OF THE PROJECT .......................................................... Error! Bookmark not defined.

CHAPTER 2 THEORETICAL FOUNDATION .................................................... Error! Bookmark not defined.

2.1. ARTIFICIAL INTELLIGENCE ...................................................... Error! Bookmark not defined.

2.1.1. Definition ............................................................................ Error! Bookmark not defined.

2.1.2. Major Fields of Artificial Intelligence ......................................... Error! Bookmark not defined.

2.2. EXPERT SYSTEM .......................................................................... Error! Bookmark not defined.

2.2.1. Definition ............................................................................ Error! Bookmark not defined.

2.2.2. Major Components of Expert Systems ...................................... Error! Bookmark not defined.

2.3. EXPERT SYSTEM DEVELOPMENT LIFE CYCLE (ESDLC) ............... Error! Bookmark not defined.

2.3.1. Steps in Developing Expert System ......................................... Error! Bookmark not defined.

2.3.2. Differences with System Development Life Cycle (SDLC) ........ Error! Bookmark not defined.

2.4. ELLIPSE ..................................................................................... Error! Bookmark not defined.

CHAPTER 3 METHODOLOGY ............................................................... Error! Bookmark not defined.

3.1. GENERAL STRATEGY OF THE COMPANY .................................... Error! Bookmark not defined.

3.1.1. History .................................................................................. Error! Bookmark not defined.


3.2. PROFESSIONAL SERVICES ....................................................... Error! Bookmark not defined.

3.2.1. Main Activities ................................................................. Error! Bookmark not defined.

3.2.2. Organization Structure ......................................................... Error! Bookmark not defined.

3.3. SYSTEM ANALYSIS ................................................................. Error! Bookmark not defined.

3.3.1. Organization Function Analysis .............................................. Error! Bookmark not defined.

3.3.2. Entity Analysis ................................................................. Error! Bookmark not defined.

3.3.3. Organization – Location Matrix ............................................. Error! Bookmark not defined.

3.3.4. Business Function – Information Subject Matrix ..................... Error! Bookmark not defined.

3.3.5. Organization – Business Function Matrix ............................... Error! Bookmark not defined.

3.3.6. Organization – Information Subject Matrix ............................. Error! Bookmark not defined.
3.4. EXPERT SYSTEM ANALYSIS...........................................ERROR! BOOKMARK NOT DEFINED.
   3.4.1. Knowledge Acquisition......................................Error! Bookmark not defined.
   3.4.2. Knowledge representation..................................Error! Bookmark not defined.
3.5. CRITICAL SUCCESS FACTOR ANALYSIS .....................ERROR! BOOKMARK NOT DEFINED.

CHAPTER 4 RESULT AND DISCUSSION .........ERROR! BOOKMARK NOT DEFINED.
   4.1. EXPERT SYSTEM NEEDS IN PROFESSIONAL SERVICES DEPARTMENTERROR! BOOKMARK NOT DEFINED.
   4.2. SYSTEM ARCHITECTURE.......................................ERROR! BOOKMARK NOT DEFINED.
   4.3. CORE EXPERT SYSTEM .........................................ERROR! BOOKMARK NOT DEFINED.
      4.3.1. Knowledge Base .........................................Error! Bookmark not defined.
      4.3.2. Inference Engine .........................................Error! Bookmark not defined.
   4.4. DATABASE.......................................................ERROR! BOOKMARK NOT DEFINED.
      4.4.1 Data Structure ............................................Error! Bookmark not defined.
      4.4.2 Entity Relationship Diagram ............................Error! Bookmark not defined.
   4.5. SYSTEM INTERFACE............................................ERROR! BOOKMARK NOT DEFINED.
      4.5.1. Screen Design ............................................Error! Bookmark not defined.
      4.5.2. Interface Protocol Design ...............................Error! Bookmark not defined.
   4.7. EVALUATION.....................................................ERROR! BOOKMARK NOT DEFINED.
      4.7.1. Performance Test .........................................Error! Bookmark not defined.

CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONSERROR! BOOKMARK NOT DEFINED.
   5.1. CONCLUSIONS ..................................................ERROR! BOOKMARK NOT DEFINED.
   5.2. RECOMMENDATIONS .............................................ERROR! BOOKMARK NOT DEFINED.

BIBLIOGRAPHY .....................................................ERROR! BOOKMARK NOT DEFINED.
RESUME....................................................................ERROR! BOOKMARK NOT DEFINED.
ATTACHMENT 1 EVALUATION FORM............ERROR! BOOKMARK NOT DEFINED.
ATTACHMENT 2 EXPERT TEST .................ERROR! BOOKMARK NOT DEFINED.