

**Context-based Translation of Constant Concept
Values in E-Business**

by

Xin Guan

Master of E-Commerce Technology

2008



**Faculty of Science and Technology
University of Macau**

TABLE OF CONTENTS

LIST OF FIGURES.....	III
LIST OF TABLES.....	IV
LIST OF ABBREVIATIONS.....	V
ACKNOWLEDGMENTS	VII
CHAPTER 1: INTRODUCTION	1
1.1. MOTIVATION.....	2
1.2. OBJECTIVE.....	4
1.3. DESCRIPTION OF ISSUE.....	5
1.4. SOLUTION: CONTEXTUAL VALUE TRANSLATION APPROACH.....	6
1.5. CONTRIBUTION OF THE THESIS.....	7
1.6. ORGANIZATION OF THE THESIS	7
CHAPTER 2: LITERATURE SURVEY	9
2.1. HCM RESEARCH ON BUSINESS INFORMATION EXCHANGE	9
2.2. CONSTANT VALUES IN BUSINESS INFORMATION EXCHANGE.....	11
2.2.1. INCONSISTENT CONSTANT VALUE COMPOSITION	11
2.2.2. INACCURATE TRANSLATION ON CONSTANT VALUES	11
2.3. EXISTING SOLUTIONS TO SEMANTIC CONSISTENCY ISSUE ON CONSTANT VALUES	12
2.3.1. COLLABORATIVE MAPPING STRATEGY	12
2.3.2. APPROACHES TO WORD SENSE DISAMBIGUATION.....	13
2.4. REQUIREMENTS OF A VIABLE APPROACH.....	16
2.5. SUMMARY.....	17
CHAPTER 3: CONTEXTUAL VALUE TRANSLATION APPROACH	18
3.1. CONTEXTUAL VALUE TRANSLATION (CAT) FRAMEWORK.....	19
3.1.1. VALUE DICTIONARY DATA MODELS (VDDTs).....	20
3.1.2. VALUE DICTIONARY EDITORS (VDEs).....	23
3.1.3. DATA SOURCE REPOSITORIES (DSRs).....	29
3.1.4. DISTRIBUTED CONTEXT TRANSFORMER (DCT)	29
3.1.5. REIFIED DOCUMENT EXCHANGERS (RDEs).....	40
3.2. FEATURES OF CAT APPROACH.....	40
3.3. SUMMARY.....	41
CHAPTER 4: CONTEXTUAL VALUE TRANSLATION PROTOTYPE	42
4.1. ARCHITECTURE OF CAT PROTOTYPE.....	42
4.2. IMPLEMENTATION TECHNOLOGIES BEHIND CAT PROTOTYPE	45
4.3. IMPLEMENTATION OF CAT PROTOTYPE	46
4.3.1. VALUE DICTIONARY EDITORS	46
4.3.2. REIFIED DOCUMENT TRANSFORMER	52
4.4. VALUE DICTIONARY COMPILATION AND REIFIED DOCUMENT TRANSFORMATION: PERSPECTIVES FROM DICTIONARY DESIGNER AND USER.....	54
4.4.1. COMMON CONTEXTUAL VALUE DICTIONARY COMPILATION.....	55
4.4.2. LOCAL CONTEXTUAL VALUE DICTIONARY COMPILATION.....	57
4.4.3. REIFIED DOCUMENT TRANSFORMATION	59
CHAPTER 5: EVALUATION OF CAT APPROACH.....	61
5.1. EVALUATION CRITERIA	61

5.2. EXPERIMENTAL SETTING.....	61
5.3. EVALUATION RESULTS.....	63
5.4. EXPLANATION TO EXPERIMENT RESULTS	66
5.5. SUMMARY	66
CHAPTER 6: CONCLUSION	67
6.1. SUMMARY	67
6.2. IMPLICAITON OF THE RESEARCH.....	68
6.3. FUTURE WORK	68
BIBLIOGRAPHY.....	70
APPENDIX A: AN EMPIRICAL INVESTIGATION TO CONSTANT CONCEPT VALUES IN E-BUSINESS INFORMATION DOCUMENTS	76
APPENDIX B: TRANSALTION SYSTEMS ON INTERNET	77
APPENDIX C: DATA SOURCE SPECIFICATION	79
APPENDIX D: CONCEPT CONTEXTS FOR EXPERIMENT	83
APPENDIX E: DETAILED INFORMATION OF THE HUMAN TRANSLATORS	88
APPENDIX F: GOLD-STANDARD TRANSLATIONS FOR EXPERIMENT	89