



# PERSONAL ACCIDENT INFORMATION SYSTEM OF INSURANCE COMPANY

by

Ms. Narawadee Sathiyangkoon

A Final Report of the Three - Credit Course  
CS 6998 System Development Project

Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
Master of Science  
in Computer Information Systems  
Assumption University

November, 2000



**St. Gabriel's Library, Au****Personal Accident Information System  
of Insurance Company**

by

Ms. Narawadee Sathityangkoon

A large, faint watermark of the Assumption University of Thailand logo is centered on the page. The logo is circular, featuring a central shield with a blue and white design, flanked by golden laurel branches. Above the shield is a crown. Below the shield is a banner with the text 'LABOR OMNIA VINCIT'. The outer ring of the logo contains the text 'ASSUMPTION UNIVERSITY OF THAILAND' at the top and 'มหาวิทยาลัยอัสสัมชัญ' at the bottom, with 'SINCE 1969' in the center of the bottom arc.

A Final Report of the Three-Credit Course  
CS 6998 System Development Project

Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
Master of Science  
in Computer Information Systems  
Assumption University

November 2000

Project Title	Personal Accident Information System of Insurance Company
Name	Ms. Narawadee Sathityangkoon
Project Advisor	Dr. Sudhiporn Patumtaewapibal
Academic Year	November 2000

---

The Graduate School of Assumption University has approved this final report of the three-credit course, CS 6998 System Development Project, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer Information Systems.

Approval Committee:



(Dr. Sudhiporn Patumtaewapibal)  
Advisor



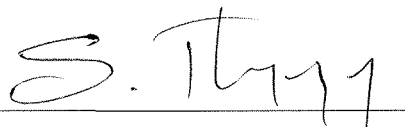
(Prof. Dr. Srisakdi Charmonman)  
Chairman



(Air Marshal Dr. Chulit Meesajjee)  
Dean and Co-advisor



(Asst. Prof. Dr. Vichit Avatchanakorn)  
Member



(Assoc. Prof. Somchai Thayarnyong)  
MUA Representative

November 2000

## ABSTRACT

Nowadays business plays an important role in our human life. Every kind of business has to improve productivity for surviving in the competitive market. The competitors include not only within the country but also among other countries. Increased international competition in the insurance business has made the continuous pursuit of great productivity, lower costs, and better customer service. Therefore modern computer systems have to get involved in order to race with the competition. Personal Accident Information System is the one that has been proved to be an efficient computerized system for the company.

Personal Accident Insurance becomes great value for Better Life Insurance Company. Before adopting this Personal Accident Insurance Information System, analyzing and developing a new system has to be done in order to eliminate unnecessary workflow, create information control and reduce cost of policy forms. The methods for developing this Personal Accident Information System are studying the existing system, analyzing the problems, designing insurance processes, and mapping these processes to computerized personal accident information system.

The existing system, Foxpro system, does not support the new system. It is too slow and expensive to upgrade. The new system presents application on PC-LAN base, a kind of network used, within the company. Users can share database with one another. Thus, cost of policy form, hardware, software, other equipment, and salary will be decreased. Moreover this system is developed to improve the work efficiency at operational level and support DSS and ESS at management levels that require reliable, accurate, and timeliness of information and report.

One of the project's objectives is to provide a computerized system in accordance to the system analysis and design techniques. The new system project includes the user requirement, system design, hardware and software requirements, security and control, input screen, and output report. Within the new system, Visible Analyst is used for designing data flow, and structure diagram. Moreover Microsoft Office application is used for designing screen, report, and database as well. The important thing to design the screen is to make users feel convenient and familiar to the new system, therefore every screen design uses icon, color, name field which are easy to use and understand. Furthermore testing should be done before the system is launched and users must get involved in system testing as well.



## ACKNOWLEDGEMENTS

There are a lot of people who get involved in this project in order to make it succeed. These people assist and guide me to analyze and design the system in the right way to what it should be. The users of the existing system try to give me a lot of requirements, problems, comments and suggestions because they would like to improve the current system to be the most efficient one. Many requirements and problems are discussed and solved as much as possible. That means some of them can not be done because it is beyond our capacity such as limited budget. We try to use the most suitable tools within budget for the new system which is the concept that must be followed.

At this opportunity, the writer would like to thank the project committee members of Graduate of Computer Information Systems at Assumption University for their advice and everyone who gave her their time, information, ideas and lots of suggestions, which are very useful to develop this project.

First and foremost she would like to thank Dr.Sudhiporn Patumtaewapibal, her advisor, for his invaluable guidance provided me during the entire course of the project. She is proud to have the opportunity to study under him at Assumption University.

She also would like to extend her appreciation to Air Marshal Dr. Chulit Meesajjee, Dean of Graduate School of Computer Information Systems and once again to Prof.Dr. Srisakdi Charmonman, Chairman MS(CIS) Board, for providing the building blocks to this course.

She also extend her sincere thanks to Dr. Ouen Pin-Ngern, her instructor of Information System Analysis and System Design, who taught her the analysis and

design methodology, refining concept and techniques which are very important basic for system development and design students. It also gives her a greatness of gratitude to her advisor, Dr. Sudhiporn Patumtaewapibal who taught her Computer Network and the useful concept of networking system.

She also would like to thank her friends who help her pass through the period of this project course. Thanks for their help and she really enjoys being pleasurable to work with all of them.

As a final note, she thanks her parents for their support and their willingness to brighten her future with this study.





TABLE OF CONTENTS

<u>Chapter</u>	<u>Page</u>
ABSTRACT	i
ACKNOWLEDGEMENTS	iii
LIST OF FIGURES	v
LIST OF TABLES	viii
I. INTRODUCTION	1
1.1 Background of the Project	1
1.2 Objectives of the Project	5
1.3 Scope of the Project	6
1.4 Deliverables	7
1.5 Project Plan	10
II. THE EXISTING SYSTEM	11
2.1 Background of the Organization	11
2.2 Current Problems and Areas for Improvement	15
2.3 Existing System	20
III. THE PROPOSED SYSTEM	21
3.1 System Specification	21
3.2 System Design	24
3.3 Hardware and Software Requirement	45
3.4 Security and Control	52
3.5 Cost-Benefit Analysis	57



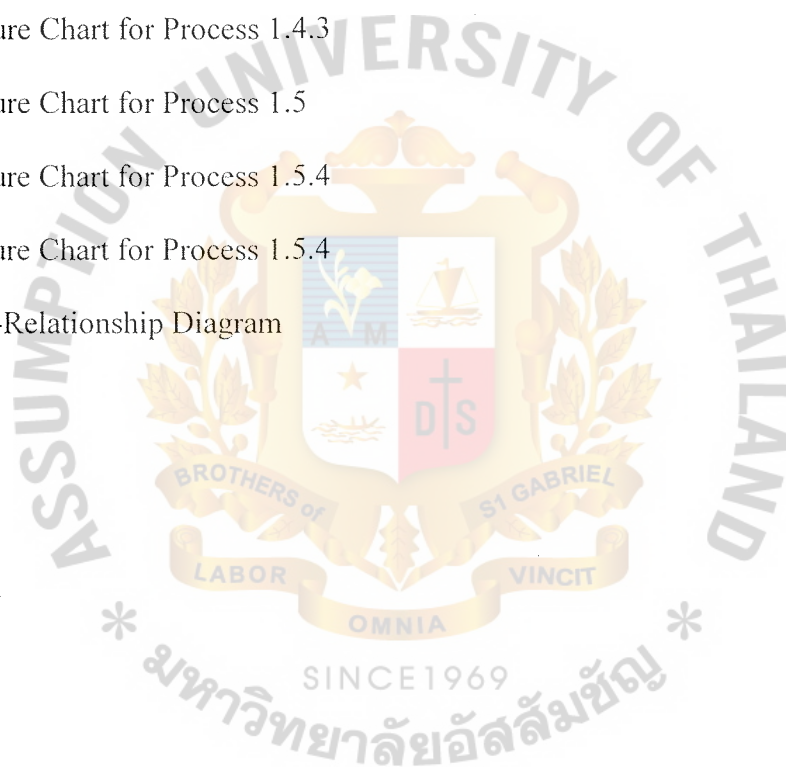
<u>Chapter</u>	<u>Page</u>
IV. PROJECT IMPLEMENTATION	74
4.1 Overview of Project Implementation	74
4.2 Source Code	78
4.3 Test Plan	79
4.4 Conversion	82
V. CONCLUSIONS AND RECOMMENDATIONS	84
5.1 Conclusions	84
5.2 Recommendations	87
APPENDIX A USER INTERFACE DESIGN / USER MANUAL	89
APPENDIX B REPORT DESIGN	110
APPENDIX C DATABASE DESIGN	119
APPENDIX D PROCESS SPECIFICATION	124
APPENDIX E DATA DICTIONARY	153
APPENDIX F STRUCTURE CHART	165
APPENDIX G ENTITY RELATIONSHIP DIAGRAM	185
BIBLIOGRAPHY	186

## LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1.1 Project Plan of Personal Accident Information System	10
2.1 Organization Chart of Better Life Insurance company	13
2.2 Organization Chart of Personal Accident Department	14
2.3 Context Diagram of the Existing System	20
3.1 Context Diagram of the Proposed System	26
3.2 Data Flow Diagram Level 0 of the Proposed System	27
3.3 Data Flow Diagram Level 1 (Collect Application Process)	28
3.4 Data Flow Diagram Level 1 (Underwriting Process)	29
3.5 Data Flow Diagram Level 1 (Issuing Policy Process)	30
3.6 Data Flow Diagram Level 1 (Billing Process)	31
3.7 Data Flow Diagram Level 1 (Making Report Process)	32
3.8 Data Flow Diagram Level 2 (Process 1.1)	33
3.9 Data Flow Diagram Level 2 (Process 1.2)	34
3.10 Data Flow Diagram Level 2 (Process 1.3)	35
3.11 Data Flow Diagram Level 2 (Process 2.1)	36
3.12 Data Flow Diagram Level 2 (Process 2.2)	37
3.13 Data Flow Diagram Level 2 (Process 2.3)	38
3.14 Data Flow Diagram Level 2 (Process 3.1)	39
3.15 Data Flow Diagram Level 2 (Process 3.2)	40
3.16 Data Flow Diagram Level 2 (Process 3.3)	41
3.17 Data Flow Diagram Level 2 (Process 4.1)	42
3.18 Data Flow Diagram Level 2 (Process 4.2)	43

<u>Figure</u>	<u>Page</u>
3.19 Data Flow Diagram Level 2 (Process 4.3)	44
3.20 Network Configuration	51
3.21 Breakeven Analysis	71
3.22 Payback Analysis	73
A.1 Login Form	90
A.2 Change Password Form	92
A.3 Personal Accident Main Menu	94
A.4 Policy Entry Client Information Form	96
A.5 Policy Entry General Information Form	98
A.6 Policy Entry Beneficiary Form	100
A.7 Policy Number Form	102
A.8 Product Form	104
A.9 Producer Form	106
A.10 Report Form	108
F.1 Structure Chart for Data Flow Diagram	165
F.2 Structure Chart for Process 1.1	166
F.3 Structure Chart for Process 1.1.1	167
F.4 Structure Chart for Process 1.1.2	168
F.5 Structure Chart for Process 1.1.3	169
F.6 Structure Chart for Process 1.2	170
F.7 Structure Chart for Process 1.2.1	171
F.8 Structure Chart for Process 1.2.2	172
F.9 Structure Chart for Process 1.2.3	173
F.10 Structure Chart for Process 1.3	174

<u>Figure</u>	<u>Page</u>
F.11 Structure Chart for Process 1.3.1	175
F.12 Structure Chart for Process 1.3.2	176
F.13 Structure Chart for Process 1.3.3	177
F.14 Structure Chart for Process 1.4	178
F.15 Structure Chart for Process 1.4.1	179
F.16 Structure Chart for Process 1.4.2	180
F.17 Structure Chart for Process 1.4.3	181
F.18 Structure Chart for Process 1.5	182
F.19 Structure Chart for Process 1.5.4	183
F.20 Structure Chart for Process 1.5.4	184
G.1 Entity-Relationship Diagram	185





## LIST OF TABLES

<u>Table</u>	<u>Page</u>
3.1 Addition Hardware Specification	50
3.2 Addition Software Specification	50
3.3 Cost of New Hardware, Software, and Others	60
3.4 Estimated Projected Cost	61
3.5 Cost / Benefit Analysis of Proposed System	65
3.6 Existing System Cost Analysis	66
3.7 Five Years Accumulated Existing System Cost	67
3.8 Computerized System Cost Analysis	68
3.9 Five Years Accumulated Computerized System Cost	70
3.10 Payback Period Analysis	72
5.1 The Degree of Achievement of the Proposed System	85
B.1 Monthly Production by Agent Report	110
B.2 Monthly Production by Product Report	111
B.3 Summary Production Report	112
B.4 Daily Policy Transaction Issued Report	113
B.5 Daily Policy Transaction Issued Report	114
B.6 High Sum Insured Customer Report	115
B.7 Cashless Card Detail Policy Issued Report	116
B.8 Renewal Policy Report	117
B.9 Black List Producer Report	118

<u>Table</u>	<u>Page</u>
C.1 Structure of Product Table	119
C.2 Structure of Plan Table	119
C.3 Structure of Coverage Table	120
C.4 Structure of State Table	120
C.5 Structure of District Table	120
C.6 Structure of Zip Code Table	121
C.7 Structure of Producer Table	121
C.8 Structure of Client Table	122
C.9 Structure of Policy Entry Table	123
C.10 Structure of Beneficiary Table	123
D.1 Process Specification of Process 1	124
D.2 Process Specification of Process 2	125
D.3 Process Specification of Process 3	126
D.4 Process Specification of Process 4	127
D.5 Process Specification of Process 5	128
D.6 Process Specification of Process 1.1	128
D.7 Process Specification of Process 1.2	129
D.8 Process Specification of Process 1.3	129
D.9 Process Specification of Process 1.1.1	129
D.10 Process Specification of Process 1.1.2	130
D.11 Process Specification of Process 1.1.3	130
D.12 Process Specification of Process 1.1.4	130
D.13 Process Specification of Process 1.2.1	131

<u>Table</u>	<u>Page</u>
D.14 Process Specification of Process 1.2.2	131
D.15 Process Specification of Process 1.2.3	131
D.16 Process Specification of Process 1.3.1	132
D.17 Process Specification of Process 1.3.2	132
D.18 Process Specification of Process 1.3.3	132
D.19 Process Specification of Process 2.1	133
D.20 Process Specification of Process 2.2	133
D.21 Process Specification of Process 2.3	134
D.22 Process Specification of Process 2.1.1	134
D.23 Process Specification of Process 2.1.2	135
D.24 Process Specification of Process 2.1.3	135
D.25 Process Specification of Process 2.2.1	136
D.26 Process Specification of Process 2.2.2	136
D.27 Process Specification of Process 2.2.3	136
D.28 Process Specification of Process 2.3.1	137
D.29 Process Specification of Process 2.3.2	137
D.30 Process Specification of Process 2.3.3	137
D.31 Process Specification of Process 2.3.4	138
D.32 Process Specification of Process 3.1	138
D.33 Process Specification of Process 3.2	139
D.34 Process Specification of Process 3.3	139
D.35 Process Specification of Process 3.1 .1	140
D.36 Process Specification of Process 3.1.2	140
D.37 Process Specification of Process 3.1.3	140

<u>Table</u>	<u>Page</u>
D.38 Process Specification of Process 3.2.1	141
D.39 Process Specification of Process 3.2.2	141
D.40 Process Specification of Process 3.2.3	141
D.41 Process Specification of Process 3.2.4	142
D.42 Process Specification of Process 3.2.5	142
D.43 Process Specification of Process 3.3.1	142
D.44 Process Specification of Process 3.3.2	143
D.45 Process Specification of Process 3.3.3	143
D.46 Process Specification of Process 3.3.4	144
D.47 Process Specification of Process 4.1	144
D.48 Process Specification of Process 4.2	145
D.49 Process Specification of Process 4.3	145
D.50 Process Specification of Process 4.1.1	146
D.51 Process Specification of Process 4.1.2	146
D.52 Process Specification of Process 4.1.3	147
D.53 Process Specification of Process 4.2.1	147
D.54 Process Specification of Process 4.2.2	147
D.55 Process Specification of Process 4.2.3	148
D.56 Process Specification of Process 4.3.1	148
D.57 Process Specification of Process 4.3.2	148
D.58 Process Specification of Process 4.3.3	149
D.59 Process Specification of Process 5.1	149
D.60 Process Specification of Process 5.2	150
D.61 Process Specification of Process 5.3	150



<u>Table</u>	<u>Page</u>
D.62 Process Specification of Process 5.4	151
E.1 Data Dictionary of Inventory Control System (Data Definition)	153
E.2 Data Dictionary of Inventory Control System (Data Structure)	160



# I. INTRODUCTION

## 1.1 Background of the Project

Better Life Insurance Company is a worldwide company. The head office is settled in New York. There are many branches around the world. Thailand has one. This project is concerned with Personal Accident Insurance, which is one type of insurance business. Nowadays insurance becomes an important thing that most people would like to buy to protect them from loss. For example, we can see that when we buy a car, you have to pay for compulsory mobile insurance as well. Moreover people pay more attention to their life. They buy personal accident insurance for themselves or other people they know because accidents can happen everywhere without expectation. Therefore; nowadays, insurance business becomes more popular than the past. For this reason, we have a chance to get more customers and inversely we get more competitors as well.

While the business is growing, Better Life Insurance Company has to develop to be the highest quality working, improving and innovating in order to provide the best service and products to our customers. Personal Accident Information System is one of the important system to be computerized. This system is needed to fulfill the Personal Accident Department's requirement and to make faster, more accurate, and more efficient operations. Therefore this system is the most suitable alternative to be used in order to make Better Life Insurance Company become Second To None company.

A system is defined as a set of concepts or parts that must work together to perform a particular function. An organization is a system or a collection of systems.

Every job in an organization is used by a system to produce a product or service. The product or service is the means by which an organization supports itself.

There are four inputs necessary in every system to produce a product or service:

- (1) People: The workers making up a group and linked by a common activity.
- (2) Material: The raw products, which go into the system.
- (3) Technology: The technique for achieving a practical purpose or goal.
- (4) Time: The measured period during which an action or process begins and ends.

Every system must also have at least one output in order to survive. The output can be a material product, such as a television or computer software; or a service, such as a protection agency or an insurance policy. The output of a particular system in an organization may be the final product, a service sold to its customers, or a product or service to aid or enhance the organization in its goal to produce a marketable product or service.

A large company may have several systems, which are generally broken down into departments or groups, while a small company may only have one system. All of these systems have three basic functions, which this project bases on as well:

- (1) Input: Something must be going into the system, otherwise, it is a mysterious sphere where products or services mystically radiate from it. The basic inputs of a system are material, people, technology, and time.
- (2) Process: Some type of work must be accomplished in the system. This work is the technology performed that changes the material input into the systems output.
- (3) Output: A desired service or product must be produced. If there is no output, then it is a black hole where things go in, but nothing emerges.

Information system analysis, design, and implementation are required in order to study the existing system in the office. The purpose of analysis of the system is to aid in the decision making process by defining all the elements, issues, facts, and features taking place in the Personal Accident System. The information gathered in this step provides a basic background for developers, consultants, contractors, etc. This step allows testing activity to understand the technical, non-technical, political, social, and cultural aspects of Personal Accident insurance system. This phase also allows the users to understand the testing activity and its purpose. Users often view outside activities as meddlers who interrupt their daily flow of work. These users are often on the defensive and hide their true feelings and facts. During this initial phrase you have to bring the users in on the development activities and make them a part of the solution. It is universally advised that the users of a proposed system be extensively involved in the construction of any new project. Besides introducing the users and the testing activity to each other, other benefits include that the users will accept and benefit from a system that they themselves helped to define. Also, nobody knows the system's requirement better than these people do. Knowing the basics of a system enables you to better understand the tasks that lay ahead. Although we are interested in the system as a whole, so that we may understand its purpose and goals, the main emphasis of this initial research should be on the people within the system. Regardless of which method you choose and what questions you ask, the data gathered must accurately reflect the specific tasks now being performed. The information gathered will be used as the basis to select the tasks that need to be developed. Through brainstorming and consensus building, the team develops a sequential list of tasks. Following this process, the team determines which tasks should be concerned. Task selection is based on the frequency, difficulty, criticality and the consequences of error



or poor performance. The last step in the analysis phase is to document the project and perform an estimate of the cost to implement it.

Information system design is concerned with the identification of system requirements based on the analysis of job performance requirements data obtained from experts in the job to be performed. This project develops system by following an approach below:

- (1) Analyze the system in order to completely understand it, and then describe the goals you wish to achieve in order to correct any shortcomings or faults within the system.
- (2) Design a method or model to achieve your goals.
- (3) Develop the method or model into a product
- (4) Implement the product
- (5) Evaluate the development system throughout the four phases and in the field to ensure it is heading in the right direction and achieving the desired results.

The five phases are ongoing activities that continue throughout the life of development system. After building a system, the other phases do not end once the program is implemented. The five phases are continually repeated on a regular basis to see if further improvements can be made.

Moreover the design must be an empirical one. This requires observation, measurement of behavior, careful evaluation of feedback, and a strong motivation to make design changes when needed.

Development makes people acquire new horizons, technologies, or viewpoints. It enables leaders to guide their organizations onto new expectations by being proactive rather than reactive. It enables workers to create better products, faster

services, and more competitive organizations. Furthermore this project tries to design and improve the efficiency of operation in the company. That is the major review of the company's operating method and system.

## **1.2 Objectives of the Project**

Having an objective is important. Without an objective, we could end up someplace else and not even know it. Objectives are the tools for guiding managers, users, and trainers. Managers need objectives so that they know what kind of return they are receiving from their investment. Users need them so that they know exactly what is expected of them. And trainers need them to plan and conduct the learning environment so that they may achieve the desired result.

The project has been studied in order that the proposed modified Personal Accident Information System of Personal Accident department would reduce repetitive manual work, operating time and friendly filling system. The objectives of this Personal Accident Information System are as follows:

- (1) To design and implement new computer-based information system.
- (2) To improve our customer service. Better Life Insurance Company will be the preferred choice for consumer and commercial lines insurance by providing customer satisfaction, second to none.
- (3) To improve system efficiency.
- (4) To provide underwriting services and quotations to producers and customers.
- (5) To reduce time consumption for issuing policy.
- (6) To make more profit in the marketing world.
- (7) To improve the work performance of Personal Accident Department.
- (8) To reduce the paper work, workload and save operation cost.

- (9) To increase the quality of work.
- (10) To obtain information requirements from management and provide new reports for the management's decision making.
- (11) To create good look working area. When the customer come to our company, they must be satisfied and our employees will be comfortable to work. Therefore the productivity will increase per employee.
- (12) To meet the company policy.
- (13) To increase the capability of the company.
- (14) To improve productivity in accordance with the company's overall objectives.
- (15) Provide new functions to console the users in the day-to-day operation.
- (16) Provide efficient storage and facilities.
- (17) Provide data communication and integration.

When employees have good skill in several duties, it can make one stop processing and reduce time for processing our work. Although an organization can provide tools to help users succeed, such as efficient system, training specialists, counselors, state-of-art training material, the ultimate responsibility for success belongs to the users.

### **1.3 Scope of the Project**

Before doing something, we should understand the scope of the system first. The scope of a system is the system's boundaries. For example, if we are analyzing a production department, we will notice that it takes many supplies to keep it operating, such as raw material to make the product, cleaning supplies, maintenance supplies, etc. Do not get led off into studying the inventory control department. They are probably

two entirely different systems. Stay within one system at a time until you thoroughly understand it.

This project focuses on the Personal Accident Information System which support the Personal Accident in the part of issuing policy for new business operation. This system can be classified area of operation into getting the customer information from the application, underwriting the application, issuing the policy, billing which will be taken care by account department and then creating the report.

According to many problems in the department, it requires an improvement for Personal Accident system, which will facilitate employees' performance and produce information used for the decision making efficiently.

The project will cover a major part of the Personal Accident Information System for Personal Accident service which can be categorized into:

- (1) To collect the user's requirements.
- (2) To create the existing system to be automated system.
- (3) To design data flow diagram.
- (4) To design entity relationship diagram.
- (5) To design screen layout for issuing policy.
- (6) To design the output report which shows the detail and status of each policy, agent, production, and product.

#### **1.4 Deliverables**

The deliverables for the personal accident insurance system are as follows:

- (1) Relational Database, which is developed using Microsoft Access. This Database consists of 10 Tables. These tables are as follows:
  - (a) Product Table
  - (b) Plan Table



- (c) Coverage Table
  - (d) State Table
  - (e) District Table
  - (f) Zip Code Table
  - (g) Producer Table
  - (h) Client Table
  - (i) Policy Entry Table
  - (j) Beneficiary Table
- (2) Input User Interface, which is developed using Microsoft Access are as follows:
- (a) Login Screen
  - (b) Change Password Screen
  - (c) Personal Accident Main Menu Screen
  - (d) Policy Entry Client Information Screen
  - (e) Policy Entry General Information Screen
  - (f) Policy Entry Beneficiary Screen
  - (g) Policy Number Screen
  - (h) Product Screen
  - (i) Producer Screen
  - (j) Report Screen
- (3) Various Reports, which is developed using Microsoft Access are as follows:
- (a) Monthly Production by Agent
  - (b) Monthly Production by Product
  - (c) Summary Production Report

- (d) Daily Policy Transaction Issued Report
- (e) Monthly Policy Transaction Issued Report
- (f) High Sum Insured Customer Report
- (g) Cashless Card Detail Policy Issued Report
- (h) Renewal Policy Report
- (i) Black List Producer Report



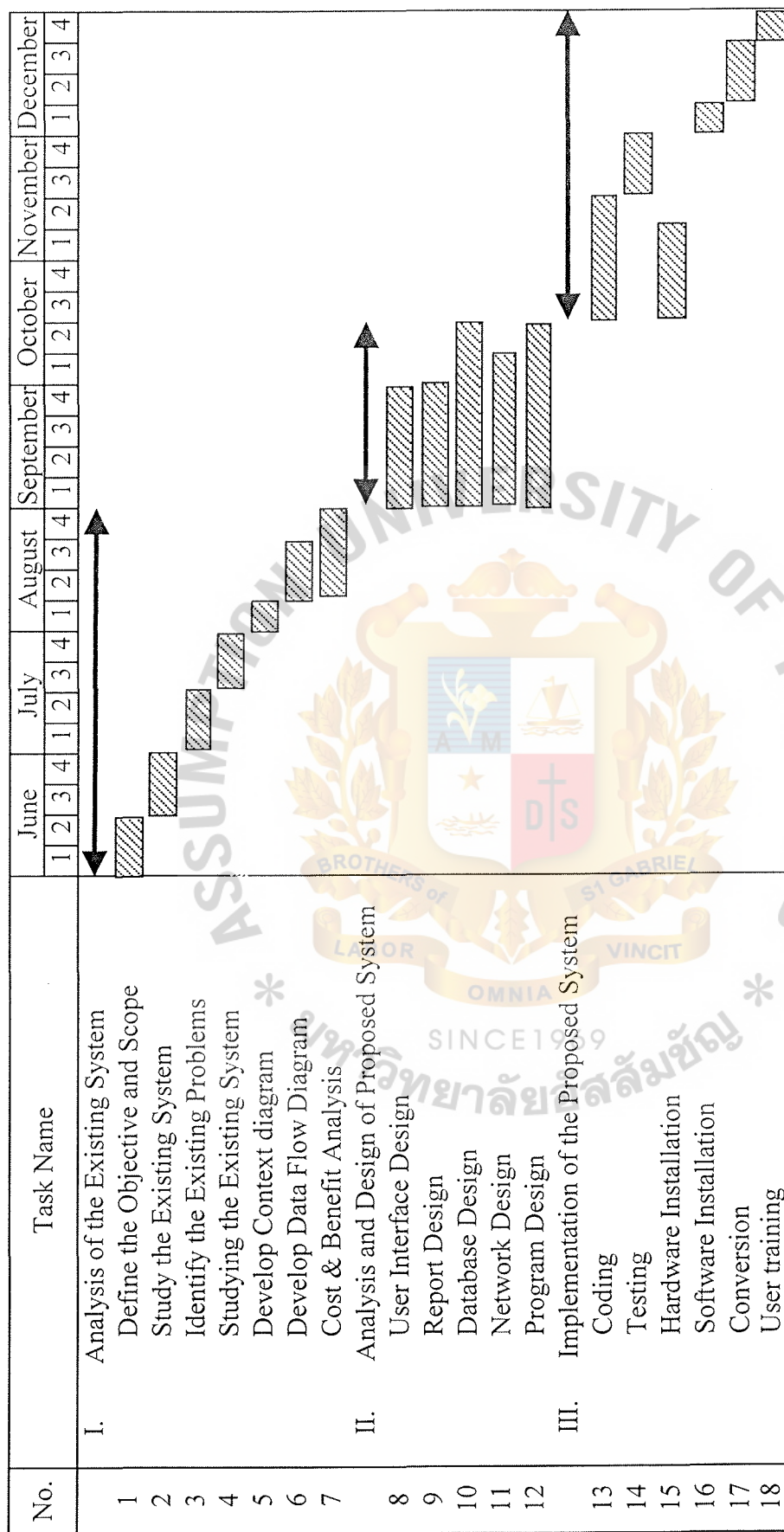


Figure 1.1. Project Plan of Personal Accident Information System.

## II. THE EXISTING SYSTEM

### 2.1 Background of the Organization

Most people concern about their risks. The function of insurance is to identify a particular risk and spread the costs of any losses that may occur over the whole pool of insured risks. Better life Insurance Company is a world leader in insurance and financial services with a global network and business franchise second to none. Within ten years, offices and agencies across China, Hong Kong, Indonesia, Jakarta, Kuala Lumpur and the Philippines had been established. This growth was fueled by focusing on hiring, training and promoting local people to managerial positions, a practice that remains hallmark of the Better Life's culture. The company becomes a leading global insurance organization because Better Life's capital base and strong brokerage community relationships enable the domestic operation companies to underwrite more significant risks and become major players in new markets requiring high capacity and specialized underwriting expertise. Management emphasizes tailoring products and services to specific market segments and stress deep technical expertise in underwriting, engineering risk management and other services. Therefore Better Life Insurance Company is a professional in Non-Life Insurance business. The company has eight lines of insurance business:

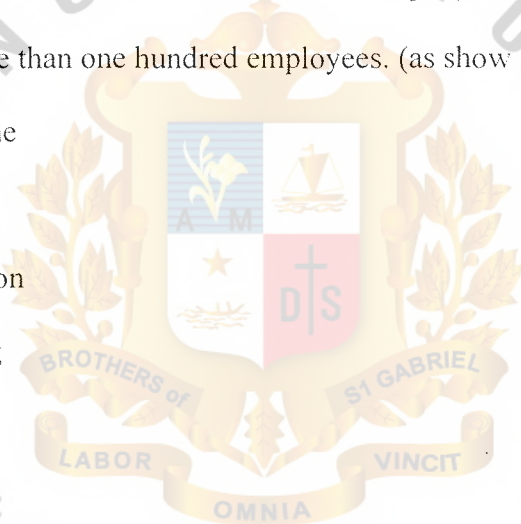
- (1) Automobile Insurance
- (2) Commercial Business Unit
- (3) Marine
- (4) Casualty
- (5) Energy
- (6) Accident & Health

- (7) Property
- (8) Financial Line

Better Life Insurance Company has been developed to be world class of Non-Life Insurance and to be a people organization where we are of the highest quality working, improving and innovating as a team to provide the best services and products to our customers. In addition, computer system has also been developed continuously. Introduction of new technology enables the staffs to produce higher quality output by using less time. Therefore the staffs can manage their job efficiently and effectively.

Organization chart of Better Life Insurance Company can be divided into six main functions with more than one hundred employees. (as show in Figure 2.1)

- (1) Financial Line
- (2) Account
- (3) Administration
- (4) Underwriting
- (5) Claim
- (6) Marketing\*
- (7) Agency & Broker





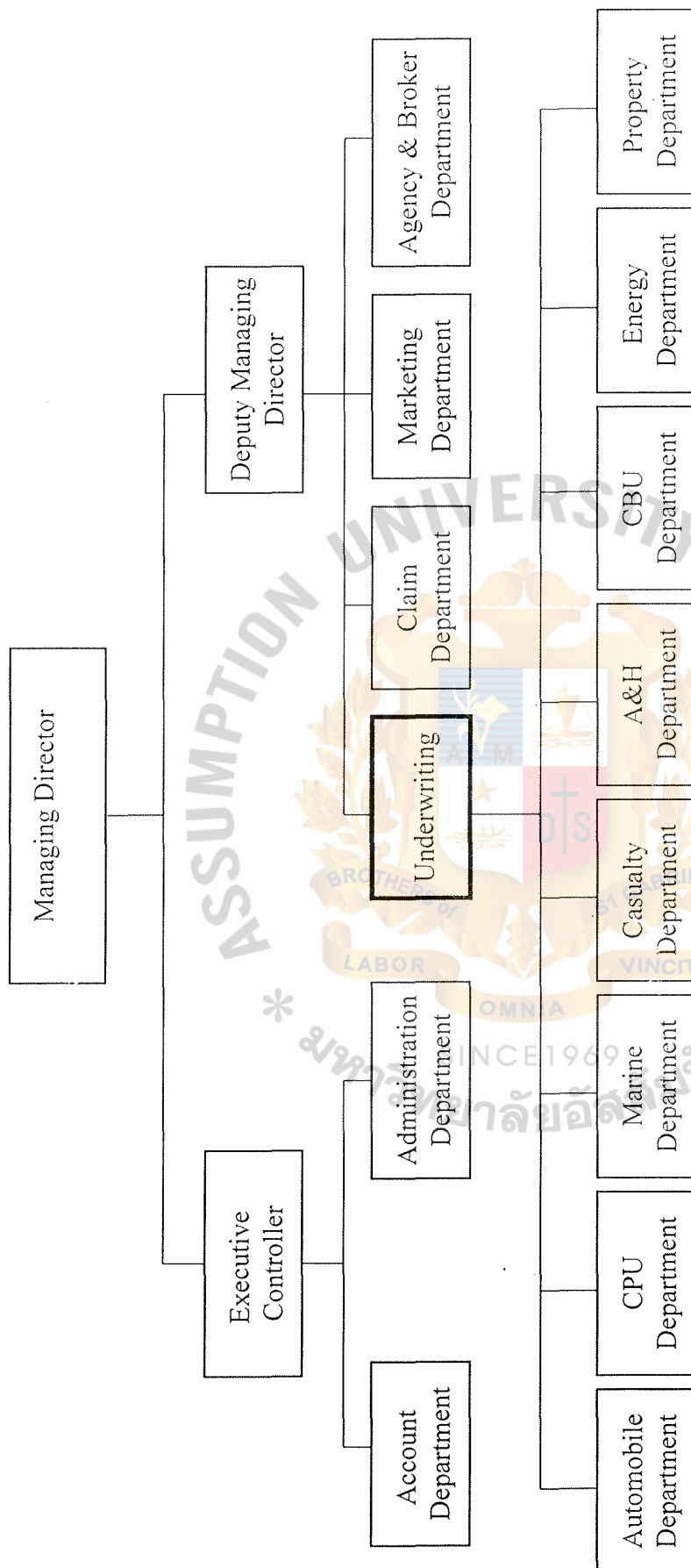


Figure 2.1. Organization Chart of Better Life Insurance Company.

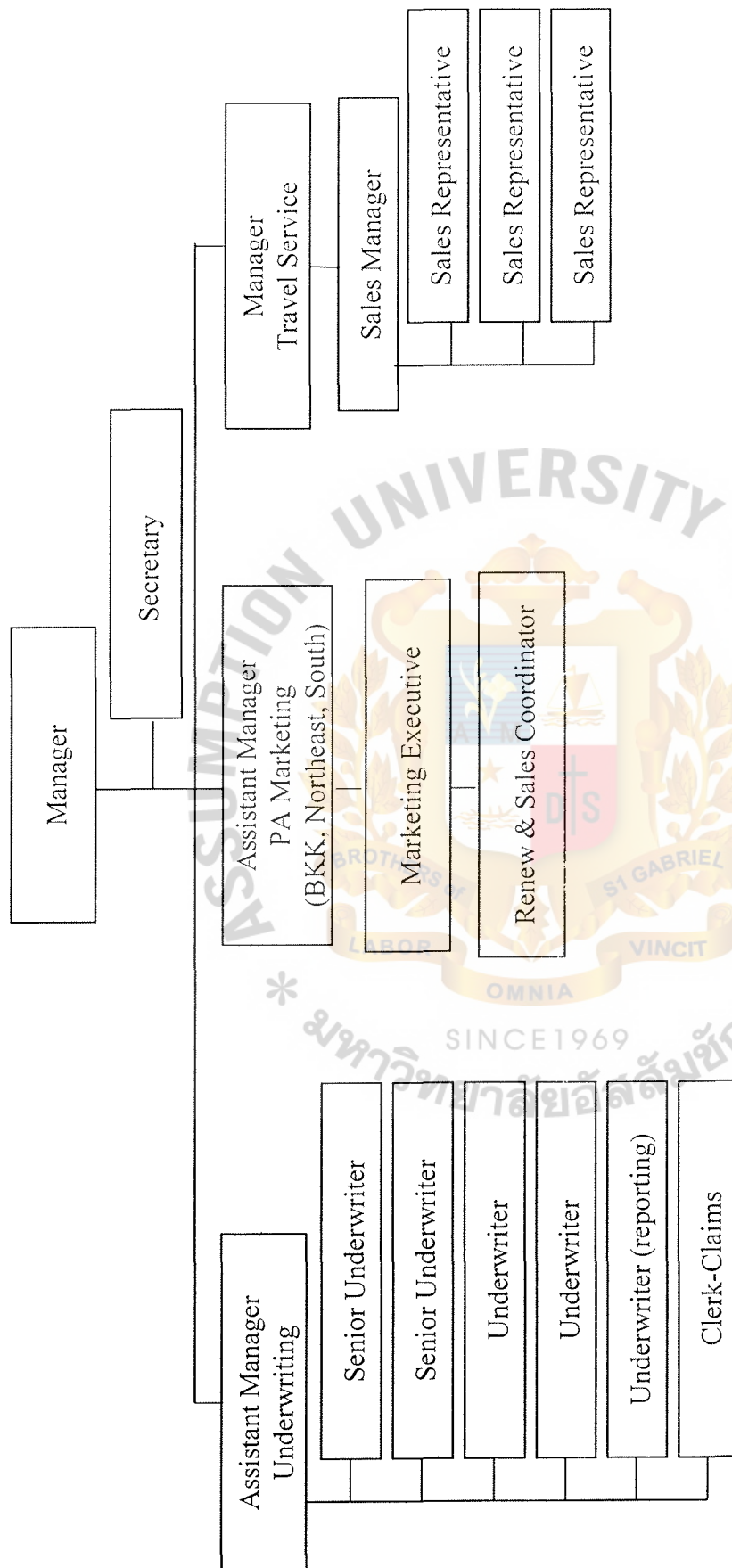


Figure 2.2. Organization Chart of Better Life Insurance Company.

## 2.2 Current Problems and Areas for Improvement

Everything in this world is not perfect. There are advantages and disadvantages in its own. Even if we do it the best we can, it has always got some problems. Although there are some problems, we have to face those problems in order to improve what we have right now. Those problems let us know the way to strengthen. Similar to the Personal Accident system, the old system has some problems as well. The improvement can be done by solving the existing problems described as follows:

- (1) A lot of processes for issuing policy.

In order to make new personal accident insurance business, it must go through many steps that will cause areas of work and a lot of paper work.

- (2) Inadequate sales and marketing information.

Customers' information is not stored in our system. When we would like to know this kind of information, we have to find it manually. No customer database is available. It is hard to control and follow up the application for Marketing Department.

- (3) Redundant checking and time consuming

Some package plans have to issue cashless card used for medical expenses with the contract hospital. Before issuing this card, we have to check whether this plan covers medical expenses or not. If it does, we will type the insured name and sum insured on the plastic card by typewriter which takes too much time to finish it.

- (4) Inaccurate information

When a customer likes to change his/her information such as address, name, etc. There is a chance to make a mistake because of not showing

client number on the screen. The officer may key new information into the wrong person. That will make big problems later.

(5) Useless space and pre-printed form

The company has to stock a lot of pre-printed policy paper forms in the storage because there is no form setting in the existing system. In the case of changing policy format, we have to throw the old form away which wastes a lot of papers and also area to keep these documents.

(6) Inadequate system support

The existing centralized computer system is so slow that it is hard to support all users at the same time efficiently. It is a burden to develop new application as well. Moreover it is difficult to connect with other open systems because it is the property of the company.

(7) Slow processing

Because of slow workflow, the bottleneck for producing the policy schedule and attachment always occurs. Moreover the hardware and software equipment can not access a lot of processing as the user need at the same time because the capacity of those equipment is not enough.

After considering the problems, we have to find the way out to solve those problems as much as we can. The improvement of Personal Accident Insurance System can be classified as follows:

(1) System Software

Our existing system is still using FoxPro language to operate the application program. In the real situation, it makes low ability and flexibility for complex system. By using new development tools in Window NT operating system such as Microsoft Access, Microsoft Visual

Basic and ODBC as middle ware and so on. All of these softwares can be shared to access every place where users have authority to use through the user interface. Moreover these new development tools will make the person who write the program feel comfortable and convenient to develop programs. It means that the programmers can develop programs faster than the old software on mini computer. We can save time to improve the system.

(2) Hardware

Even though we have the efficient software, sometimes we can't use it totally. The reason is that the hardware can't accept those software because it may be so old that have not enough capacity to run the software, old control processing unit can't access the new software, sometimes RAM is not enough and so on. If we would like to use the old computer, we have to upgrade it. If not, we have to buy the new computers, which are suitable for our new system. Due to the mini computers with a lot of user licenses that the company has used for many years, its performance is very slow when many users would like to use at the same time especially online system which needs real time respond to update the existing application and information. With the new centralized computing called Client / Server computing, we can save cost to update the system power, memory and hard disk space. We have just increased the power of this computing system which just uses personal computer base machine to operate.

(3) Paper Work

Right now a lot of processes to make the policy and attachment including cashless card are still done manually. Therefore the company



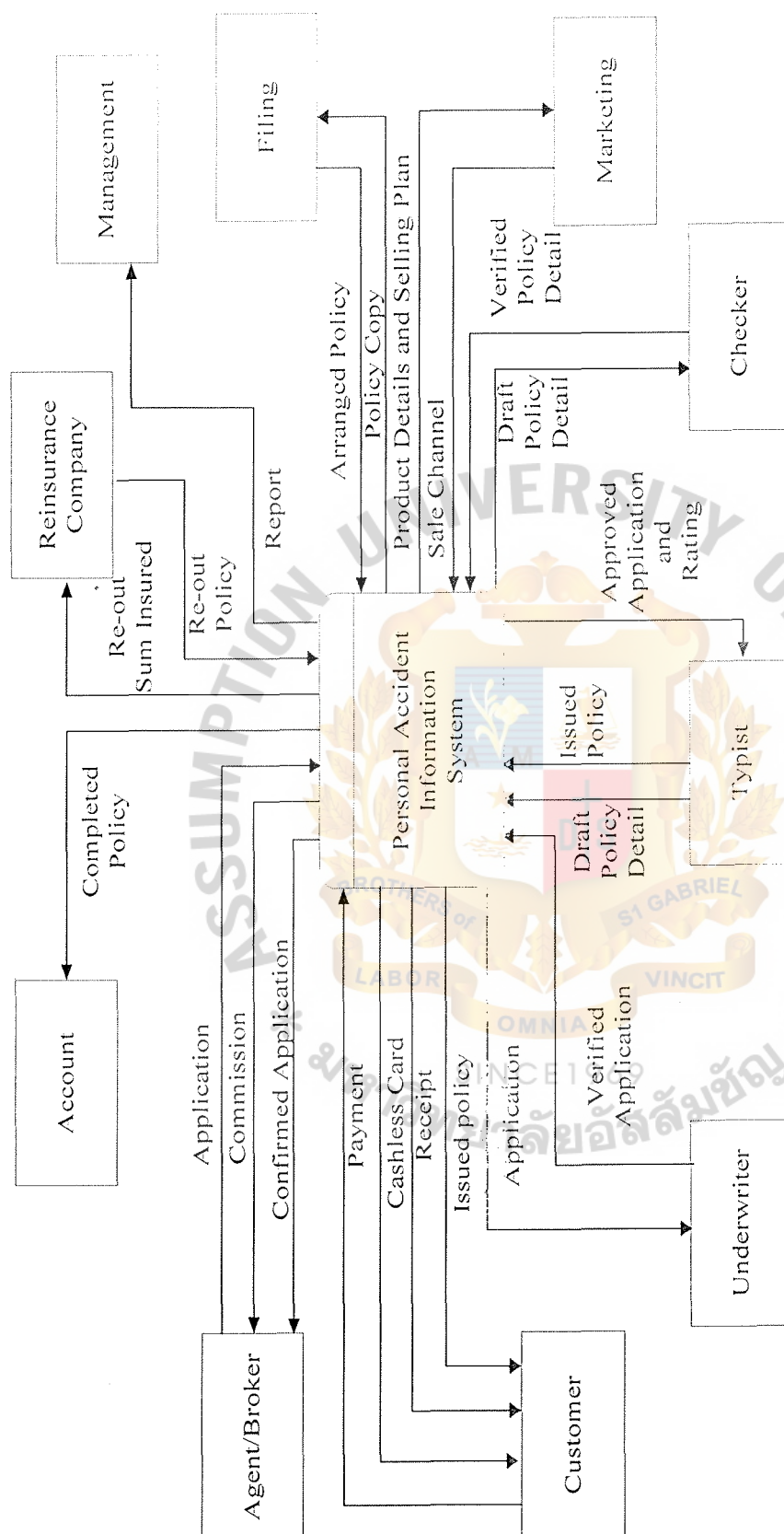
has to keep a lot of pre-printed forms for policy printing. If we can reduce this cost, we will save a lot of expenses that we have to pay in the future. By using package software, we can set the form of our policy endorsement or even attachment into the computer. In this form, it looks the same as the policy schedule, which is used nowadays. This software will help system designers to design and update forms rapidly. They can design by using computer, which contains picture, graphic, character and computed field. The policy can be printed out by using laser printer, HP 4 MV. Whenever the underwriters issue the policy, it can be printed immediately because of high speed printing system. The advantages of this form package are flexibility, saving company's expense, no need to stock pre-printed forms, saving operation time and so on.

(4) Information Arrangement

The customers' information is important for marketing department. The existing system does not allow marketing staffs to access those information. There is no customer database in this system. It is hard to control and follow up the application for them. Moreover customers' details have been used by account department as well in order to issue receipt when premium has been paid. Therefore this kind of database should be prepared to support the operation. The customer's details are useful for marketing, accounting and underwriting as well. For marketing, staffs utilize this information to evaluate the customers' behavior, customer services or even to plan the strategy for sale promotion. For accounting, paid premium of any customers can forward to cashier correctly. For underwriting, underwriters need not key in the customer's detail because

they have already existed in the system and they can use this information to check the history of the customers when they need to buy high sum insured. In the existing system, these departments communicate by using paper notes. It takes time and has a chance to make a mistake or miss some paper notes, which can make a big problem later.

With the new computer system using new technology, many problems can be solved effectively. The efficient centralized computing system allows users who have authority to access in the same database simultaneously. It looks like real time application. Before they can do that, user in each department must log on to the network in order to access the central information that they need. Each user has his/her own identification and password for security purpose. Moreover they have different priority to get into the information, which help our system protect the sensitive information from the malicious person. The central computing will maintain all information needs in the whole company. It is like the heart in our body. This central computing also has backup system in case some information has been lost by accident.



### III. THE PROPOSED SYSTEM

#### 3.1 System Specification

Before we design any system, we have to analyze the problems and requirements from the users. The system should be provided a means for sound decision making to determine who, what, when, why, and how of using the system. The concept of a system approach is based on obtaining an overall view of the process. It is characterized by an orderly process for gathering and analyzing collective, by individual performance requirements, and by the ability to respond to identify new system needs. All the requirements that users need will get involved in the new system. The requirements of this new system approach insure that the programs and the required support materials are continually developed in an effective and efficient manner to match the variety of needs in an ever rapidly changing environment.

After interviewing the user who is concerned with the new system, we can clarify their requirements into the following items:

- (1) Customer's record should be available in order that marketing team can follow up and control applications efficiently.
- (2) Policy printing should be processed more faster because nowadays there are a lot of waiting jobs each day
- (3) Proposal coming and policy issuing should be controlled in order that no proposals are lost during processing, because proposals are paper work, they can be easily got lost without attention.
- (4) When an accident occurs, such as no electricity, the main computer in each department should be able to access to the centralized system. It means that the back up system should be provided, so our customers will not

waste their time waiting for something that they don't know how long they have to wait and we can process our job continually.

- (5) Before issuing any policy, a draft policy should be checked by underwriters as well in order to protect any mistake in underwriting which is done by typewriter.
- (6) New system should be provided various database connectivity; however, it should have only one central information to respond to many department needs.
- (7) The processing should be run faster. Right now the users waste their time by waiting computer operation.

After considering the users' requirement, to limit the scope of the new system is the important thing to be done. To improve the working process both within and among departments and get rid of any expenses as much as we can are the main objectives of the new system.

Therefore we have to define the scope of the new system that matches the users' requirements. Because the scope will let us know which way we have to improve accurately. We are not concerned only on the users' requirement but also the real situation that we can afford that needs, for example, the time limit, expense limit, and so on which are the various factors. We have to analyze whether the requirements are reasonable and possible or not. If not, in which way can we get close to that requirement? The entire requirements are important to create a new system. The new system worked efficiently and effectively or not depends on how much we can blend every factor together to become the smart single one.

The scope of system design and development can be identified as follows:

- (1) Proposal registration system



- (2) Client information database
- (3) Paid premium acceptance and receipt issuing
- (4) Policy, data entry and related documents issued by underwriter
- (5) Account receivable for premium

Moreover the requirements of the new system can be divided into two parts as follows:

(1) Input requirement

- (a) Input screen should be easy to use and understand.
- (b) Input screen should work fast.
- (c) Input screen should be protected by using login and password.
- (d) Input screen should protect most errors.

(2) Output requirement

Reports should be precise, accurate, and up-to-date. Management can use these reports for their decision making. Moreover reports should be easy to read and understand because management has not much time to consider. In each period of time personal accident department will generate nine reports for a new business operation which are as below:

- (a) Monthly production by agent report
- (b) Monthly production by product report
- (c) Summary production report
- (d) Daily policy transaction issued report
- (e) Monthly policy transaction issued report
- (f) High sum insured customer report
- (g) Cashless detail policy issued report
- (h) Renewal policy report

- (i) Black list producer report

### 3.2 System Design

After receiving user requirements from users and management, the next activity is to design the system, which supports these requirements. System design is the evaluation of alternative solutions and the specification of a detailed computer-based solution. System design deals with the physical or implementation-dependent aspect of a system. We design inputs, outputs, files database and other computer components. The design builds on the knowledge derived from system analysis.

Before creating something, designer must understand the scope and objective of that thing. For example, when designers design a cloth, they have to know which style the client admires and which occasion should put it on. They design to meet the client's need; it is similar to design new system. The existing system users' requirements, problems and other resources will be considered for designing the new system. Therefore the designer will consider the following list in order to design the new system.

- (1) Users' requirements
- (2) Cost-effective and operating expenses
- (3) The suitable technology that can be provided
- (4) High security
- (5) Productivity improvement, more outcome by using the same period of time
- (6) Fast response and correctness
- (7) Easily user interface

The new system needs a close working relationship between the designer and the users. The designer will make a prototype when each step is finished. A prototype is a model on which something is patterned or a first full scale and usually functional form

of a new type or design of a construction. The prototyping approach is an iterative process to let users see, touch, feel, and experience what a new system should be before the real system is implemented. Therefore errors can be detected much earlier.

The important part of this phase is design of Entity Relationship Diagram (ERD). This part concerns with creation of database.

Another important part of this phase is Proposed Data Flow Diagram. The revised process model of existing system will be used to create to data flow diagram. The proposed data flow diagrams will have a new process that generates reports for management for decision making.

After two parts, the next part is design of input and output for system. Input concerns with screens. These screen were derived from user requirements. Input screen should be user-friendly for users and also protect any possibility error. Output concerns with reports. Report should be easy to read and also contain only necessary information. All information in reports must be precise and consistent.

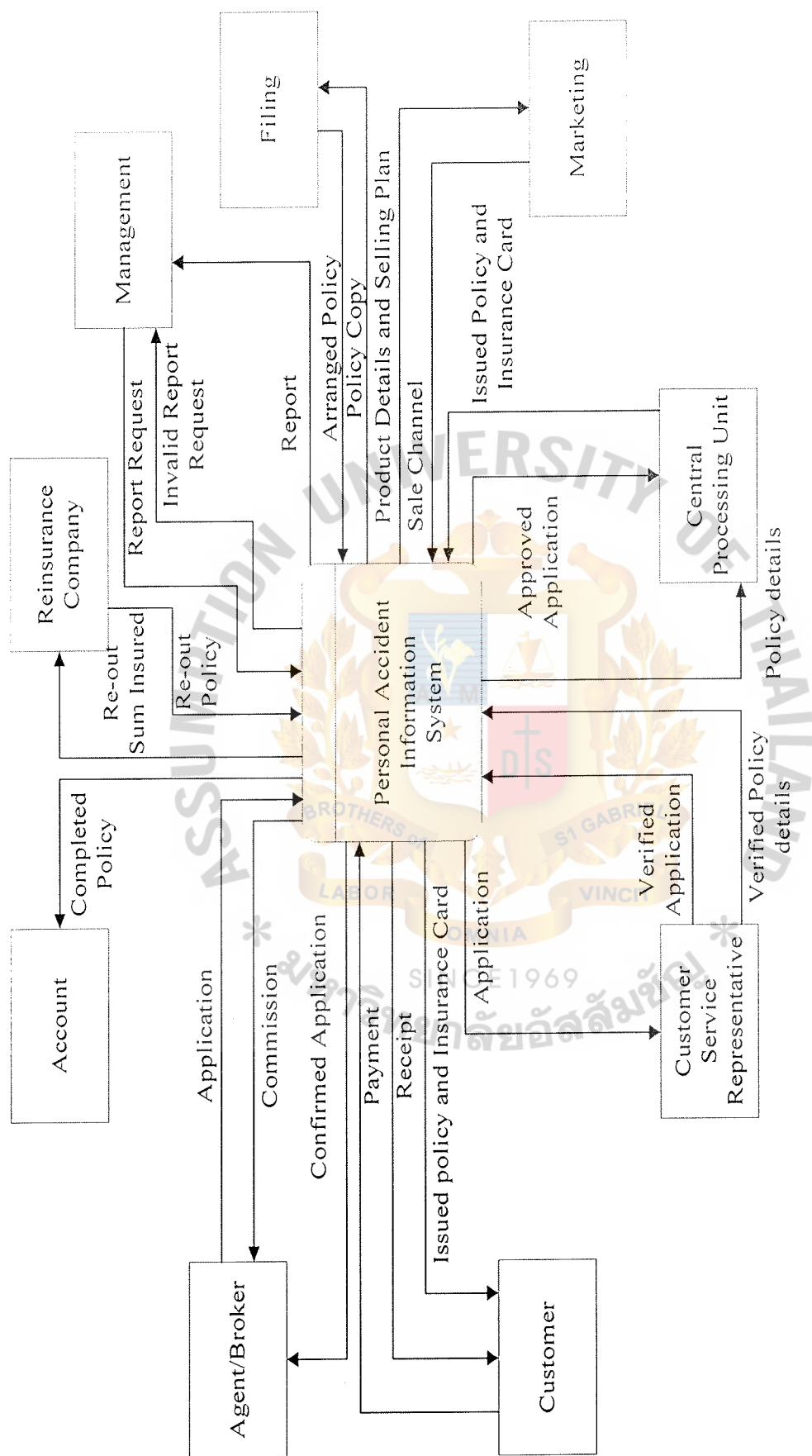


Figure 3.1. Context Diagram of Proposed System.

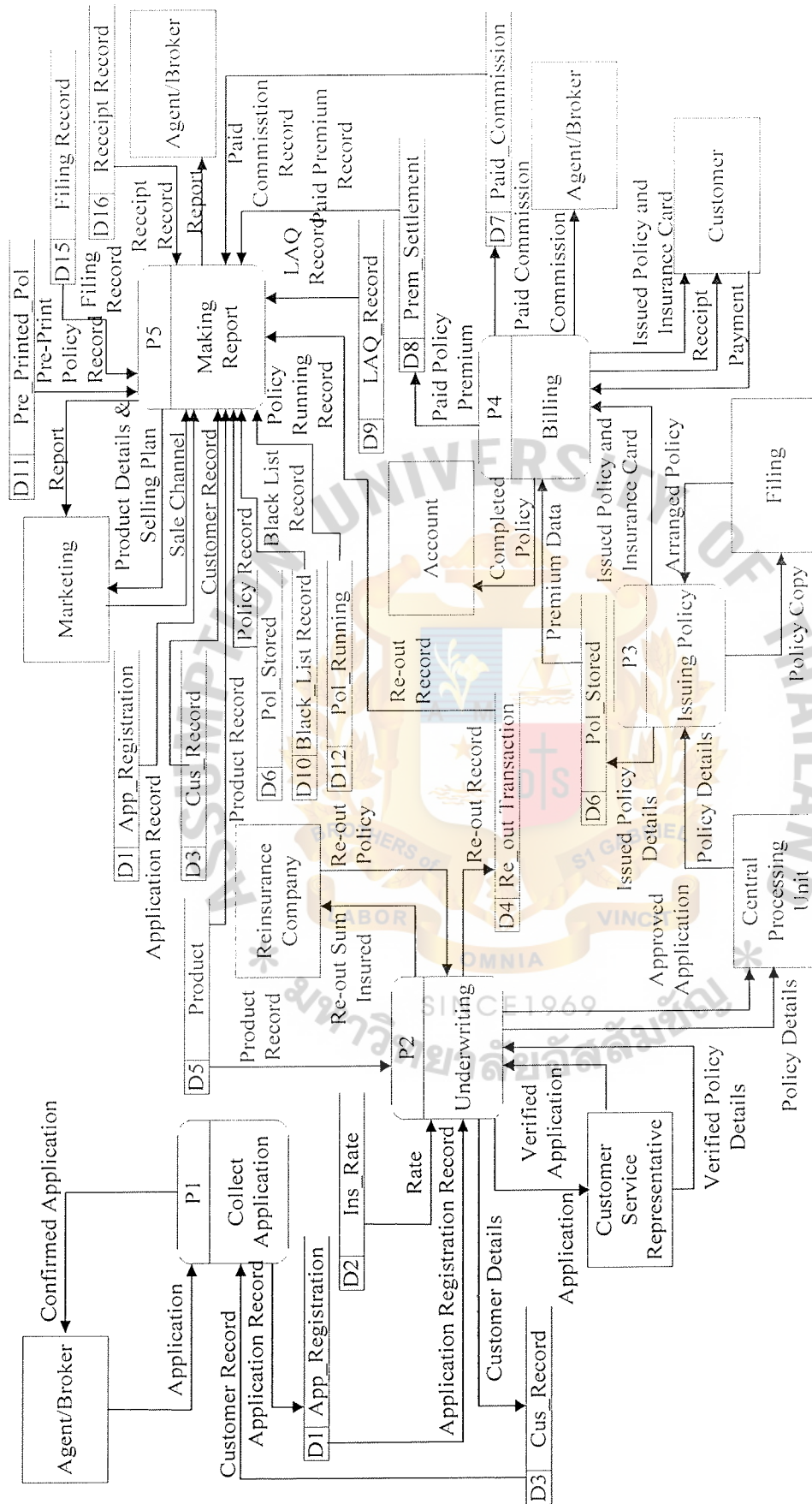


Figure 3.2. Data Flow Diagram Level 0 of the Proposed System.



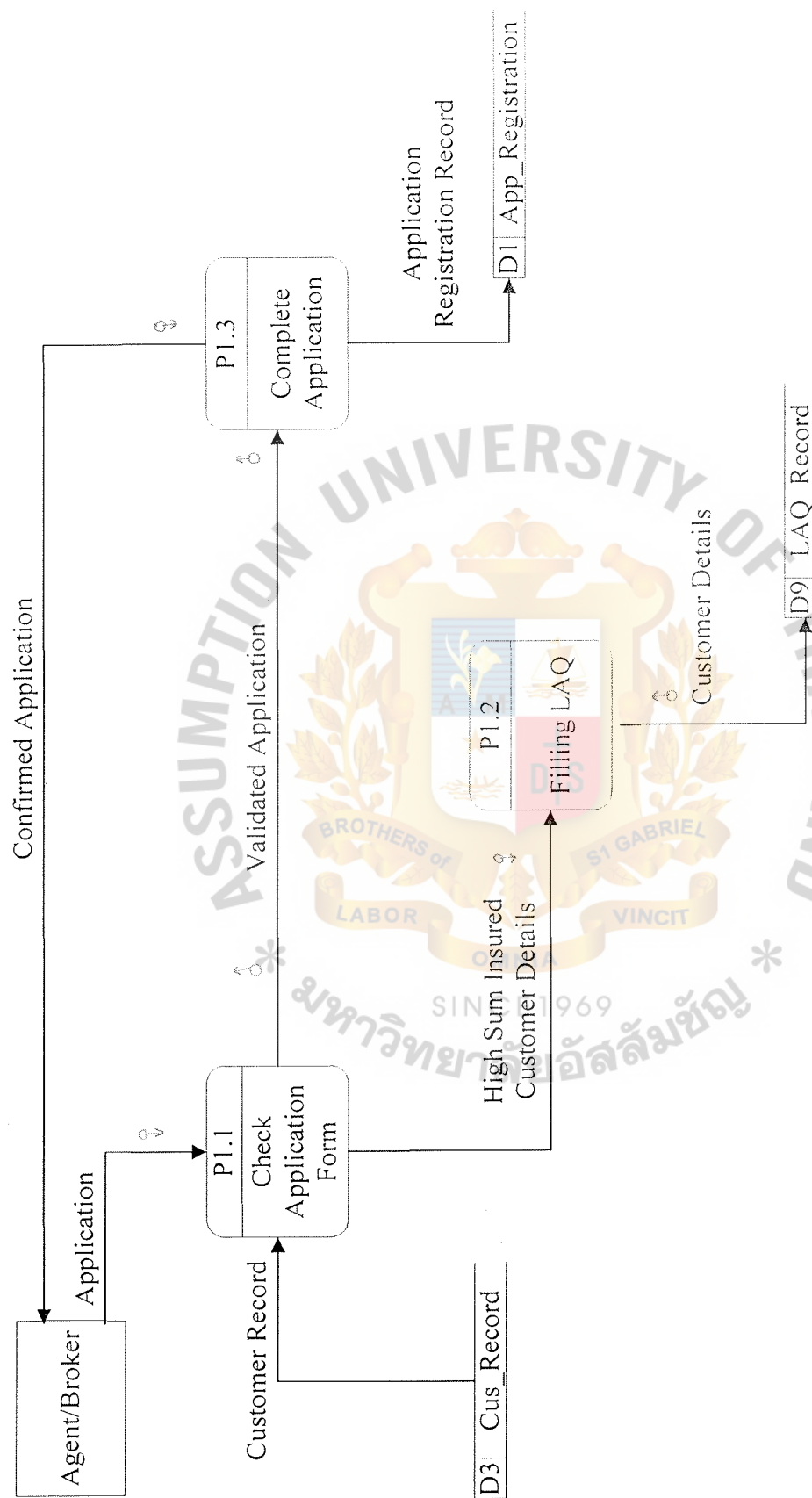


Figure 3.3. Data Flow Diagram Level 1 of the Proposed System (Collect Application Process).



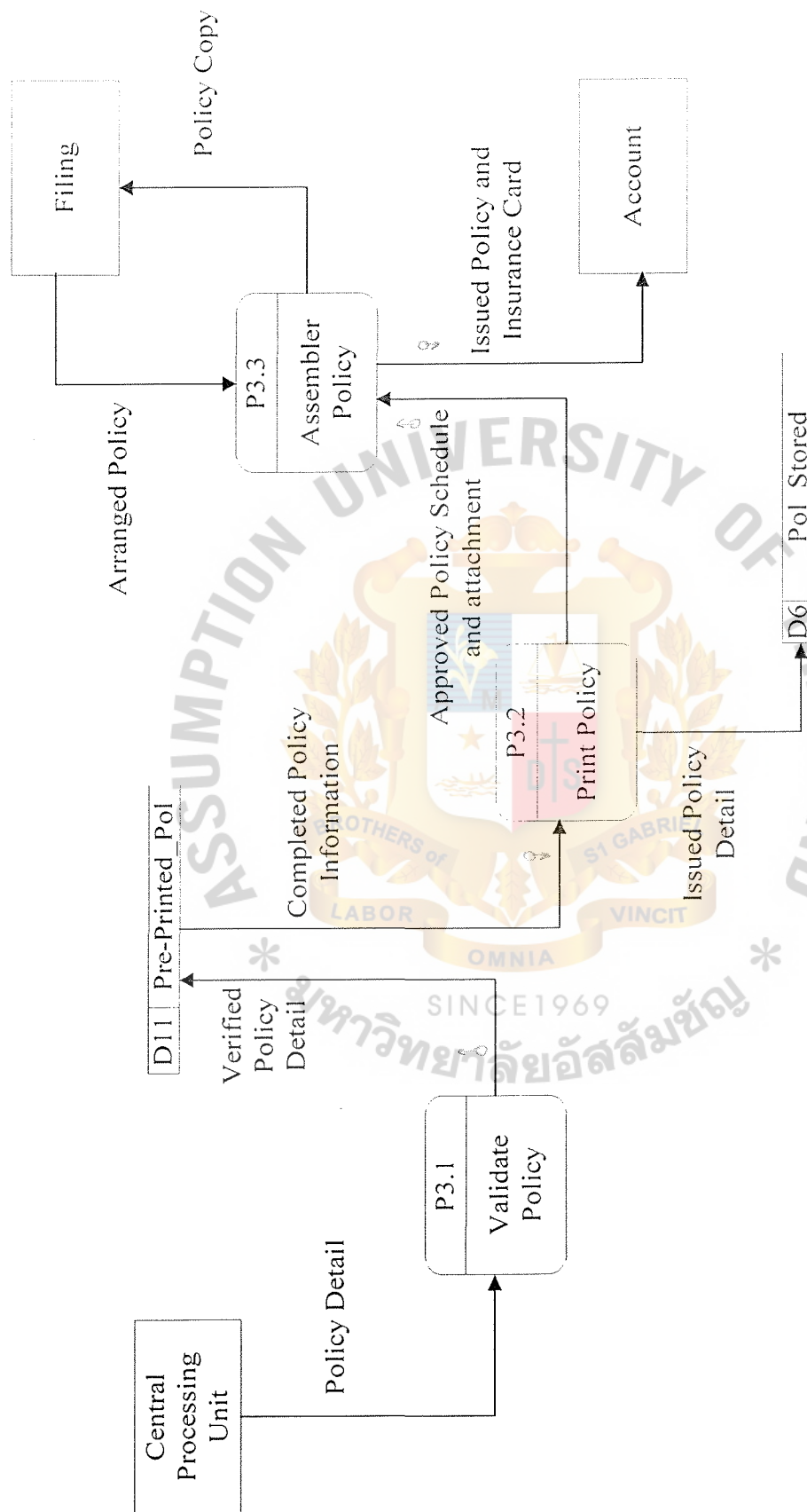


Figure 3.5. Data Flow Diagram Level 1 of the Proposed System (Issuing Policy Process).

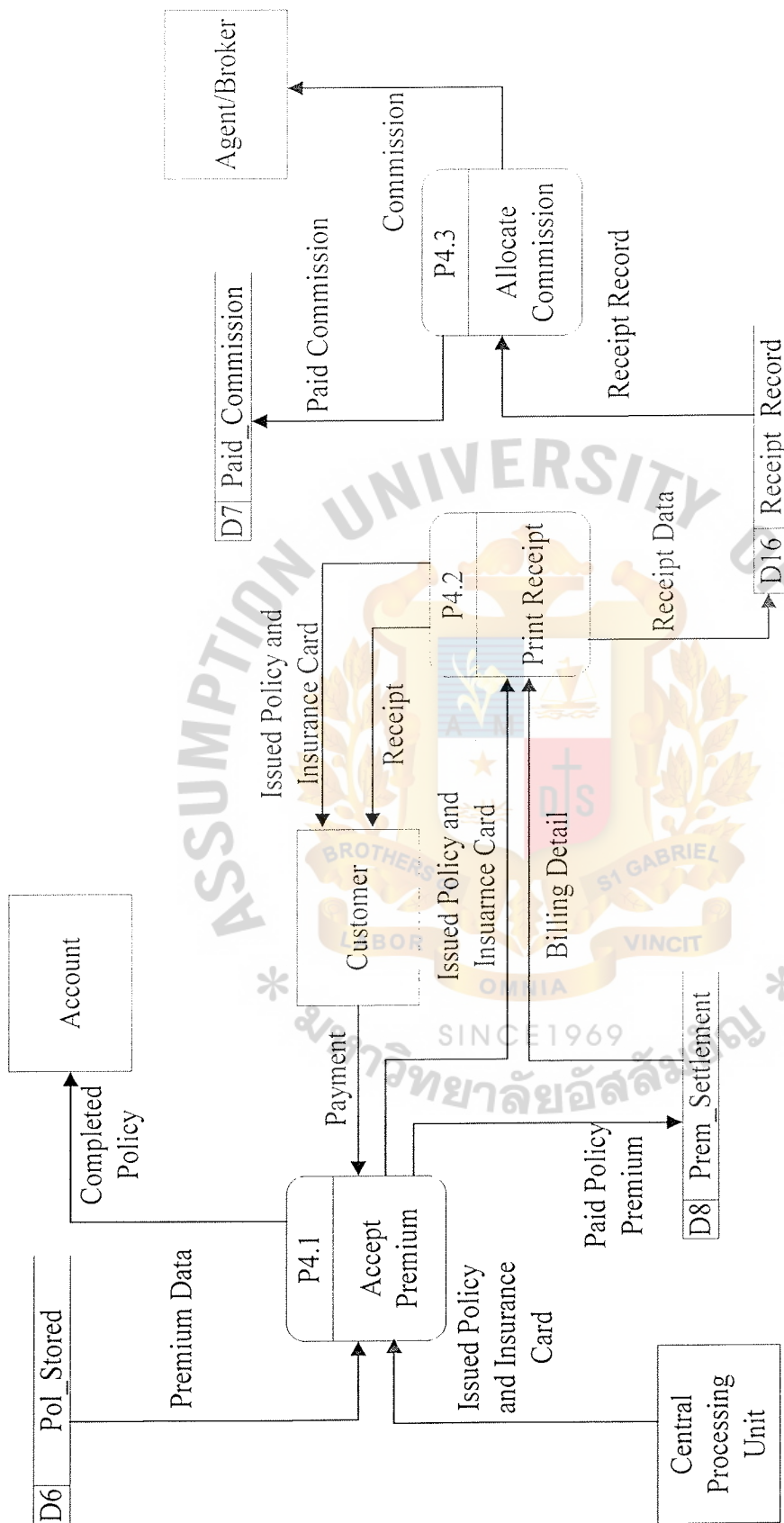


Figure 3.6. Data Flow Diagram Level 1 of the Proposed System (Billing Process).

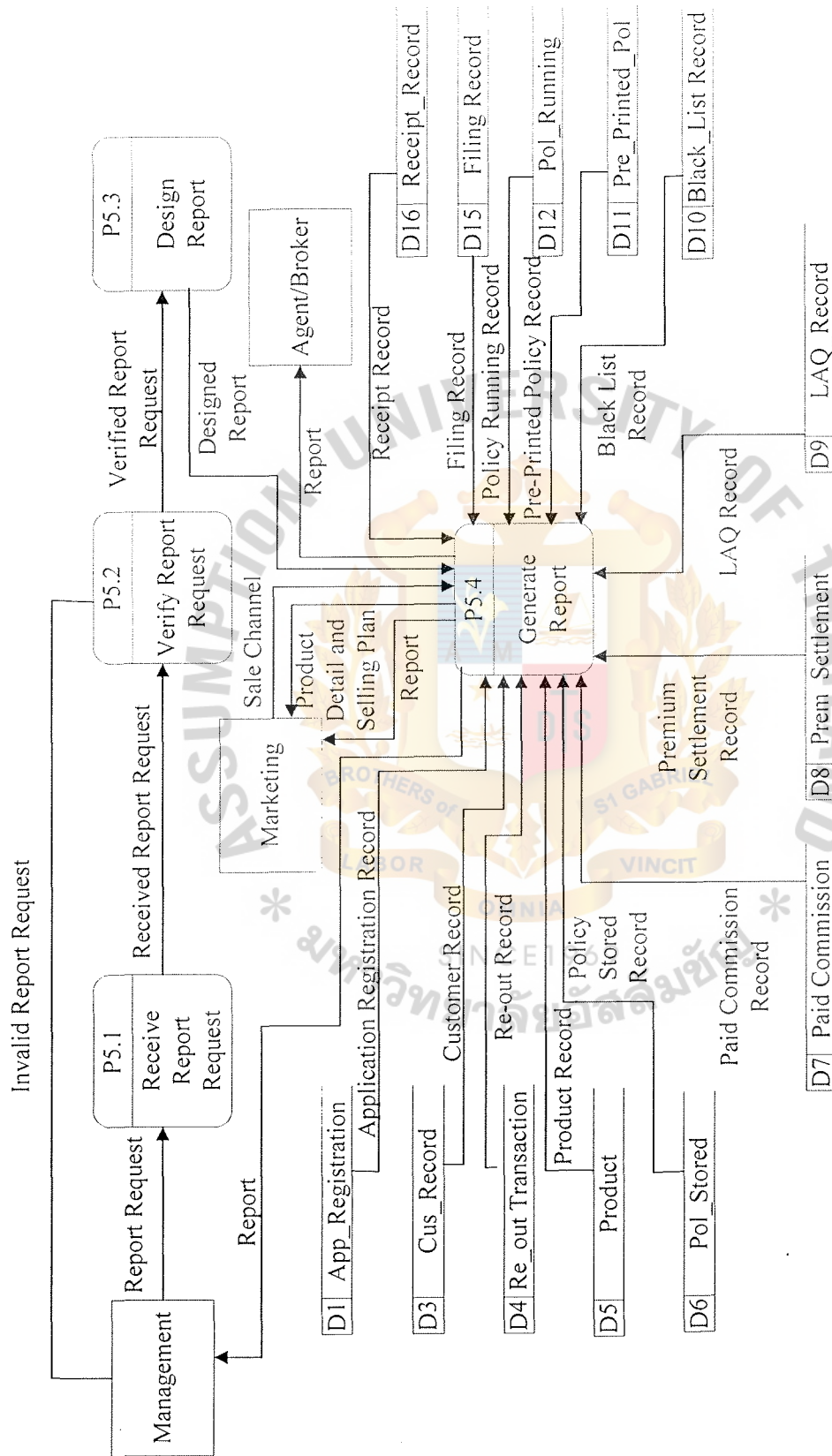


Figure 3.7. Data Flow Diagram Level 1 of the Proposed System (Making Report Process).



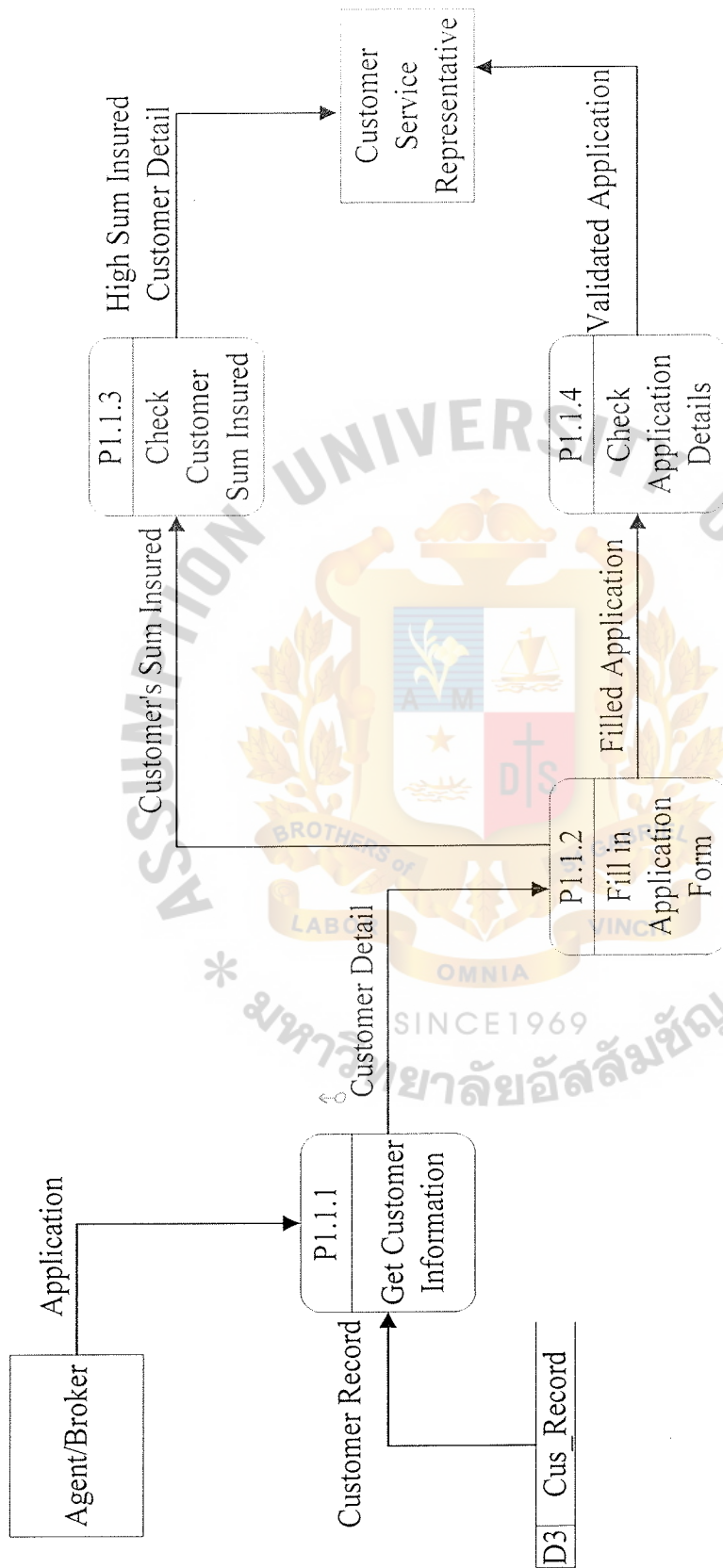


Figure 3.8. Data Flow Diagram Level 2 of the Proposed System (For Process 1.1).

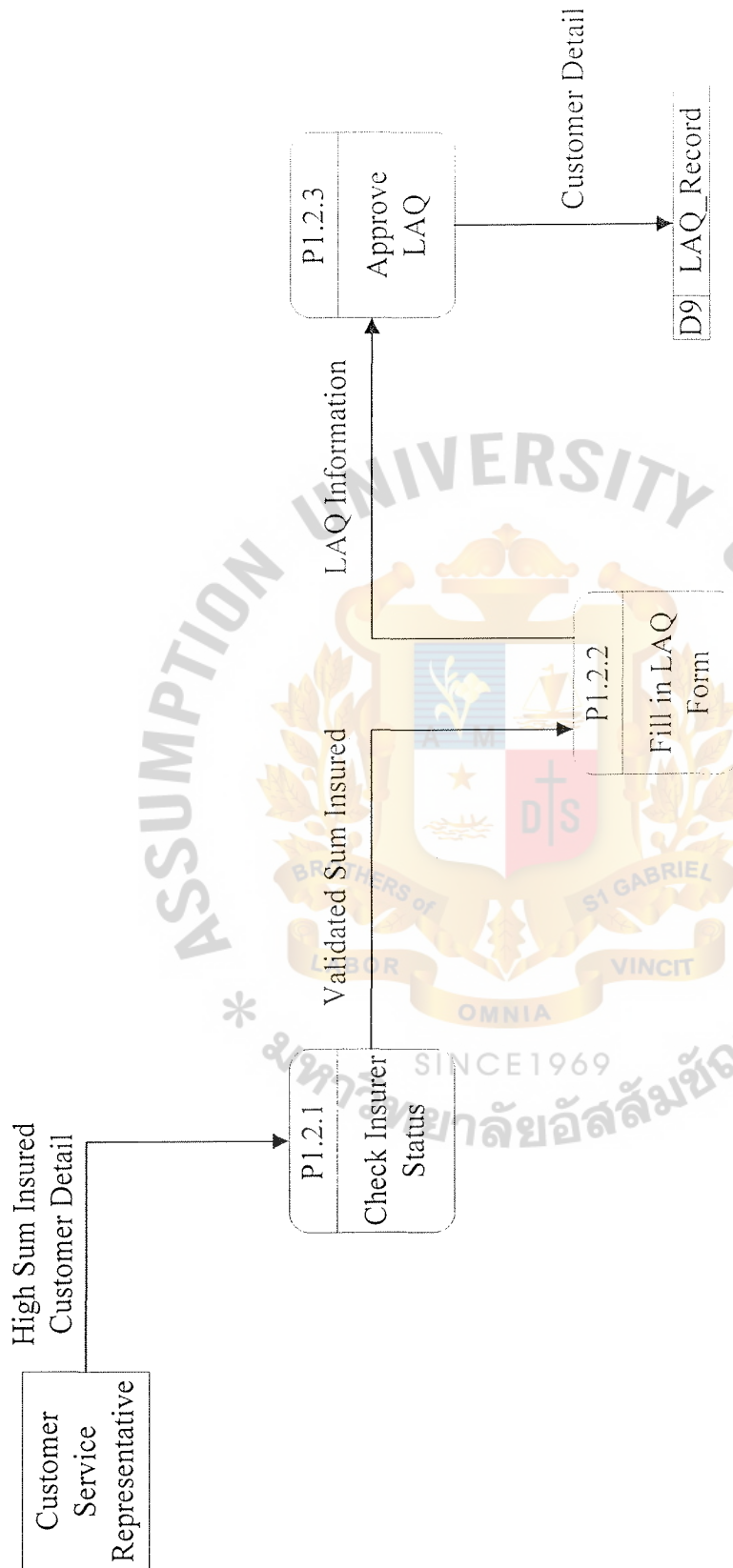


Figure 3.9. Data Flow Diagram Level 2 of the Proposed System (For Process 1.2).

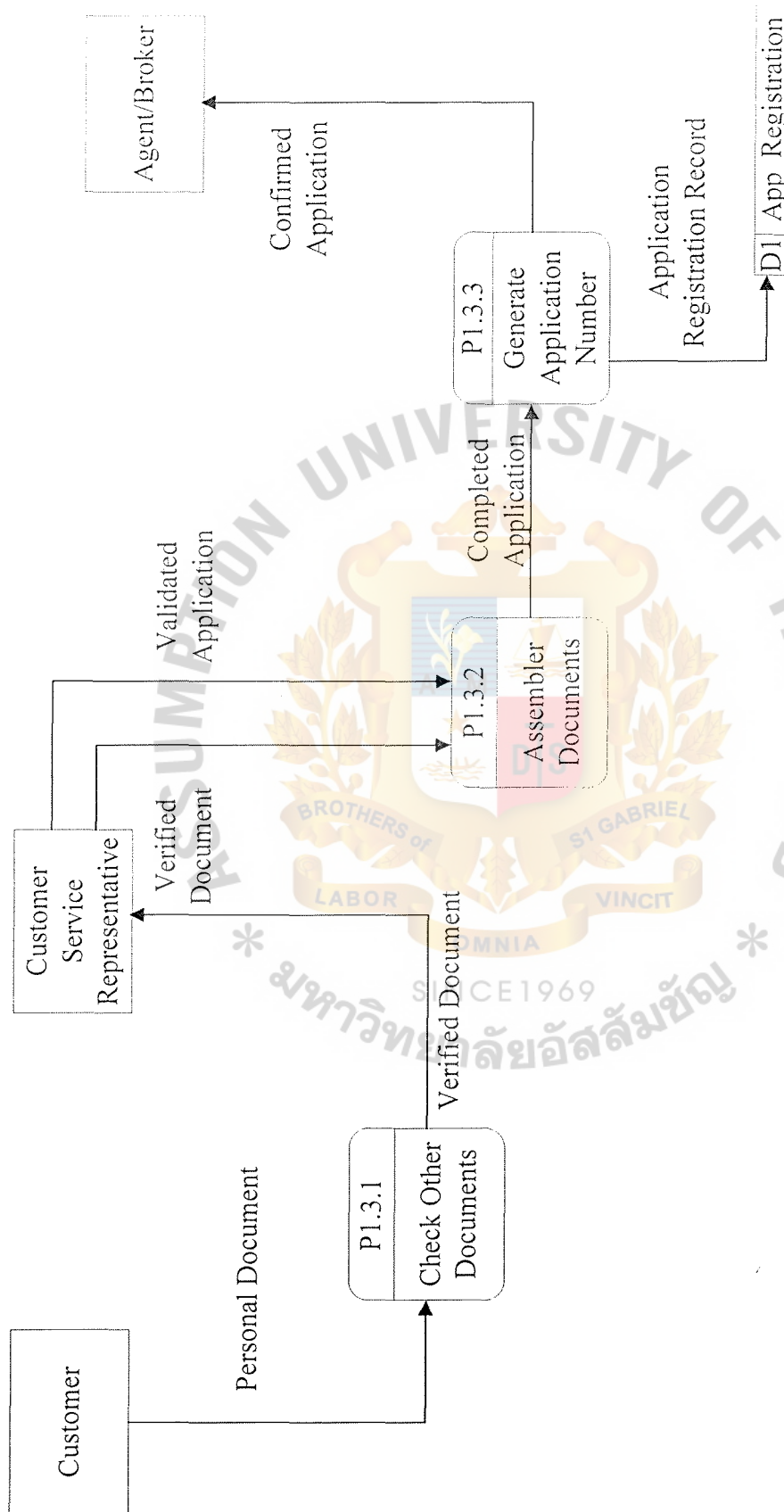


Figure 3.10. Data Flow Diagram Level 2 of the Proposed System (For Process 1.3).

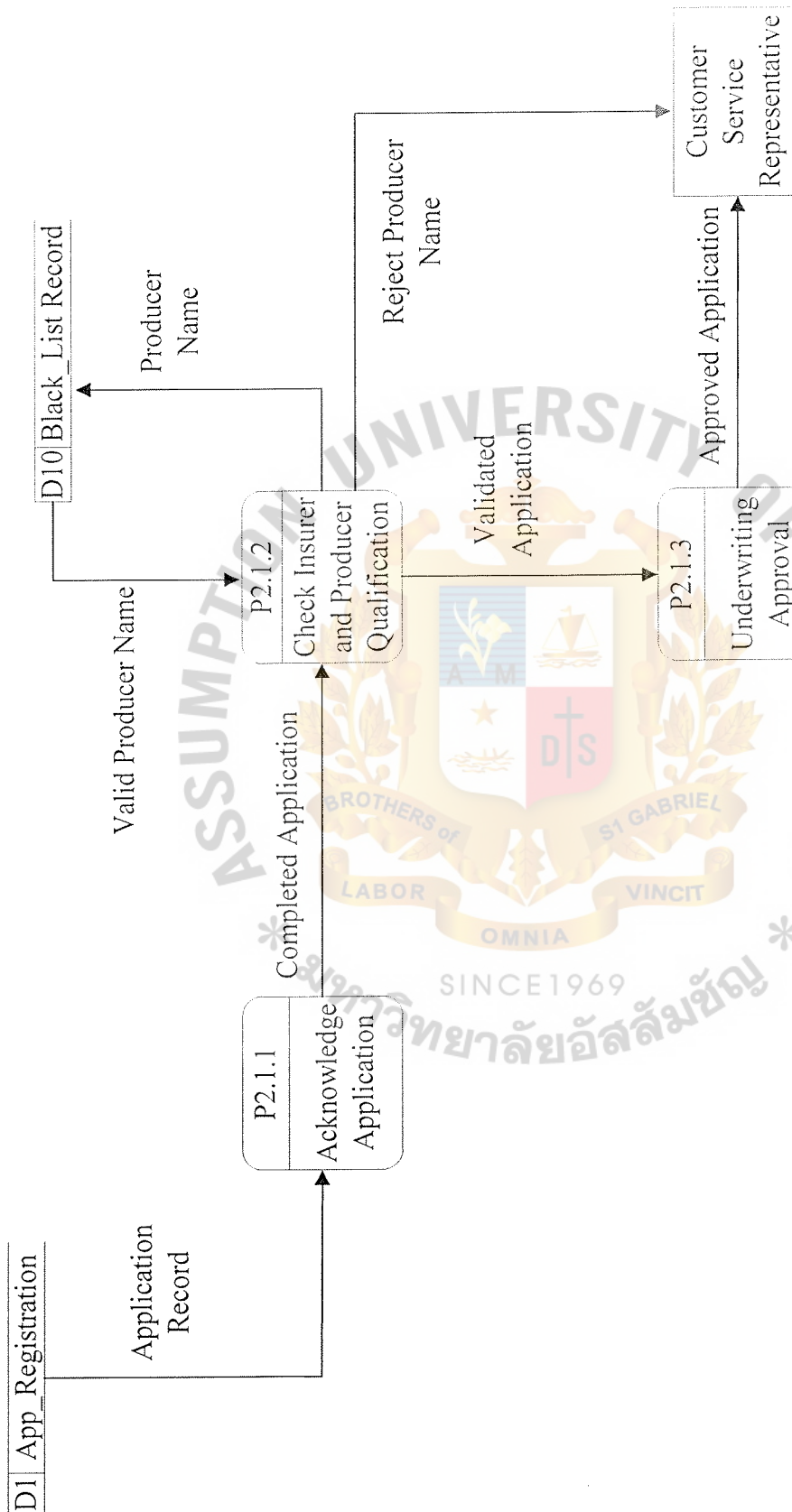


Figure 3.11. Data Flow Diagram Level 2 of the Proposed System (For Process 2.1).

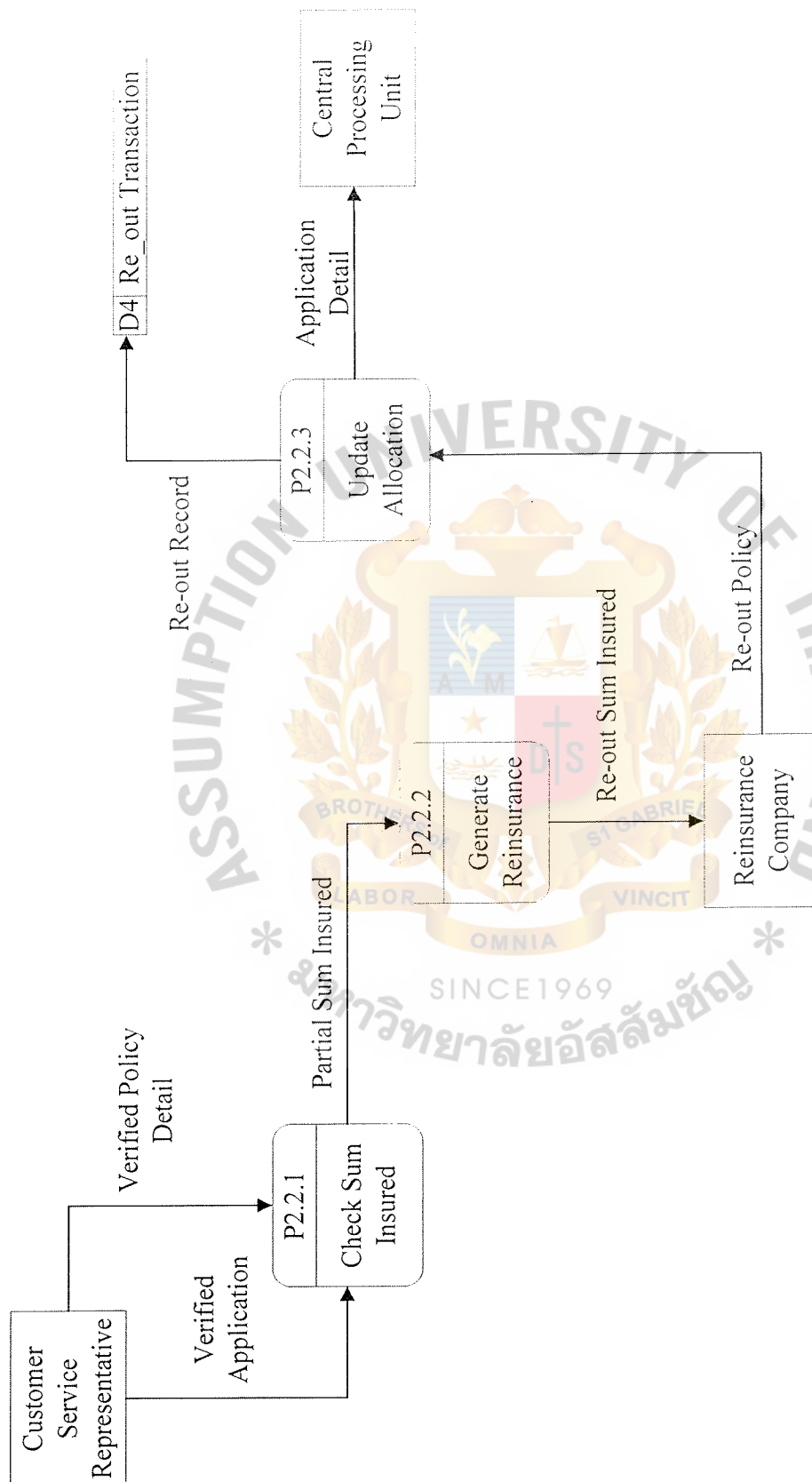


Figure 3.12. Data Flow Diagram Level 2 of the Proposed System (For Process 2.2).



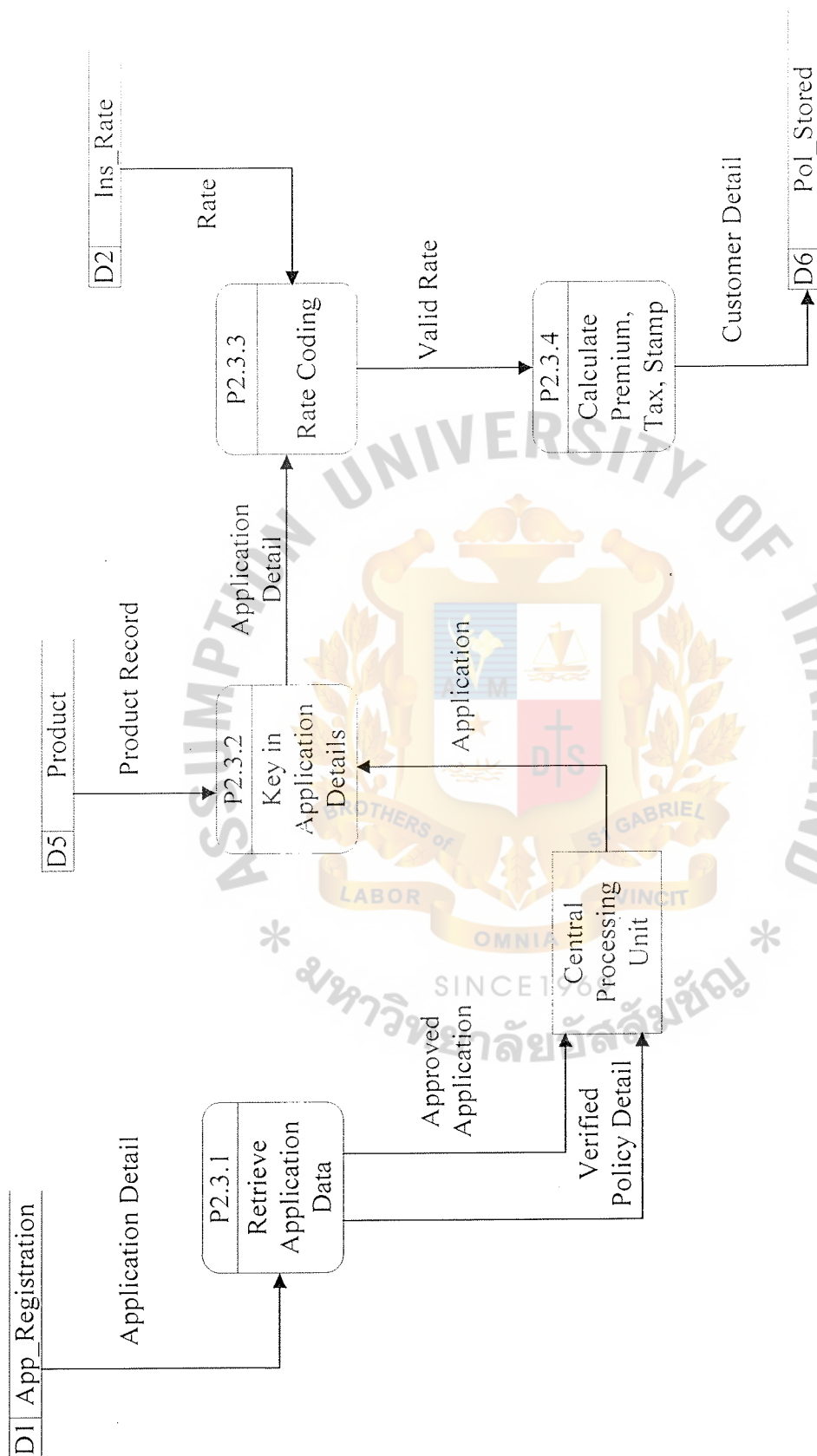


Figure 3.13. Data Flow Diagram Level 2 of the Proposed System (For Process 2.3).

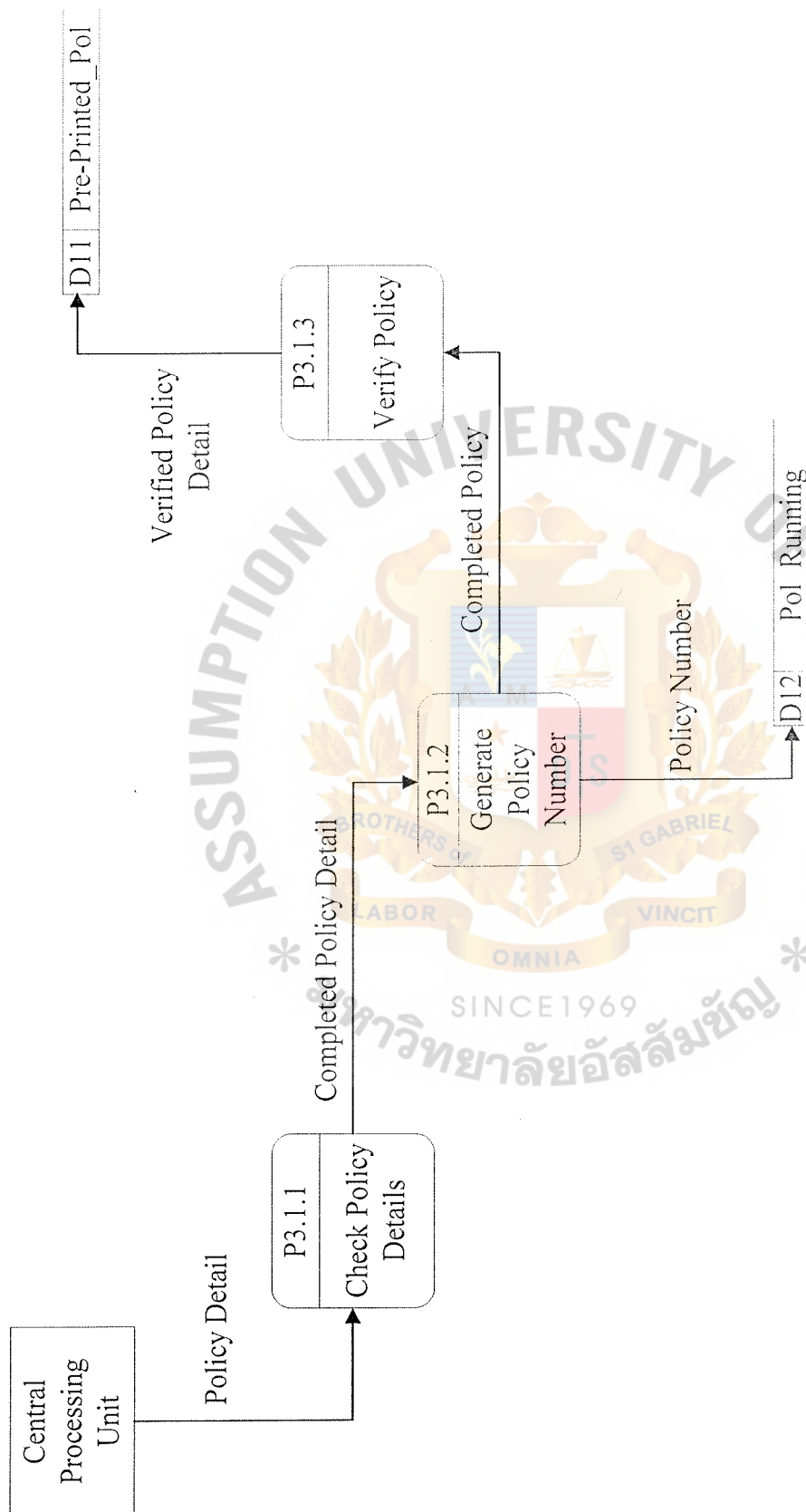


Figure 3.14. Data Flow Diagram Level 2 of the Proposed System (For Process 3.1).

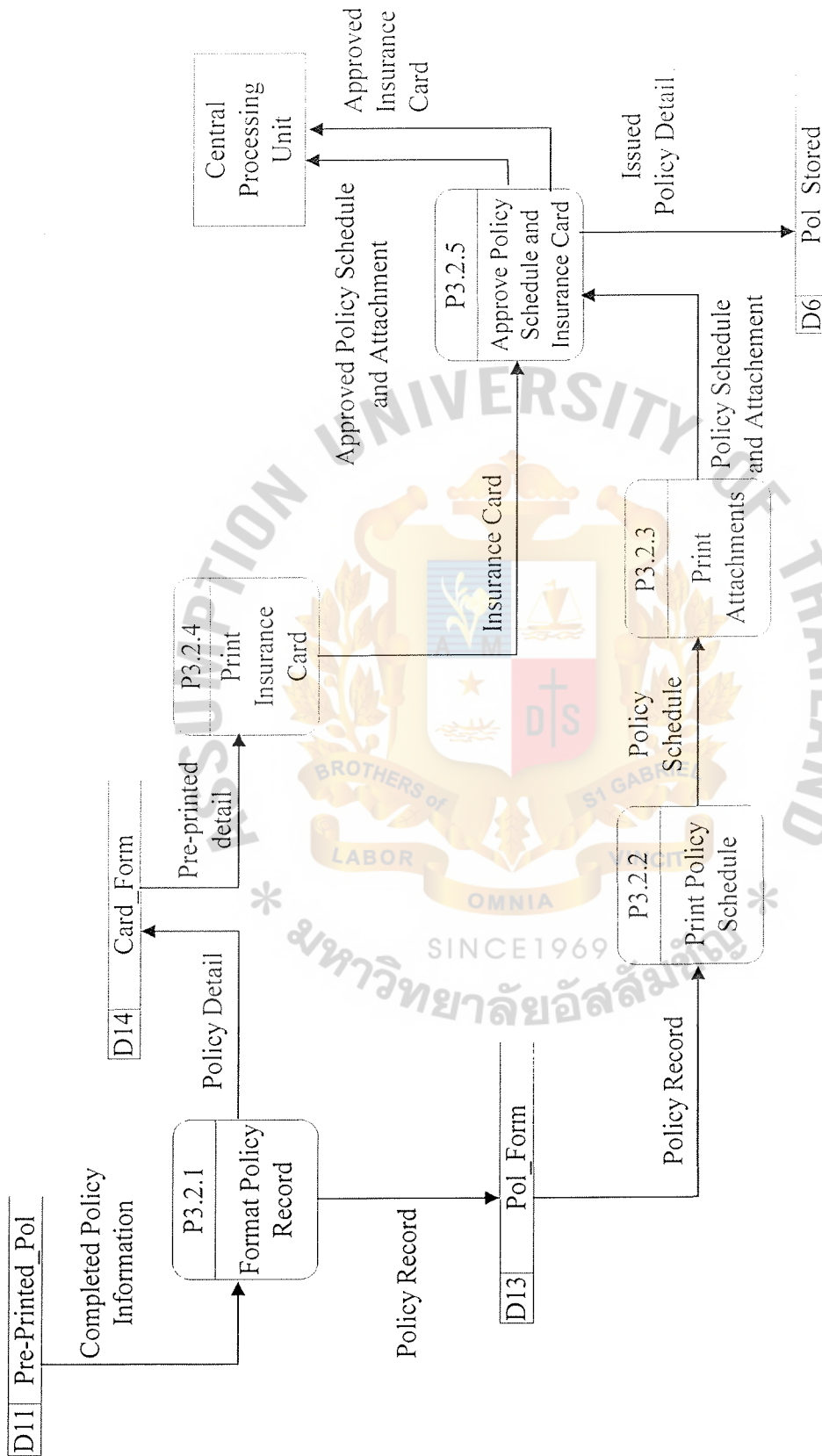


Figure 3.15. Data Flow Diagram Level 2 of the Proposed System (For Process 3.2).

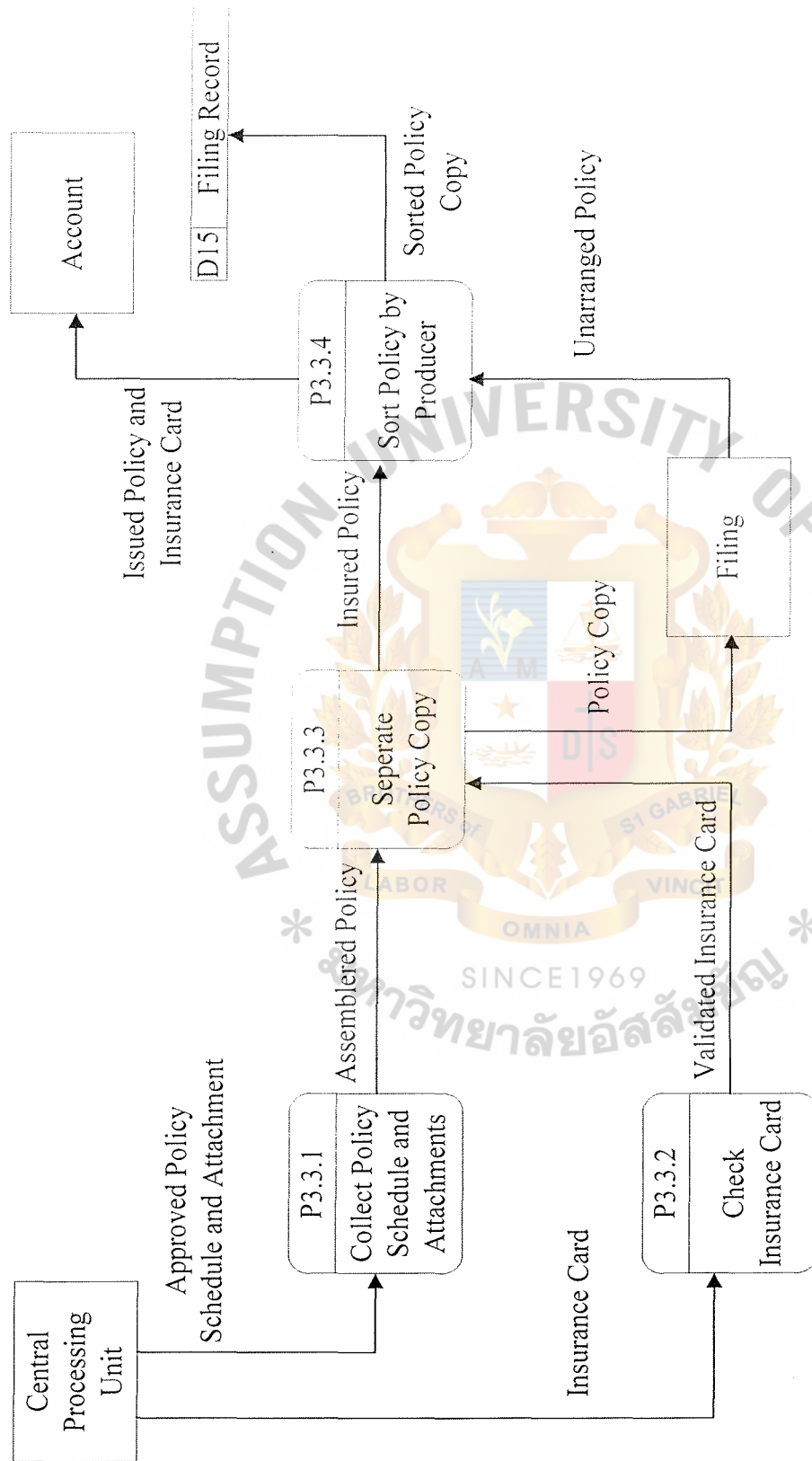


Figure 3.16. Data Flow Diagram Level 2 of the Proposed System (For Process 3.3).

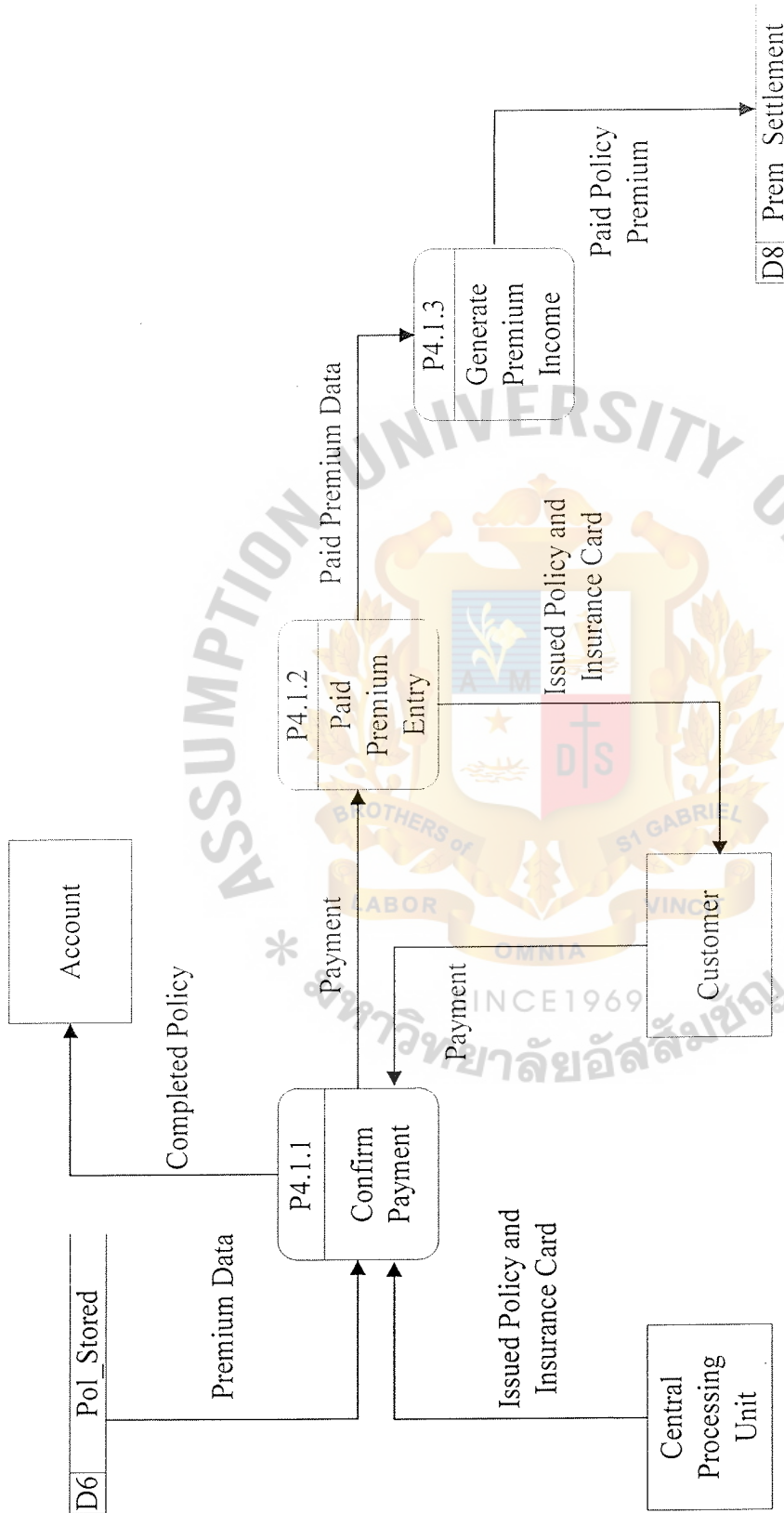


Figure 3.17. Data Flow Diagram Level 2 of the Proposed System (For Process 4.1).



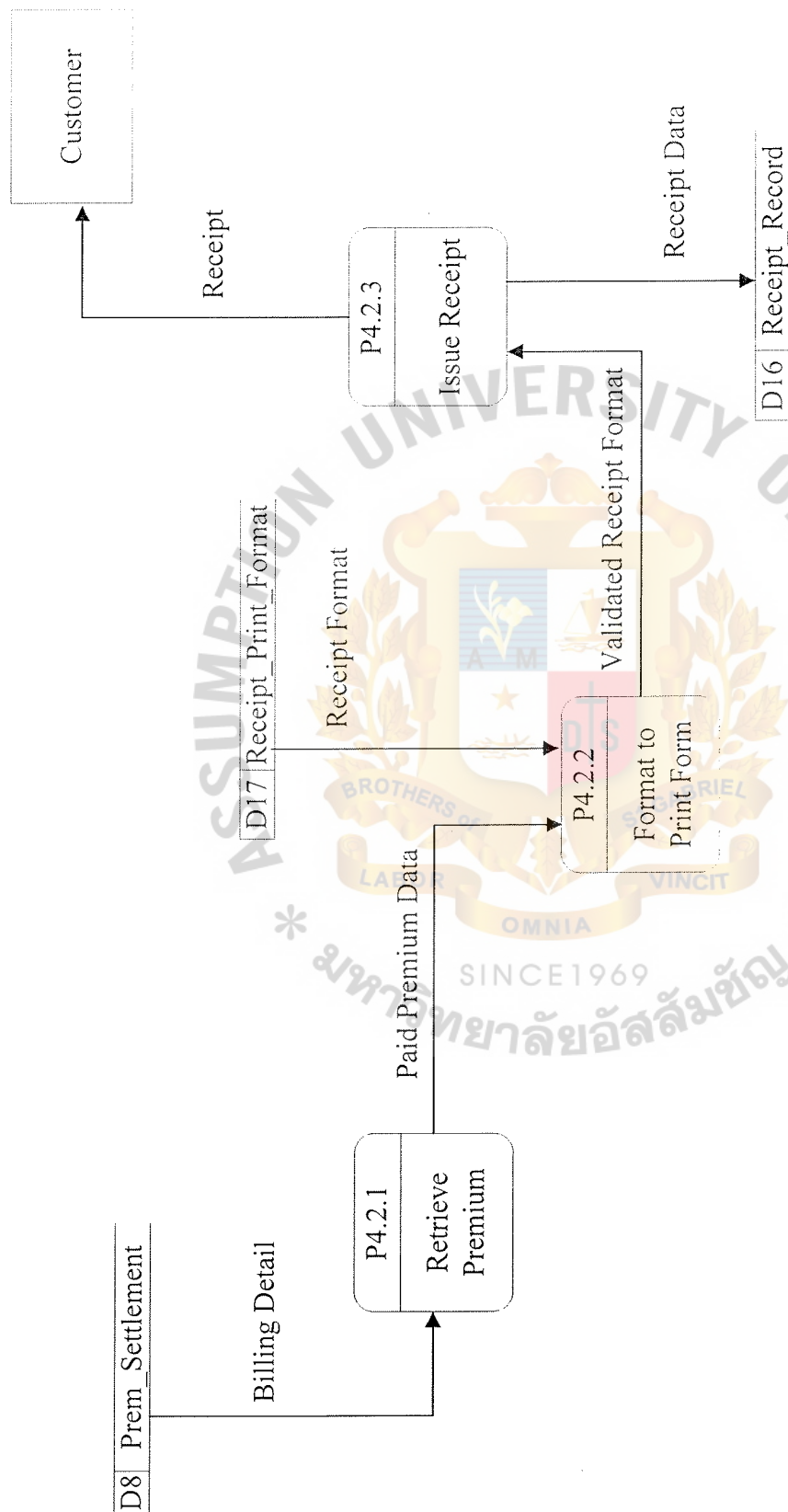


Figure 3.18. Data Flow Diagram Level 2 of the Proposed System (For Process 4.2).

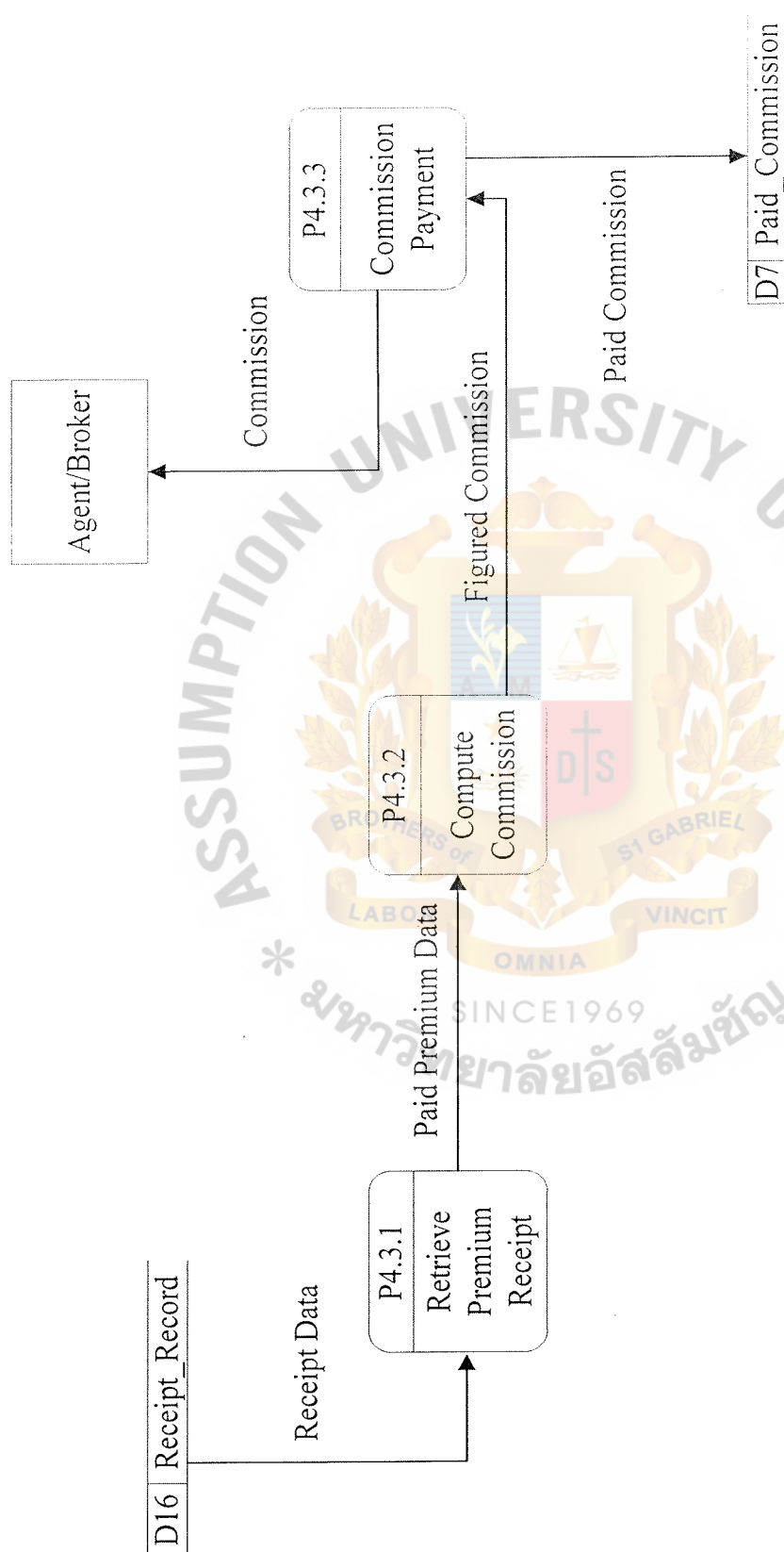


Figure 3.19. Data Flow Diagram Level 2 of the Proposed System (For Process 4.3).

### 3.3 Hardware and Software Requirement

At present most people accept that technology is the important part of our life. Business today needs the technology to run the operation. Computer gets involved into most companies. To improve working processes, we need to utilize this kind of technology. Computer consists of two parts, which come together that are hardware and software. The improvement of the existing system requires new technology of hardware and software to support. The new system can work smoothly with efficient users and effective equipment.

#### 3.3.1 System Environment in General

##### (1) Network & distributed system

The client / server environment is designed to use in this LAN system. This model will split the processing between clients and server on the network assigning functions to the machine most able to perform the function. It provides better utilization of system resources. Data processing and information analysis are handled by the server where the central database is maintained.

A client / server system is a user-centric system that emphasizes the user's interaction with the data. The client is the user point-of-entry for the required function and is normally a desktop computer, workstation, or laptop computer. The user generally interacts directly with only the client portion of the application, typically through graphical user interface. The user typically utilizes it to input data and query a database to retrieve data. Once the data has been retrieved, the user can analyze and report on them, using fourth-generation packages such as spreadsheets, word processors, and graphics applications available on the client machine on the user's own

desktop. The server satisfies some or all the user's request for data and / or functionality and might be anything from a supercomputer or mainframe to another desktop computer. Servers store and process shared data and also perform back-end functions not visible to users.

For client portion, Microsoft Window Version 97 is selected to run the operating system and used Microsoft Window NT Version 4.0 as an operating system for the server. There are many advantages for selecting this kind of operating system, for example:

- (a) It is easy to operate and control, no need to key the command line.
- (b) There are a lot of programs to support on this operating system.
- (c) There is a good support team.
- (d) It can create new software to run on Window NT in order to meet executive vision.
- (e) It is well-known operating system so it is easily to recruit the programmers.
- (f) It can connect to other systems by using multi protocols.

In the client / server computing, an information system's database, software, and interfaces are distributed across a network of clients and server that communicate and cooperate to achieve system objectives. Despite the distribution of computing resources, each system user perceives that a single computer does all the work.

- (1) A client is single-user computer that provides.
  - (a) User interface services and appropriate database and processing services.
  - (b) Connectivity services to servers.
- (2) A server is a multi-user computer that provides

- (a) Share database, processing, and interface services.
- (b) Connectivity to clients and other servers.

Three- tiered client / server will be used in the new system. The three-tiered client/ server solution uses the same database servers as the two-tiered approach. Additionally, the three-tiered system introduces an application server. The new information system has three database servers, which have their own duties as follows:

- (1) Server number 1 is primary domain controller. It will take charge of users' authorities, managing users' account and network, and being printed server.
- (2) Server number 2 is backup domain controller. It will support server number 1. If the server number 1 is down, this server can be promoted to be primary domain controller as well.
- (3) Server number 3 is an application server. It keeps and maintains file and program. It provides a transaction monitor to manage transaction. Some or all of the business logic of the application can be moved from the client to the server. This offers the advantage of not having to maintain business logic on hundreds of clients.

The transmission media that will be used in the new system are unshielded twist pair and some cable to cascade among three hubs. The performance is better and it will not waste any port without using.

The printer used in the new system should be supported the new system. Laser printers are necessary in order to print the policy schedule. Its speed of the printer should be twelve pages per minute.

Moreover, the UPS is also necessary for protecting the information when any accident happened, the UPS that is used in the new system can provide software management. For example, when the electricity is down, this UPS will manage a



computer within the time limit by itself. It will close all program, database and turn off the computer. This can protect any loss of information by accident.

## (2) Database

Leading vendor, quite well known Oracle, provides relational database management system for the company. Relational Database Management System vendors are very large and have a higher probability of being around for the long haul. Data will be kept on Oracle database and stored on the server. The application is built and run on the workstation by Microsoft Access, which uses basic language basis to develop programs. The Relational Database Management System stores data in a database consisting of one or more tables of rows and columns. The rows correspond to a record, the column correspond to attributes. Each column has a data type. The types of data that can be stored are confined to a very limited number of data types. Any attribute of a record can store only a single value. Relationships are not explicit, but rather implicit and implied by value in specific fields, foreign keys in one table that match those of records in a second table. Many-to-many relationships typically required an intermediate table that makes the relationships. A view is a subset of a database that is the result of the evaluation of a query. In an RDBMS, the view is a table. RDBMSs uses SQL for data definition, data management, and data access and retrieval. Data is retrieved bases of the value in a certain field in record. The types of queries supported run the gamut from simple single-table queries to very complicated multitable queries involving joins, nesting, set union/differences, and others. All processing is based on values in fields of records. Records do not have unique identifiers that are

immutable during the life of the row. There are no provisions for references from one record to another. Examining the result of a query is done under the control of a cursor that allows the user to step through the result set one record at a time. The same is true for updates.

### 3.3.2 Hardware and Software Specification

Each Hardware and software has its own advantage and disadvantage at the same time because there are no hardware and software that are perfect. Which hardware and software should be chosen depends on the way of use. It means how much we can take advantage most and fit to the system's need. Although some hardware and software have a lot of functions and options, they may not be suitable for our system or may waste the money for over qualification. That means it is not necessary to have full functions in spite of using only part of them. We just use what the best we can provide, because choosing hardware and software has some limitation for considering, For example, budget, usage, appropriateness, and so on.

Table 3.1. Addition Hardware Used in the New System.

Items	Description	Unit (s)
1.	PC server – Compaq Proliant 4500 Speed: Pentium Pro 200 MHz. RAM: 128 MB Harddisk: 9 GB	1
2.	PC Workstation – Compaq Deskpro 4000 Speed: Pentium Pro 166 MHz. RAM: 32 MB Harddisk: 2 GB	6
3.	LAN card 3 com Etherlink III Speed: 10/100 MB/S	2
4.	Hub 3Com link builder FMS 24 100 base TX	1
5.	Laser printer HP 4V/Lan card (jet direct) Hewlett Packard	2
6.	UPS LEONIC INTERNET PLUS Software management provider	4
7.	UTP cable – AMP CAT 5 10 Megabit per second	300 meters
8.	HP sure store 8200E (External)	1
9.	Tape backup 120 MM HP	30

Table 3.2. Addition Software Used in the New System.

Items	Description	Unit (s)
1.	PC server – Operating System Window NT 4	3 licenses
2.	PC Workstation – Operating System Window NT 4 Workstation Thai Microsoft office 97 Thai	3 licenses

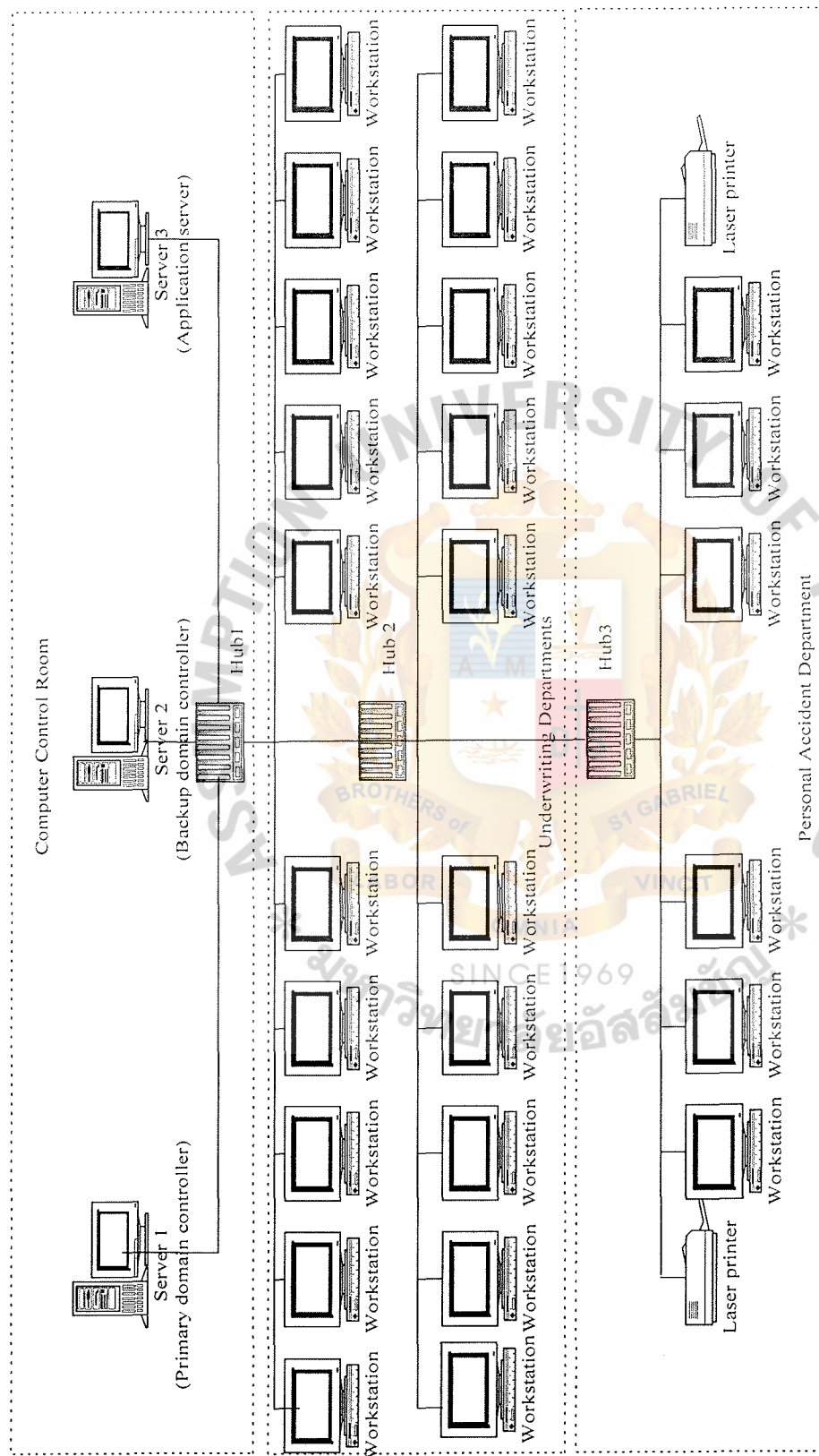


Figure 3.20. Network Architecture for Personal Accident Information System.

### 3.4 Security and Control

Better Life Insurance Company is a middle-sized insurance company; however, It has a large size of database and applications, which runs on both client and server. The computer center also connects to Internet service provider to disseminate the information through Internet. The company has its own website. A lot of people can access this website to see the general information, products, and service that we can serve them. The system should be protected from unauthorized persons both inside and outside the company. Obviously, security in computing is a very important issue. The major assets of computing system are hardware, software, and data.

The new system can be divided into two parts of security control as follows:

(1) Network Security

According to client / server computing system, security in networks has to be concerned. Network threats arise at different points based on different technologies, and the control must also relate to specific technologies.

- (a) Encryption: - It is a very powerful tool for providing privacy, authenticity, integrity, and limited access to data. Because of the greater risks involved, networks often secure data with encryption, perhaps in combination with other controls.
- (b) Access control: - Encryption is good for protecting data within a network. However, access to data, programs, and other resources of the network is also a serious concern in network security. In a network environment, access control must protect a single system of the network and also prevent unauthorized users from passing



through one system of a network to access other systems of the network.

- (c) Traffic control: - Because an interceptor can tap all blocks of messages passing through the network, the interceptor can determine who is communicating frequently with whom. The standard control is introduction of many spurious messages between points of low traffic. In this way, communication between the two sensitive places will not seem outstandingly heavy.

To control security on LAN access is also important. New employees must apply, through their managers, for a valid user ID in order to access corporate computing resource, servers, home directories, and mainframe application access. Other security service includes LAN access password reset.

## (2) Database Security

We can say that database is the treasure of the company. Without database, the company cannot access the integrity and consistency policy. The security of database is the important thing to concern in order to prevent any malicious person stealing the sensitive information for his / her interest. Reliability, correctness, and integrity are three closely related concepts in database. Users trust the Database Management System to maintain their data correctly, so integrity issues are very important in the security of database. The following is a list of requirements for security of database systems

- (a) Physical database integrity, so that the data of a database is immune to physical problems such as power failures and so that someone can reconstruct the database if it is destroyed through a catastrophe.
- (b) Logical database integrity, so that the structure of the database is preserved. With logical integrity of a database, a modification to the value of one field does not affect other fields, for example.
- (c) Element integrity, so that the data contained in each element is accurate.
- (d) Auditability, to be able to track who has accessed (or modified) the elements in the database.
- (e) Access control, so that a user is allowed to access only authorized data and so that different users can be restricted to different modes of access (such a read or write).
- (f) User authentication, to ensure that every user is positively identified, both for the audit trail and for permission to access certain data.
- (g) Availability, meaning that users can access the database in general and all the data for which they are authorized.

Database contains what is called sensitive data. Sensitive data is that should not be made public. Determining which data items are sensitive depends on the individual database and the underlying meaning of the data. The more difficult problem, which is also more interesting, is the case in which some but not all of the elements in the database are sensitive. There may be varying degree of sensitivity. For example, an insurance database might contain policy data consisting of insurer's name, age, occupation, beneficiary, duration, coverage, compensation, exclusion, producer's name, and premium are probably the least

sensitive; commission, reinsurance, and credit term the most. That is, many people may have legitimate access to the general information, and relatively few to the sensitive information. The access control problem is to limit user's access so that they can obtain only the data to which they have legitimate access. The access control problem is a challenge to ensure that sensitive data is not to be released to unauthorized people.

The database manager or database management system is a program that operates on the database and auxiliary control information to implement the decisions of the access policy. The database management system may consider several factors when deciding whether to permit an access. These factors include:

- (1) Availability of the data
- (2) Availability of the access
- (3) Availability of the user

In addition, the security control also covers as follows:

- (1) Hardware and printer should not be left unattended during the printing process.
- (2) The computer room must be locked at closing time and the key should be entrusted to an authorized person.
- (3) The distribution of reports should be controlled to ensure that they are sent to the correct person.
- (4) Staffs should be provided with adequate training of how to use the system.
- (5) Authorized persons should be instructed to sign source documents.

In conclusion, both secrecy and integrity are important to users of databases. Secrecy can be broken by indirect disclosure of a negative result or the bounds of a

value. Integrity of the entire database is a responsibility of the database management system software; this problem is handled by most major commercial systems through backups, redundancy, change logs, and two-step updates. Integrity of an individual element of the database is the responsibility of the database administrator, who defines the access policy.

According to system level backup, data on every server are backed up as a nightly unattended process. Full backup is done every weekday's night. Differential backups are scheduled during weekends. File restoration is also available. A duly filled service request form must be submitted.



### 3.5 Cost-benefit Analysis

In today's business world, it is becoming more and more apparent that analysts must learn to think like business managers. Information is a major capital investment that must be justified, just as marketing must justify a new product, or manufacturing must justify a new plant or equipment. This part deals with cost-benefit analysis and other feasibility issues of interest to the systems analyst and users of information system. Feasibility analysis is a cross life cycle activity and should be continuously performed throughout a system project. Feasibility is the measure of how beneficial or practical the development of an information system will be to an organization. Feasibility analysis is the process by which feasibility is measured because of the change of technology and environment. There are four categories of feasibility test.

- (1) Operational feasibility is a measure of how well the solution will work in the organization. It is also a measure of how people feel about the system.
- (2) Technical feasibility is a measure of the practicality of a specific technical solution and the availability of technical resources and expertise.
- (3) Schedule feasibility is a measure of how reasonable the project timetable is.
- (4) Economic feasibility is a measure of the cost-effectiveness of a project or solution. This is often called a cost-benefit analysis.

#### 3.5.1 Cost Analysis

Costs fall into two categories. There are costs associated with developing the system and costs associated with operating a system. The former can be estimated from the outset of a project and should be refined at the end of each phase of the project. The latter can be estimated only once specific computer-based solutions have been defined. The costs of developing an information system can be classified according to the phase in



which they occur. Systems development costs are usually onetime costs that will not recur after the project has been completed.

- (1) Personnel costs: The salaries of systems analysts, programmers, consultants, data entry personnel, computer operators, secretaries, and the like who work on the project make up the personnel costs. Because many of these individuals spend time on many projects, their salaries should be prorated to reflect the time spent on the projects being estimated.
- (2) Computer usage: Computer time will be used for one or more of the following activities: programming, testing, conversion, word processing, maintaining a project dictionary, prototyping, loading new data files, and the like. If a computing center charges for usage of computer resources such as disk storage or report printing, the cost should be estimated.
- (3) Training: If computer personnel or end-users have to be trained, the training courses may incur expenses. Packaged training courses may be charged out on a flat fee per site, a student fee or an hourly fee.
- (4) Supply, duplication, and equipment costs.
- (5) Cost of any new computer equipment and software.

Almost nobody forgets systems development budgets when itemizing costs. On the other hand, it is easy to forget that a system will incur costs after it is operating. The lifetime benefits must recover both the developmental and operating costs. Unlike systems development costs, operating costs tend to recur throughout the lifetime of the system. The cost of operating a system over its useful lifetime can be classified as fixed and variable.

Fixed costs occur at regular intervals but at relatively fixed rates. Examples of fixed operating costs include:

- (1) Lease payments and software license payments.
- (2) Prorated salaries of information systems operators and support personnel

Variable costs occur in proportion to some usage factor. Examples include:

- (1) Costs of computer usage (e.g., CPU time used, terminal connect time used, storage used), which vary with the workload.
- (2) Supplies (e.g., preprinted forms, printer paper used, punched cards, floppy disks, magnetic tapes, and other expendables), which vary with the workload.
- (3) Prorated overhead costs (e.g., utilities, maintenance, and telephone service), which can be allocated throughout the lifetime of the system using standard techniques of cost accounting.

The criteria of choosing the hardware have been concluded after discussing all the details with the management by clarifying the requirement of each hardware and other items that are necessary for launching a good system. This hardware should easily suit the future expansion as well. This criteria can be applied for the software requirements. Given below is the cost of the hardware and software configuration.

Table 3.3. Cost of New Hardware, Software, and Others, Baht.

Quantity	Description	Price per Unit	Total Price
1 set	PC server Compaq Proliant 4500 Pentium Pro 200 MHz., RAM 128 MB, HDD 2 GB	180,000	180,000
6 sets	PC workstation Compaq deskpro 4000 Pentium 166 MHz., RAM 128 MB, HDD 2 GB	45,000	270,000
1 set	Hub 10 MB/S, 24 ports 3 com link buidor FMS 24	25,000	25,000
3 boxes	UTP-AMP, CAT 5 10 MB/S 300Metres	3,500	10,500
2 sets	Laser Printer HP 4 V Hewlett Packard. Lan Card (jet direct), RAM 8 MB	34,000	102,000
4 sets	UPS LEONIC Internet Plus	4,000	16,000
1 set	HP sure store 8200E (External)	38,500	38,500
30 cassettes	Tape 120 ML HP	550	16,500
	Software		480,000

New hardware and software cost is only one part of the development costs that we have to concern. Moreover the annual operating costs and implementation costs are our concern as well. The table below represents these costs.

Table 3.4. Estimated Projected Cost, Baht.

Cost Items	Description	Amount	Unit Price	Price
1. Development Cost:	1.1 Personnel Cost:			
	System Analysts (3 months/each)	2	30,000	180,000
	Programmer (3 months/each)	1	20,000	60,000
	GUI Designer (2 months/each)	1	20,000	40,000
	Database Specialist (3 months/each)	1	25,000	75,000
	Subtotal 1:			355,000
	1.2 New Hardware			
	PC Server Compaq Proliant 4500	1	250,000	250,000
	PC workstation 4000	6	65,000	390,000
	Hub 10 MB/S 24 ports	1	35,000	35,000
	UTP-AMP CAT 5	4	4,500	18,000
	Laser Printer HP 4 V	2	52,500	105,000
	UPS LEONIC Internet Plus	4	7,000	28,000
	HP sure store 8200E (External)	1	42,500	42,500
	Tape 120 ML HP	30	650	19,500
	Subtotal 2:			888,000
	1.3 New Software			
	Server Software (Operating System)	3	25,000	75,000
	Client Software (Operating System)	6	5,000	30,000
	DBMS Server Software	1	90,000	90,000
	DBMS Client Software	6	10,000	60,000
	Server Generation	1	180,000	180,000
	Support Pack	1	45,000	45,000
	Subtotal 3:			480,000
	Total Development Cost			1,723,000
2. Operating Cost:	2.1 Personnel Cost:			
	Management	2	50,000	100,000
	Supervisor	4	15,000	60,000
	Staff	12	10,000	120,000
	Subtotal 1:			280,000
	2.2 Maintenance:			
	Hardware Maintenance			130,000
	Software Maintenance			110,000
	Subtotal 2:			240,000
	Total Operating Cost			520,000
	Total Projected Annual Cost			2,243,000

Note: Unit Price is Baht/month.

### 3.5.2 Benefit Analysis

Benefits normally increase profits or decrease costs, both highly desirable characteristics of a new information system. Benefit can be divided into two categories:

- (1) Tangible benefits are those that can be easily quantified. Tangible benefits are usually measured in terms of monthly or annual saving or of profit to the firm. Alternatively, tangible benefits might be measured in term of unit cost saving or profit. Tangible benefits of this system are as follows:

- |   |                     |
|---|---------------------|
| (a) Decrease the salary of employee                                 | 160,000 Baht / year |
| (b) Decrease the amount of time consuming<br>to complete tasks      | 200,000 Baht / year |
| (c) Decrease the error made by manual                               | 500,000 Baht / year |
| (d) Decrease the office equipment cost                              | 300,000 Baht / year |
| (d) Increase the capacity in policy<br>issuing to protect the delay | 500,000 Baht / year |
| (e) Increase the access to information<br>on timely basis           | 200,000 Baht / year |

- (2) Intangible benefits are those benefits believed to be difficult or impossible to quantify. Examples of intangible benefits are:

- (a) Improved customer goodwill
- (b) Improved employee morale
- (c) Better service to community
- (d) Better decision making
- (e) Enhance the accuracy, timeless and efficiency; operation work is done on time, more accurate and more efficient manner.



- (f) Reduce risk of error, which can be made by human
- (g) Reduce the volume of paper work and time consuming
- (h) Smoothing of the operation
- (i) Available for future expansion capacity

### 3.5.3 Conclusion of Cost-Benefit Analysis

There are many well-known techniques for comparing the costs and benefits of the proposed system. The three popular techniques to access economic feasibility called cost effectiveness: payback analysis, return on investment, and net present value. One concept that should be applied to each technique is the adjustment of cost and benefits to reflect the time value of money. Moreover all the techniques provide straight forward way in yielding information to decision maker about the worth of the proposed system.

The methodology of Breakeven Analysis are as follows:

- (a) Simplest form of cost comparison
- (b) Point where proposed new system begins to generate a positive monetary return in comparison with the old system.
- (c) The exact point of time that separates investment and returns period.
- (d) Point where system begins showing the profit

The Methodology of Pay Period Analysis are as follows:

- (a) Point in time when initial investment cost is recovered completely and new system saving begins
- (b)  $\text{Payback period} = \frac{\text{last year of negative cash flow difference} + \text{cumulative differences last negative year}}{\text{absolute value of cumulative difference (last year plus first positive year)}}$

Return on Investment Analysis is a percentage rate that measures the relationship between the amount the business gets back from an investment and the amount invested.

In the first year, proposed system cost is greater than existing system cost because of development and implementation cost. After the third year, proposed system cost is less than the existing system cost.

The accumulated cost or annual cost of the proposed system after the first year is less than the existing system cost because proposed system cost can reduce some costs from the existing system such as paper, employee salary, miscellaneous, etc. That reduction is the benefit of the proposed system.

The result of Cost-Benefit Analysis are as follows:

- (1) The payback period is 3 years and 1 month.
- (2) The break-even point is after second year onward.
- (3) Return on Investment is 36%
- (4) Net Present Value is 1,014,439.72

Table 3.5. Cost / Benefit Analysis of Proposed System, Baht.

Cost Items	Price
Investment Costs:	
Hardware Cost	850,200.00
Software Cost	576,000.00
Personnel Set up Cost	355,000.00
Implementation Cost	188,620.25
Total Investment Cost	1,969,820.25
Annual Operation costs:	
Maintenance Cost	94,575.00
Supply and Utility Cost	1,326,151.50
Total Operation Cost	1,420,726.50
Total Cost	3,390,546.75
Benefit Expected:	
Tangible Benefits:	
Reduce Salary Cost	2,379,126.53
Reduce Office Utility and Supply Cost	124,792.56
Reduce Hardware and Software maintenance Cost	2,895,625.00
Total Benefit	5,399,544.09

Table 3.6. Existing System Cost Analysis, Baht.

Cost Items	Years				
	1	2	3	4	5
Fixed Cost					
Hardware					
Hardware maintenance	400,000.00	420,000.00	420,000.00	450,000.00	450,000.00
Hard disk, Memory	50,000.00	-	100,000.00	-	50,000.00
Minicomputer upgrade	-	-	-	12,000.00	-
Other equipment (5% increase)	60,000.00	63,000.00	66,150.00	69,457.50	72,930.38
Software					
Software maintenance	40,000.00	40,000.00	40,000.00	40,000.00	40,000.00
Total Fixed Cost	550,000.00	523,000.00	626,150.00	571,457.50	612,930.38
Operating Cost					
Salary Cost:					
Management (50,000 x 2) x 10% increase	100,000.00	110,000.00	121,000.00	133,100.00	146,410.00
Supervisor (15,000 x 4) x 10% increase	60,000.00	66,000.00	72,600.00	79,860.00	87,846.00
Staff (10,000 x 15) x 10% increase	150,000.00	165,000.00	181,500.00	199,650.00	219,615.00
Overtime payment	7,000.00	7,700.00	8,470.00	9,317.00	10,248.70
Total monthly salary cost	317,000.00	348,700.00	383,570.00	421,927.00	464,119.70
Total annually salary cost	3,804,000.00	4,184,400.00	4,602,840.00	5,063,124.00	5,569,436.40
Office Supplies & Utility Cost:					
Pre-printed form (150 boxes x 10%)	120,000.00	132,000.00	145,200.00	159,720.00	175,692.00
Office supply (5% increase)	80,000.00	84,000.00	88,200.00	92,610.00	97,240.50
Other expenses (5% increase)	50,000.00	52,500.00	55,125.00	57,881.25	60,775.31
Total Annual Office Supply & Utility Cost	250,000.00	268,500.00	288,525.00	310,211.25	333,707.81
Total Annual Operating Cost	4,054,000.00	4,452,900.00	4,891,365.00	5,373,335.25	5,903,144.21
Total Existing System Cost	4,604,000.00	4,975,900.00	5,517,515.00	5,944,792.75	6,516,074.59

Table 3.7. Five Years Accumulated Existing System Cost, Baht.

Year	Total Manual Cost	Accumulated Cost
1	4,604,000.00	4,604,000.00
2	4,975,900.00	9,579,900.00
3	5,517,515.00	15,097,415.00
4	5,944,792.75	21,042,207.75
5	6,516,074.59	27,558,282.34
Total	27,558,282.34	



Table 3.8. Computerized System Cost Analysis, Baht.

Cost items	Years				
	1	2	3	4	5
<b>Fixed Cost</b>					
Hardware Cost:					
Computer Server Cost	180,000.00	9,000.00	9,000.00	9,000.00	9,000.00
Client Computer Cost	270,000.00	13,500.00	13,500.00	13,500.00	13,500.00
Other Hardware Cost	258,500.00	12,925.00	12,925.00	12,925.00	12,925.00
Total Hardware Cost	708,500.00	35,425.00	35,425.00	35,425.00	35,425.00
Maintenance Cost:					
Maintenance Cost	-	-	30,000.00	31,500.00	33,075.00
Total Maintenance Cost	-	-	30,000.00	31,500.00	33,075.00
Software Cost:					
Software Cost	480,000.00	24,000.00	24,000.00	24,000.00	24,000.00
Total Software Cost	480,000.00	24,000.00	24,000.00	24,000.00	24,000.00
Personnel Set up Cost:					
System Analysts 2 persons (3 months * 30,000/month)	180,000.00	-	-	-	-
Programmer 1 person (2 months * 20,000/month)	60,000.00	-	-	-	-
GUI Designer 1 person (2 months * 20,000/month)	40,000.00	-	-	-	-
Database Specialist 1 person (3 months * 25,000/month)	75,000.00	-	-	-	-
Total Personnel Set up Cost	355,000.00	-	-	-	-
Implementation Cost:					
Training Cost	80,000.00	-	-	-	-
Server Generation	100,000.00	2,000.00	2,100.00	2,205.00	2,315.25
Total Implementation Cost	180,000.00	2,000.00	2,100.00	2,205.00	2,315.25
<b>Total Fixed Cost</b>	<b>1,723,500.00</b>	<b>61,425.00</b>	<b>91,525.00</b>	<b>93,130.00</b>	<b>94,815.25</b>

Table 3.8. Computerized System Cost Analysis (Continued), Baht.

Cost Items	Years				
	1	2	3	4	5
<u>Operating Cost</u>					
<u>Salary Cost:</u>					
Management 2 persons @ 50,000 (10% increase)	100,000.00	110,000.00	121,000.00	133,100.00	146,410.00
Supervisor 4 persons @ 15,000 (10% increase)	60,000.00	66,000.00	72,600.00	79,860.00	87,846.00
Staff 12 persons @ 10,000 (10% increase)	120,000.00	132,000.00	145,200.00	159,720.00	175,692.00
Overtime payment	5,000.00	5,250.00	5,512.50	5,788.13	6,077.53
Total monthly salary cost (Baht)	285,000.00	313,250.00	344,312.50	378,468.13	416,025.53
Total annually salary cost (Baht)	3,420,000.00	3,759,000.00	4,131,750.00	4,541,617.50	4,992,306.38
<u>Office Supplies &amp; Miscellaneous Cost:</u>					
Paper A4 Per Annual	40,000.00	42,000.00	44,100.00	46,305.00	48,620.25
Laser Printer Toner Per Annual	100,000.00	105,000.00	110,250.00	115,762.50	121,550.63
Other expenses Per Annual	80,000.00	84,000.00	88,200.00	92,610.00	97,240.50
Miscellaneous Per Annual	20,000.00	21,000.00	22,050.00	23,152.50	24,310.13
Total Annual Office Utility and Supply Cost	240,000.00	252,000.00	264,600.00	277,830.00	291,721.50
Total Annual Operating Cost	3,660,000.00	4,011,000.00	4,396,350.00	4,819,447.50	5,284,027.88
<u>Total Computerized System Cost</u>	5,383,500.00	4,072,425.00	4,487,875.00	4,912,577.50	5,378,843.13

Table 3.9. Five Years Accumulated Computerized Cost, Baht.

Year	Total Computerized Cost	Accumulated Cost
1	5,383,500.00	5,383,500.00
2	4,072,425.00	9,455,925.00
3	4,487,875.00	13,943,800.00
4	4,912,577.50	18,856,377.50
5	5,378,843.13	24,235,220.63
Total	24,235,220.63	

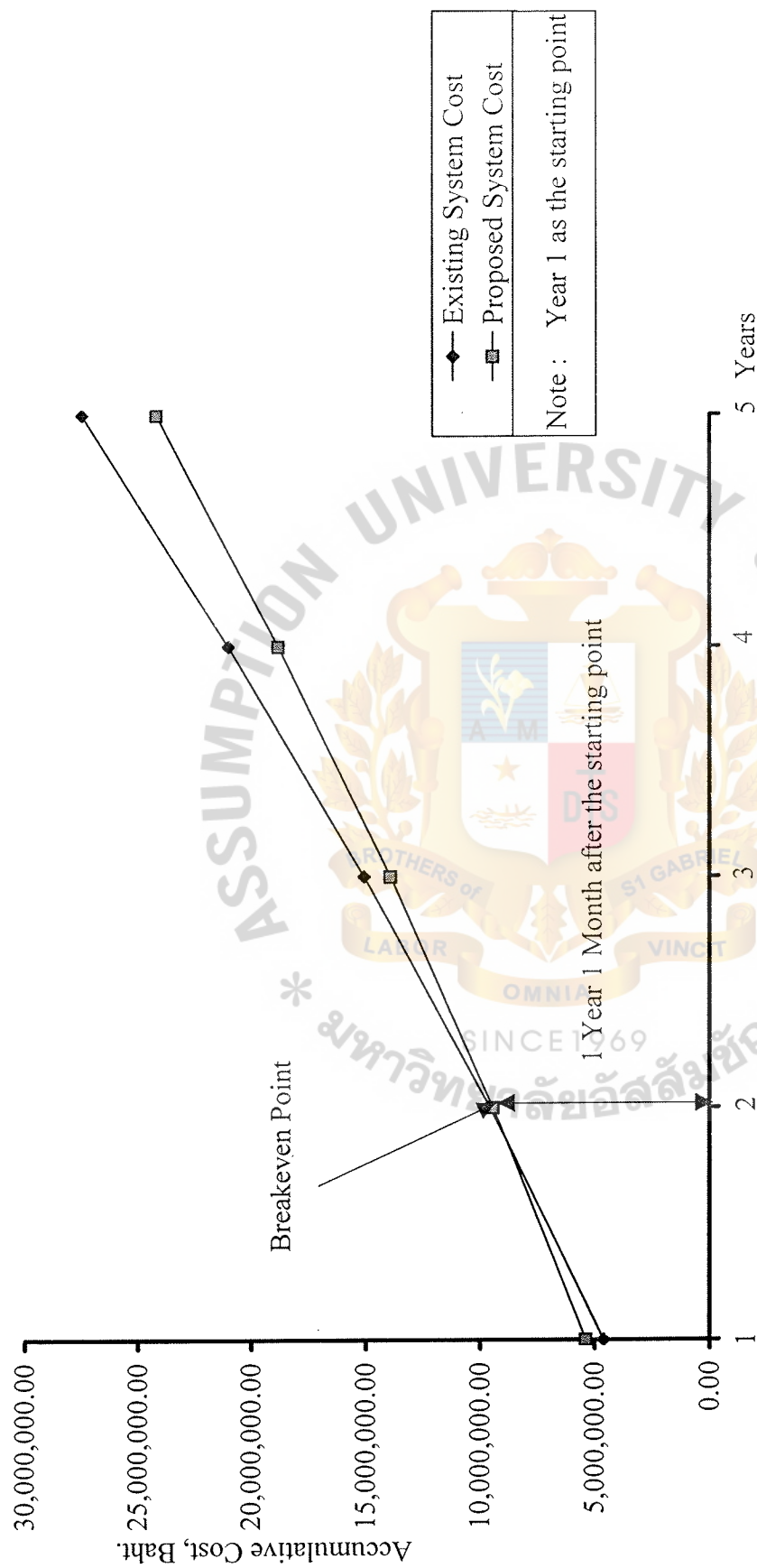


Figure 3.21. Cost Comparison between Existing System and Proposed System.

Table 3.10. Payback Analysis, Baht.

Cost Items	Years					
	0	1	2	3	4	5
Development cost:	-1,723,500.00					
Operation & maintenance cost(5% increase annually):	0.00	-301,425.00	-301,425.00	-301,425.00	-301,425.00	-301,425.00
Discount factors for 12%:	1.00	0.89	0.80	0.71	0.64	0.57
Time-adjusted costs (adjusted to present value):	-1,723,500.00	-269,172.53	-240,235.73	-214,614.60	-191,706.30	-170,907.98
Cumulative time-adjusted costs over lifetime:	-1,723,500.00	-1,992,672.53	-2,232,908.25	-2,447,522.85	-2,639,229.15	-2,810,137.13
	0.00					
Benefits derived from operation of new system:	0.00	944,000.00	964,900.00	1,121,165.00	1,125,345.25	1,232,046.71
Discount factors for 12%:	0.00	0.89	0.80	0.71	0.64	0.57
Time-adjusted benefits (adjusted to present value):	0.00	842,992.00	769,025.30	798,269.48	715,719.58	698,570.49
Cumulative time-adjusted benefits over lifetime:	0.00	842,992.00	1,612,017.30	2,410,286.78	3,126,006.36	3,824,576.84
Cumulative lifetime time-adjusted costs + benefits:	-1,723,500.00	-1,149,680.53	-620,890.95	-37,236.07	486,777.21	1,014,439.72
Net Present Value::						1,014,439.72
Return on Investment (ROI):						0.36%



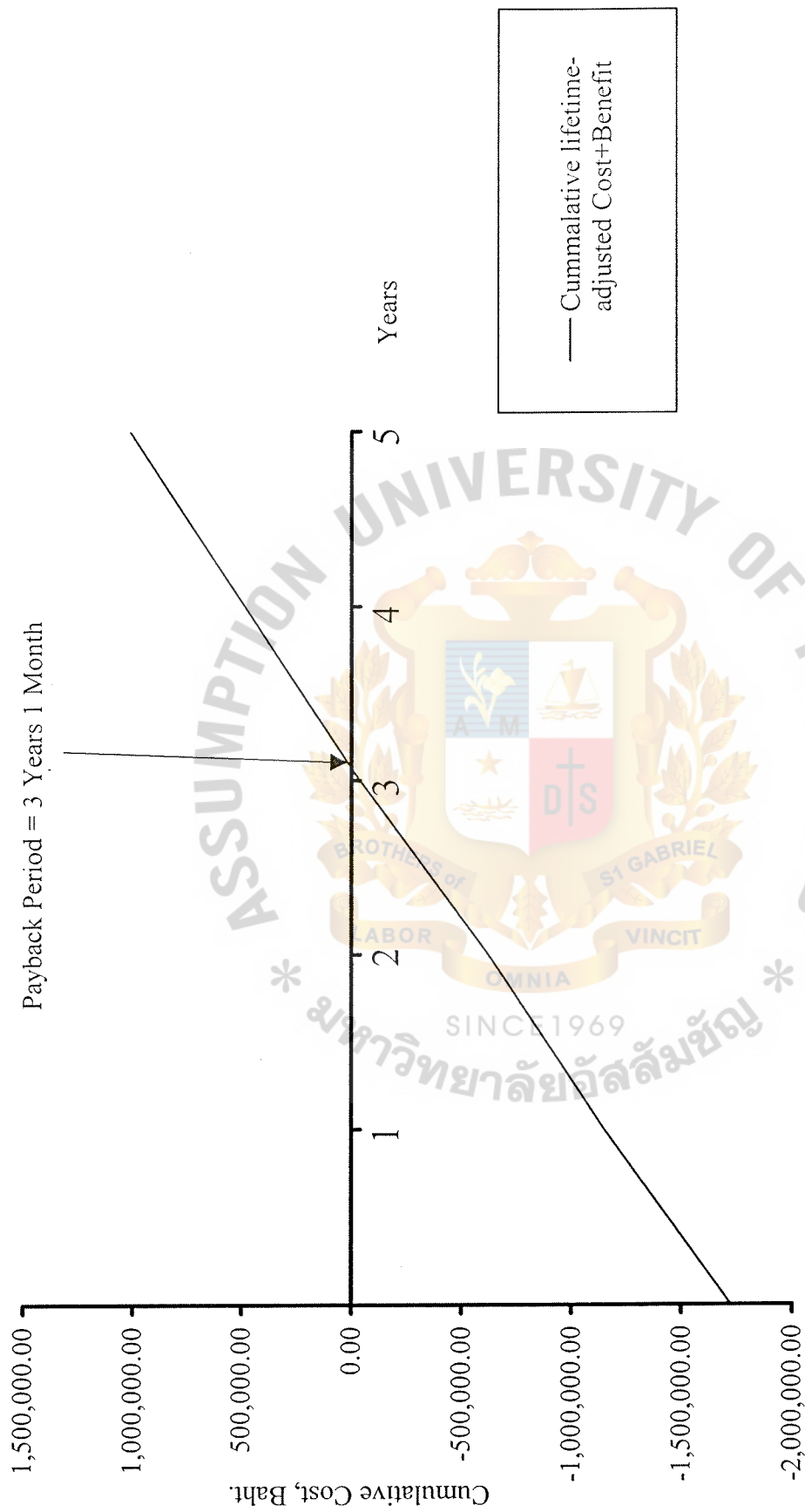


Figure 3.22. Payback Period of Proposed System.

## IV. PROJECT IMPLEMENTATION

### 4.1 Overview of Project Implementation

A project is a sequence of unique, complex, and connected activities having one goal or purpose and that must be completed by specific time, within budget, and according to specification. For any systems development project, effective project management is necessary to ensure that the project meets the deadline, is developed within an acceptable budget, and fulfills expectation and specifications. Project management is the process of defining, planning directing, monitoring, and controlling the development of an acceptable system at a minimum cost within a specified time frame. The schedule is very important. The uncontrolled addition of technical features to a system under development without regard to schedule and budget can cause the problem to the project schedule. Each unplanned feature, however impressive, added time and costs to the overall schedule. One major problem with cost overruns is that many methodologies or project plans call for an unreasonably precise estimate of costs before the project begins. Poor estimating techniques are another cause of cost overruns. And finally, cost overruns are often caused by schedule delays. We can point to premature estimates as a problem. These early estimates are based on the initial scope of the project. Because system analysis are eternal optimists, they often quote optimistic schedules and fail to modify those schedules as the true scope of the project becomes apparent. Moreover missed requirements may cause schedule slippages that, in turn, cause cost overruns.

The overall plan to develop the existing system of Better Life Insurance Company is shown by project management software. Nowadays, project management software is routinely used to help project managers plan projects, develop schedules, develop budgets, monitor progress and cost, generate management reports, and effect change. Examples

include Microsoft's Project and Applied Business Technology's Project Manager Workbench. We use Microsoft Project because this tool is frequently available with inexpensive price. Microsoft Project, like most project management software tools, defaults to a project model called a Gantt Chart. The following steps are the details of the overall plan that will fulfill the company goal in computer system.

The step of system analysis and design for the new computing system can be described as follows:

Step 1 Survey problems and opportunities

Purpose: To quickly survey and evaluate each identified problem, opportunity, and directive with respect to urgency, visibility, tangible benefits, and priority. Optionally, the participants can explore possible solutions, although everyone should be informed that other solutions may and should be explored at later stages of the project.

Step 2 Plan the project

Purpose: To develop the initial project schedule and resource assignments.

Step 3 Present the project

Purpose: To secure any required approvals to continue the project

Step 4 Model the current system

Purpose: To learn enough about the current system's data, processes, interfaces, and geography to expand the understanding of scope and to establish a common working vocabulary for that scope.

Step 5 Analyze the business processes

Purpose: To analyze each business process in a set of related business processes to determine if the process is necessary and what problems might exist in that business process.

Step 6 Analyze problems and opportunities

Purpose: To understand the underlying causes and effects of all perceived problems and opportunities, and to understand the effects and potential side effects of all perceived opportunities.

Step 7 Establish system improvement objectives and constraints

Purpose: To establish the criteria against which any improvements to the system will be measured and to identify any constraints that may limit flexibility in achieving those improvements.

Step 8 Model business system requirements

Purpose: To model business system requirements such that they can be verified by system users and subsequently understood and transformed by system designers into a technical solution.

Step 9 Prioritize business requirements

Purpose: To prioritize business requirements for a new system. It is not the intent of this activity to eliminate any business requirement

Step 10 Define candidate solutions

Purpose: To identify alternative candidate solutions to the business requirements defined during systems analysis.

Step 11 Analyze feasibility of alternative solutions

Purpose: To evaluate the alternative candidate solutions according to their economic, operational, technical, and schedule feasibility.

Step 12 Recommend a system solution

Purpose: To select a candidate solution to recommend. The candidate having the best overall operational, technical, economic, and schedule feasibility should be selected.

Step 13 Design database

Purpose: To prepare technical design specifications for a database that will be adaptable to future requirements and expansion.

Step 14 Design computer outputs and inputs

Purpose: To prepare technical design specifications for user inputs and outputs.

Step 15 Present and review design

Purpose: To prepare technical design specifications for an on-line user interface.

Step 16 Build and test database

Purpose: To build and test new databases and modify existing databases for use by the new system.

Step 17 Conduct system test

Purpose: To test all software packages, custom-built programs, and any existing programs that comprise the new system to ensure they all work together.



Step 18 Prepare conversion plan

Purpose: To provide a smooth transition from the old system to the new system.

Step 19 Install database

Purpose: To populate the new systems databases with existing data from the old system.

Step 20 Train system users

Purpose: To provide training and documentation to system users to prepare them for a smooth transaction to the new system.

Step 21 Convert to new system

Purpose: To convert to the new system from the old system and evaluate the project experience and final system.

#### **4.2 Source Code**

This project uses software named Microsoft Access 97 as the application for user interface. This application is a friendly graphical user interface. For this new system, it also uses Microsoft Access 97 as the database, which keeps all data needed in the system by using database management system to operate

#### **4.3 Test Plan**

Before the new system can be launched, testing is necessary in order to ensure that it will not cause the problem at least. The testing of the new system is the part of system implementation process. It should be done on a parallel with the existing system because the business must go on. Both the old and new systems are operated for some time period. This is done to ensure that all major problems in the new system have been solved before the old system is discarded. The final cutover may be either abrupt (usually at the end of

one business period) or gradual, as portions of the new system are deemed adequate. This strategy minimizes the risk of major flaws in the new system causing irreparable harm to the business; however, it also means the cost of running two systems over some period must be incurred. The operation and results of the new system can be compared with those of the old system to make sure that it can be worked correctly.

At the period of testing, users who get involved to the new system will be provided a prototype to test whether the new system can be done or not. At this stage the designer should be with the user in order to make sure that the system is completed as much as possible. The number of new clients and existing clients will be chosen for the implementation testing and their data will be kept into the new system database.

The proposed system will be tested before implementing. Testing should not be deferred until after the entire program has been written. Testing takes on even greater importance in system maintenance. The following tests are essential and recommended:

(1) Stub testing

It is the test performed on individual modules, whether they are main program, subroutine, subprogram, block, or paragraph. This may have a question like how you can test a higher-level module before coding its lower-level modules. We can simulate the lower-level modules. These lower-level modules are often called stubs. Stub modules are subroutines, paragraphs, and the like that contain no logic.

(2) Specification testing

This is to test the program to check whether it performs according to the specification requirements. The test cases are developed in various conditions.

(3) Unit or program testing

It is the test whereby all the modules that have been coded and stub tested are tested as an integrated unit. This testing ensures that the stand-alone program, which consists of many modules, fixes the bug without side effects. The test data and current performance that we recovered, created, edited, or generated when the programs were benchmarked are used here. Moreover it will ensure that the applications programs work properly when tested in isolation from other applications programs.

(4) System testing

It is the test to ensure that application programs written in isolation work properly when they are integrated into the total system. This kind of testing also ensures that the entire application, of which the modified program was a part, still works. The test data and current performance are concerned.

(5) Regression testing

It extrapolates the impact of the changes on program and application throughput and response time from the before-and-after results using the test data and current performance.

(6) Special system testing

- (a) Storage testing: To determine the capacity of the system in order to store transaction data on a disk and in other files.
- (b) Peak load testing: To determine whether the new system can handle the volume of activities that occur when the system is at the highest point of its processing demand.
- (c) Performance time testing: To determine the length of time system used by the system to process transaction data.

- (d) Recovery testing: To recover data from the system failure by creating a failure or data loss even where a user is forced to reload and recover from back up copy. This test can determine whether the recovery procedure is adequate.
- (e) Procedure testing: To clarify the documentation on operation and to use the system by allowing users do exactly what they used to do in manual.
- (f) Human testing: To test how well user will use the system when processing data or preparing reports.

(7) Data testing

This testing will use live data or the real data. The user has to key in the data in their usual activities. The data will be tested to use with the system and find the error.

A single program that works properly does not mean that it works properly with other programs. The integrated set of programs should be run through a system test to make sure that one program properly accepts, as input, the output of other programs.

When a new machine is received, it is important to test run and install corporate standard software, i.e. operating system (DOS or Windows NT), operating environment (Microsoft Windows for Workgroups), business-specific applications.

When something is wrong with the system, first aid service may be required. In case of hardware failure, a call shall be made to outside technical service (the vendor) if it cannot be fixed by MIS team or requires special trained technical support attendance.

If it is the system software that fails to function properly, a reinstallation of such software may be required. We bear no responsibility of loss of data kept at the workstation.

In LAN networking, the period of time for installing servers takes two hours to finish one of them and for clients takes only one hour. Time is important to set the schedule to do something. When the installation of LAN system is completed, LAN test should be done before implementing. We use performance monitor for Window NT to check the performance of processing. For example, if the result shows that speed is 30%, users can use the system with efficiency.

#### **4.4 Conversion**

After completing acceptance testing, the installation of new system begins at the site preparation. It includes system and program installation, network installation and telecommunication connection. All data and files will be set up to the system.

It is advisable that system analyst and programmer observe the following basic principles during implementation.

- (a) Inform the management of all changes in the implementation method or schedule.
- (b) Stick to the schedule that is already planned. Do the process on time.
- (c) Avoid disrupting the day-to-day business activities during the implementation process.
- (d) Do not require excessive overtime work during implementation.
- (e) Do not give demanding orders because system analyst and programmer are functioning as advisory staff, not a line manager.

Moreover the method for installing the new system should use parallel change, because this method allows the existing system and new system to operate simultaneously with computerized system.



The user who accesses the new system must be concerned. The quality of training provided by the personnel and consultant is very important for successful implementation. They must know in detail how to use the system in order to protect from any mistakes. The overview of system operation and procedures should be included in the training course. The instruction should include trouble shooting the system and training in data handling activities, such as add, delete, change, and so on.

The result of the improved day-to-day operation will be shown in a short period of time. The system can issue more policies and collect more premiums. Moreover it can provide efficient and improved workflow. However, the overall results of the whole system in terms of business may take some months before the real extent of the improvement to the operation.



## V. CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

The purpose of the system development project is to develop a new system to manage Personal Accident Insurance Business Functions. The entire workflow and processes of the existing system have to be studied in depth by interviewing involved staffs and managements. All working processes and problems to perform each function exposed to be used in designing the system. Users' requirements are important because they are used to working with this kind of business. They realize what the problems are and they can advise some suggestions to protect those problems. These requirements are also defined to guide the developer to implement the appropriate service system.

The design of this project depends on the latest technology that can be provided in both hardware and software. Microsoft Access is used to design the user interface. However, the company's budget is one of the important factors that we have to concern. Things that we have to keep in our mind is how to make the most of limited budget. The benefits are the management's concern. The company can take many benefits after implementing this system. The examples of the benefits are as follows:

- (1) Provide fast service to customers.
- (2) Increase work efficiency and quality of work.
- (3) Reduce cost.
- (4) Reduce lost of opportunity sales.
- (5) Provide fast and accurate report that simplify and speed up all analysis process.
- (6) Improve the work system
- (7) Provide well and trusted database management system.

- (8) Help management to do strategic management plan.
- (9) Increase the competitive advantages.
- (10) Reduce workload.
- (11) Provide timeliness, accuracy and updated information.
- (12) Provide the company incremental performance.
- (13) Reduce redundancy work.

The above benefits can make our department yield the higher productivity, which is the goal of the company. With the new system, all information will be accurate and in time whenever the executive needs. Management team and staffs who work for the Personal Accident department will be more satisfied with this new system. In the future, this system can be developed further in order to meet other user's requirements and business goal because everything can be changed all the time. Finding the way to apply those changes with our business future enhancement is our concern for improving the value, quality, or attractiveness in order to survive in this competitive market.

Table 5.1 shows the time counted on each process of the proposed system compared with the existing system. It shows that each process of the proposed system spends less time than each process of the existing system. This can be concluded that the proposed system is more efficient and effective than the existing system.

Table 5.1. The Degree of Achievement of the Proposed System.

Process	Existing System	Proposed System
Application Process	3 hrs.	1 hr.
Policy Issuing Process	1 hr.	30 mins.
Payment Process	30 mins.	15 mins.
Modification Process	2 hrs.	1 hr.
Inquiry Process	30 mins.	10 mins.
Making Report Process	1 hr.	15 mins.
Total	8 hrs.	3.10 hrs.

The description of each process can be clarified as follows:

(1) Application Process

This process concerns with collecting application, checking producer blacklist, and underwriting application. When underwriter receives application from agent, he or she has to check whether this application is completed or not. Then he or she has to check producer blacklist in order to protect any unauthorized producer. After that, he or she has to consider client's qualification, which has to be matched in each product.

(2) Policy Issuing Process

After underwriting application, this verified application is sent to Central Processing Unit for issuing policy. The detail of this application will be entered into the system. After checking policy detail, policy will be printed. Central Processing Unit has to collect policy and assembler the attachments to make the completed policy for client.

(3) Payment Process

This process concerns with checking net premium and producer's credit term of issued policy to assure that the payment is correct.

(4) Modification Process

This process is to modify the existing information. First, users have to find information needed to be changed. Then they have to check the detail of this information whether they have found the correct one or not. Then they can modify or update the existing information to make the information fresh.

(5) Inquiry Process

This process is to find any information for reference. Users have to enter some required information they would like to search, such as policy number, insured name, etc. Then they have to wait for the result.

(6) Making Report Process

This process concerns with collecting information need, analyzing information, and printing report. When management team request the specified report, the report has to be designed. Consideration of information need is necessary. After that, this information has to be analyzed in order to meet the management need. Then waiting for the result and printing the report.

## 5.2 Recommendations

Technology changes all the time. At present we can not know what it is going to be in the future. We have just used the latest computer technology, which we can afford and this technology has to be the most suitable for our new system. The new and suitable computer technology can be applied for re-engineering the insurance process. In the future, this new system can be modified to respond to other users' requirement, which can not be supported by the current technology. The future enhancement of Personal Accident Insurance Information System for new business should be done step by step, which is evaluated if necessary.

- (1) The uses of EDI (Electronic Data interchange) should be provided to connect between our company and producers who work outside the office. The processes can be done anywhere because computers can be widely used right now. Electronic data interchange is an application that allows the paperless transfer of business information. Producers can send the



applications straight away by computer to computer and authorized staff will access those applications. No need to fax or walk-in for sending only the application.

- (2) Website technology can be applied for premium payment. Clients can pay the premium via credit card number, which is a comfortable choice for them. Moreover this technology may be applied for selling personal accident insurance to our clients directly. At present we have only our information on the web site. We have not provided electronic commerce yet. In the future, clients may buy our product through the Internet, which make them be more comfortable. Therefore we have to keep on moving for the best thing which can be provided to our clients.
- (3) Improve the communication among departments by using electronic mail and database system for sharing information. If any user changed any part of the data, all the involved users would be notified automatically when they retrieve data from the computer system.
- (4) Account receivable management dealing with premium collection should be developed in the next step to control the unpaid premiums.
- (5) Train more technical staffs to solve the complicated problems of this new client / server system in the future.



## APPENDIX A

USER INTERFACE / USER MANUAL

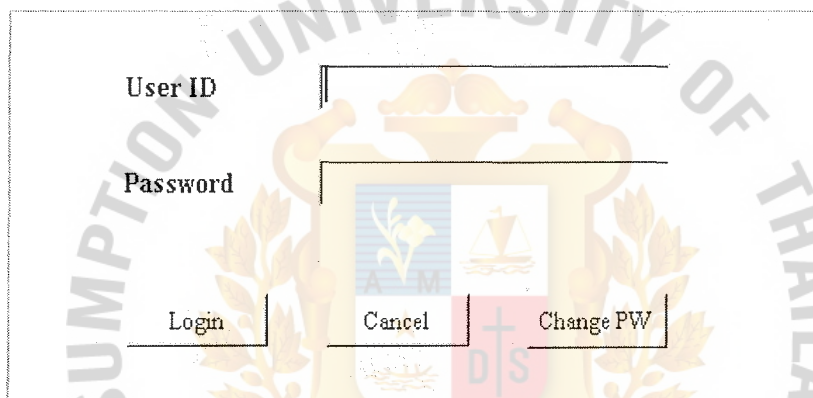
## User Manual

This user interface consists of 10 screens.

- (1) Login Screen
- (2) Change Password Screen
- (3) Personal Accident Main Menu Screen
- (4) Policy Entry Client Information Screen
- (5) Policy Entry General Information Screen
- (6) Policy Entry Beneficiary Screen
- (7) Policy Number Screen
- (8) Product Screen
- (9) Producer Screen
- (10) Report Screen



## Personal Accident Information System



The login form is displayed within a rectangular frame. It features a large, faint watermark of the Assumption University of Thailand seal in the background. The seal includes the text 'ASSUMPTION UNIVERSITY OF THAILAND' at the top, 'BROTHERS of LABOR OMNIA VINCIT' on a banner, and 'S1 GABRIEL' and 'SINCE 1969' at the bottom. The form itself contains the following elements:

- User ID**: A text label followed by a single-line input field.
- Password**: A text label followed by a single-line input field.
- Login**: A button located below the Password field.
- Cancel**: A button located to the right of the Login button.
- Change PW**: A button located to the right of the Cancel button.

Figure A.1. Login Form.

## Login Screen

The function of Login Screen is to protect unauthorized person who would like to access the system without permission. This screen uses to verify UserID and Password. This screen consists of two input textboxes and three command buttons. Two input textboxes are UserID and Password. Three command buttons are Login, Cancel, and Change Password.

The character length of UserID is eight characters and character length of password is eight characters as well. UserID textbox has to contain only character A to Z and the first character is the initial alphabet of user's last name. Password textbox can contain any character.

When user types in Password textbox, character “\*” will show in this textbox to protect other person seeing the password. User can use TAB or Enter command on keyboard when finishing typing each textbox.

After user has already entered in the textbox, user has to press Login button in order to access the system. If user types wrong password more than three times, that UserID will be locked automatically. User has to request to reset password.

User can change password whenever he/she would like to do. Just press on the button “Change PW”

When user presses Login button, the system will check whether both textboxes are matched or not. If they are valid, it will allow user to access Main Menu Screen. If they are invalid, it will show an error message and then clear existing characters on the screen.

Cancel command button concerns with closing this screen and exit the system.



## Change Password

User ID

Old Password

New Password

Confirmed New Password

Figure A.2. Change Password Form.

## Change Password Screen

This screen increases security control in each user. The longer user use the same password, the more chance other person knows the password.

This screen consists of four textboxes and one command button. Four textboxes are UserID, Old Password, New Password, and Confirmed New Password. The character length is the same as the Login Screen.

When user types in Old Password, New Password, and Confirmed New Password textboxes, character “\*” will show in the textboxes. User can use TAB or Enter command on keyboard when finishing typing each textbox.

After finishing typing in the textboxes, user can do either of the following:

- (a) Press Enter key on keyboard.
- (b) Move mouse and then click on OK button.

## Personal Accident Information System

- ☐ Policy Entry
- ☐ Product
- ☐ Producer
- ☐ Report
- ☐ Exit

Figure A.3. Personal Accident Main Menu.

## Personal Accident Main Menu Screen

The function of Main Menu Screen is to show the main processes in Personal Accident Information System. This screen consists of five command buttons. The command buttons are as follows:

- (a) Policy Entry
- (b) Product
- (c) Producer
- (d) Report
- (e) Exit

When this screen appears, user can access these command buttons by clicking mouse on the desired menu.

Functions of each command button are as follows:

- (a) Policy Entry command button will show client information screen, general information screen, and beneficiary screen.
- (b) Product command button will show product screen.
- (c) Producer command button will show producer screen.
- (d) Report command button will show report menu screen.
- (e) Exit command button will stop the processing. It will close this screen and exit the system.

**Client**

**Client Information**

<b>Client</b>	Client_no	0000000001		<b>Producer</b>
First Name	จิตรพันธ์		Producer name	กรรณ
Last Name	วิชรพงศ์			

**Address**

Street	353 ถ.วานิช1		
district	เขตสัมพันธวงศ์	state	กรุงเทพมหานคร
zipcode	10100		

**Personal Details**

Date_of_Birth	12/3/72	Occupation	พนักงานบริษัท
Marital Status	Single	Occupation class	B
Nationality	Thai	Salary	15,000.00
Gender	<input checked="" type="radio"/> M <input type="radio"/> F	IC No.	3 1552 00051 61 5

**Phone**

Phone	Fax	Mobile
222-4586		

Record: 1 of 1

Figure A.4. Policy Entry Client Information.



## Policy Entry Client Information Screen

The function of Policy Entry Client Information Screen is to enter client information for issuing new policy. This screen consists of eleven input textboxes, seven input combo boxes, one group of radio button, and two command buttons.

The textboxes in this screen are Client's Last Name, Client's First Name, Street, IC Number, Salary, Occupation, and Phone. Client's Last Name, Client's First Name, Producer's Name, and Street can contain any character but IC Number, Salary, and Phone contain only numeric. If user types other characters, system will show an error message and then will clear invalid character.

The combo boxes in this screen are District, State, Zip Code, Martial Status, Producer's Name, Occupation Class, and Nationality. User can type some alphabet into these boxes, it will show the choice which has the same initial alphabet on the list or user can click the arrow drop down to choose the record which matches his/her needs.

One group of radio button is Gender. This allows user to choose only one record. User cannot choose both of them. This group has two radio buttons, which are Female and Male.

Functions of the command buttons are as follows:

- (a) OK command button will go to the next screen, General Information Screen, to allow user complete policy issuing.
- (b) Cancel command button will close this screen and go back to Main Menu.

**POLICY\_TRAN**

## POLICY ENTRY

**General Information**

pol\_no

<b>Policy Holder</b>	Policy Holder ID	0000000001	<b>Policy Date</b>	Proposal_date	12/8/00
First_name	จิตรพันธ์		inception_date	1/9/00	
Last_name	ธีรพงศ์		expiry_date	1/9/01	

Next

<b>Producer</b>	Producer_cd	000001	<b>Rating</b>	Premium	1,550.00
First_name	กรกนก		Tax	43.00	
Last_name	นิยรัตน์		Stamp	7.00	
Prod_name	READY FORMULA		Net_premium	1,600.00	
Plan_des	RF 2 (Plan 2)		Commission	279.00	
			Prem_receivable	1,321.00	

Cancel

Record: 1 of 4

Figure A.5. Policy Entry General Information.

## Policy Entry General Information Screen

The function of this screen is to enter information need to complete new policy. This screen will show general information for one policy. This screen consists of eleven input textboxes, six input combo boxes, and two command buttons.

The textboxes in this screen are Policy Number, Policy Holder's Last Name, Policy Holder's First Name, Commission, Proposal Date, Inception Date, and Expiration Date. Policy Holder's Last Name and Policy Holder's First Name can contain any character. Policy Number and Commission contain only numeric. Proposal Date, Inception Date, and Expiration Date contain date format.

The combo boxes in this screen are Producer's Name, Product, and Plan. The choices have already set up for user.

The command buttons in this screen are Next and Cancel. The functions of these two command buttons are as follows:

- (a) Next command button will allow user to access next screen, Beneficiary Screen.
- (b) Cancel command button will close this screen and go back to the first screen of policy entry, which is Client Information Screen.

**POLICY\_TRAN1**

**Beneficiary**

pol\_no

Client No. 0000000001 จิตพิพนท์ อัครพงศ์

Date of Birth 12/3/72 IC No. 3 1552 00051 61 5 Occupation พนักงานบริษัท

Beneficiary

seq_no	Bene_name	Relation	Percent
1	ยุพิน วิเศษวัฒน์	มารดา	100
0			0

Record: 1 of 1

Finish  
Previous  
Cancel

Figure A.6. Policy Entry Beneficiary.

## Policy Entry Beneficiary Screen

The function of the Beneficiary Screen is to allow user to put the beneficial persons for issuing policy. This screen consists of six input textboxes, one subform table, and three command buttons.

Six input textboxes are Client No., Client's Name, Client's Surname, Date of Birth, IC No., and Occupation. These textboxes will appear by themselves. user does not have to key again because these information have already entered in the Client Information Screen.

The table of beneficiary can enter many persons by scrolling down depend on client's needs.





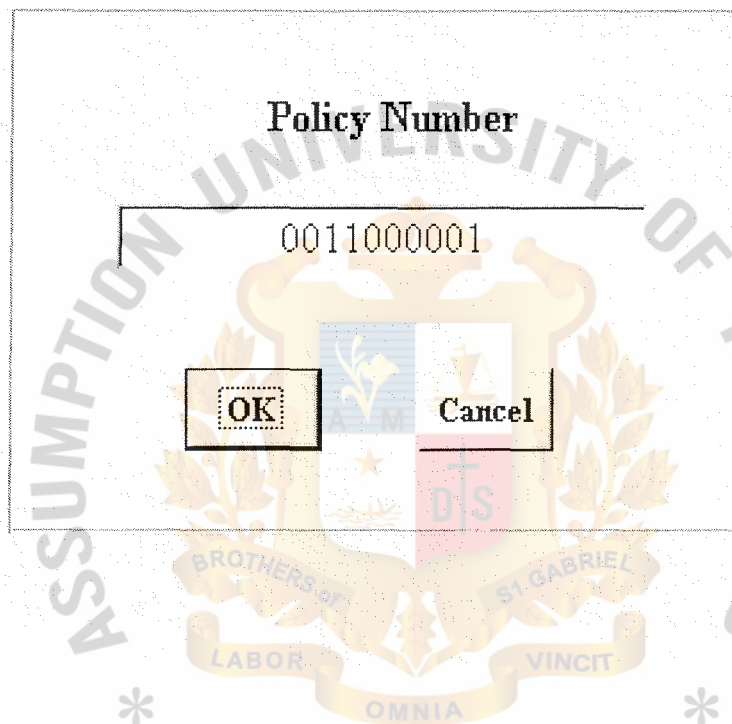


Figure A.7. Policy Number.

## Policy Number Screen

The function of the Policy Number Screen is to show the policy number of the exiting record. The policy number will run automatically to protect the repeating number. This screen consists of one textbox and two command buttons.

One textbox is policy number. User is not allow to put any character into it. Policy Number has ten digits.

Two command buttons are OK and Cancel. The functions of these two command buttons are as follows:

- (a) OK command button will end all the issuing policy process.
- (b) Cancel command button will go back to previous screen.



**Product**

**PRODUCT TYPE**

Prod\_cd: 000001

Product Name: Ready Formula 1

Commission: 18 %

Plan_cd	Plan_des	Premium
01	RF1(Plan 1)	1,100.00
02	RF1(Plan 2)	1,600.00
03	RF1(Plan 3)	1,800.00
04	RF1(Plan 4)	2,000.00

Record: 1 of 4

Coverage

Cov_cd	Cov_des	Sum_insured
ad	Accidental Death	200,000.00
d	dismemberment	200,000.00
me	medical expense	20,000.00

Record: 1 of 3

Buttons: Add, Delete, Edit, Cancel, Previous Record, Next Record, Find, Exit

Figure A.8. Product.

## Product Screen

The function of Product Screen is to show product detail. The screen consists of two input textboxes, one combo box, two subform tables, and eight command buttons.

Input textboxes are Producer code and Commission. One combo box is Product Name. Two tables is Plan and Coverage, which each plan has different coverage. The functions of command button are as follows:

- (a) Add command will prepare new record for user to record in product file.
- (b) Delete command will delete record that is not useful in product file.
- (c) Edit command will prepare record for user to change record in product file.
- (d) Cancel command will cancel last activity on the screen.
- (e) Previous Record command will go to previous record of product file.
- (f) New Record command will go to next record of product file.
- (g) Find command will find record that user would like to search in product file.
- (h) Exit command will close this screen and go to main menu.

**Producer**

First\_name | กรกนก | Last\_name | เจริญรัตน์

**ADDRESS**

Street | 285 ต.ตำรังรักษ์ |

District | เขตป้อมปราบ | State\_des | กรุงเทพมหานคร |

zipcode | 10100 | Branch | |

**DETAILS**

Producer\_cd | 000001 | Date of Birth | 25/9/71 |

Status | 6 | License Expiry Date | 30/12/00 |

**TELEPHONE**

Phone | 225-9786 | Fax | | Mobile | |

Previous | Next | Find | Exit

Record: 1 of 2

Figure A.9. Producer.



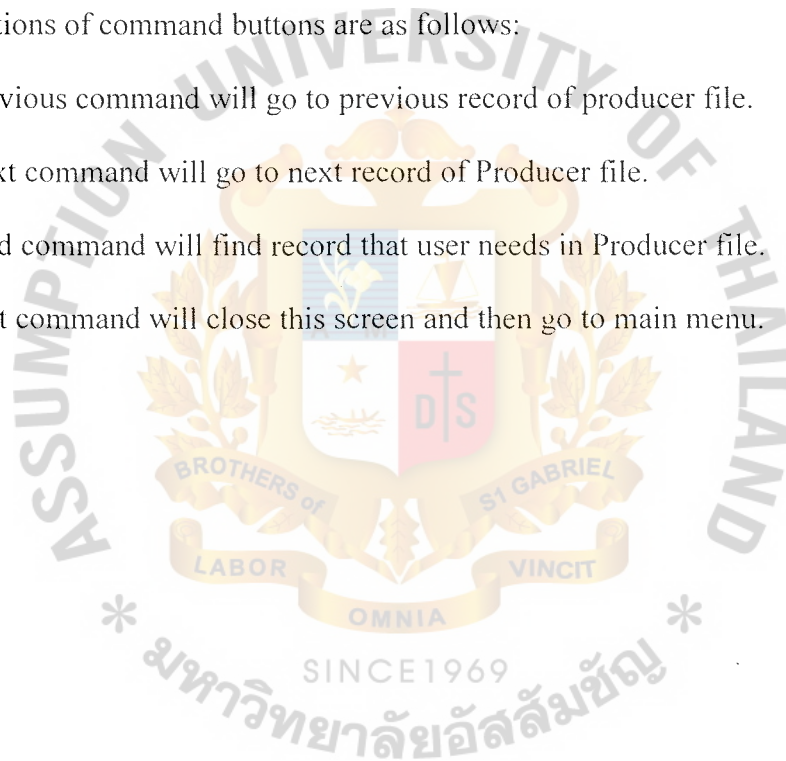
## Producer Screen

The function of Producer Screen is to show producer detail. User can check whether the producer has black list or not. This screen consists of ten input textboxes, four input combo boxes, and four command buttons.

Ten input textboxes are Producer's First Name, Producer's Last Name, Street, Producer code, Date of Birth, Status, License Expiry Date, Phone, Fax, and Mobile. Four combo boxes are District, State, Zipcode, and Branch.

The functions of command buttons are as follows:

- (a) Previous command will go to previous record of producer file.
- (b) Next command will go to next record of Producer file.
- (c) Find command will find record that user needs in Producer file.
- (d) Exit command will close this screen and then go to main menu.



## Report

- ☐ Monthly Production Report by Agent
- ☐ Monthly Production Report by Product
- ☐ Summary Production Report
- ☐ Daily Policy Transaction Issued Report
- ☐ Monthly Policy Transaction Report
- ☐ High Sum Insured Customer Report
- ☐ Cashless Card Policy Issued Report
- ☐ Renewal Policy Report
- ☐ Black List Producer Report

Figure A.10. Report.

## Report Screen

The function of Report Screen is to show the report processes. User can choose which report he/she needs. In case that user would like further report which is not in the list, user can request to MIS department to produce the specific report. This screen consists of ten command buttons. Their functions are as follows:

- (a) Monthly production report by agent will print monthly production report, which is sorted by agent name.
- (b) Monthly production report by product will print monthly production report, which is sorted by product name.
- (c) Summary production report will print summary production report by showing each month for the whole year.
- (d) Daily policy transaction issued report will print policy transaction issued report in each day. This report will show detail issued policy.
- (e) Monthly policy transaction issued report will print policy transaction issued report every month.
- (f) High sum insured customer report will print high sum insured customer report every month.
- (g) Cashless card policy issued report will print the detail for the policy, which has cashless card.
- (h) Renewal policy report will print the report for the policy, which is closed to the expiry date. This will help user follow policy renewal.
- (i) Black list producer report will print black list producer report.
- (j) Exit command button will close this screen and go back to Main Menu.



Table B.1. Report of Monthly Production by Agent.

**Better Life Insurance Company**  
**Monthly Production by Agent**  
**For the month of August**

Page: 1  
 Printing date 15-Sep-00

Producer Name	Product Name	Premium
กนกวรรณ กิจเจริญ	Economy Group	7,000.00
	High Executive Plan	18,000.00
	PA Junior	
	PA Premier	8,000.00
	Ready Formula 1	1,800.00
	Ready Formula 2	
		34,800.00
Total :		
กษกร ตั้งจิตประสงค์		
	Economy Group	3,800.00
	High Executive Plan	
	PA Junior	8,000.00
	PA Premier	
	Ready Formula 1	1,100.00
	Ready Formula 2	2,100.00
		15,000.00
Total :		



Table B.2. Report of Monthly Production by Product.

**Better Life Insurance Company**  
**Monthly Production by Product**  
**For the month of August**

Page: 1  
 Printing date: 15-Sep-00

<u>Product Name</u>	<u>Premium</u>	<u>No. of Policy</u>
Economy Group	22,600.00	10
High Executive Plan	124,000.00	4
PA Junior	12,800.00	8
PA Premier	120,000.00	11
Ready Formula 1	37,400.00	14
Ready Formula 2	27,050.00	9
<b>Total</b>	<b>343,850.00</b>	<b>56</b>

Table B.3. Report of Summary Production.

## Better Life Insurance Company

### Summary Production Report

Page: 1  
Printing date: 15-Sep-00

<u>Month</u>	<u>Gross Premium</u>	<u>No. of Policy</u>	<u>Commission</u>
January	450,050.00	65	81,009.00
February	545,740.00	70	98,234.00
March	320,413.00	58	57,675.00
April	475,800.00	68	85,644.00
May	740,650.00	80	133,317.00
June	651,000.00	74	117,180.00
July	403,950.00	69	72,711.00
August	343,850.00	56	61,893.00
September			
October			
November			
December			
Total Production	3,931,453.00	540	707,663.00

Table B.4. Report of Daily Policy Transaction Issued.

Better Life Insurance Company					Page: 1
Daily Policy Transaction Issued Report					Printing date: 15-Sep-00
Date :					
<u>Policy No.</u>	<u>Insured Name</u>	<u>Producer Name</u>	<u>Inception</u>	<u>Expired</u>	<u>Premium</u>
0011000001	จิตพิณินท์ อัครพงษ์	กรกนก นิสัยรัตน์	1/9/00	1/9/01	1,550
0011000002	สิริวรรณ คงสุข	ณัฐ ดิอนันต์ลาภ	1/9/00	1/9/01	1,000
0011000003	จรรยา สุโกไส	ปิยะนุช ตั้งจิตอารี	1/9/00	1/9/01	2,500
0011000004	นิรมล สกุลเจริญ	ประคอง ณ นคร	1/9/00	1/9/01	2,100
0011000005	วันดี สุขแสวง	เหรียญ จอกรูรกิจ	1/9/00	1/9/01	1,550
0011000006	นัฐพล สมบูรณ์	สุทธินันท์ โอถาวร	1/9/00	1/9/01	2,900
0011000007	สมศรี จันวิบูล	ณรงค์ ปุคเจริญ	1/9/00	1/9/01	2,550
0011000008	พรสวรรค์ วิชัยทัศน์	อนงค์ แวดดี	1/9/00	1/9/01	1,400
0011000009	เจริญ แสงสว่าง	วิบูลย์ จันทร์พันธ์	1/9/00	1/9/01	1,600
0011000010	สุรพล สุภิมลศรี	อัครา ตั้งจิตสมบุญ	1/9/00	1/9/01	1,000
Total Premium					18,150
<u>Sub-Total :</u>					
25					<u>Transaction(s)</u>

Table B.5. Report of Monthly Policy Transaction Issued.

<b>Better Life Insurance Company</b>			Page: 1
<b>Monthly Policy Transaction Issued Report</b>			Printing date: 15-Sep-00
<b>Month : September</b>			
<u>Policy No.</u>	<u>Inception</u>	<u>Expired</u>	<u>Premium</u>
0011000001	1/9/00	1/9/01	1,550
0011000002	1/9/00	1/9/01	1,000
0011000003	1/9/00	1/9/01	2,500
0011000004	1/9/00	1/9/01	2,100
0011000005	1/9/00	1/9/01	1,550
0011000006	1/9/00	1/9/01	2,900
0011000007	1/9/00	1/9/01	2,550
0011000008	1/9/00	1/9/01	1,400
0011000009	1/9/00	1/9/01	1,600
0011000010	1/9/00	1/9/01	1,000
Total Premium			18,150
<b>Sub-Total :</b>			<b>1,005</b>
			<b>Transaction(s)</b>

Table B.6. Report of High Sum Insured Customer.

<b>Better Life Insurance Company</b> <b>High Sum Insured Customer Report</b> Period From : 1-Sep-00      To: 10-Sep-00		Page: 1 Printing date 15-Sep-00
Insured No. 00000000005	Insured Name วนิด์ สุแสง	Policy No. 0011000005 Inception 1/9/00 Expired 1/9/01
Total Insured :		Person(s) 1

Table B.7. Report of Cashless Card Detail Policy Issued.

Better Life Insurance Company							Page: 1
Cashless Card Detail Policy Issued Report							Printing date 15-Sep-00
Period From : 1-Sep-00							
To: 5-Sep-00							
Policy No.	Inception	Expired	Status	Producer Name	Insured Name	Medical Expenses	
Product Name : Ready Formula 2							
0011001000	1/9/00	10/9/01	New	กรกนก นิสัยรัตน์	สุกใส ดีตลอด	10,000	
0011001200	5/9/00	11/9/01	New	กรกมล สุขใจดี	พรนภา ณ อยู่รักษา	20,000	
Product Name : PA Premier							
0011000012	2/9/00	2/9/01	New	พัชร ศิทธิ์สุด	ประคอง หะจุนทด	80,000	
0011000020	3/9/00	3/9/01	New	นุจิ ตั้งสกุล	สุภาวรรณ ณ นคร	60,000	
Sub-Total :							
4							Transaction(s)



Table B.8. Report of Renewal Policy.

Better Life Insurance Company					Page: 1
Renewal Policy Report					Printing date: 15-Sep-00
Month : October					
<u>Policy No.</u>	<u>Insured Name</u>	<u>Expired</u>	<u>Producer Name</u>	<u>Premium</u>	
0011000001	คงสกุล ตั้งจิตใจ	1/10/00	นภา จิตใจดี	1,100	
0011000002	อัครพล อภิระพงษ์	1/10/00	เหรียญ แวงสกุล	1,200	
0011000003	คงคา ใจสะอาด	1/10/00	ณัฐ คือนันทลภาพ	3,000	
0011000004	ณรงค์ศักดิ์ พันภัย	1/10/00	พิศมัย ไผ่ประดิษฐ์	4,500	
0011000005	ปิยนุช ณ นคร	2/10/00	ศุภวรรณ ชันธศักดิ์	1,400	
0011000006	สุทธินันท์ จรุงธุรกิจโทก	2/10/00	พริษา สุขใจ	2,500	
0011000007	สมพงษ์ แวกระโทก	2/10/00	สมศักดิ์ ปัญญาชน	1,000	
0011000008	วิบูลย์ พิริยะพงศ์	3/10/00	วิชัย พิริยะสุขใจ	1,200	
0011000009	นุจรี คีลภาพ	3/10/00	สมศรี ศรีเลิศวิชา	1,300	
0011000010	อนงค์ ไม่มีภัย	4/10/00	สมชาย ยาวีเศษ	2,600	
<b>Total Number of Policy:</b>				<b>Total Premium :</b>	19,800

Table B.9. Report of Black List Producer.

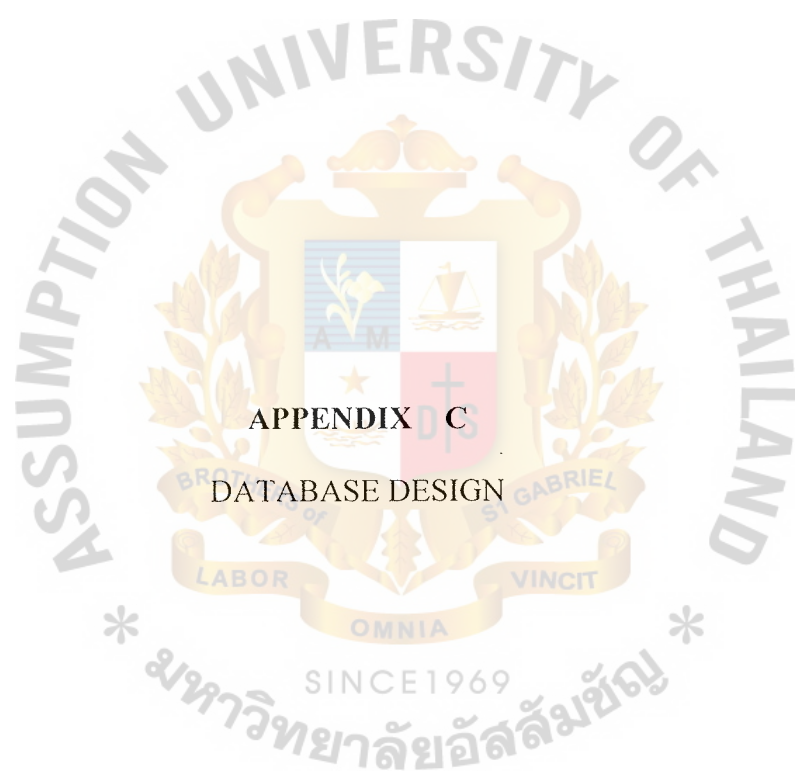
## Better Life Insurance Company Black List Producer Report

Month :            September

<u>Producer Code</u>	<u>Producer First Name</u>	<u>Producer Last Name</u>	<u>Effective Date</u>
000001	สมพงษ์	ดิอนันต์ลาภ	1/9/00
000012	ปิ่นจิตา	บุกหุต	1/9/00
000014	ปิยวรรณ	สุขสว่างจิต	1/9/00

Page:            1

Printing date   15-Sep-00



## APPENDIX C

### DATABASE DESIGN

Personal Accident Insurance Database

Table C.1. Structure of Product Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Product Code	Int (6)	Y	Y			> 0	Primary Key
2	Product Name	Text(20)	Y					Attribute
3	Commission	Int(Standard)	Y					Attribute

Table C.2. Structure of Plan Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Plan Code	Int(2)	Y	Y			> 0	Primary Key
2	Product Code	Int(6)	Y	Y		Product	> 0	Primary Key
3	Plan Description	Text(20)	Y					Attribute
4	Premium	Int(Standard)	Y				> 0	Attribute
5	Tax	Int(Standard)	Y				> 0	Attribute
6	Stamp	Int(Standard)	Y				> 0	Attribute
7	Net Premium	Int(Standard)	Y				> 0	Attribute

Table C.3. Structure of Coverage Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Coverage Code	Int(2)	Y	Y			> 0	Primary Key
2	Product Code	Int(6)	Y	Y		Product	> 0	Primary Key
3	Plan Code	Int(2)	Y	Y		Plan	> 0	Primary Key
4	Coverage Description	Text	Y					Attribute
5	Sum Insured	Int(Standard)	Y				> 0	Attribute

Table C.4. Structure of State Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	State Code	Int(2)	Y	Y			> 0	Primary Key
2	State Description	Text	Y					Attribute

Table C.5. Structure of District Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	District Code	Int(2)	Y	Y			> 0	Primary Key
2	State Code	Int(2)	Y	Y		State	> 0	Primary Key
3	Zip Code	Int(5)	Y					Attribute

Table C.6. Structure of Zip Code Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	State Code	Int(2)	Y	Y			> 0	Primary Key
2	District Code	Int(2)	Y	Y		District	> 0	Primary Key
3	Zip Code	Text(5)	Y					Attribute

Table C.7. Structure of Producer Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Producer Code	Int	Y	Y			> 0	Primary Key
2	First Name	Text	Y					Attribute
3	Last Name	Text	Y					Attribute
4	Street	Text	Y					Attribute
5	District	Text	Y					Attribute
6	State	Text	Y					Attribute
7	Zip Code	Text	Y				5 digits	Attribute
8	Status	Text	Y					Attribute
9	Phone	Text	Y		Y			Attribute
10	Fax	Text	Y		Y			Attribute
11	Mobile	Text	Y		Y			Attribute
12	Date of Birth	Date	Y					Attribute
13	License Expired	Date	Y					Attribute



Table C.8. Structure of Client Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Client Number	Int	Y	Y			> 0	Primary Key
2	Producer Code	Int(6)	Y	Y		Producer	> 0	Primary Key
3	Client First Name	Text	Y				> 0	Attribute
4	Client Last Name	Text	Y					Attribute
5	Street	Text	Y					Attribute
6	District	Text	Y					Attribute
7	State	Text	Y					Attribute
8	Zip Code	Text(5)	Y				5 digits	Attribute
9	Date of Birth	Date	Y					Attribute
10	Nationality	Text	Y					Attribute
11	Marital Status	Text	Y					Attribute
12	Gender	Text	Y					Attribute
13	Occupation	Text	Y					Attribute
14	Occupation Class	Text	Y					Attribute
15	Salary	Int	Y					Attribute
16	Phone	Text	Y		Y			Attribute
17	Fax	Text	Y		Y			Attribute
18	Mobile	Text	Y		Y			Attribute

Table C.9. Structure of Policy Entry Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Policy Number	Int(10)	Y	Y			> 0	Primary Key
2	Client Number	Int	Y	Y		Client	> 0	Primary Key
3	Product Code	Int(6)	Y	Y		Product	> 0	Primary Key
4	Plan Code	Int(2)	Y	Y		Plan	> 0	Primary Key
5	Inception Date	Date	Y					Attribute
6	Expiry Date	Date	Y					Attribute
7	Proposal Date	Date	Y					Attribute
8	Premium	Int(Standard)	Y					Attribute
9	Tax	Int(Standard)	Y					Attribute
10	Stamp	Int(Standard)	Y					Attribute
11	Commission	Int(Standard)	Y					Attribute
12	Net Premium	Int(Standard)	Y					Attribute
13	Premium Receivable	Int(Standard)	Y					Attribute

Table C.10. Structure of Beneficiary Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Policy Number	Int(10)	Y	Y			> 0	Primary Key
2	Name	Text	Y					Attribute
3	Relation	Text	Y					Attribute
4	Percent	Int(Percent)	Y		Y		(<0) and (>100)	Attribute



Table D.1. Process Specification of Process 1.

Process Name:	Collect Application
Data In:	Application
Data Out:	Application Record Confirmed Application
Process:	(1) Receive Application from Agent and Broker
	(2) Check Information in Application Form
	(3) Complete Application Form
	(4) Verify Application
	(5) If Sum Insured is Valid then Create New Application Record Else if Sum Insured is High then Fill out LAQ Form
	(6) Edit Application Detail into Application Registration Record
	(7) Store Application Record into Application Registration File
	(8) Confirm Customer's Application to Agent and Broker
	(9) Send Application Form to Customer Service Representative to underwrite the detail
	(1) Agent or Broker
	(2) Data Store (Application Registration)
Attachment:	

Table D.2. Process Specification of Process 2.

Process Name:	Underwriting
Data In:	Insurance Rate
	Application Record
	Verified Application
	Product Record
Data Out:	Approved Application
	Policy Detail
	Re-out Sum Insured
Process:	(1) Receive Completed Application and LAQ Form from Collect Application Process
	(2) Read Insurance Rate Record from Insurance Rate File
	(3) Compare Application Detail with Insurance Rate Record
	(4) Read Product Record from Product File
	(5) Create New Customer Record
	(6) Store Customer Detail into Customer Record File
	(7) Send List of Customers' Sum Insured to Reinsurance Company
	(8) Create Re-out Policy
	(9) Store Re-out Sum Insured into Re-out Transaction File
	(10) Send Approved Application and Verified Policy Detail to Central Processing Unit
Attachment:	(1) Data Store (Application Registration)
	(2) Data Store (Insurance Rate)
	(3) Data Store (Re-out Transaction)
	(4) Data Store (Customer Record)
	(5) Data Store (Product)
	(6) Customer Service Representative
	(7) Central Processing Unit
	(8) Reinsurance Company

Table D.3. Process Specification of Process 3.

Process Name:	Issuing Policy
Data In:	Policy Detail
	Arranged Policy
Data Out:	Issued Policy and Insurance Card
	Policy Copy
	Issued Policy Detail
Process:	(1) Receive Verified Policy from Underwriting Process
	(2) Send Verified Policy Detail to Central Processing Unit
	(3) Generate Policy's Data to be printed
	(4) Call Form Package Running for Printing Policy
	(5) Create Policy and Insurance Card
	(6) Store Issued Policy Detail into Policy Stored File
	(7) Send Policy Copy to Filing
	(8) Create Arranged Policy
	(9) Send Issued Policy and Insurance Card to Billing Process
Attachment:	(1) Data Store (Policy Stored)
	(2) Central Processing Unit
	(3) Filing



Table D.4. Process Specification of Process 4.

Process Name:	Billing
Data In:	Premium Data
	Issued Policy and Insurance Card
	Payment
Data Out:	Completed Policy
	Receipt
	Paid Commission
	Paid Policy Premium
Process:	(1) Receive Issued Policy and Insurance Card
	(2) Receive Premium Data
	(3) Read Premium Data
	(4) If Premium is Matched the policy
	Do step 5 to 7
	Else if Premium is not matched then
	Repeat step 3
	(5) Generate Premium Detail into Print Receipt
	Format
	(6) Create Premium Receipt
	(7) Send Premium Receipt to Customer
	(8) Store Paid Policy Premium into Premium
	Settlement File
	(9) Generate Commission Amount to Agent and
	Broker
	(10) Calculate Commission from
	$\text{Commission} = \text{Net Premium} * 18\%$
	(11) Create Commission
	(12) Send Commission to Agent and Broker
	(13) Store Paid Commission into Paid Commission
	File
Attachment:	(1) Data Store (Premium Settlement)
	(2) Data Store (Paid Commission)
	(3) Account Department
	(4) Customer
	(5) Agent or Broker

Table D.5. Process Specification of Process 5.

Process Name:	Making Report
Data In:	Paid Premium
	Customer Detail
	Sale Channel
Data Out:	Product Detail and Selling Plan
	Production Report
	Underwriting Report
	Sales Report
Process:	(1) Receive Report Request from Management
	(2) Verify Received Report Request
	(3) If the Verified Report is Valid then
	Do step 4 to 6
	Else if the Verified Report is Invalid then
	Do step 7 to 8
	(4) Create Designed Report
	(5) Send Designed Report to Print Report Process
	(6) Send Printed Report to Management, Marketing, and Agent
	(7) Create Invalid Report Request
	(8) Send Invalid Report Request to Management
Attachment:	(1) Data Store (Premium Settlement)
	(2) Data Store (Customer Record)
	(3) Marketing
	(4) Agent/Broker
	(5) Customer Service Representative

Table D.6. Process Specification of Process 1.1.

Process Name:	Check Application Form
Data In:	Application
Data Out:	Validated Application
	High Sum Insured Customer Detail
Process:	(1) Receive Application from Agent or Broker
	(2) Read Customer Record from
	Customer Record File
	(3) If Sum Insured is High then
	Create LAQ Request Form
	Else if Sum Insured is normal then
	Send Application to Complete Application Process
	(4) Verify Application
Attachment:	(1) Agent or Broker
	(2) Data Store (Customer Record)

Table D.7. Process Specification of Process 1.2.

Process Name:	Filling LAQ
Data In:	High Sum Insured Customer Detail
Data Out:	Customer Detail
Process:	(1) Receive Customer's High Sum Insured from Check Application Form Process
	(2) Create New LAQ Record
	(3) Store New LAQ Record into LAQ Record File
Attachment:	(1) Data Store (LAQ Record)

Table D.8. Process Specification of Process 1.3.

Process Name:	Complete Application
Data In:	Validated Application
Data Out:	Application Record Confirmed Application
Process:	(1) Receive Validated Application from Check Application Form Process
	(2) Create List of New Application Record
	(3) Create Confirmed Application to Agent or Broker
	(4) Store Application Record into Application Registration File
	(5)
Attachment:	(1) Data Store (Application Registration)
	(2) Agent or Broker

Table D.9. Process Specification of Process 1.1.1.

Process Name:	Get Customer Information
Data In:	Customer Information
Data Out:	Customer Detail
Process:	(1) Receive Customer Information from Agent or Broker
	(2) Complete Customer Information
	(3) Send Customer Detail to Fill in Application Form Process
	(4)
Attachment:	(1) Data Store (Customer Record)
	(2) Agent or Broker

Table D.10. Process Specification of Process 1.1.2.

Process Name:	Fill in Application Form
Data In:	Customer Detail
Data Out:	Filled Application Customer's Sum Insured
Process:	(1) Receive Customer Detail from Get Customer Information Process (2) Edit Customer Detail (3) Send Customer's Sum Insured to Check Check Customer Sum Insured Process (4) Send Filled Application to Check Application Detail Process
Attachment:	

Table D.11. Process Specification of Process 1.1.3.

Process Name:	Check Customer Sum Insured
Data In:	Customer's Sum Insured
Data Out:	High Sum Insured Customer Detail
Process:	(1) Receive Customer's Sum Insured from Fill in Application Form Process (2) If Sum Insured is more than Bht.1,000,000 then Create High Sum Insured Record Else if Sum Insured is less than Bht.1,000,000 then Send Sum Insured Record to Customer Service Representative for Underwriting (3) Send High Sum Insured Detail to Customer Service Representative to Prepare LAQ
Attachment:	(1) Customer Service Representative

Table D.12. Process Specification of Process 1.1.4.

Process Name:	Check Application Detail
Data In:	Filled Application
Data Out:	Validated Application
Process:	(1) Receive Fill Application from Fill in Application Form Process (2) Create Completed Application Detail (3) Verify Application Detail (4) Send Validated Application to Customer Service Representative
Attachment:	(1) Customer Service Representative

Table D.13. Process Specification of Process 1.2.1.

Process Name:	Check Insurer Status
Data In:	High Sum Insured Customer Detail
Data Out:	Validated Sum Insured
Process:	(1) Receive High Sum Insured Customer Detail from Customer Service Representative (2) Verify Insurer Status (3) Send Validated Sum Insured to Fill in LAQ Form Process
Attachment:	

Table D.14. Process Specification of Process 1.2.2.

Process Name:	Fill in LAQ Form
Data In:	Validated Sum Insured
Data Out:	LAQ Information
Process:	(1) Receive Validated Sum Insured from Check Insurer Status Process (2) Edit LAQ Form (3) Send Completed LAQ Form to Approve LAQ Process
Attachment:	

Table D.15. Process Specification of Process 1.2.3.

Process Name:	Approve LAQ
Data In:	LAQ Information
Data Out:	Customer Detail
Process:	(1) Receive LAQ Information from Fill in LAQ Form Process (2) Check LAQ Information (3) Verify LAQ Form (4) Edit New LAQ Information (5) Store High Sum Insured Customer Detail into LAQ Record File
Attachment:	(1) Data Store (LAQ Record)



Table D.16. Process Specification of Process 1.3.1.

Process Name:	Check Other Documents
Data In:	Personal Documents
Data Out:	Verified Documents
Process:	(1) Receive Personal Documents from Customer (2) Complete Necessary Personal Documents (3) Verify Documents (4) Send Verified Documents to Customer Service Representative
Attachment:	(1) Customer Service Representative

Table D.17. Process Specification of Process 1.3.2.

Process Name:	Assembler Documents
Data In:	Verified Documents Validated Application
Data Out:	Completed Application
Process:	(1) Receive Verified Documents and Validated Application from Customer Service Representative (2) Collect All Documents (3) Send Completed Application to Generate Application Number Process
Attachment:	

Table D.18. Process Specification of Process 1.3.3.

Process Name:	Generate Application Number
Data In:	Completed Application
Data Out:	Confirmed Application Application Record
Process:	(1) Receive Completed Application from Assembler Documents Process (2) Create Completed Application Record (3) Store Application Record into Application Registration File (4) Confirm Application (5) Send Confirmed Application to Agent or Broker
Attachment:	(1) Data Store (Application Registration) (2) Agent or Broker



Table D.19. Process Specification of Process 2.1.

Process Name:	Consider Application Details
Data In:	Application Record
	Valid Producer Name
Data Out:	Application
	Producer Name
Process:	(1) Receive Application Record From Application Registration File
	(2) Check Producer Status
	(3) Read Producer Record from Black list Record File
	(4) If Producer Name is not in the Black list Record then Create Valid Application
	Else if Producer Name is in the Black list Record then Return Application to Customer Service Representative
	(5) Send Valid Application to Customer Service Representative
Attachment:	(1) Data Store (Application Registration)
	(2) Data Store (Black list Record)
	(3) Customer Service Representative

Table D.20. Process Specification of Process 2.2.

Process Name:	Allocate Sum Insured
Data In:	Verified Application
	Verified Policy Details
	Re-out Policy
Data Out:	Application Details
	Re-out Sum Insured
	Re-out Record
Process:	(1) Receive Verifies Application and Verified Policy Details from Customer Service Representative
	(2) Calculate Portion of Sum Insured
	(3) Create Re-out Sum Insured
	(4) Send Re-out Sum Insured to Reinsurance Company
	(5) Receive Re-out Policy from Reinsurance
	(6) Store Re-out Record into Re-out transaction File
	(7) Send Application Details to Entry Policy Details Process
Attachment:	(1) Data Store (Re-out Transaction)
	(2) Reinsurance Company

Table D.21. Process Specification of Process 2.3.

Process Name:	Entry Policy Detail
Data In:	Application Detail
	Insurance Rate
	Product Record
Data Out:	Policy Detail
	Approved Application
	Customer Detail
Process:	(1) Receive Application Detail from Allocate Sum Insured Process
	(2) Edit Customer Detail into Customer Record
	(3) Store Customer Record into Customer Record File
	(4) Read Insurance Rate Record from Insurance Rate File
	(5) Verify Policy Detail with Insurance Rate Record
	(6) Read Product Record from Product File
	(7) If Product is Valid then Create New Policy Detail Else if Product is Invalid then Create Invalid Product
	(8) Send Policy Detail and Approved Application to Central Processing Unit
	(1) Data Store (Insurance Rate)
	(2) Data Store (Customer Record)
Attachment:	(3) Central Processing Unit

Table D.22. Process Specification of Process 2.1.1.

Process Name:	Acknowledge Application
Data In:	Application Record
Data Out:	Completed Application
Process:	(1) Retrieve Application Record from Application Registration File
	(2) Read Application Detail
	(3) Accept Application
	(4) Send Completed Application to Check Insurer and Producer Qualification Process
	(1) Data Store (Application Registration)

Table D.23. Process Specification of Process 2.1.2.

Process Name:	Check Insurer and Producer Qualification
Data In:	Completed Application
	Valid Producer Name
Data Out:	Validated Application
	Producer Name
Process:	(1) Receive Completed Application from Acknowledge Application Process (2) Edit Producer Name to Check on the Black List Record File (3) Read Producer Name Record from Black List Record File (4) If End-of-File then Do step 5 to 7 Else if Producer Name is Matched then Do step 8 to 9 (5) Create Valid Producer Name (6) Send Valid Producer Name (7) Validate Application (8) Create Reject Producer Name (9) Send Reject Producer Name to Customer Service Representative (10) Send Validated Application to Underwriting Approval Process
Attachment:	(1) Data Store (Black List Record) (2) Customer Service Representative

Table D.24. Process Specification of Process 2.1.3.

Process Name:	Underwriting Approval
Data In:	Validated Application
Data Out:	Approved Application
Process:	(1) Receive Validated Application from Check Insurer Qualification Process (2) Create Approved Application (3) Send Approved Application to Customer Service Representative
Attachment:	(1) Customer Service Representative

Table D.25. Process Specification of Process 2.2.1.

Process Name:	Check Sum Insured
Data In:	Verified Application Verified Policy Detail
Data Out:	Partial Sum Insured
Process:	(1) Receive Verified Application from Customer Service Representative (2) Receive Verified Policy Detail from Customer Service Representative (3) Verify Sum Insured of Application and Policy Detail (4) Allocate Partial Sum Insured (5) Send Partial Sum Insured to Generate Reinsurance Process
Attachment:	

Table D.26. Process Specification of Process 2.2.2.

Process Name:	Generate Reinsurance
Data In:	Partial Sum Insured
Data Out:	Re-out Sum Insured
Process:	(1) Receive Partial Sum Insured from Check Sum Insured Process (2) Create Re-out Sum Insured (3) Send Re-out Sum Insured to Reinsurance Company
Attachment:	(1) Reinsurance Company

Table D.27. Process Specification of Process 2.2.3.

Process Name:	Update Allocation
Data In:	Re-out Policy
Data Out:	Re-out Record Application Detail
Process:	(1) Receive Re-out Policy from Reinsurance Company (2) Create New Re-out Policy Record (3) Store Re-out Record into Re-out Transaction File (4) Send Application Detail to Central Processing Unit to issue the Policy
Attachment:	(1) Data Store (Re-out Transaction) (2) Central Processing Unit



Table D.28. Process Specification of Process 2.3.1.

Process Name:	Retrieve Application Data
Data In:	Application Detail
Data Out:	Approved Application
	Verified Policy Detail
Process:	(1) Receive Application Detail from Application Registration File
	(2) Create Retrieved Approved Application and Verified Policy Detail
	(3) Send Approved Application and Verified Policy Detail to Central Processing Unit
Attachment:	(1) Central Processing Unit

Table D.29. Process Specification of Process 2.3.2.

Process Name:	Key in Application Detail
Data In:	Application
	Product Record
Data Out:	Application Detail
Process:	(1) Receive Application from Central Processing Unit
	(2) Read Product Record from Product File
	(3) Enter Customer's Detail into Printed Policy Format
	(4) Send Application Detail to Rate Coding Process
Attachment:	

Table D.30. Process Specification of Process 2.3.3.

Process Name:	Rate Coding
Data In:	Application Detail
	Rate
Data Out:	Valid Rate
Process:	(1) Receive Application Detail from Key in Application Detail Process
	(2) Read Insurance Rate from Insurance Rate File
	(3) Verify Insurance Rating
	(4) Send Valid Rate to Calculate Premium Process
Attachment:	(1) Data Store (Insurance Rate)

Table D.31. Process Specification of Process 2.3.4.

Process Name:	Calculate Premium
Data In:	Valid Rate
Data Out:	Customer Detail
Process:	(1) Receive Valid Insurance Rate from Rate Coding Process (2) Calculate Net Premium from $\text{Net Premium} = \text{Premium} + \text{Tax} + \text{Stamp}$ $\text{As Tax} = 2.75\% \text{ of Premium}$ $\text{Stamp} = 0.4\% \text{ of Premium}$ (3) Create Net Premium (4) Store Net Premium and Customer Detail into Policy Stored File
Attachment:	(1) Data Store (Policy Stored)

Table D.32. Process Specification of Process 3.1.

Process Name:	Validate Policy
Data In:	Policy Detail
Data Out:	Verified Policy
Process:	(1) Receive Policy Detail from Central Processing Unit (2) Verify Policy Detail to be Printed (3) Create Verified Policy to be Printed (4) Store Verified Policy into Pre-Printed Policy File
Attachment:	(1) Data Store (Pre-Printed Policy) (2) Central Processing Unit



Table D.33. Process Specification of Process 3.2.

Process Name:	Print Policy
Data In:	Completed Policy Information
Data Out:	Approved Policy Schedule and Attachment Issued Policy Detail
Process:	(1) Receive Completed Policy Information from Pre-printed Policy File (2) Read Completed Policy Information from Pre-printed Policy File (3) Print Policy Schedule (4) Store Issued Policy Detail into Policy Stored File (5) Send Approved Policy Schedule and Attachment to Assembler Policy Process
Attachment:	(1) Data Store (Pre-printed Policy) (2) Data Store (Policy Stored)

Table D.34. Process Specification of Process 3.3.

Process Name:	Assembler Policy
Data In:	Approved Policy Schedule and Attachment Arranged Policy
Data Out:	Issued Policy and Insurance Card Policy Copy
Process:	(1) Receive Approved Policy Schedule and Attachment from Print Policy Process (2) Collect Policy Schedule and Attachment (3) Check Completed Policy (4) Send Issued Policy and Insurance Card to Account Department (5) Send Policy Copy to Filing (6) Arrange Policy Copy (7) Return Arranged Policy to Assembler Policy Process
Attachment:	(1) Account Department (2) Filing

Table D.35. Process Specification of Process 3.1.1.

Process Name:	Check Policy Detail
Data In:	Policy Detail
Data Out:	Completed Policy Detail
Process:	(1) Receive Policy Detail from Central Processing Unit (2) Complete Policy Detail (3) Send Completed Policy Detail to Generate Policy Number Process
Attachment:	

Table D.36. Process Specification of Process 3.1.2.

Process Name:	Generate Policy Number
Data In:	Completed Policy Detail
Data Out:	Completed Policy Detail Policy Number
Process:	(1) Receive Completed Policy Detail from Check Policy Detail Process (2) Create New Policy Number (3) Store Policy Number into Policy Running File (4) Send Completed Policy to Verify Policy Process
Attachment:	(1) Data Store (Policy Running)

Table D.37. Process Specification of Process 3.1.3.

Process Name:	Verify Policy
Data In:	Completed Policy
Data Out:	Verified Policy
Process:	(1) Receive Completed Policy from Generate Policy Number Process (2) Verify Policy to Prepare Printing (3) Store Verified Policy into Pre-printed Policy File
Attachment:	(1) Data Store (Pre-printed Policy)

Table D.38. Process Specification of Process 3.2.1.

Process Name:	Format Policy Record
Data In:	Completed Policy Information
Data Out:	Policy Detail Policy Record
Process:	(1) Receive Completed Policy Information from Pre-printed Policy File (2) Create Policy Format to be Printed (3) Store Policy Detail into Card Form File to Print Insurance Card (4) Store Policy Record into Policy Form File to Print Policy Schedule
Attachment:	(1) Data Store (Pre-Printed Policy) (2) Data Store (Card Form) (3) Data Store (Policy Form)

Table D.39. Process Specification of Process 3.2.2.

Process Name:	Print Policy Schedule
Data In:	Policy Record
Data Out:	Policy Schedule
Process:	(1) Read Policy Record from Policy Form File (2) Generate Policy Data to be Printed (3) Call Form Flow Package Running to Print Policy (4) Issued Policy Schedule (5) Send Policy Schedule to Print Attachment Process
Attachment:	

Table D.40. Process Specification of Process 3.2.3.

Process Name:	Print Attachment
Data In:	Policy Schedule
Data Out:	Policy Schedule and Attachment
Process:	(1) Receive Policy Schedule from Print Policy Schedule Process (2) Create Attachment (3) Call Attachment to be Printed (4) Enclose Attachment with Policy Schedule (5) Send Policy Schedule and Attachment to Approve Policy Schedule Process
Attachment:	

Table D.41. Process Specification of Process 3.2.4.

Process Name:	Print Insurance Card
Data In:	Pre-printed Detail
Data Out:	Insurance Card
Process:	(1) Read Pre-printed Detail from Card Form File (2) Create Insurance Card Record to be Printed (3) Call Print Insurance Card (4) Send Insurance Card to Approve Policy Schedule and Insurance Card Process
Attachment:	(1) Data Store (Card Form)

Table D.42. Process Specification of Process 3.2.5.

Process Name:	Approve Policy Schedule and Insurance Card
Data In:	Policy Schedule and Attachment Insurance Card
Data Out:	Approved Policy Schedule and Attachment Approved Insurance Card Issued Policy Detail
Process:	(1) Receive Policy Schedule and Attachment from Print Attachment Process (2) Receive Insurance Card from Print Insurance Card Process (3) Verify Policy Schedule, Attachment, and Insurance Card (4) Send Approved Policy schedule, Attachment and Insurance Card to Central Processing Unit (5) Store Issued Policy Detail into Policy Store File
Attachment:	(1) Central Processing Unit

Table D.43. Process Specification of Process 3.3.1.

Process Name:	Collect Policy Schedule and Attachment
Data In:	Approved Policy Schedule and Attachment
Data Out:	Policy
Process:	(1) Receive Approved Policy Schedule and Attachment from Central Processing Unit (2) Gather Policy Schedule and Attachment (3) Send Policy to Separate Policy Copy Process
Attachment:	(1) Central Processing Unit

Table D.44. Process Specification of Process 3.3.2.

Process Name:	Check Insurance Card
Data In:	Insurance Card
Data Out:	Validated Insurance Card
Process:	(1) Receive Insurance Card from Central Processing Unit (2) Create Insurance Card Record (3) Validate Insurance Card (4) Send Validated Insurance Card to Separate Policy Copy Process
Attachment:	(1) Central Processing Unit

Table D.45. Process Specification of Process 3.3.3.

Process Name:	Separate Policy Copy
Data In:	Policy Validated Insurance Card
Data Out:	Insured Policy Policy Copy
Process:	(1) Receive Policy from Collect Policy schedule and Attachment Process (2) Receive Validated Insurance Card from Check Insurance Card Process (3) Divide Policy into Insured Policy and Policy Copy (4) Send Insured Policy to Sort Policy by Producer Process (5) Send Policy Copy to Filing
Attachment:	(1) Filing



Table D.46. Process Specification of Process 3.3.4.

Process Name:	Sort Policy
Data In:	Insured Policy
	Arranged Policy
Data Out:	Issued Policy and Insurance Card
	Sorted Policy Copy
Process:	(1) Receive Insured Policy from Separate Policy Copy Process
	(2) Receive Unarranged Policy from Filing
	(3) Sort Insured Policy by Policy Number
	(4) Send Issued Policy and Insurance Card to Account Department
	(5) Sort Unarranged Policy by Policy Number for Filing
	(6) Create Sorted Policy Copy Record
	(7) Store Sorted Policy into Filing Record File
Attachment:	(1) Data Store (Filing Record)
	(2) Filing
	(2) Account Department

Table D.47. Process Specification of Process 4.1.

Process Name:	Accept Premium
Data In:	Premium Data
	Issued Policy and Insurance Card
	Payment
Data Out:	Completed Policy
	Paid Policy Premium
Process:	(1) Receive Issued Policy and Insurance Card from Central Processing Unit
	(2) Receive Payment from Customer
	(3) Read Premium Data from Policy Stored File
	(4) Check Payment Detail with Premium Summary Slip
	(5) Store Paid Policy Premium into Premium Settlement File
	(6) Send Completed Policy to Account Department
Attachment:	(1) Data Store (Policy Stored)
	(2) Data Store (Premium Settlement)
	(3) Central Processing Unit
	(4) Account Department
	(2) Customer



Table D.48. Process Specification of Process 4.2.

Process Name:	Print Receipt
Data In:	Billing Detail Issued Policy and Insurance Card
Data Out:	Receipt Issued Policy and Insurance Card Receipt Data
Process:	(1) Receive Issued Policy and Insurance Card from Accept Premium Process (2) Read Billing Detail from Premium Settlement File (3) Generate Premium Detail into Format Print Receipt (4) Call Print Receipt (5) Send Issued Policy and Insurance Card to Customer (6) Send Receipt to Customer (7) Store Receipt Data into Receipt Record File
Attachment:	(1) Data Store (Premium Settlement) (2) Data Store (Receipt Record) (2) Customer

Table D.49. Process Specification of Process 4.3.

Process Name:	Allocate Commission
Data In:	Receipt Data
Data Out:	Commission Paid Commission
Process:	(1) Read Receipt Data from Receipt Record File (2) Generate Commission Amount (3) Send Commission to Agent or Broker (4) Create Paid Commission Record (5) Store Paid Commission into Paid Commission File
Attachment:	(1) Data Store (Receipt Record) (2) Data Store (Paid Commission) (3) Agent or Broker

Table D.50. Process Specification of Process 4.1.1.

Process Name:	Confirm Payment
Data In:	Premium Data
	Issued Policy and Insurance Card
	Payment
Data Out:	Completed Policy
	Payment
Process:	(1) Receive Issued Policy and Insurance Card from Central Processing Unit
	(2) Read Premium Data from Policy Stored File
	(3) Receive Payment from Customer
	(4) Accept Payment
	(5) Send Payment to Paid Premium Entry Process
	(6) Send Completed Policy to Account Department
Attachment:	(1) Data Store (Policy Stored)
	(2) Central Processing Unit
	(3) Account Department
	(4) Customer

Table D.51. Process Specification of Process 4.1.2.

Process Name:	Paid Premium Entry
Data In:	Payment
Data Out:	Issued Policy and Insurance Card
	Paid Premium
Process:	(1) Receive payment from Confirm Payment Process
	(2) Accept Paid Premium
	(3) Create Paid Premium Record
	(4) Send Paid Premium to Generate Premium Income Process
	(5) Send Issued Policy and Insurance Card to Customer
	(6) Send Completed Policy to Account Department
Attachment:	(1) Customer

Table D.52. Process Specification of Process 4.1.3.

Process Name:	Generate Premium Income
Data In:	Paid Premium
Data Out:	Paid Policy Premium
Process:	(1) Receive Paid Premium from Premium Entry Process
	(2) Create Paid Policy Premium
	(3) Store Paid Policy Premium into Premium Settlement File
Attachment:	(1) Data Store (Premium Settlement)

Table D.53. Process Specification of Process 4.2.1.

Process Name:	Retrieve Premium
Data In:	Billing Detail
Data Out:	Paid Premium
Process:	(1) Read Billing Detail from Premium Settlement File
	(2) Create Retrieved Paid Premium
	(3) Send Paid Premium to Format to Print Form Process
Attachment:	(1) Data Store (Premium Settlement)

Table D.54. Process Specification of Process 4.2.2.

Process Name:	Format to Print Form
Data In:	Paid Premium
	Receipt Format
Data Out:	Validated Receipt Format
Process:	(1) Receive Paid Premium from Retrieve Premium Process
	(2) Read Receipt Format from Receipt Print Format File
	(3) Set up Validated Receipt Format to be Printed
	(4) Send Validated Receipt Format to Issue Receipt Process
Attachment:	(1) Data Store (Receipt Print Format)

Table D.55. Process Specification of Process 4.2.3.

Process Name:	Issue Receipt
Data In:	Validated Receipt Format
Data Out:	Receipt
	Receipt Data
Process:	(1) Receive Validated Receipt Format from Format to Print Form Process
	(2) Create Receipt Record to be Printed
	(3) Call Print Receipt
	(4) Send Receipt to Customer
	(5) Store Receipt Data into Receipt Record File
Attachment:	(1) Data Store (Receipt Record)
	(2) Customer

Table D.56. Process Specification of Process 4.3.1.

Process Name:	Accept Premium
Data In:	Receipt Data
Data Out:	Paid Premium
Process:	(1) Read Receipt Data from Receipt Record File
	(2) Check Premium Data
	(3) Create Accepted Premium
	(4) Send Paid Premium to Compute Commission Process
Attachment:	

Table D.57. Process Specification of Process 4.3.2.

Process Name:	Compute Commission
Data In:	Paid Premium
Data Out:	Commission
Process:	(1) Receive Paid Premium from Accept Premium Process
	(2) Calculate Commission from $\text{Commission} = \text{Gross Premium} * 18\%$
	(3) Create Figured Commission
	(4) Send Figured Commission to Commission Payment Process
Attachment:	

Table D.58. Process Specification of Process 4.3.3.

Process Name:	Commission Payment
Data In:	Figured Commission
Data Out:	Commission
Process:	(1) Receive Figured Commission from Compute Commission Process (2) Generate Commission Payment (3) Send Commission to Agent or Broker (4) Store Paid Commission into Paid Commission File
Attachment:	(1) Data Store (Paid Commission) (2) Agent or Broker

Table D.59. Process Specification of Process 5.1.

Process Name:	Receive Report Request
Data In:	Report Request
Data Out:	Received Report Request
Process:	(1) Receive Report Request from Management (2) Create Received Report Request (3) Send Received Report Request to Verify Report Request Process
Attachment:	(1) Management



Table D.60. Process Specification of Process 5.2.

Process Name:	Verify Report Request
Data In:	Received Report Request
Data Out:	Invalid Report Request Verified Report Request
Process:	(1) Receive Received Report Request from Receive Report Request Process (2) Verify Received Report Request (3) If Verification is Valid then Do step 4 to 5 Else if Verification is Invalid then Do step 6 to 7 (4) Create Verified Report Request (5) Send Verified Report Request to Design Report Process (6) Create Invalid Report Request (7) Send Invalid Report Request to Management
Attachment:	(1) Management

Table D.61. Process Specification of Process 5.3.

Process Name:	Design Report
Data In:	Verified Report Request
Data Out:	Design Report
Process:	(1) Receive Verified Report Request from Verify Report Request Process (2) Create Design Report (3) Send Design Report to Print Report Process
Attachment:	

Table D.62. Process Specification of Process 5.4.

Process Name:	Print Report
Data In:	Designed Report
	Application Registration Record
	Customer Record
	Re-out Record
	Product Record
	Policy Stored Record
	Paid Commission Record
	Premium Settlement Record
	LAQ Record
	Black List Record
	Pre-Printed Policy Record
	Policy Running Record
	Filing Record
	Receipt Record
	Sale Channel
Data Out:	Report
	Product Detail and Selling Plan
Process:	(1) Receive Design Report from Design Report Process
	(2) Receive Sale Channel from Marketing
	(3) Create Product Detail and Selling Plan
	(4) Send Product Detail and Selling Plan to Marketing
	(5) Read Application Registration Record from Application Registration File
	(6) Read Customer Record from Customer File
	(7) Read Re-out Record from Re-out Transaction File
	(8) Read Product Record from Product File
	(9) Read Policy Stored Record from Policy Stored File
	(10) Read Paid Commission Record from Paid Commission File
	(11) Read Premium Settlement Record from Premium Settlement File
	(12) Read LAQ Record from LAQ Record File
	(13) Read Black List Record from Black List File
	(14) Read Pre-printed Policy Record from Pre-printed File

Table D.62. Process Specification of Process 5.4 (Continued).

Process Name:	Print Report
	(15) Read Policy Running Record from Policy Running File
	(16) Read Filing Record from Filing File
	(17) Read Receipt Record from Receipt Record File
	(13) Print Report
	(14) Send Report to Management, Marketing, and Agent or Broker
Attachment:	(1) Application Registration File
	(2) Customer Record File
	(3) Re-out Transaction File
	(4) Product File
	(5) Policy Stored File
	(6) Paid Commission File
	(7) Premium Settlement File
	(8) LAQ Record File
	(9) Black List Record File
	(10) Pre-Printed Policy File
	(11) Policy Running File
	(12) Filing File
	(13) Receipt Record File
	(14) Management
	(15) Marketing
	(16) Agent or Broker



Table E.1. Data Definition of Personal Accident Information System.

Field Name	Meaning
Accept Premium	Process that receives and confirms premium data and payment in order to issue receipt
Account	Department which take charge of incomes and expenses of the company
Acknowledge Application	Process that admits application to consider
Agent/Broker	Any person or company that has the right to sell insurance product. Agents must have to take a test before getting their own code for selling our product.
Allocate Commission	Process that portion the commission for agent
Allocate Sum Insured	Process that portion sum insured to Reinsurance Company
Application	The completed customer information in application form
Application Detail	Detail of customer's application
Application Record	Record that concerns with application detail to update in application registration file
Application Registration Record	Record that concerns with new coming application
Approved LAQ	Process that verifies customer's LAQ detail
Approved Policy Schedule and Insurance Card	Process that verifies to be the valid policy schedule and insurance card
Approved Application	Application that is verified by Customer Service Representative and send to Central Processing Unit for issuing policy
Approved Policy Schedule and Attachment	Policy schedule and attachment that are correct
Arranged Policy	Policy copies which are arranged in order
Assembler Document	Process that collects all documents needed
Assembler Policy	Process that collect and arrange the policy
Assembled Policy	Whole policy to be issued
Billing	Process that collect premium and pay commission
Billing Detail	Detail that is about premium, customer detail and insurance detail needed in the receipt



Table E.1. Data Definition of Personal Accident Information System (Continued).

Field Name	Meaning
Black List Record	Record concerned with non-credit producer who does not pay for premium on time
Calculate Premium, Tax, Stamp	Process that calculates premium, tax, and stamp of each policy
Central Processing Unit	Department that concerns with issuing policy
Check Application Detail	Process that verifies filled application detail whether it is completed or not
Check Application Form	Process that check application detail to make the completed one
Check Customer Sum Insured	Process that compare customer sum insured with high sum insured rate
Check Insurance Card	Process that compare information on the card with policy detail
Check Insurer and Producer Qualification	Process that considers whether those persons can be accepted
Check Insurer Status	Process that consider high sum insured insurer status to make sure he/she has enough qualification
Check Other Document	Process that collects all documents needed
Check Policy Detail	Process that checks the detail before printing whether they are correct or not
Check Sum Insured	Process that checks sum insured with product plan in order to know this sum insured is available or not
Collect Application	Process that prepare application for underwriting process
Collect Policy Schedule and Attachment	Process that gather all policy schedule and attachment in order to arrange policy
Commission	Money which has to pay to agent as the commission rate
Commission Payment	Process that confirm the payment of commission to agent
Complete Application	Process that make customer's application to be completed
Completed Application	Application which has all information and document needed for underwriting
Completed Policy	Policy which includes the attachments and insurance card(if any)
Completed Policy Detail	Policy detail that are ready to generate policy number

Table E.1. Data Definition of Personal Accident Information System (Continued).

Field Name	Meaning
Completed Policy Information	Information concerned with policy detail to be printed
Compute Commission	Process that calculates the amount of commission for agent
Confirm Payment	Process that checks whether the payment is exactly the same as the premium needed to be paid for each policy or not
Confirmed Application	Acknowledged Application inform to agent/broker
Consider Application Detail	Process that check the status of producer and insurer
Customer	Any person who accept our product and pays premium for insurance coverage
Customer Detail	Detail of person who buy our product
Customer Record	Record that concerns with customer detail which stored in customer record file
Customer Service Representative	The person who takes responsibility for underwriting
Customer's Sum Insured	Sum insured that customer would like to buy for the coverage
Design Report	Process that creates reports to management for decision making
Designed Report	Report which has already designed
Entry Policy Detail	Process that key application detail into the system
Figured Commission	The amount of commission which has to be paid for agent
Filing	Section that keeps all the arranged policy for reference
Filing Record	Record concerned with filing policy
Fill in Application Form	Process that enter customer information into standard application form
Fill in LAQ Form	Process that enter high sum insured customer's information into LAQ form
Filled Application	Application which has already filled information into a form
Filling LAQ	Process that fill out LAQ form for approval
Format Policy Record	Process that prepares policy record into standard form
Format to Print Form	Process that prepares billing detail to be printed in a standard receipt form which retrieves from receipt print format file

Table E.1. Data Definition of Personal Accident Information System (Continued).

Field Name	Meaning
Generate Application Number	Process that creates application number for reference
Generate Policy Number	Process that creates policy number running
Generate Premium Income	Process that creates premium income in order to keep record into premium settlement file
Generate Reinsurance	Process that creates re-out sum insured
Generate Report	Process that retrieves the updated record from the file needed for making the specific report
Get Customer Information	Process that receives customer information to fill in application form
High Sum Insured Customer Detail	Detail of customer who would like to buy high sum insured coverage
Insurance Card	Card used for medical expenses when the customer has an accident which can be used as cash. (depend on coverage)
Insured Policy	Policy that will give to insurer
Invalid Report Request	Report request that is shown unavailable report to management
Issue Receipt	Process that creates receipt for customer
Issued Policy and Insurance Card	Policy that is verified by Customer Service Representative and issued by Central Processing Unit
Issued Policy Detail	Policy detail that has already issued by Central Processing Unit
Issuing Policy	Process that creates insurance policy for customers
Key in Application Detail	Process that enters application detail into the screen
LAQ Information	Information about customer's LAQ
LAQ Record	Record concerned with high sum insured customer information which is needed for underwriting
Making Report	Process that generates report for management
Management	Department that sets objectives, target, and strategies in order to make a lot of profit
Marketing	Section that take charge of selling plan and promoting the product



Table E.1. Data Definition of Personal Accident Information System (Continued).

Field Name	Meaning
Paid Commission	Commission that has already paid for agent
Paid Commission Record	Record that is about commission to be paid and updates to paid commission file
Paid Policy Premium	Policy which has already paid for premium
Paid Premium Data	Data about the premium that has already paid
Paid Premium Entry	Process that creates paid premium data in order to generate premium income
Paid Premium Record	Record that customer has already paid for the premium
Partial Sum Insured	Some of the sum insured that is needed to re-out which depends on agreement
Payment	Customer pays for the insurance policy
Personal Document	Personal Customer documents needed
Policy Copy	Policy that duplicate the customer's policy schedule
Policy Detail	Detail of customer, sum insured, coverage, exclusion, beneficiary, effective date, agent name, which use for issuing policy
Policy Number	Identified number of policy which runs in order
Policy Record	Record concerned with policy to be printed
Policy Running Record	Record concerned with running policy number
Policy Schedule	Policy that shows the detail need for customer in the formatted policy form
Policy Stored Record	Record concerned with policy detail and stored on policy stored file
Premium Data	Data about the amount of premium that customer has to pay
Pre-Printed Detail	Detail need to be printed insurance card
Pre-Printed Policy Record	Record concerned with holding policy to be printed
Print Attachment	Process that prints attachment to clarify policy schedule for customers
Print Insurance Card	Process that prints insurance card for customers

Table E.1. Data Definition of Personal Accident Information System (Continued).

Field Name	Meaning
Print Policy	Process that prints policy schedule and attachment for customers
Print Policy Schedule	Process that prints schedule for customers
Print Receipt	Process that prints receipt for customers
Producer Name	Name of producer who sell our product
Product Detail and Selling Plan	Description of product and selling plan
Product Record	Record concerned with product detail
Rate	Rate for insurance policy
Rate Coding	Process that specifies insurance rate for calculating the premium
Receipt	Document that shows the customers have already paid the premium
Receipt Data	Data concerning the premium, policy number, insured name and address
Receipt Format	Format used to print receipt
Receipt Record	Record concerned with issued receipt information
Receive Report Request	Process that receive report request from management
Received Report Request	Report requirement which comes from management
Reinsurance Company	Company that takes responsibility for partial sum insured of other insurance company. When the damage occurs, this company has to take charge of the portion loss.
Reject Producer Name	Producer who has the record in the black list file
Re-out Policy	Regulation of re-out sum insured
Re-out Record	Record that concerns with re-out sum insured to other insurance company
Re-out Sum Insured	Sum insured which portion to Reinsurance company
Report	Printed data paper from any file for management, agent, and marketing for decision making
Report Request	Management requests for report
Retrieve Application Data	Process that reads application details from application registration file



Table E.1: Data Definition of Personal Accident Information System (Continued).

Field Name	Meaning
Retrieve Premium	Process that reads the billing detail from premium settlement file
Retrieve Premium Receipt	Process that reads receipt data from receipt record file in order to calculate commission
Sale Channel	Detail of how the product can be sold
Separate Policy Copy	Process that divides the policy copy for filing
Sort Policy	Process that arranges policy by policy number both insured policy and policy copy
Sorted Policy Copy	Policy copy that has already sorted by policy number in order to keep the record
Unarranged Policy	Policy that is needed to rearrange for future reference
Underwriting	Process that considers all applications whether the company can accept customer or not
Underwriting Approval	Process that shows this application is accepted
Update Allocation	Process that refreshes all allocation transaction to keep the re-out transaction record to be updated
Valid Producer Name	Producer who is not in black list file
Valid Rate	Insurance rate that is available for calculating premium
Validate Policy	Process that checks all detail to be ready to print
Validated Application	Application that is accepted to be the completed customer's information
Validated Insurance Card	Insurance card that is valid for customer to use
Validated Receipt Format	Receipt format that is accepted to print the receipt
Validated Sum Insured	Sum insured which our product can be provided
Verified Application	Application that is verified by Customer Service Representative
Verified Document	Customer's documents which are completed
Verified Policy Detail	Policy detail that is verified by Customer Service Representative
Verified Report Request	Checked report request which is available
Verify Policy	Process that verifies policy detail which is delivered to pre-printed policy file
Verify Report Request	Process that checks possibility of making report which is requested in report request

Table E.2. Data Structure of Personal Accident Information System.

Field Name	Structure
Application	ApplicantName + ApplicantAddress + ApplicantAge + ApplicantBeneficiary + ProductName + AgentName + EffectiveDate
Application Detail	ApplicationNumber + ApplicantName + ApplicantAddress + ApplicantIdentificationID + ApplicantPhone + ApplicantDateofBirth + ApplicantWeight + ApplicantHeight + ApplicantOccupation + ApplicantIncome + Beneficiary + Relationship + ProductName + Plan + SumInsured + AgentName
Application Record	ApplicationNumber + ApplicationDetail
Approved Application	ApplicationNumber + ApplicationDetail
Approved Insurance Card	PolicyNumber + InsuredName + MedicalSumInsured + EffectiveDate + IssuedCardDate
Approved Policy Schedule and Attachment	PolicyNumber + PolicyDetail + AttachmentDetail
Arranged Policy	PolicyNumber + PolicyDetail
Assembled Policy	PolicyNumber + PolicyDetail + PolicySchedule
Attachment Detail	AttachmentNumber + AttachmentDescription
Billing Detail	PolicyNumber + InsuredName + InsuredAddress + Date + ProductName + Line + GrossPremium + Tax + Stamp + NetPremium
Black List Record	ProducerNumber + ProducerName + ProducerStatus + ProducerPhone + ProducerAddress
Commission	ProducerNumber + ProducerName + CommissionAmount
Completed Application	ApplicationDetail + PersonalDocument
Completed Policy	PolicyDetail + AttachmentDetail + InsuranceCardDetail
Completed Policy Information	PolicyDetail + AttachmentDetail + InsuranceCardDetail
Confirmed Application	ApplicationNumber + ApplicationDetail
Customer Detail	CustomerName + CustomerAddress + CustomerPhone

Table E.2. Data Structure of Personal Accident Information System (Continued).

Field Name	Structure
Customer Record	CustomerNumber + CustomerName + CustomerAddress + CustomerPhone + ResidenceParticular + FamilyParticular + PropertyOwned + CustomerIncome + CustomerWork
Customer's Sum Insured	CustomerName + CustomerSumInsured
Designed Report	ReportName + ReportHeader + ReportForm
Figured Commission	ProducerNumber + ProducerName + CommissionAmount
Filled Record	PolicyNumber + ArrangedPolicyCopy
Filled Application	ApplicationNumber + ApplicationDetail
High Sum Insured Customer Detail	CustomerNumber + CustomerName + CustomerAddress + CustomerPhone + ResidenceParticular + FamilyParticular + PropertyOwned + CustomerIncome + CustomerWork
Insurance Card Detail	PolicyNumber + InsuredName + InsuredAddress + MedicalSumInsured + EffectiveDate
Insured Policy	PolicyNumber + CompletedPolicy
Invalid Report Request	ReportName + RequestName + RejectResult
Issued Policy and Insurance Card	PolicyNumber + InsuredName + InsuredAddress + InsuredAge + InsuredOccupation + Beneficiary + Relationship + EffectiveDate + TerritorialLimit + InsuringAgreement + SumInsured + PolicyIssuedDate + InsuredDeductible + Premium + AggregateLimit + AgentName
Issued Policy Detail	PolicyDetail + IssuedDate
LAQ Information	CustomerName + CustomerAddress + CustomerPhone + ResidenceParticular + FamilyParticular + PropertyOwned + CustomerIncome + CustomerWork
LAQ record	CustomerName + CustomerAddress + CustomerPhone + ResidenceParticular + FamilyParticular + PropertyOwned + CustomerIncome + CustomerWork
Paid Commission	ProducerNumber + ProducerName + CommissionAmount + CommissionPercent
Paid Commission Record	ProducerNumber + ProducerName + CommissionAmount + CommissionPercent



Table E.2. Data Structure of Personal Accident Information System (Continued).

Field Name	Structure
Paid Policy Premium	PolicyNumber + PremiumAmount
Paid Premium Data	PolicyNumber + PremiumAmount
Paid Premium Record	PolicyNumber + InsuredName + ProductName + AgentName + Premium
Partial Sum Insured	TreatyNumber + CalculatedSumInsured + CompanyName
Payment	CustomerName + PolicyNumber + PremiumAmount
Personal Document	IdentificationIDCopy + CustomerStatement
Policy Copy	PolicyNumber + PolicyDetail
Policy Detail	PolicyNumber + InsurerName + InsurerAddress + EffectiveDate + Beneficiary + Relationship + InsurerAge + Coverage + Premium + Tax + Stamp + NetPremium + AgentName
Policy Record	PolicyNumber + InsurerName + InsurerAddress + InsurerAge + InsurerOccupation + Beneficiary + Relationship + EffectiveDate + TerritorialLimit + InsuringAgreement + SumInsured + InsuredDeductible + Premium + AggregateLimit + AgentName + PolicyIssuedDate
Policy Running Record	PolicyNumber
Policy Schedule	PolicyNumber + PolicyDetail
Policy Schedule and Attachment	PolicyNumber + PolicyDetail + AttachmentDetail
Premium Data	PolicyNumber + InsurerName + NetPremium
Pre-printed Detail	PolicyNumber + InsuredName + MedicalSumInsured + EffectiveDate
Pre-printed Policy Record	PolicyNumber + PolicyDetail
Producer Name	ProducerNumber + ProducerName
Product Detail and Selling Plan	ProductName + ProductPlan + PremiumAmount
Product Record	ProductNumber + ProductName + PlanName + Coverage + Premium
Rate	InsurerClass + UnderwritingScale

Table E.2. Data Structure of Personal Accident Information System (Continued).

Field Name	Structure
Receipt	InsurerName + InsurerAddress + InvoiceNumber + BookNumber + IssuedDate + PolicyNumber + InsuranceType + Line + GrossPremium + Tax + Stamp + NetPremium
Receipt Format	BookNumber + ReceiptForm
Receipt Record	InsurerName + InsurerAddress + InvoiceNumber + BookNumber + IssuedDate + PolicyNumber + InsuranceType + Line + GrossPremium + Tax + Stamp + NetPremium
Received Report Request	ReportName + ReportDetail
Reject Producer Name	ProducerNumber + ProducerName + ProducerStatus
Re-out Policy	SumInsured + PremiumPercentage
Re-out Record	TreatyNumber + SumInsuredAmount + PremiumAmount
Re-out Sum Insured	SumInsuredAmount + PremiumAmount + EffectiveDate
Report	InsuredRecord + ProductRecord + PolicyRecord + BillingRecord
Report Request	ReportName + RequestName + RequestDate
Sale Channel	ProductName + SellingAmount
Sorted Policy Copy	PolicyNumber + ArrangedPolicyCopy
Unarranged Policy	PolicyNumber + PolicyCopy
Valid Producer Name	ProducerNumber + ProducerName + ValidProducerStatus + ProducerPhone + ProducerAddress
Valid Rate	InsuredClass + UnderwritingScale
Validated Application	ApplicationNumber + ApplicationDetail
Validated Insurance Card	InsuranceCardDetail + ValidInsuranceCard
Validated Receipt Format	BookNumber + ValidReceiptForm
Validated Sum Insured	ValidSumInsured + PlanName



Table E.2. Data Structure of Personal Accident Information System (Continued).

Field Name	Structure
Verified Application	ApplicationNumber + ApplicationDetail
Verified Document	CheckedIdentificationIdCopy + CustomerStatement
Verified Policy Detail	CheckedPolicyDetail
Verified Report Request	ReportRequirement + CheckedStatus





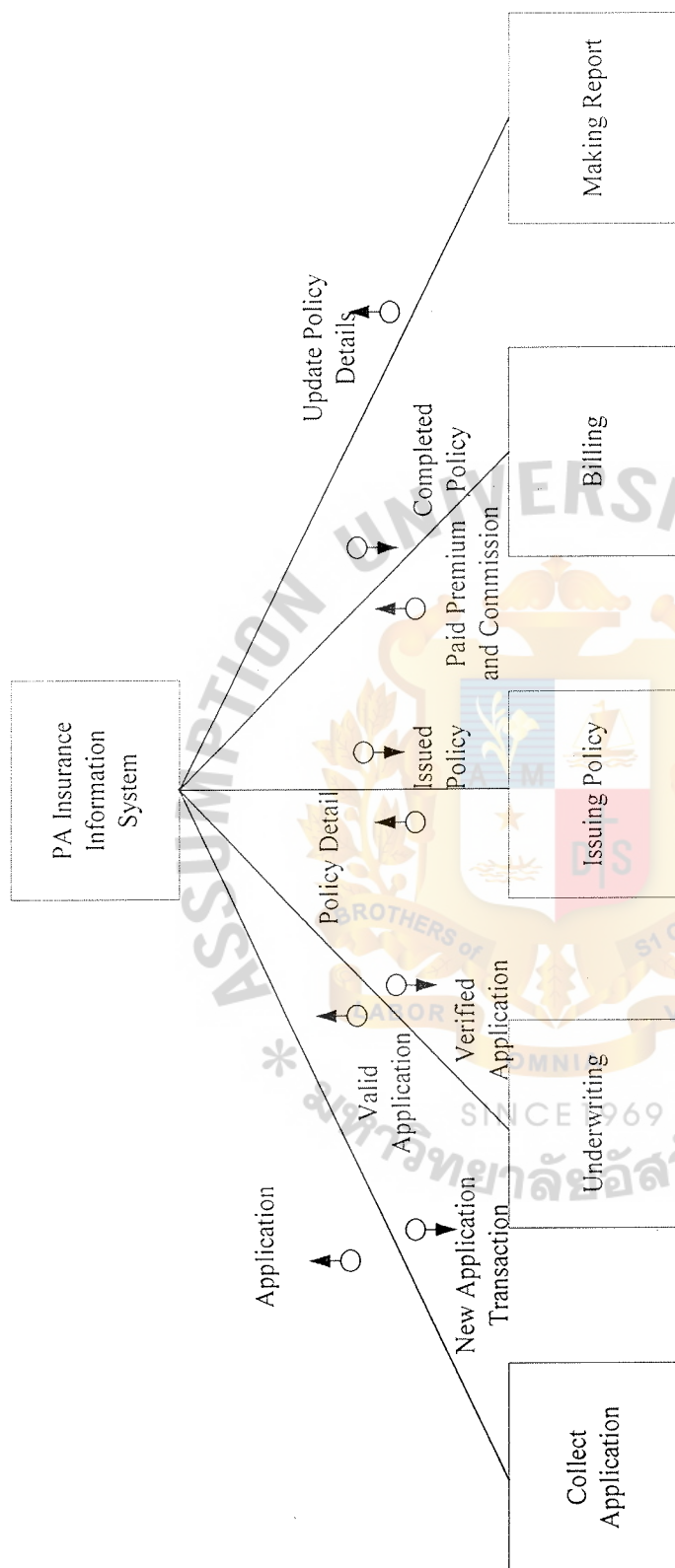


Figure F.1. Structure Chart of Data Flow Diagram.

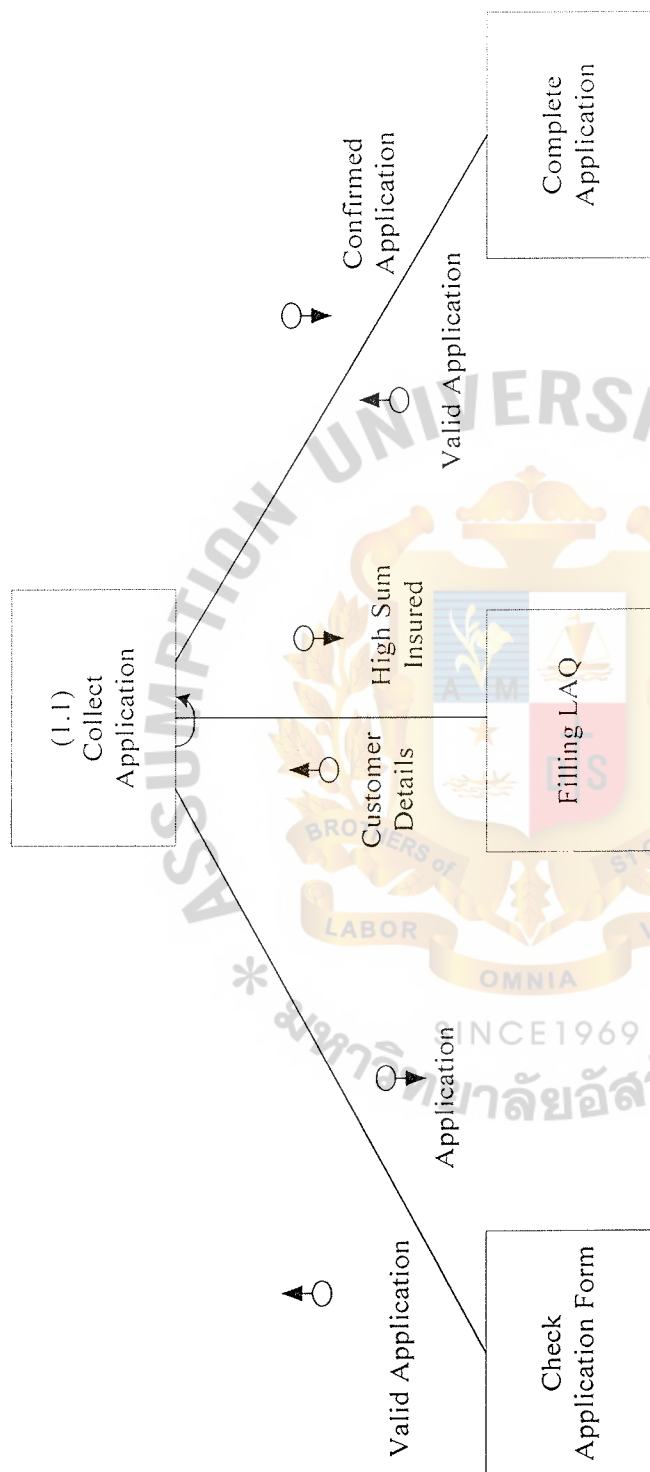


Figure F.2. Structure Chart of Process 1.1.

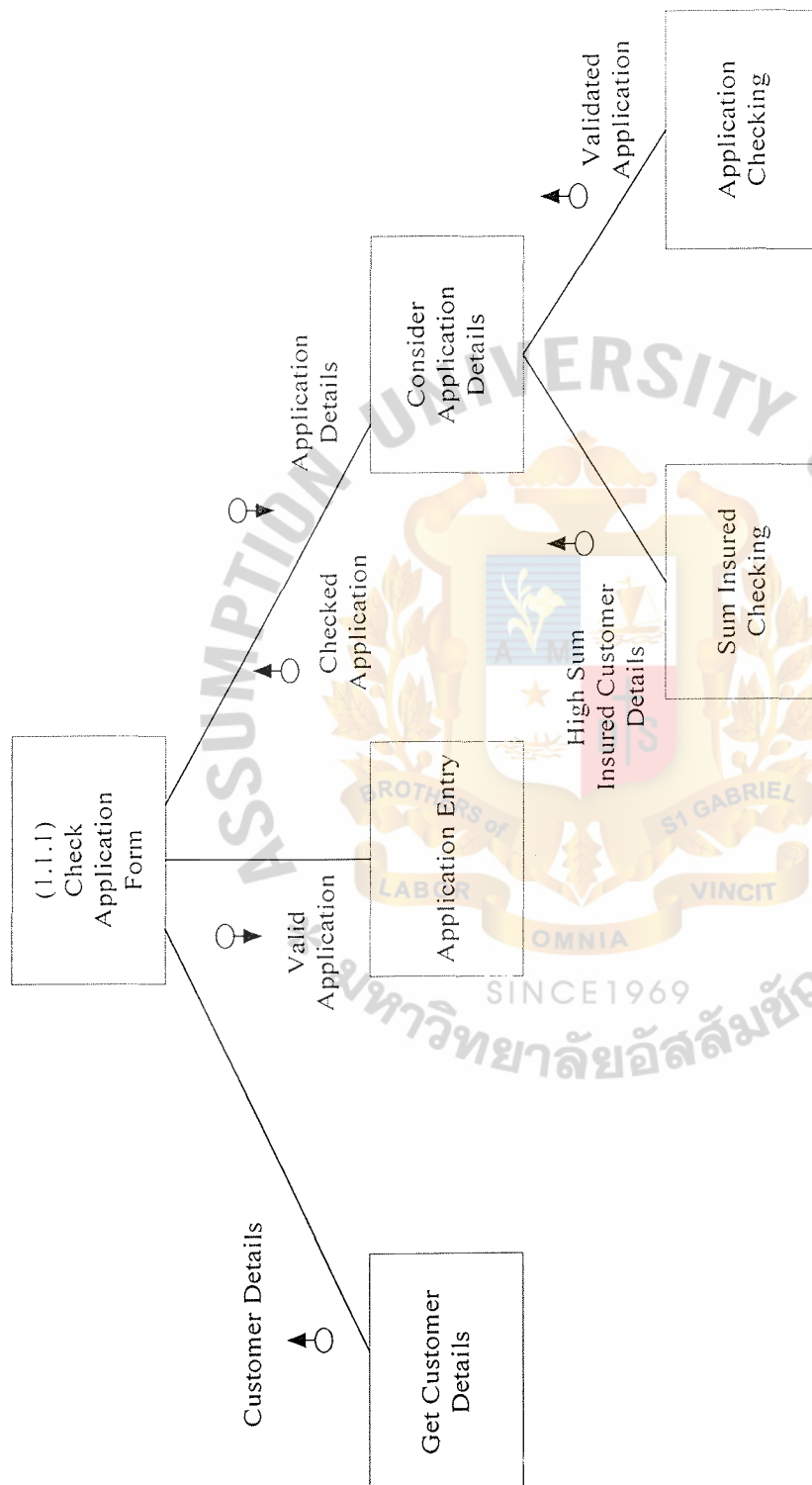


Figure F.3. Structure Chart of Process 1.1.1.



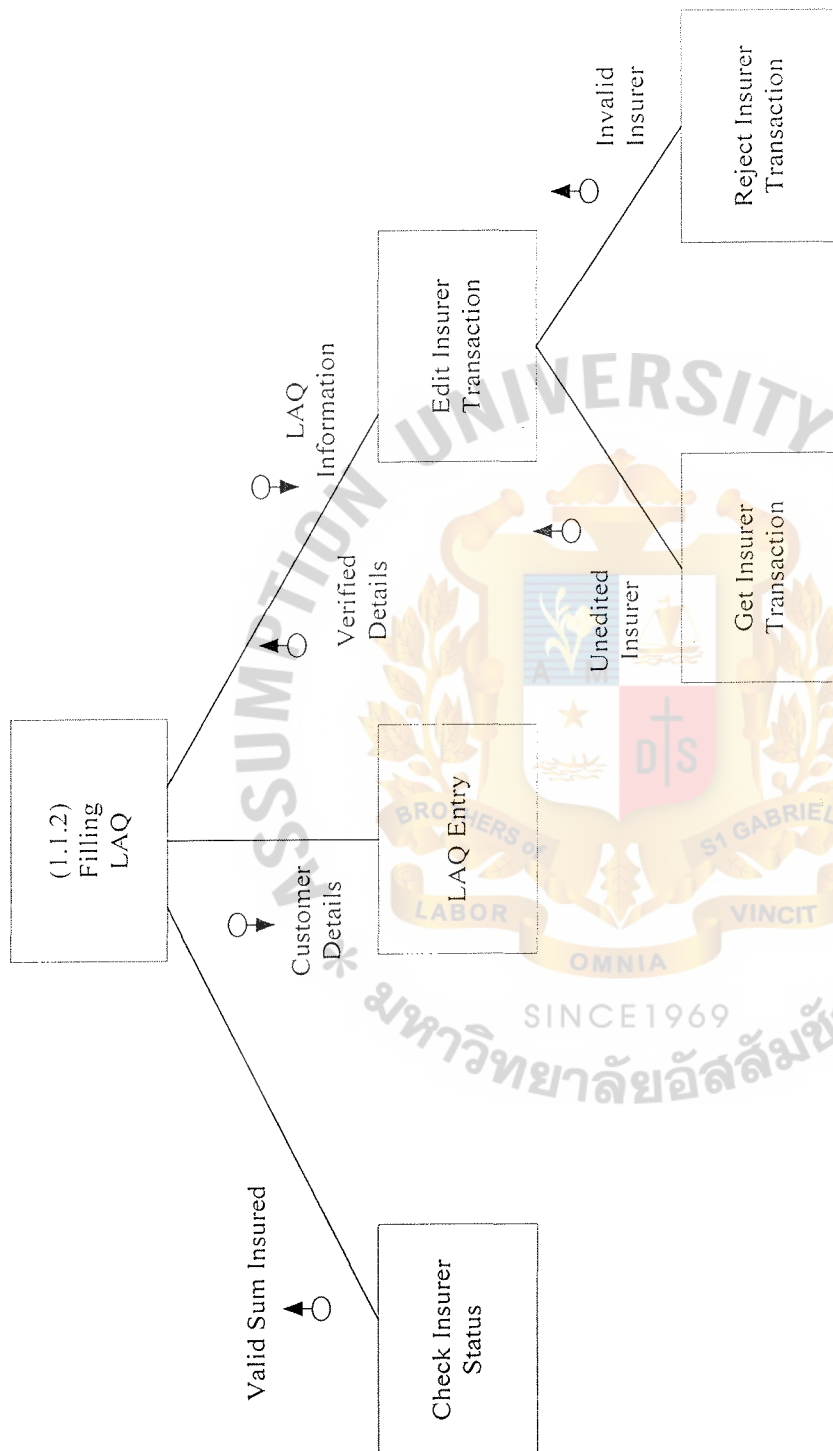


Figure F.4. Structure Chart of Process 1.1.2.

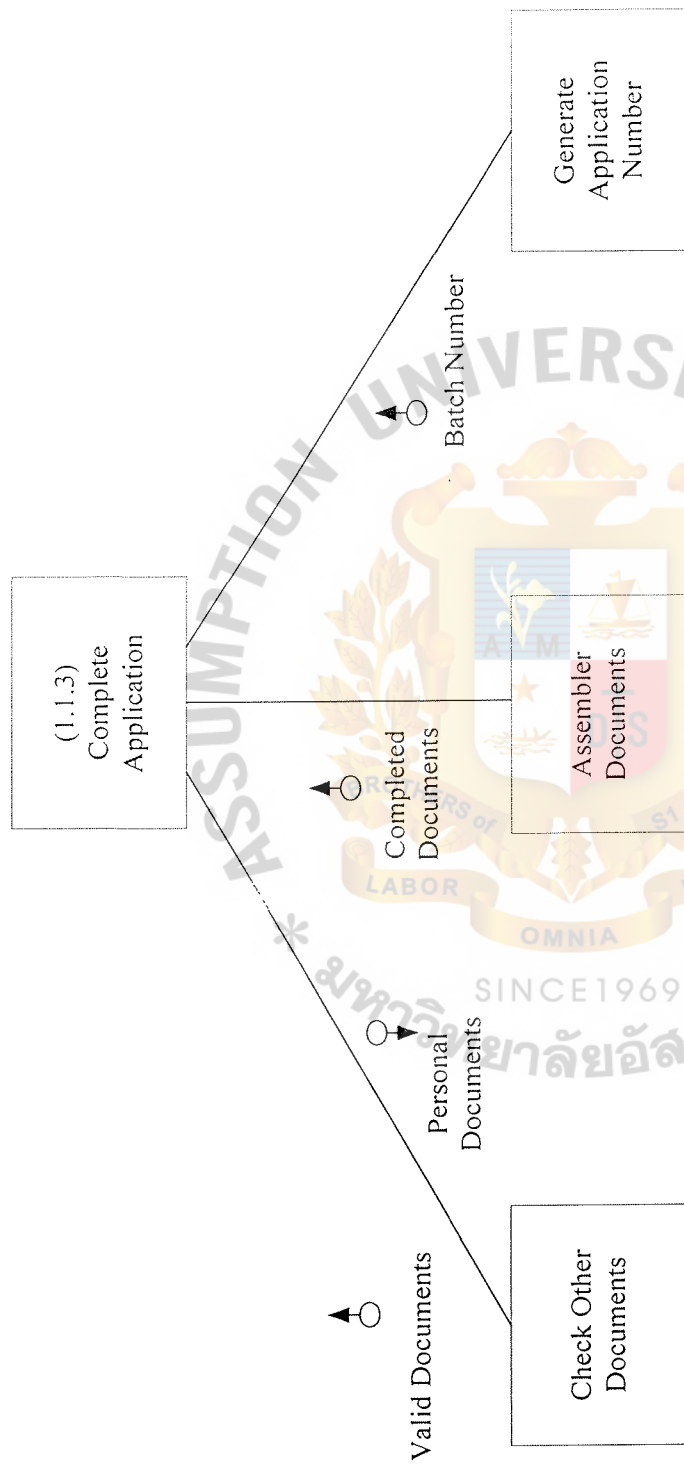


Figure F.5. Structure Chart of Process 1.1.3.

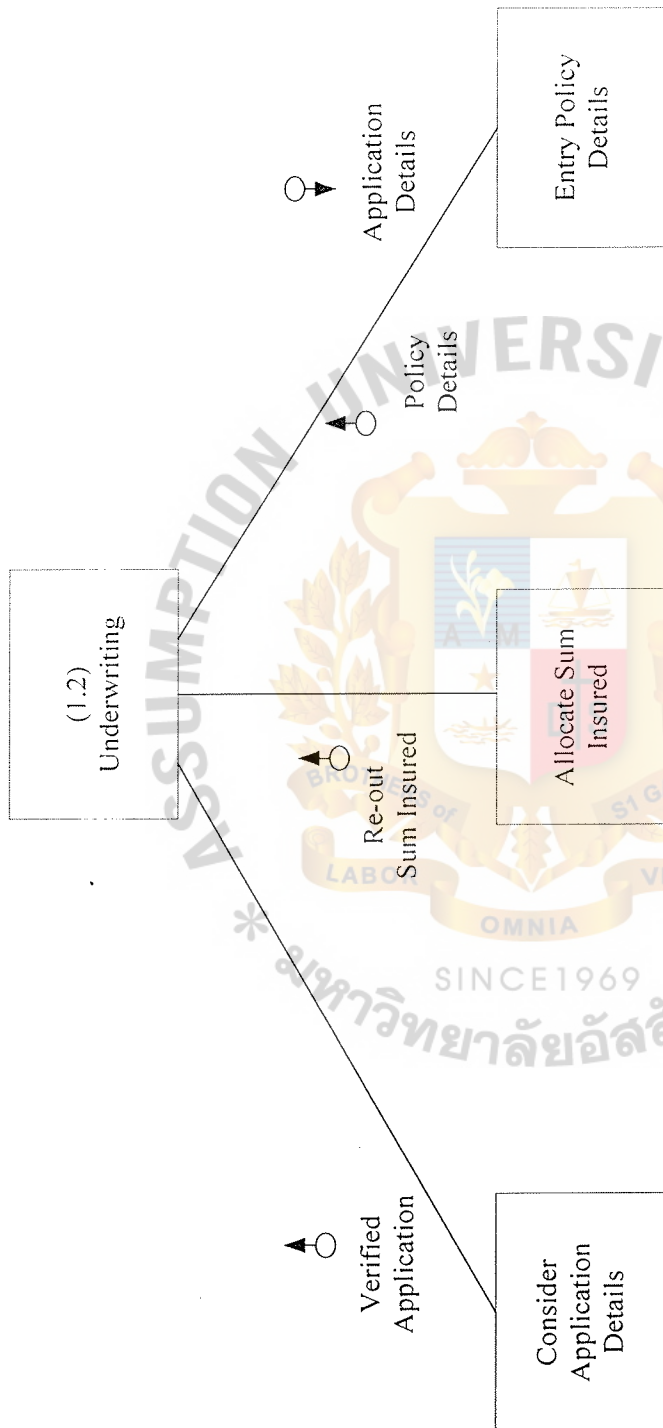


Figure F.6. Structure Chart of Process 1.2.

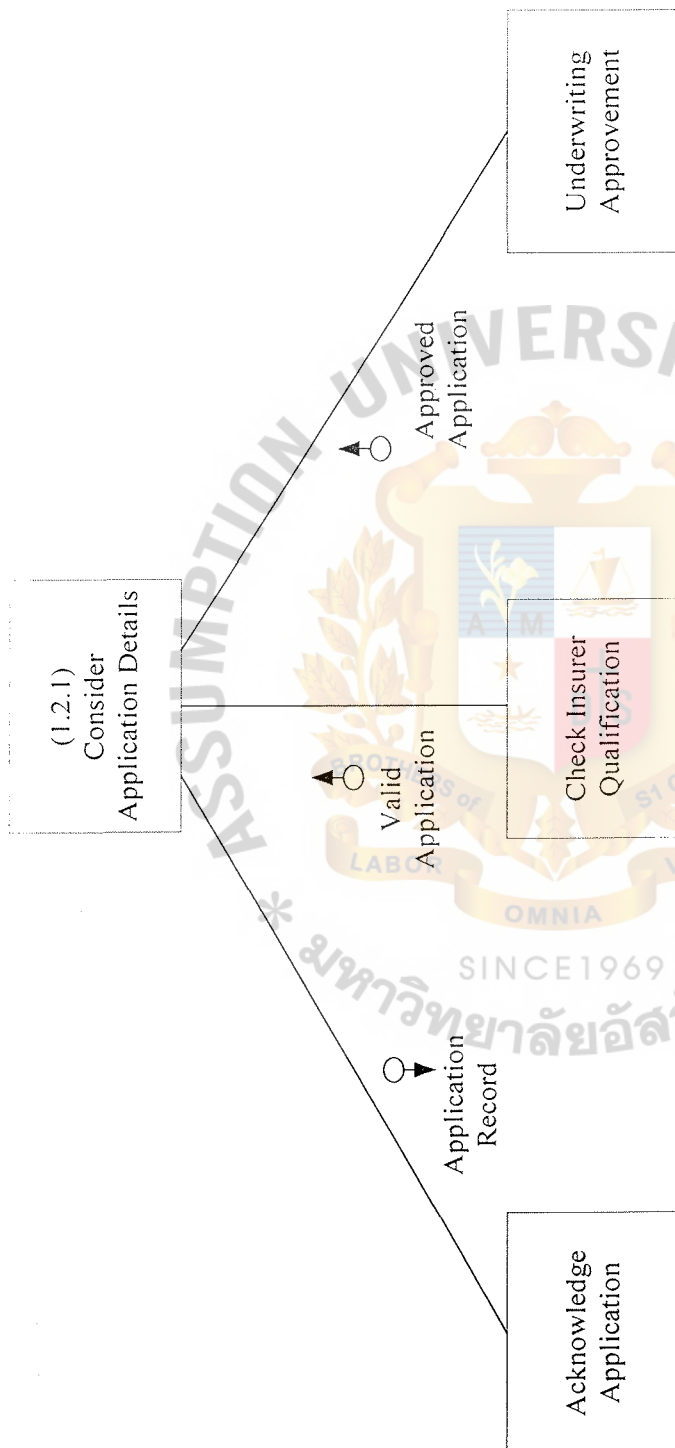


Figure F.7. Structure Chart of Process 1.2.1.

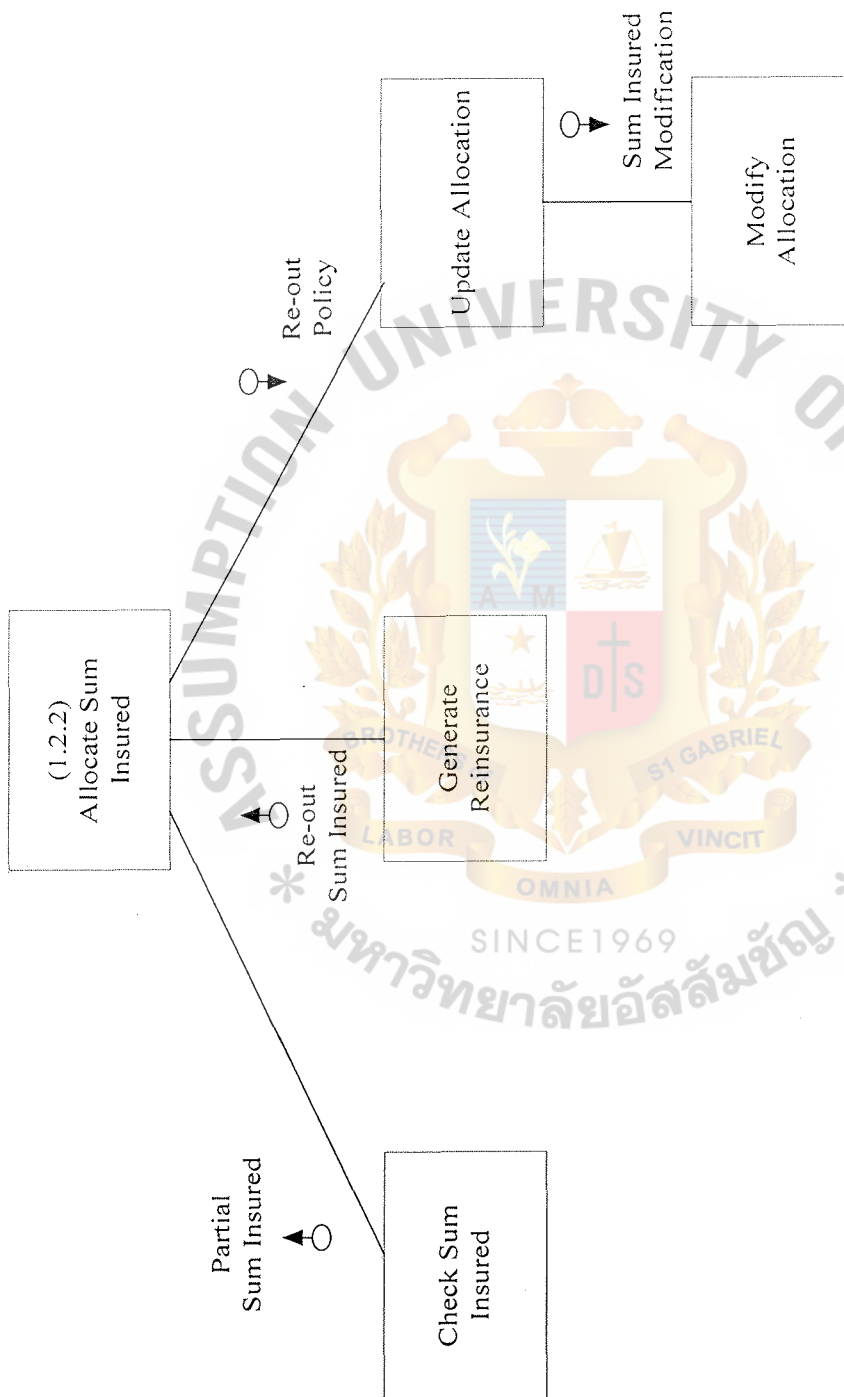


Figure F.8. Structure Chart of Process 1.2.2.



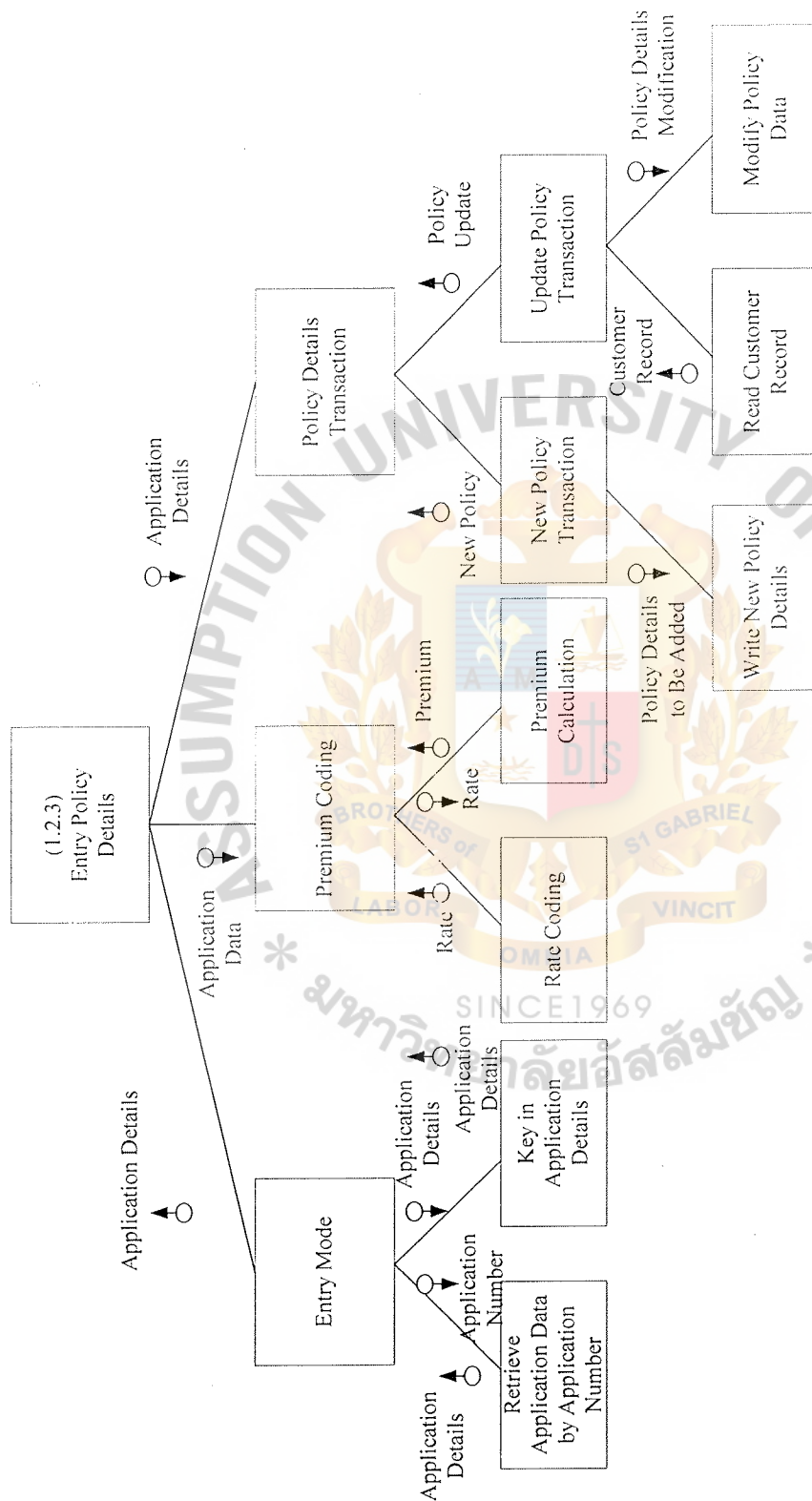


Figure F.9. Structure Chart of Process 1.2.3.

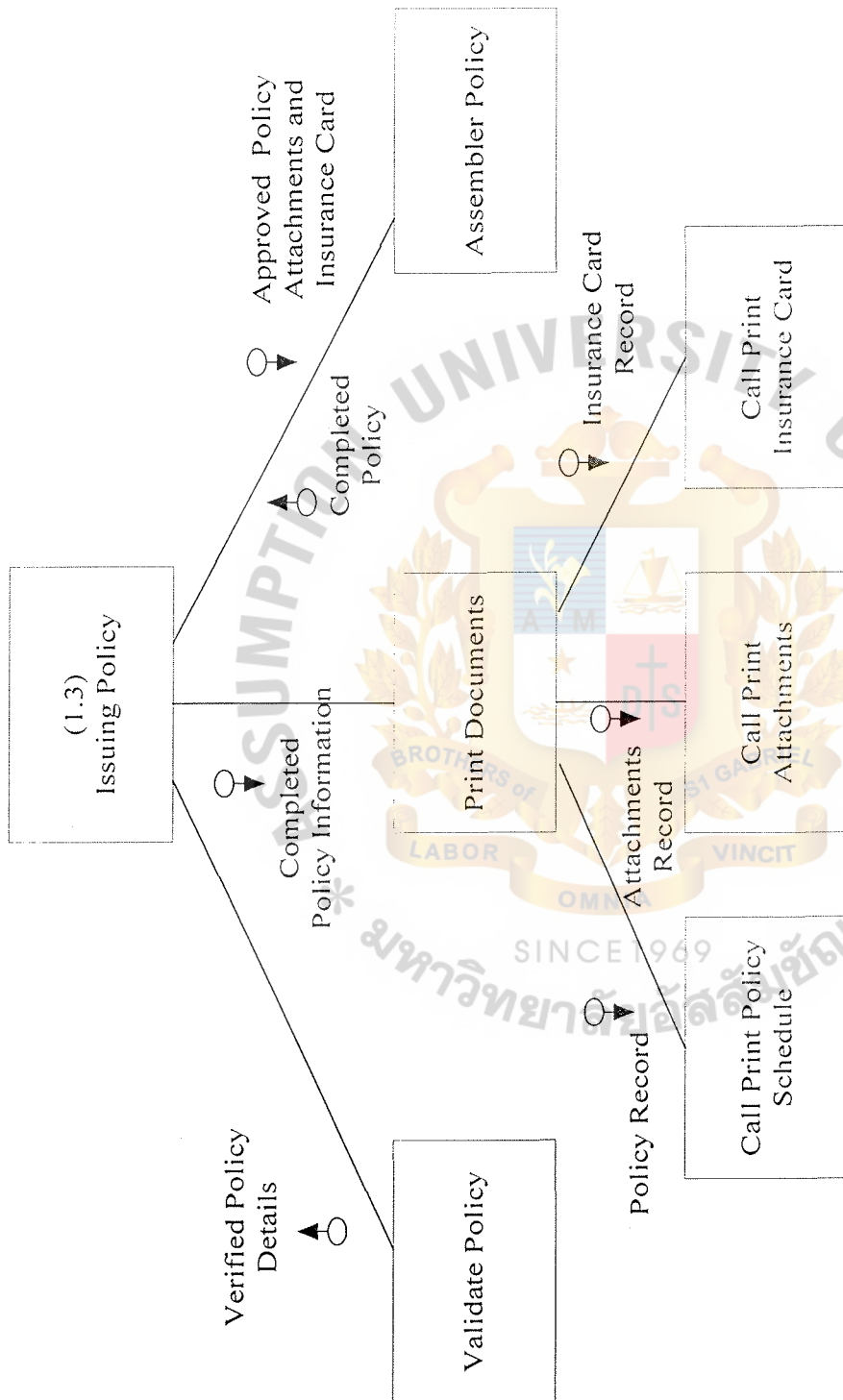


Figure F.10. Structure Chart of Process 1.3.

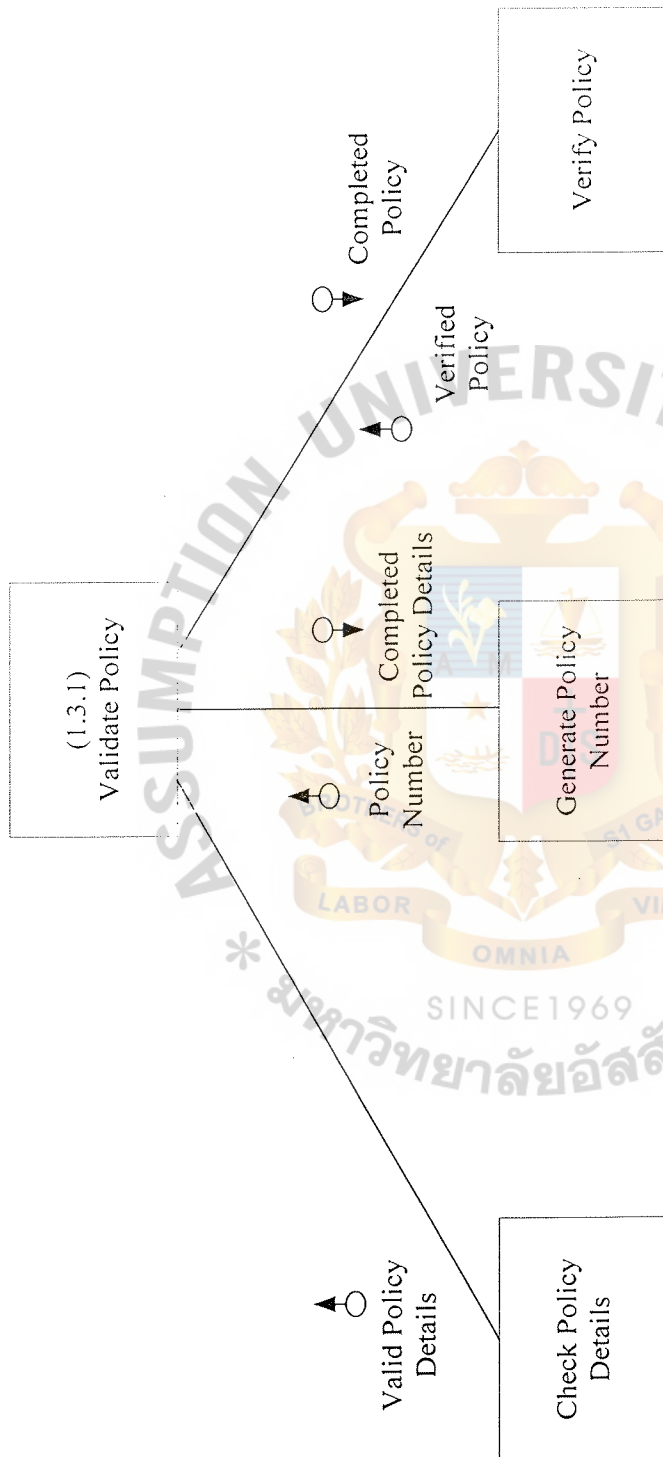


Figure F.11. Structure Chart of Process 1.3.1.

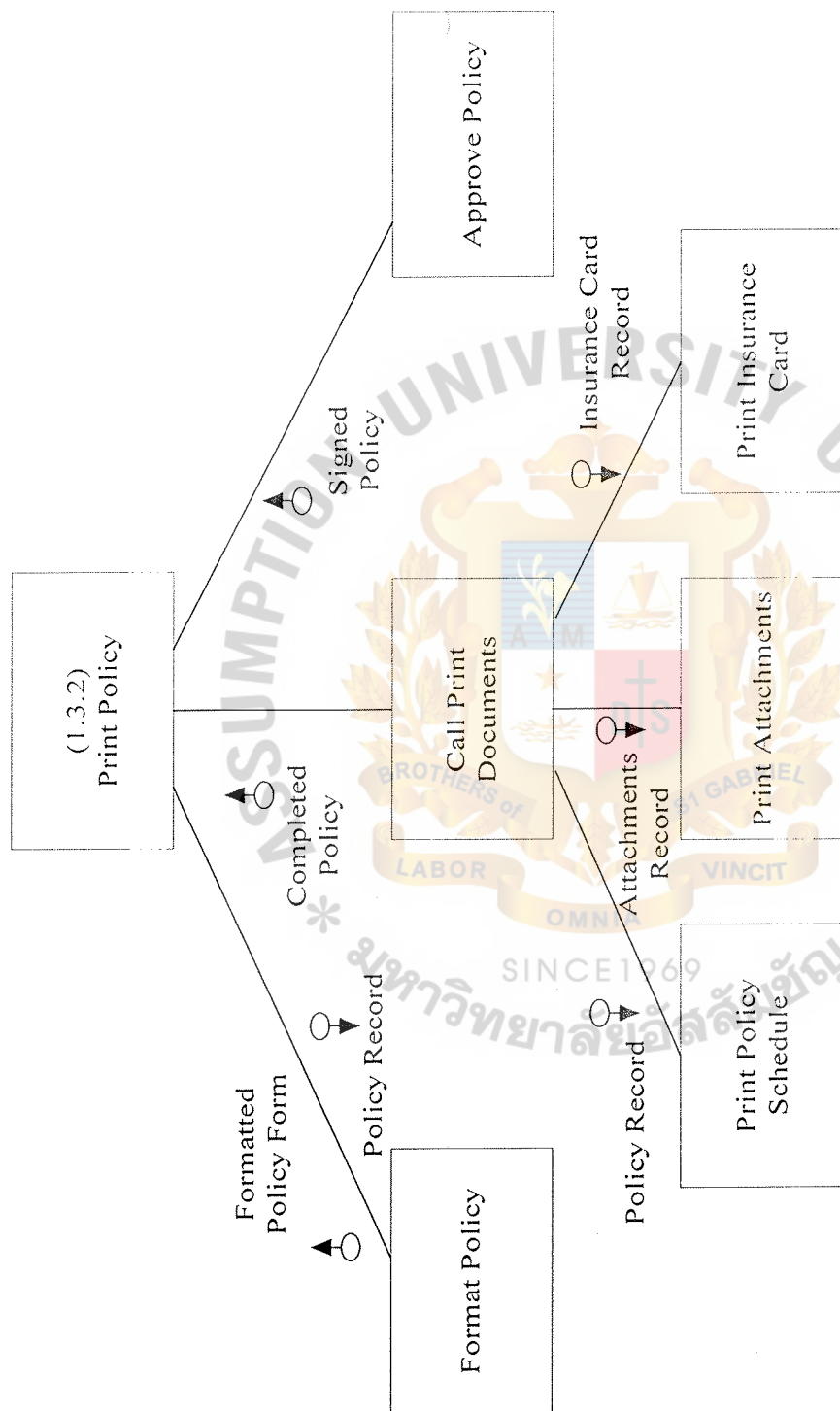


Figure F.12. Structure Chart of Process 1.3.2.

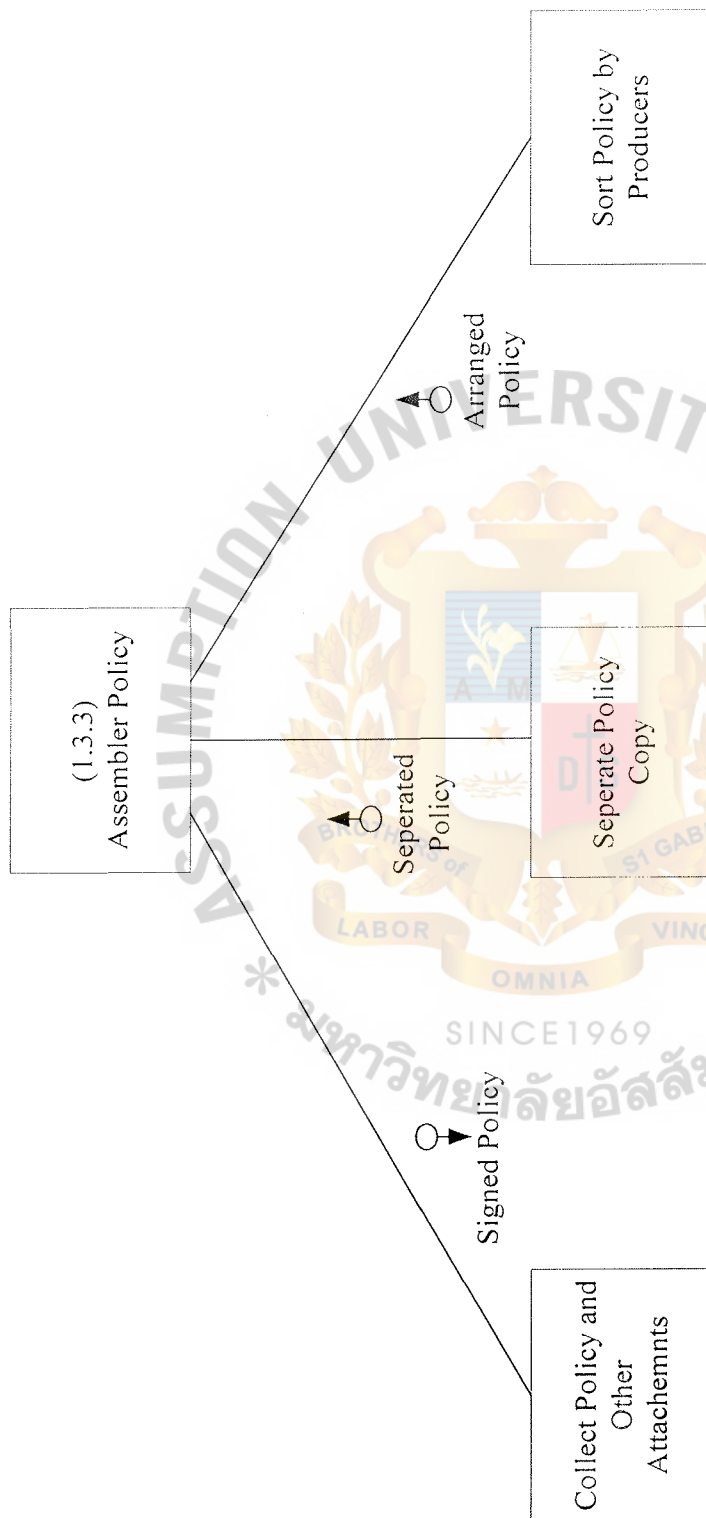


Figure F.13. Structure Chart of Process 1.3.3.



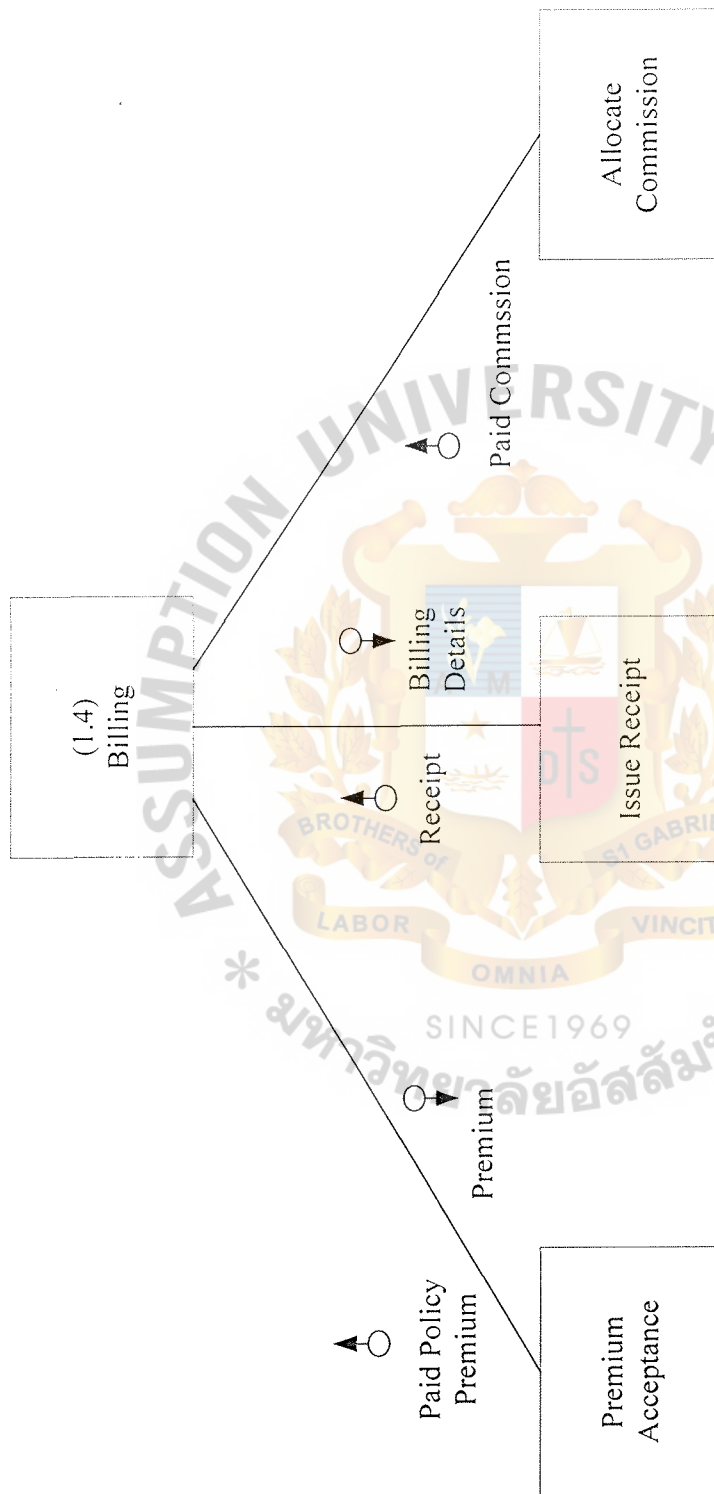


Figure F.14. Structure Chart of Process 1.4.

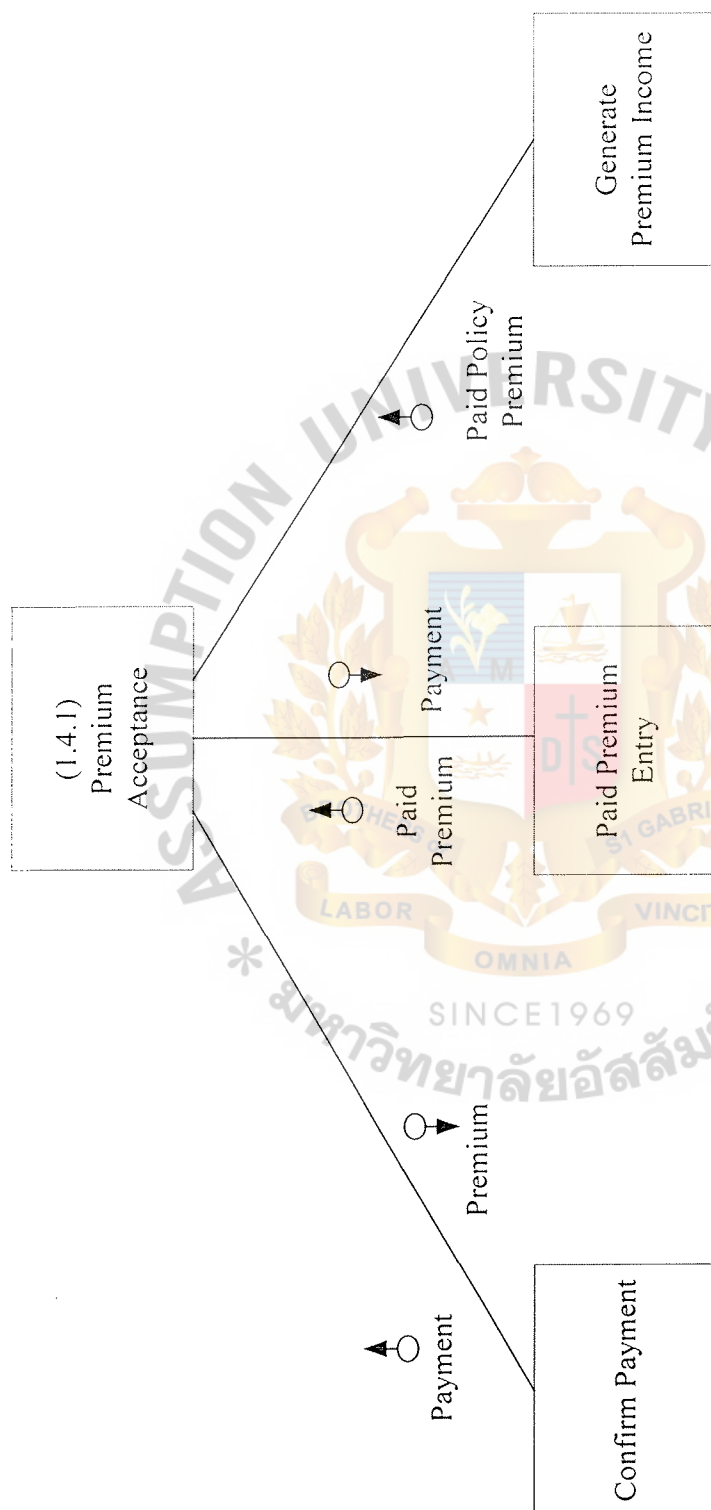


Figure F.15. Structure Chart of Process 1.4.1.

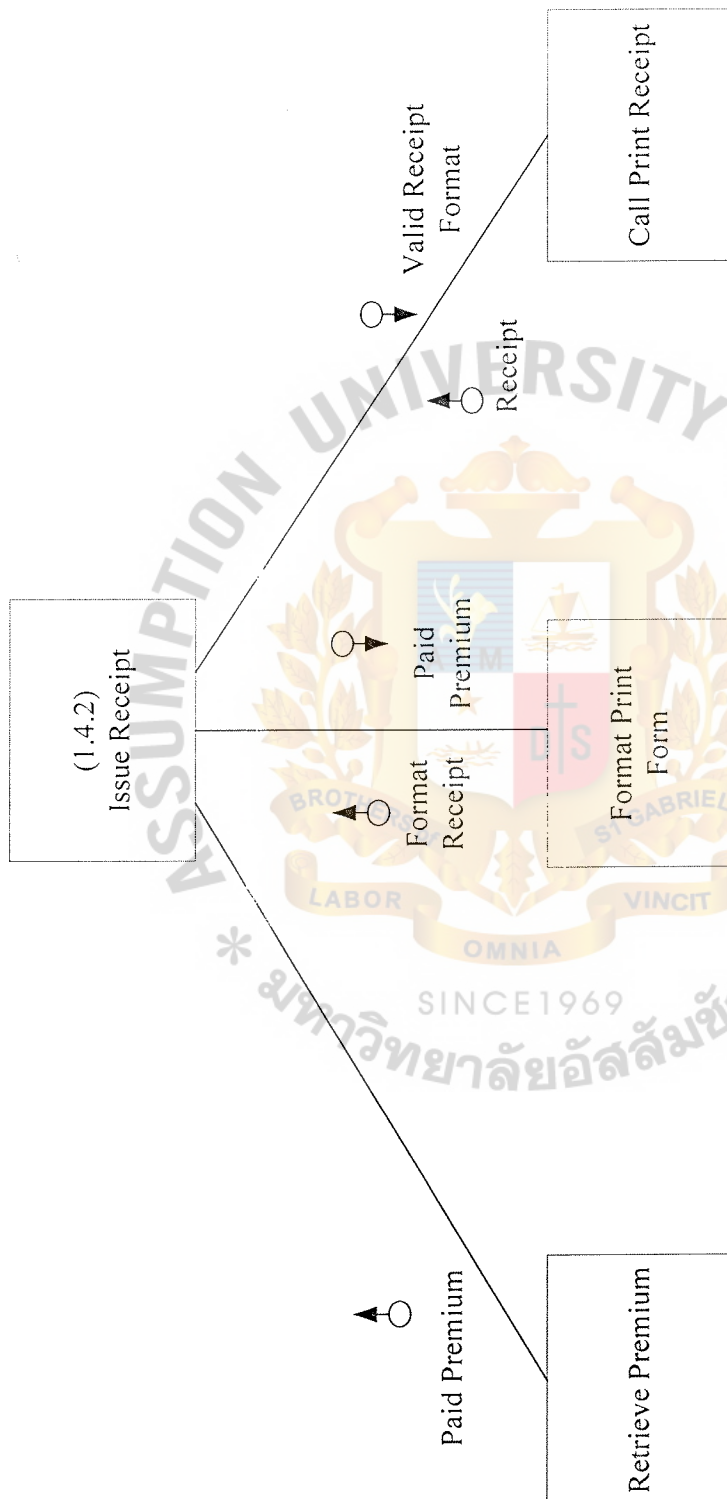


Figure F.16. Structure Chart of Process 1.4.2.

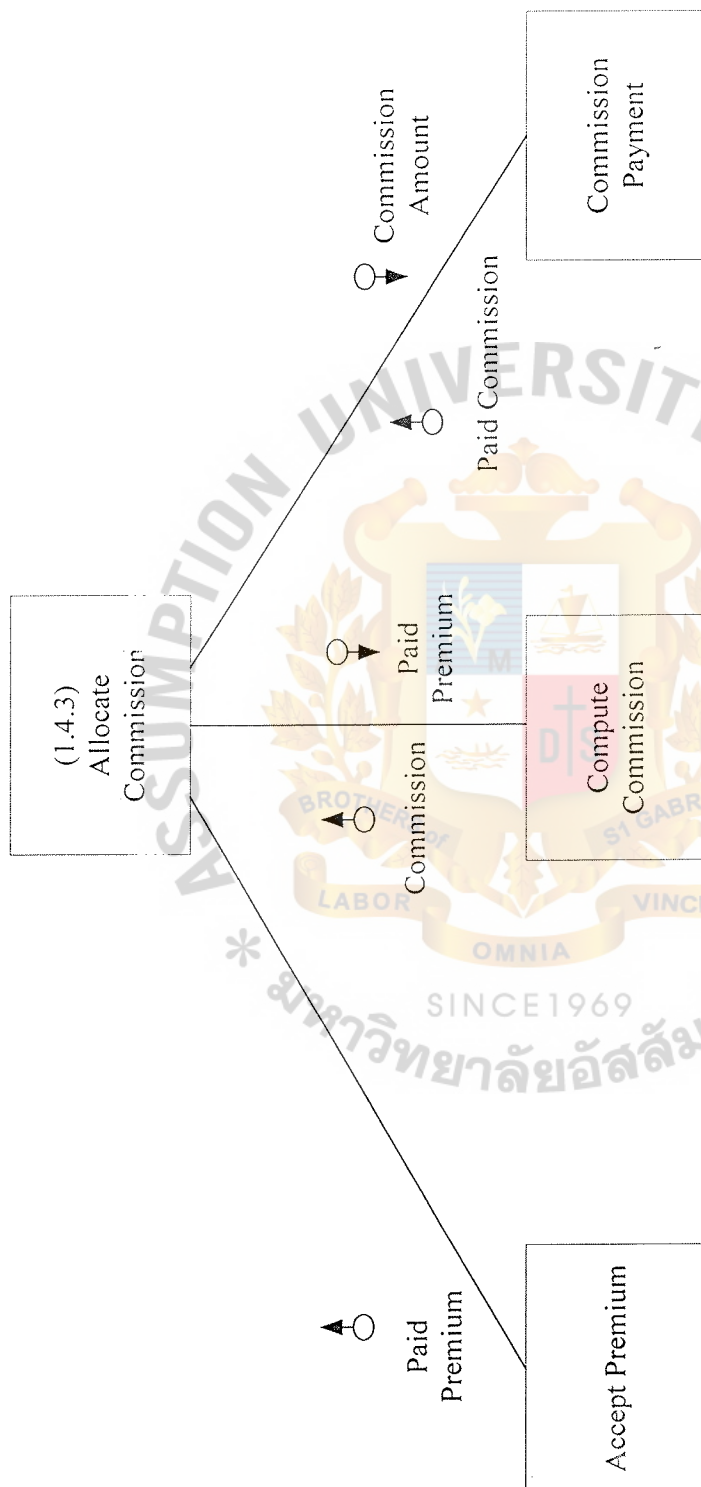


Figure F.17. Structure Chart of Process 1.4.3.

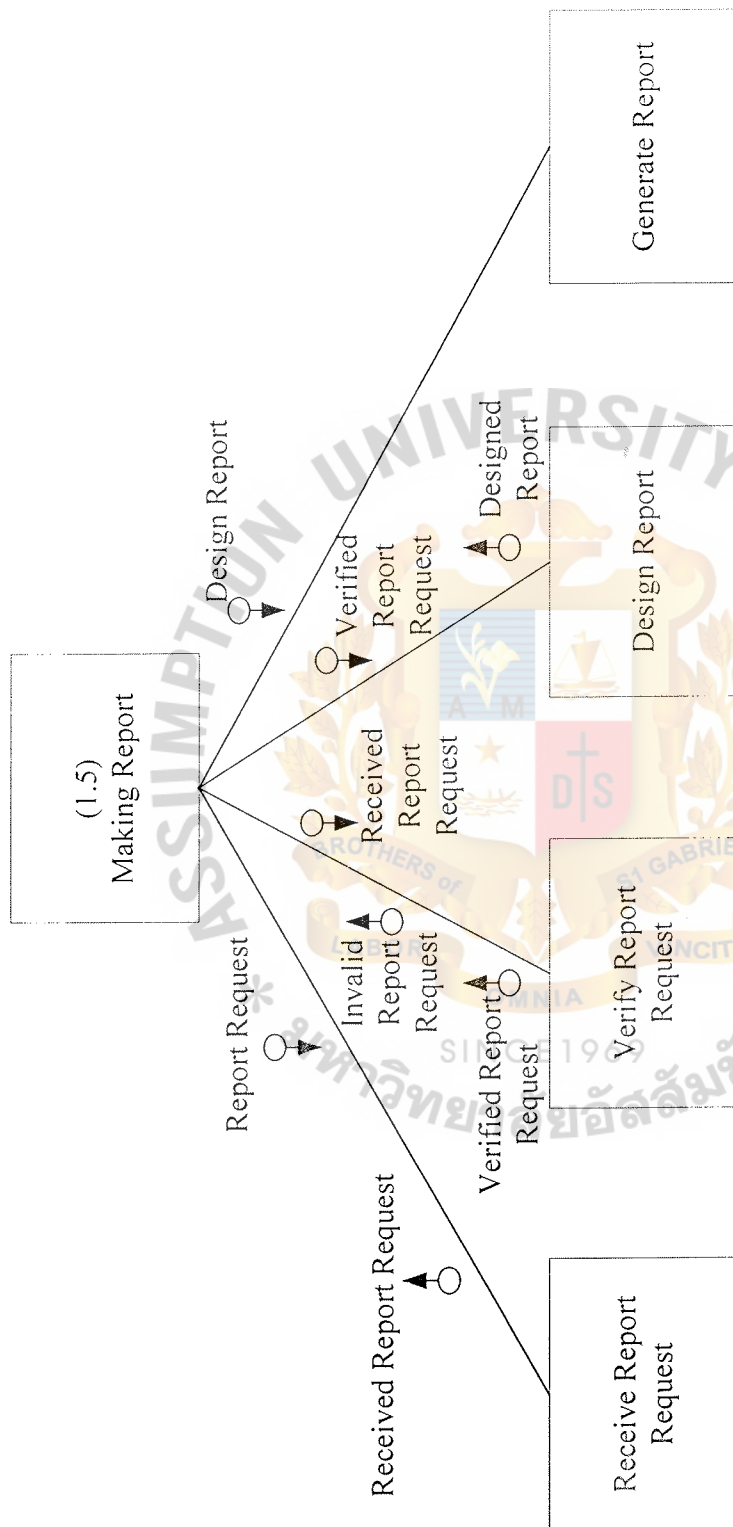


Figure F.18. Structure Chart of Process 1.5.



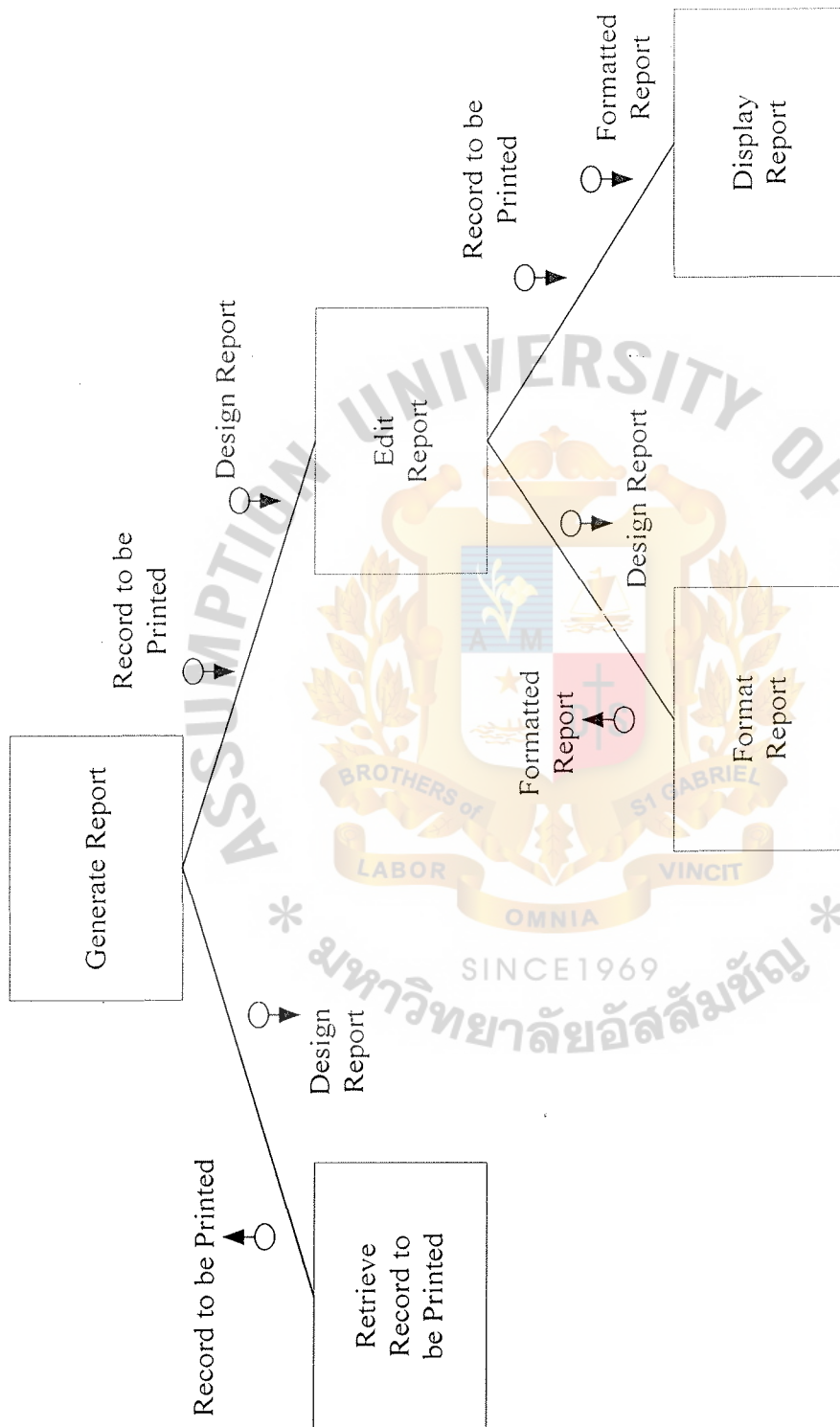


Figure F.19. Structure Chart of Process 1.5.4.

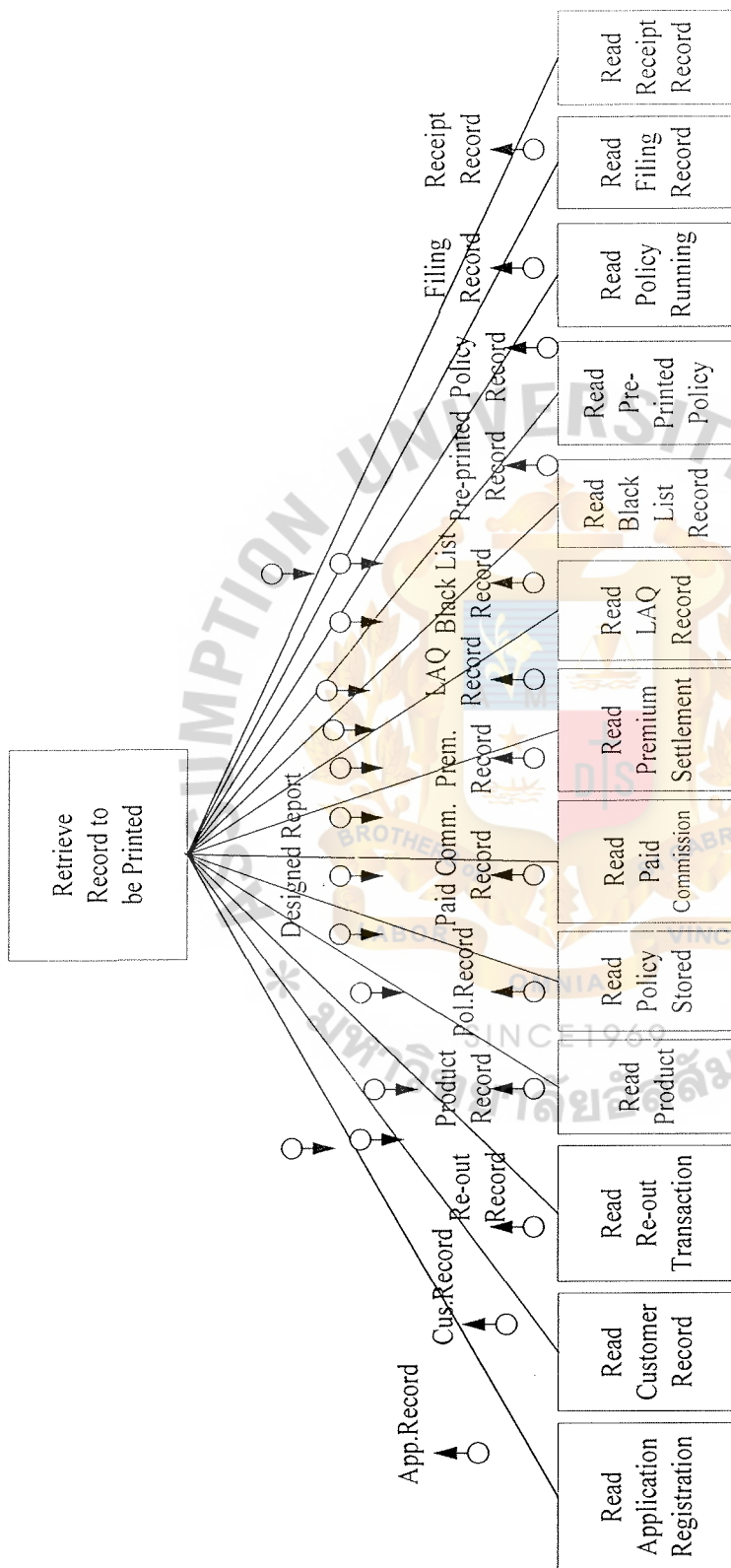


Figure F.20. Structure Chart of Process 1.5.4.



## APPENDIX G

### ENTITY RELATIONSHIP DIAGRAM

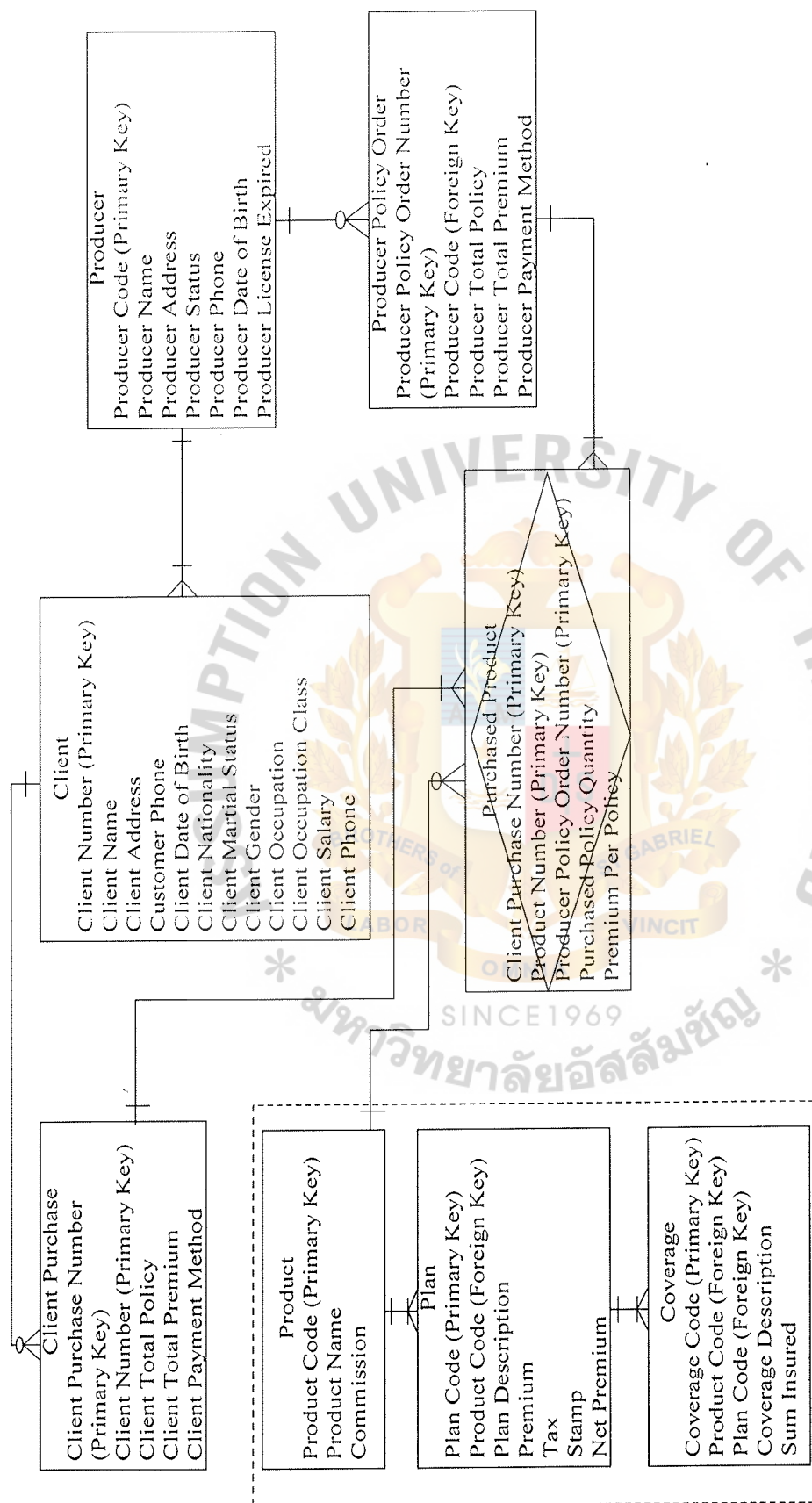


Figure G.1. Entity-Relationship Diagram.

## BIBLIOGRAPHY

1. Barker, Scott F. and Diana Barker. Using Microsoft Access 97, 3<sup>rd</sup> Edition. NJ: Que Corporation, 1997.
2. Date, C. J. An Introduction to Database System, 6<sup>th</sup> Edition. Singapore: Addison Wesley Publishing Company, 1995.
3. Kendall, Kenneth E. and Julie E. Kendall. System Analysis and Design, 2<sup>nd</sup> Edition. NY: Prentice Hall, Inc., 1992.
4. Laudon, Kenneth C. and Jane P. Laudon. Management Information Systems, 5<sup>th</sup> Edition. Singapore: Prentice Hall, Inc., 1996.
5. Modell, Martin E. A Professional's Guide to Systems Analysis, 3<sup>rd</sup> Edition. NJ: McGraw-Hill Book Company, 1988.
6. Page-Jones, Meilir. The Practical Guide to Structured Systems Design, 2<sup>nd</sup> Edition. Taipei: Prentice-Hall International Editions, 1988.
7. Pfleeger, Charles P. Security in Computing, 2<sup>nd</sup> Edition. Prentice-Hall International Editions, 1997.
8. Silver, Gerald A. and Myrna L. Silver. Systems Analysis and Design, 2<sup>nd</sup> Edition. NY: Addison-Wesley Publishing Company, 1989.
9. Whitten, Jeffrey L. and Lonnie D. Bentley. Systems Analysis and Design Methods, 4<sup>th</sup> Edition. NY: McGraw-Hill Companies, Inc., 1998.
10. Yourdon, Edward. Modern Structure Analysis, 2<sup>nd</sup> Edition. Taipei: Prentice-Hall International Editions, 1989.

**St. Gabriel's Library**