SUDAN UNIVERSITY OF SCIENCE & TECHNOLOGY
COLLEGE OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY
SOFTWARE ENGINEERING DEPARTMENT

CRM SERVICE CENTER

(GIAD MOTOR CASE STUDY)

October 2015

THES IS SUMITTED AS A PARTIAL REQUIREMENT OF B.SC. (HONOR)

DEGREE IN COMPUTRE SCIENCE

بسم الله الرحمن الرحيم

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SIGNED: ….....

DATE: 15/10/2015

بِسْمِ ٱللَّهِ ٱلرَّحْمَٰنِ ٱلرَّحِيمِ

قال تعالى :

﴿وَيَسْأَلُونَكَ عَنِ الرُّوحِ قُلِ الرُّوحُ مِنْ أَمْرِ رَبِّي وَمَا أُوتِيتُم مِّن الْعِلْمِ إِلاَّ قَلِيلاً﴾.

صدق الله العظيم سورة الإسراء الآية(85).

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DEDICATION

To our families and our friends, for their endless love, abundant support and their understanding through the duration of our studies.

To our teachers, for their devotion to education.

To those who are interested in software engineering and to students who want to be software engineers.

ACKNOWLEDGMENT

Firstly our gratitude and praise to Allah for strength that keeps us standing and for the hope that keeps us believing that this affiliation would be possible and more interesting.

Words are failed to express our grateful and thanks to our supervisor MR. SHARIF HAGO ALMUGADAM YUSUF for the valuable guidance and advice. He inspired us greatly to work in this project.

Special thanks both helped us in this project.

Finally, an honorable mention goes to our families and friends for their understandings and supports us in completing this project. Without helps of the particular that mentioned above, we would face many difficulties while doing this.

Abstract

objective of this study is to provide GIAD company services to which it can maintain its customers and enable them to make decisions quickly and collecting of all systems which the company operates in a single system and to integrate this system with call center for support customer management services and this is done through the use of OpenERP system in the development of this company and to integrate it with asterisk make BI reports for decision-making.

To study the problem and the proposed solution was to apply the following steps: the study of the current system of the company, identify shortcomings in the system, use OpenERP in developing the new system, integrate OpenERP with asterisk and thus the communication process from within the system and when you receive a call from All customer data show by popup if the customer registered on GIAD company, except that a new form appear to add this customer to the list of their customers, receive complaints and inquiries from customers through this system and convert problems to the competent authorities.

The results of this study were quick response to customers' demands and save time by showing customer information automatically to the agent screen and provide after sales services of the GIAD company and help decision makers in the creation of new business cases, for example, Sell Forecasting which provide reports that show market information whether information on over product required by one or more product problems or other information to assist decision makers in determining any kind will deal with it, or Bench Marking provide reports that show the most active customers are placed in the consideration to be targeted in the new plans.

المستخلص

الهدف من هذة الدراسة هو تقديم خدمات لشركة جياد بحيث تستطيع من خلالها المحافظة على عملاءها وتمكينها من اتخاذ القرارات بصورة سريعه وتجميع جميع الانظمة التي تعمل بها الشركة في نظام واحد وربط هذا النظام مع مركز الاتصال لخدمة قسم خدمة ادارة العملاء ويتم ذلك عن طريق استخدام OpenERP في تطوير نظام هذه الشركة وربطه مع Asterisk وعمل تقاريرBI اللازمة لاتخاذ القرارات.

لدراسة المشكلة وتقديم الحل المقترح تم تطبيق الخطوات التاليه:دراسة النظام الحالي للشركة ,تحديد اوجه القصور في هذا النظام ,استخدامOpenERP في تطوير النظام الجديد, ربط OpenERP بي مع Asterisk وبذلك تكون عملية الاتصال من داخل النظام وعند استقبال المكالمة من العميل تظهر جميع بياناته عن طريق Popup اذا كان هو عميل مسجل عند شركة جياد في ماعدا ذلك تظهر فورم جديدة لاضافة هذا العميل الي قائمة عملاءهم , استقبال شكاوي واستفسارات العملاء من خلال هذا النظام وتحويل المشاكل للجهات المختصة.

نتائج هذة الدراسة كانت استجابة سريعه لطلبات العملاء وتوفير الوقت باظهار معلومات العميل بصورة تلقائية على شاشة الوكيل وتوفير خدمات مابعد البيع لشركة جياد ويساعد متخذي القرارات في انشاء حالات عمل جديدة مثلا Sell Forcasting وهي توفير التقارير التي تظهر معلومات عن سوق العمل سواء كانت معلومات عن اكثر منتج مطلوب او اكثر منتج به مشاكل او غيرها من المعلومات لتساعد متخذي القرار في تحديد اي نوع ستتعامل معه او Benchmarking وهي بعد توفير التقارير التي تظهر اكثر العملاء نشاطا يتم وضعهم في الاعتبار لاستهدافهم في الخطط الجديدة.

LIST OF TERMS

#	Term	Descriptions
1	HTML	Hyper Text Markup Language
2	ERP	Enterprise resource planning
3	XML	Extensible Markup Language
4	UML	Unified Modeling Language
5	CRM	Customer Relationship Management
6	PBX	private branch exchange

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CHAPTER 1

INTRODUCTION

1.2 PROBLEM STATEMENT.

1.3 RESEARCH QUESTIONS.

1.4 OBJECTIVES.

1.5 SCOPE.

1.6 THESIS LAYOUT.

1.1 Introduction:

Professionally implemented CRM applications offer many benefits for sales, marketing, service and other teams. Customer Relationship Management (CRM) is a set of technology-enables business processes to create more consistent and profitable interactions with customers. Most companies engage in some form of customer relationship management. When a company builds a customer list, assigns opportunities to sales representatives, or handles customer support cases, they are undertaking CRM-related activities.

CRM applications standardize, automate, and share these activities across organizations to improve how companies interact with their customers.

The basic features of OpenERP CRM leads management where can manage all the leads by various users of the organization.

We will discuss about OpenERP CRM module which can help the manager to manage his client interactions, sales prospects, lead management in an efficient manner.

Enterprise Resource Planning (OpenERP) is open source and full featured business App suite with more than 700 modules .It has a setup usability team whose role is continuously simplify the software, its installation and its configuration.

OpenERP is a solution to all business problems. It’s management software used in big or small companies and independent companies.

1.2 Problem Statement:

The Existing problems are as follows:

- How to integrate CRM with call center via asterisk software.
- How capturing the customer information details from the CRM system when the system calling.
- How to achieve long term business between the enterprise and customer using the CRM system to ensuring customer satisfaction.
- How to integrate the legacy system in one software package.

1.3 Research Questions:

- How to integrate CRM with call center via asterisk software?
- How capturing the customer information details from the CRM system when the system calling?
- How to achieve long term business between the enterprise and customer using the CRM system to ensuring customer satisfaction?
- How to integrate the legacy system in one software package?

1.4 Objectives:

The objectives of this thesis are as follows:

- To integrate CRM with call center via asterisk software.
- To integrate all software legacy system in to one software package.
- To generate analytical report which help the organization management to make a decisions.
- To build long term business between the enterprise and its customers.

- To capturing the customer information details from the CRM system when the call.

1.5 Scope:

For the companies which use the call center this project help them to integrate call center with CRM (OPEN ERP) system to obtain its business operations.

1.6 Thesis Layout:

Chapter two represents a general background about OpenERP, CRM, call center and asterisk. Chapter three contains propose solution, techniques, and UML analysis. Chapter four contains the implementation. Chapter five contains the result and discussion. Chapter six is the conclusion and recommendations.

CHAPTER 2

LITERATURE VIEW AND PREVIOUS STUDIES

2.1 INTRODUCTION.

2.2 OPENERP.

2.3 CALL CENTER.

2.4 PREVIOUS STUDIES.

2.1 Introduction:

CRM stands for Customer Relationship Management. Mainly, the CRM Software allows businesses to manage business relationships, the data and the information associated with them. Successful CRM software solution are built around the people and relationships as in any business, you need to establish strong relationships with your customers.

You as a business owner connect with the people who need your products or services. [1]

This chapter is divided into two sections, the first section gives general description of CRM System and its operation, the second section describe the asterisk call center.

2.2 OPENERP:

Odoo is Comprehensive, Lucrative Business Suite. Odoo is an open source alternative to SAP, Oracle, Microsoft & other enterprise resource planning software.

It's a solution to all business problems. It allows you to start with single application or module to fit in your needs and install other application when you need them [2].

One application for every needed:

- Manage Your Sales & Purchase
- Attract Leads, Manage Customers, Phone Calls.
- Manage Your Account Books.
- Manages Employees, Recruitment, Appraisals, and Payroll etc.
- Manage Manufacturing Orders, Delivery Orders, And Stock Levels.

- Collaborative and real time project management helps your team get work done.

2.2.1 CRM OVERVIEW:

Customer relationship management (CRM) is a term that refers to practices, strategies and technologies that companies use to manage and analyze customer interactions and data throughout the customer lifecycle, with the goal of improving business relationships with customers, assisting in customer retention and driving sales growth.

CRM systems are designed to compile information on customers across different channels or points of contact between the customer and the company which could include the company's website, telephone, live chat, direct mail, marketing materials and social media.

CRM systems can also give customer-facing staff detailed information on customers' personal information, purchase history, buying preferences and concerns [3].

2.2.2 CRM is Used Today:

CRM solutions provide you with the customer business data to help you provide services or products that your customers want, provide better customer service, cross-sell and up-sell more effectively, close deals, and retain current customers and better understanding who your customers are [4].

2.2.3 CRM USABILITY:

CRM software has typically been considered difficult to use. As an enterprise application, stability and security have been the primary focal points of CRM solutions.

Usability, according to this Enterprise Apps Today article, was not a key part of CRM which often result in failed software projects, largely attributed to undo complexity. With increased adoption of CRM applications, however, today's CRM software vendors make usability a central part of their products.

To improve usability, many vendors today focus on usability issues to make CRM workflow as simple and intuitive as possible, to offer navigation that can be performed in three clicks or less and to ensure CRM software is designed to suit the needs of sales teams [4].

2.2.4 THE BENEFITS OF CRM:

Here are 10 examples to highlight how a professionally implemented CRM system helps organizations prosper [5]:

- Management decision making is nimble and well informed supported by real-time reporting across all business teams.
- Staff manages their time more effectively. CRM prompts users to follow up on activities and sends automated alerts when important actions occur.
- Marketing activity brings higher quality leads through continually improving contact segmentation and targeted campaigns.
- Pipeline reports are trusted and used as the basis for reliable sales and production forecasts to increase efficiency and predictably manage cash flow.
- The value of each customer relationship is understood so service resources can be prioritized to protect the most profitable accounts.

- Customer churn is minimal as CRM users have access to all the relationship detail they need through multiple channels to engage with clients and deliver great service.
- Communication is strength. Shared diaries, team calendars and service schedules give everyone clear visibility of individual activities.
- CRM connects to accounting and other back-office applications to join up processes and remove double handling of tasks.
- Users can instantly check customer order histories to assess buying patterns and identify new sales opportunities.
- Email marketing actions are reported in CRM so hot prospects can be immediately identified and routed to sales teams for further action.

2.2.5 TECHNOLOGY AND CRM- THE CRM ECOSYSTEM:

Technological developments continue to affect the organization and the marketing of its products and services. These technological applications include the computer (specifically the World Wide Web) and mobile telephone technology.

CRM needs to be seen as more than just technology with the technology being regarded as the enabler of the CRM strategy.

In using technology, a number of technology applications can be identified that are used in the development of CRM strategy. Three main components of CRM systems can be identified:

1- Operational CRM includes customer-facing applications such as sales force automation, enterprise marketing automation and customer service and support, Customer call centers are also a component of operational CRM, and have been identified as the dominant aspect in CRM systems.

2- Analytical CRM analyses the data that has been created through operational CRM to build a picture of the customer. Analytical CRM includes the capturing, storage, extraction, processing, interpretation and reporting of customer data stored in data warehouses, This enables the organization to examine customer behavioral patterns in order to develop marketing and promotional strategies.

3- Collaborative CRM uses new and traditional communication technologies to enable customers to interact with the organization. Collaborative CRM allows a better level of response to customer needs by involving all the members of the supply chain such as suppliers or other partners. It also involves channel strategies or any function that provides a point of interaction (or touch point) between the customer and the channel [6].

2.2.6 TOOLS IN CRM:

A main component of any CRM strategy entails the facilitation of two-way interaction between individual customers and the organization (external communications) about every aspect of the relationship, enabling the organization to adjust its strategy, including product design, customer service and channel preferences.

Some of the interactive technologies that provide interactive customer communications and care include:

- **Intelligent email**: Email remains an important method of customer contact for more than 70% of online businesses. The faster and more effective responses to customer queries that are enabled via intelligent email significantly reduce customer time costs and enable the more efficient resolution of their problems. This can, in turn, increase customer satisfaction and subsequent loyalty and retention rates.
- **Collaborative chat:** If customers have questions about a product or shipping details, a live collaborative chat function enables them to click on a live

customer service icon that brings up a chat box. If customers have shopped on that specific website before, and registered with their user name when logging on, they may be addressed by name by the Customer Service Representative (CSR). Should the CSR have access to all the customer's history with the organization, they will be able to interact with the customer in a more meaningful way.

- **Self-help:** Such self-help features increase customer satisfaction through the quick and efficient resolution of queries, and they collect important customer information that can be fed into, and be aggregated in the website-linked CRM database to serve customer needs better, uncover preferences trends, and improve relationships and loyalty.
- Telephony**:** Computer telephony integration (CTI) can be incorporated as web pages can now be equipped with call-back buttons that can, when clicked on, open a window in which a customer can provide a phone number where he/she can be reached for questions or other service provisions. The request for a call may also be directed to a specific CSR who is familiar with the goods or services advertised on a particular web page, thereby increasing the probability of a sale and the acquisition of a new customer.

- **VoIP**: VoIP is a technology where by an organization's Local Area Network (LAN) or Wide Area Network (WAN) can be used to transfer both data and voice. This essentially means that an organization no longer needs to use physical phone lines in order to communicate to the outside world. This enables the organization (and their representatives) to speak directly to customers through speakers or headphones [6].

2.3 CALL CENTER:

A call center is a physical place where customer and other telephone calls are handled by an organization, usually with some amount of computer automation.

Typically, a call center has the ability to handle a considerable volume of calls at the same time, to screen calls and forward those to someone qualified to handle them, and to log calls. Call centers are used by mail-order catalog organizations, telemarketing companies, computer product help desks, and any large organization that uses the telephone to sell or service products and services.

Two related terms are virtual call center and contact center.

A virtual call center is a call center in which the organization's representatives are geographically dispersed, rather than being situated at work stations in a building operated by the organization. Virtual call center employees may be situated in groups in a number of smaller centers, but most often they work from their own homes.

A contact center (also referred to as a customer interaction center or e-contact center) is a central point in an enterprise from which all customer contacts are managed. The contact center typically includes one or more online call centers but may include other types of customer contact as well, including E-mail newsletters, postal mail catalogs, Web site inquiries and chats, and the collection of information from customers during in-store purchasing[7].

2.3.1 ASTERISK IN THE CALL CENTER:

Asterisk is a powerful tool for building call center system and solutions. With support for call queues, interactive voice response IVRs, outbound dialing, recording, live monitoring and reporting Asterisk includes virtually everything you need to create a working call center. Small and informal call centers can be built using a single Asterisk server [8].

2.3.2 MANAGING ASTERISKS THE MANAGER'S INTERFACE:

Asterisk runs in the background of a Linux or UNIX systems. Most functionality today is based on Linux. As a manager, you can connect to a running Asterisk PBX with a command line interface, or one of several graphical interfaces.

The CLI gives the manager the power to:

- Follow what happens in the PBX on line
- Debug various protocols as clients connect and place calls
- See active users and active calls
- Change data in the asterisk database
- Reload configurations into the running PBX [9].

2.4 PREVIOUS STUDIES:

2.4.1 INTEGRATING CRM AND CUSTOM APPLICATIONS INTO YOUR CALL CENTER:

In the study of the Integrating CRM and Custom Applications in to Call Center this page explored the need to achieve the flexibility to respond to changing client demands while keeping a sharp eye on the bottom line. And will define the essential requirements needed to efficiently support integrations to CRM and custom applications. And also introduce Q-Suite, a next-generation call center software for Asterisk, which is capable of providing tight integrations to your CRM and custom application, thereby optimizing performance, delivering agility, and positioning you for success in a competitive market.

Result:

The paradigm shift in technology has opened an unprecedented opportunity to enhance your call center platform, lower your cost and provide much more functionality [10].

2.4.2 CALLS CENTER FUNCTIONALITIES THROUGH CRM (OPTIMA) DECEMBER 2012: IN ANOTHER STUDY OF THE CALL CENTER FUNCTIONALITIES THROUGH CRM:

on optima the employees use Microsoft Dynamics CRM to make appointments with prospects, to carry out marketing actions and to follow up the contacts with prospects and customers .Thus, our call center colleagues can reach up to 25 percent more prospects than they used to, and they can make up to 25 percent more appointments. And CRM does not only allow call center and commercial agents to be more productive, the colleagues from the marketing and IT department benefit from CRM as well [11].

2.4.3 THE INTELLIGENT CALL CENTER: FUELED BY FEEDBACK AND CRM (WP26) MARCH 2014(CRM MAGAZINE):

Another study of The Intelligent Call Center: Fueled by Feedback and CRM Findings of this study indicate as Intelligent Call Centers work to leverage new communication platforms and maximize the power of CRM, they should be sure to directly connect feedback data to CRM. This means creating support case forms, call

scripts, and customer care surveys that integrate directly with CRM. The solution(s) used to collect feedback should also allow for many of these interactions to be automated, so that agents can focus on improving customer experience where it matters – in one-to-one conversations. The Intelligent Call Center can directly improve customer experience by doing the following:

1- Collecting customer feedback across numerous communication channels such as self-service case creation, automated closed case surveys, and social media, among many others.
2- Centralizing customer data in CRM to provide context and visibility to agents, as well as to automate workflows that anticipate customer needs and increase agent productivity.
3- Acting and reporting on customer insights to address individual issues while driving process improvements from aggregated results.

This will also allow Intelligent Call Centers to identify and replicate agent best practices [12].

2.4.4 311 CALL CENTER BOOSTS OPERATIONAL EFFICIENCY, AVOIDS HIGHER COSTS WITH CRM (BRIAN MALONE, 311 CALL CENTER DIRECTORS, CITY OF BIRMINGHAM):

In another study entitled 311 Call Center reached to the City of Birmingham, Alabama, needed a new 311 call center solution to help route and track service requests from citizens. It was selected Microsoft Dynamics CRM because of its technical flexibility, cost-effectiveness, and ease of use.

❖ **Benefits:**

- Improved citizen service.
- Empowered employees.
- Cost-effective, solid technology [13].

CHAPTER 3

WORK'S ENVIROMENT AND

PROPOSED SYSTEM ANALYSIS

3.1 INTRODUCTION.

3.2 SYSTEM REQUIREMENT SPECIFICATIONS.

3.3 INTRODUCTION TO THE TECHNIQUE.

3.4 PROPOSE SOLUTION.

3.5 ANALYSIS DIAGRAMS.

3.1 INTRODUCTION:

This chapter describes specification of devices, operating system, programming language, and techniques used to build the system. Then describes the system analysis using UML technology.

3.2 SYSTEM REQUIREMENT SPECIFICATIONS:

Processor	:	Pentium 4.
RAM	:	512 MB.
Hard Disk	:	400 GB.
NIC	:	one NIC D-Links.
Mother board	:	INTEL.
Operating system	:	Windows7, Linux.
Modem	:	GSM/Modem.
SIM Cards	:	Three SIM
Asterisk	:	Version 1.8
Open ERP	:	Version 8
MYpbx	:	Version 21804

3.3 INTRODUCTION TO THE TECHNIQUE:

3.3.1 XML:

We use the xml because it simplifies data sharing, simplifies data transport, simplifies platform changes and simplifies data availability. We need it because HTML is specifically designed to describe documents for display in a Web browser and XML , on the other hand, isn't just suited to the Web – it can be used in a variety of different contexts, some of which may not have anything to do with humans interacting with content (for example, Web Services use XML to send requests and responses back and forth).The XML was designed to carry data with focus on what data is and the HTML was designed to display data - with focus on how data looks. XML also makes it easier to expand or upgrade to new operating systems, new applications, or new browsers, without losing data [14] [15].

3.3.2 PYTHON:

We use the python because:

Those arbitrary and annoying little matters of style such as curly-bracket positioning to open and closing blocks simply (and thankfully) go away, Python works with the very little code the way most common "use cases" require, reserving lengthy explicit coding for outliers and exceptions and the Python is highly approachable by complete beginners, and yet still powerful enough for pros to use as "shortcut-glue" in enterprise-class apps.

Python is a widely used general - purpose, level -high programming language. Its design philosophy emphasizes code readability .Python supports multiple

paradigms programming, including object-oriented, imperative and functional programming or procedural styles.

It features a dynamic type system and automatic memory management and has a large and comprehensive standard library.

Python interpreters are available for installation on many operating systems, allowing Python code execution on a wide variety of systems [16] [17].

3.3.3 HTML:

Hyper-text Mark-up Language is a globally accepted programming language for formatting web pages. We use it because Almost – if not all – browsers support HTML. Certainly more browsers support HTML than any other web programming language.

As a result, when you build a website using HTML, it would show up on most browsers around the world, as long as the programmer takes care to optimize the website for the most commonly used browsers.

Optimizing an HTML based website for browser compatibility is neither difficult nor complex.

Today, XML is increasingly being used for data storage. The similarity of syntax between HTML and XML means that it is easier and seamless working between the two platforms.

Whether it is FrontPage, Dreamweaver or any other programming tool, there are more web development tools that allow you to create HTML based websites, than any other web programming language.

Aesthetically, an HTML website can look just as appealing as a website using the more advanced technologies. It is easy to be swayed by the desire to be 'up with the

times'. However, getting yourself a well-made HTML website may be a wiser and more progressive decision for your business than getting a high-tech website [18].

3.3.4 ASTERISK:

We use the Asterisk because it is an open source software toolkit for building communications applications that converts an ordinary computer into a feature-rich voice communications server.

Asterisk makes it simple to create and deploy a wide range of telephony applications and services.

Build Voice, Video and Text Applications Easily With Asterisk, the World's Most Widely Adopted Open Source Communications Software Development Framework. Asterisk is an open source framework for developing state-of-the-art communications applications. Asterisk includes hundreds of pre-built components that handle the complex, low-level details of voice, video, and text communications [19] [20].

3.3.5 OPENERP:

We use Open ERP because it is very complete and extremely modular, with more than 350 available modules.

Open ERP has been established as the main free market-changing alternative for enterprise management systems. Multilingual approach in every aspect – user interface and information itself this allows people work simultaneously with the same installation and on the same information in their native language.

The OpenERP has many features include: Management accounting, financial accounting, sales and purchase management, automation of tasks, marketing campaigns, complete modularity, Multilingual user interfaces, multilingual information oriented design from the very beginning , multi-platform server and

clients (Linux, MS Windows, MAC), Multiple user interfaces (several application clients along with web interface adaptable to the enterprise and etc. [21].

3.3.6 POSTGRE IN OPENERP:

A PostgreSQL database server which contains all Open ERP databases. Databases contain all application data, and also most of the Open ERP system configuration elements. The database server and the Open ERP server can be installed on the same computer, or distributed onto separate computer servers [22].

3.3.7 QWEB REPORTS:

Qweb reports allow you to develop a set of report using an HTML based template language.

Qweb reports are view based reports that offer the same flexibility than standards Open ERP views, (inherit, groups, xpath, translation, etc.).

Reports are written in HTML/QWeb, like all regular views in Odoo.

You can use the usual QWeb control flow tools. The PDF rendering itself is performed by wkhtmltopdf.

If you want to create a report on a certain model, you will need to define this Report and the Report template it will use.

If you wish, you can also specify a specific Paper Format for this report. Finally, if you need access to more than your model, you can define a Custom Reports class that gives you access to more models and records in the template [23] [24].

3.4 PROPOSE SOLUTION:

Basic problem is the lack of sufficient data on the registered customer as soon as it is connected, and the loss of a lot of time when the agent take the data from the customer directly, causing a lack of customer satisfaction.

Additionally ,one of the problem is the lack of authority to the Director of for all the existing problems and the possibility of decision-making easily and work reports and solution, so we will link the CRMP asterisk even does not appear to the client when it is connected via asterisk only configure.

Each recorded data for the customer appear in our database of the Open May me and if you have not registered in the database and connects for the first time, will be required to the system of agent to enter new customer data and after the client display to his problem is agent link the problem with the old problems, if you find the converting it to the competent authority to dissolve his problem, and that outside detection system is that agent the book a ticket to the customer when the competent authority to dissolve his problem system allows also PI any reports that Director in the analysis of user problems and this keeps the company as much of costumers.

We will work of the first two units are CRM which represents GIAD company, and other one represents TIBIAN Company .In module of CRM , we will present all our customers, and we'll show Dash Board that has all cases of problems which enables the Director of ease of follow-up.

And it will display prices to agent, because most customers inquire about prices**.**

We will work in the unit using OpenERP as a framework to work and take advantage of the data in its base.

And then use device IP Box as A Central Switched System and his asterisk has powerful tool for the device that distributes calls.

Director can control the device through an interface who can follow up of incoming and outgoing calls.

In this project we will link the CRM with Asterisk and objective possibility of automatically recording of phone calls to get information about the user and record the text of its user information. Previous studies were based on the use of CRM for different purposes, for example, be used to follow the commercial activities and follow-up contact with the customer and some studies had been working on building tools to help on the customer's survival and building interfaces help to quickly access customer information and a study seeking to achieve a level of flexibility and determine the basic requirements needed to support the efficiency of the CRM to build customer applications.

3.5 ANALYSIS DIAGRAMS:

3.5.1 USE CASE DIAGRAM:

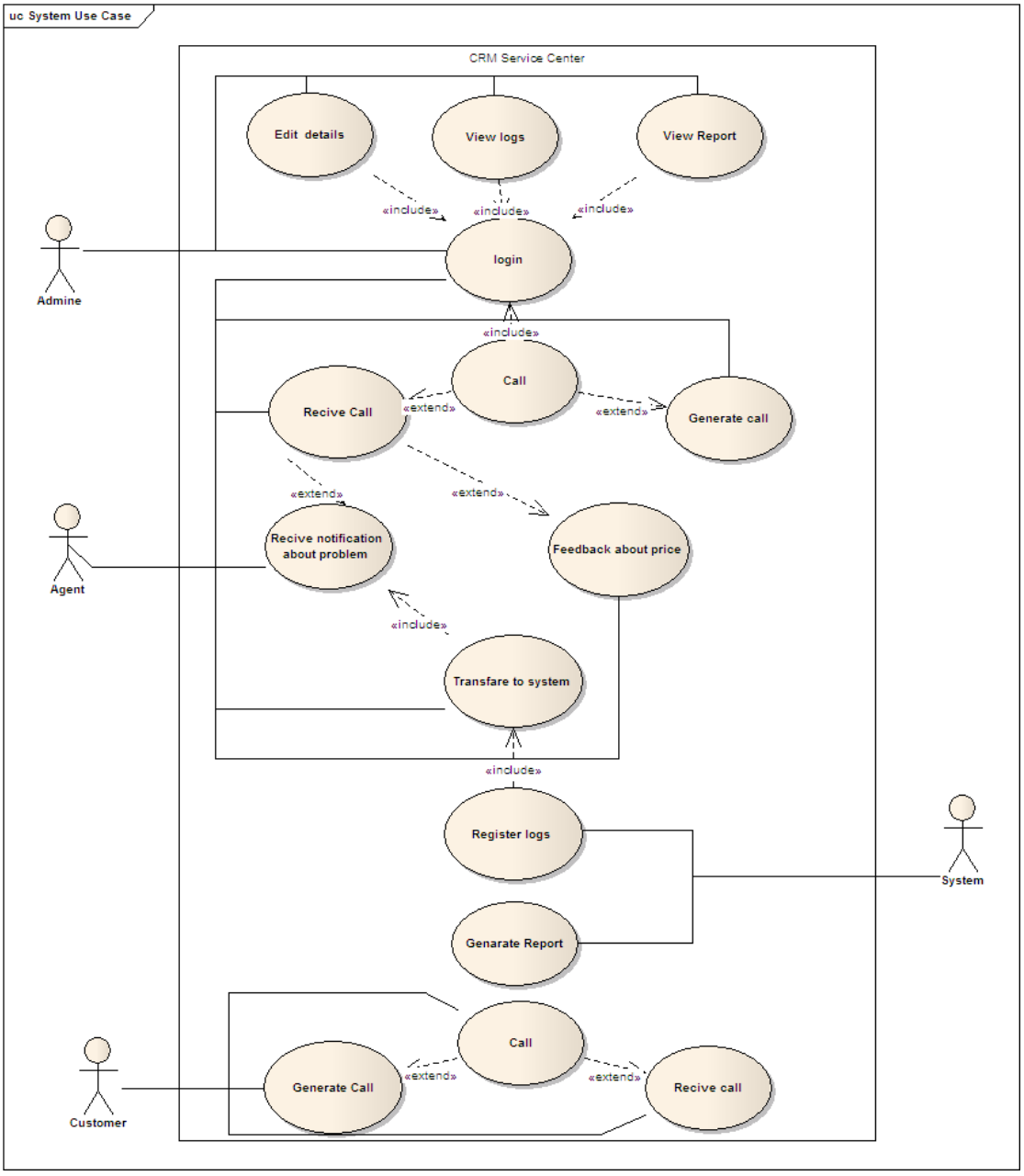

Figure (3.1) Use Case Diagram for the system.

3.5.2 SEQUENCE DIAGRAM:

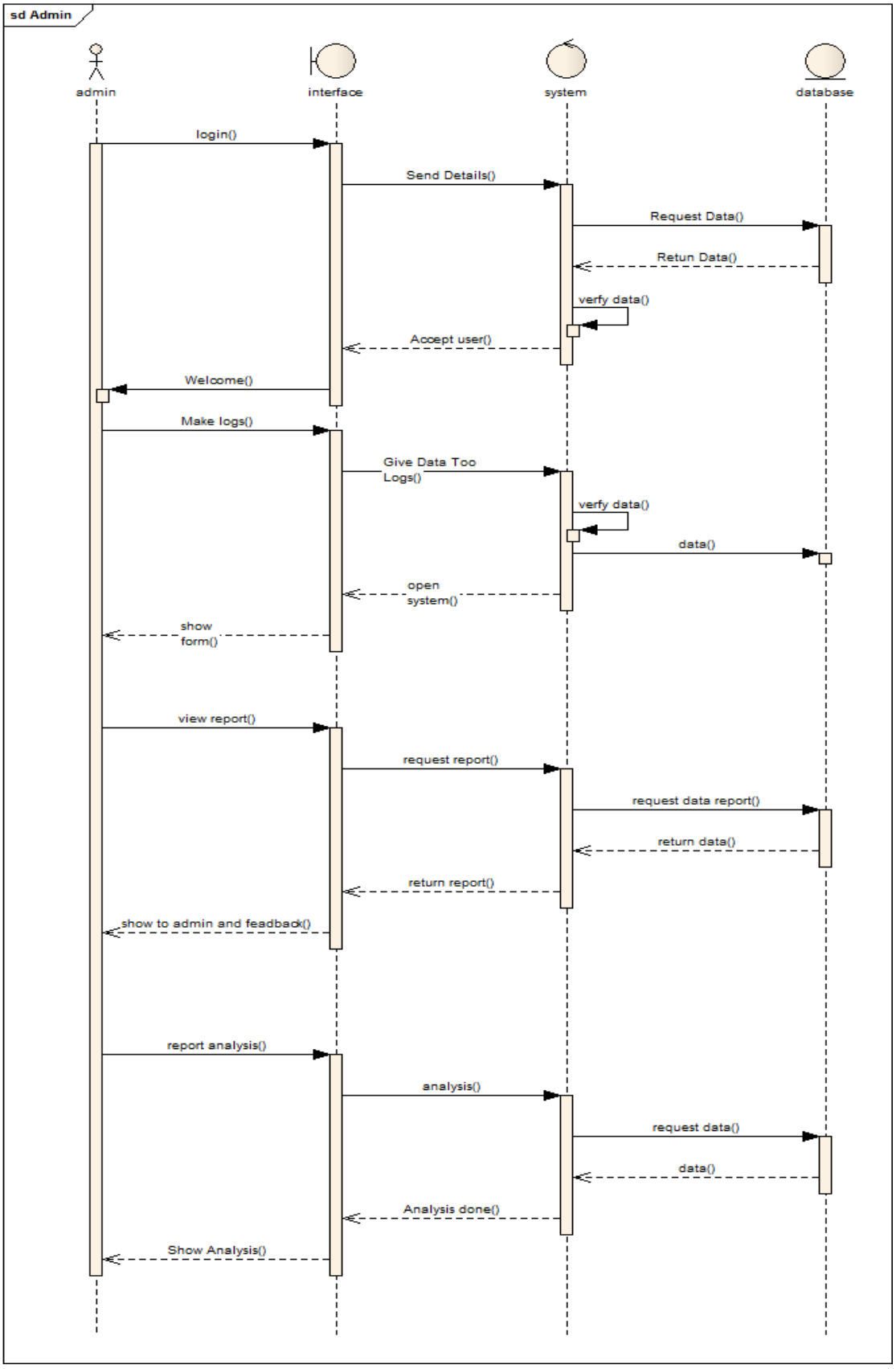

Figure (3.2) Sequence diagram for the admin

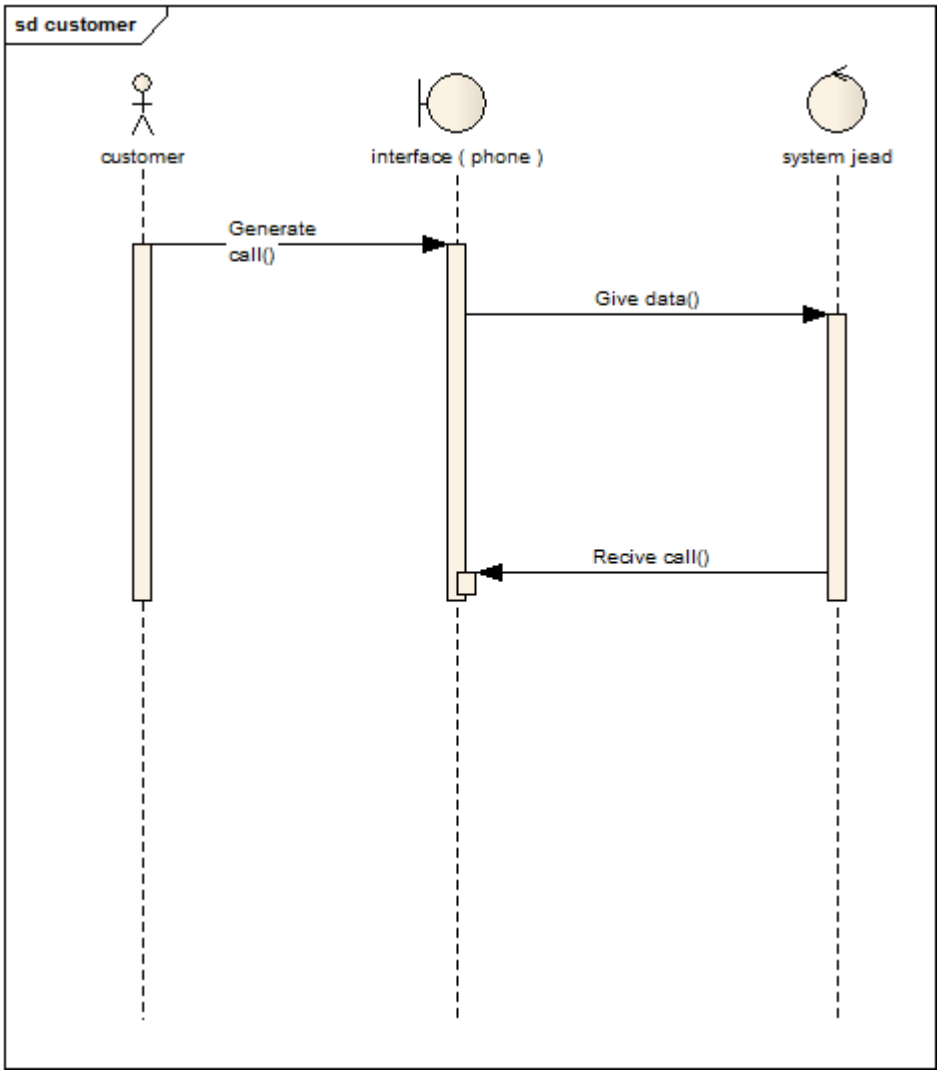

Figure (3.3) Sequence diagram for the customer

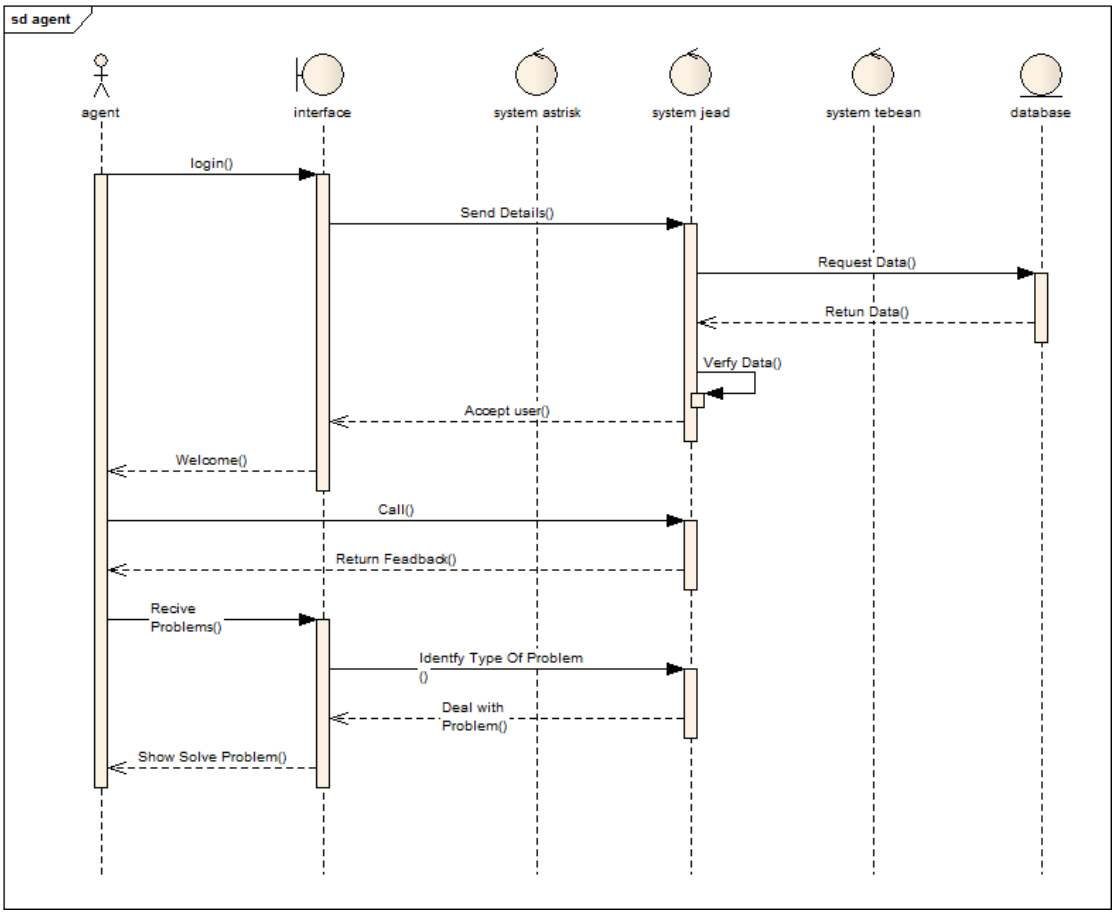

Figure (3.4) Sequence diagram for the agent

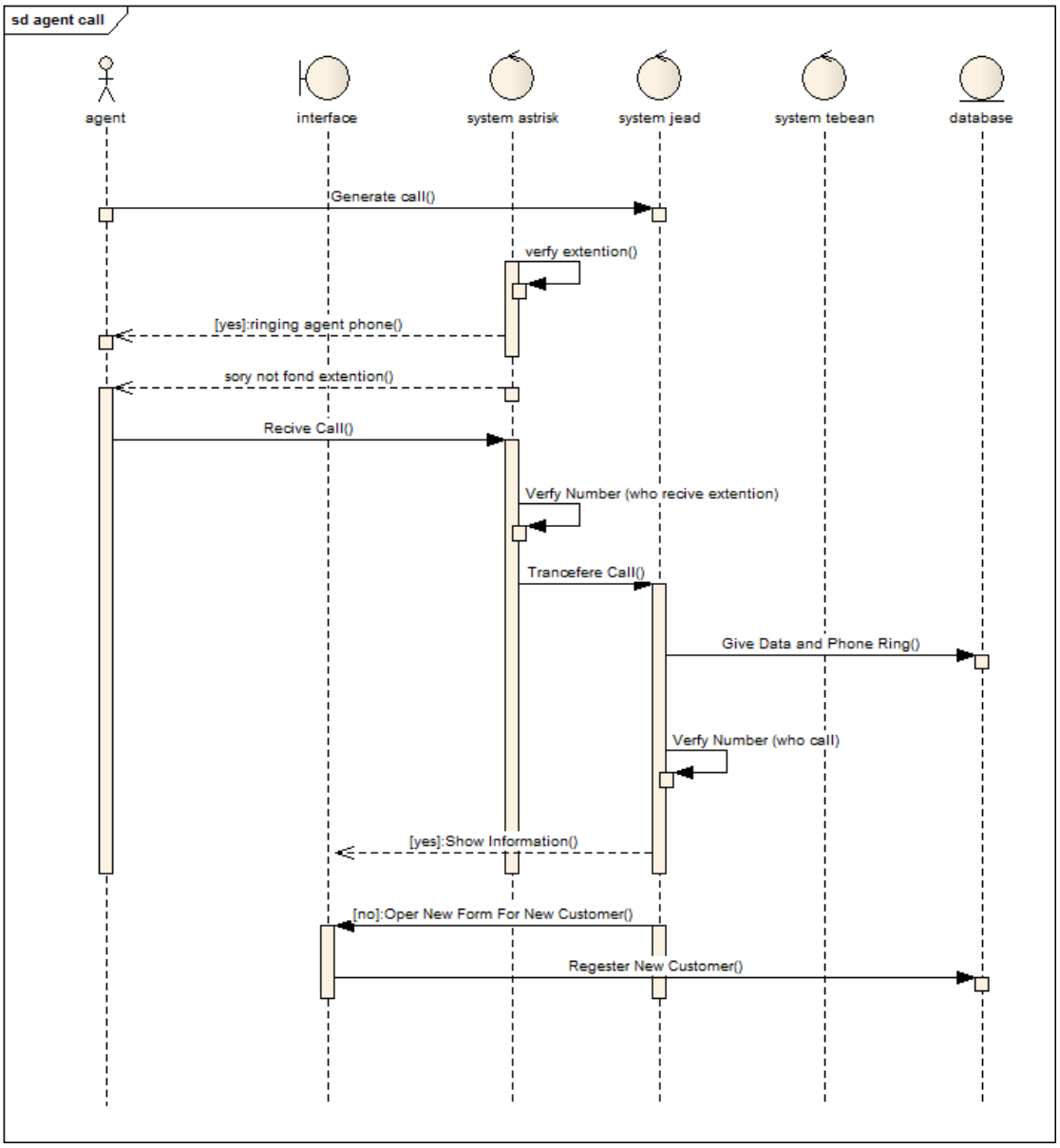

Figure (3.5) Sequence diagram for the agent Call

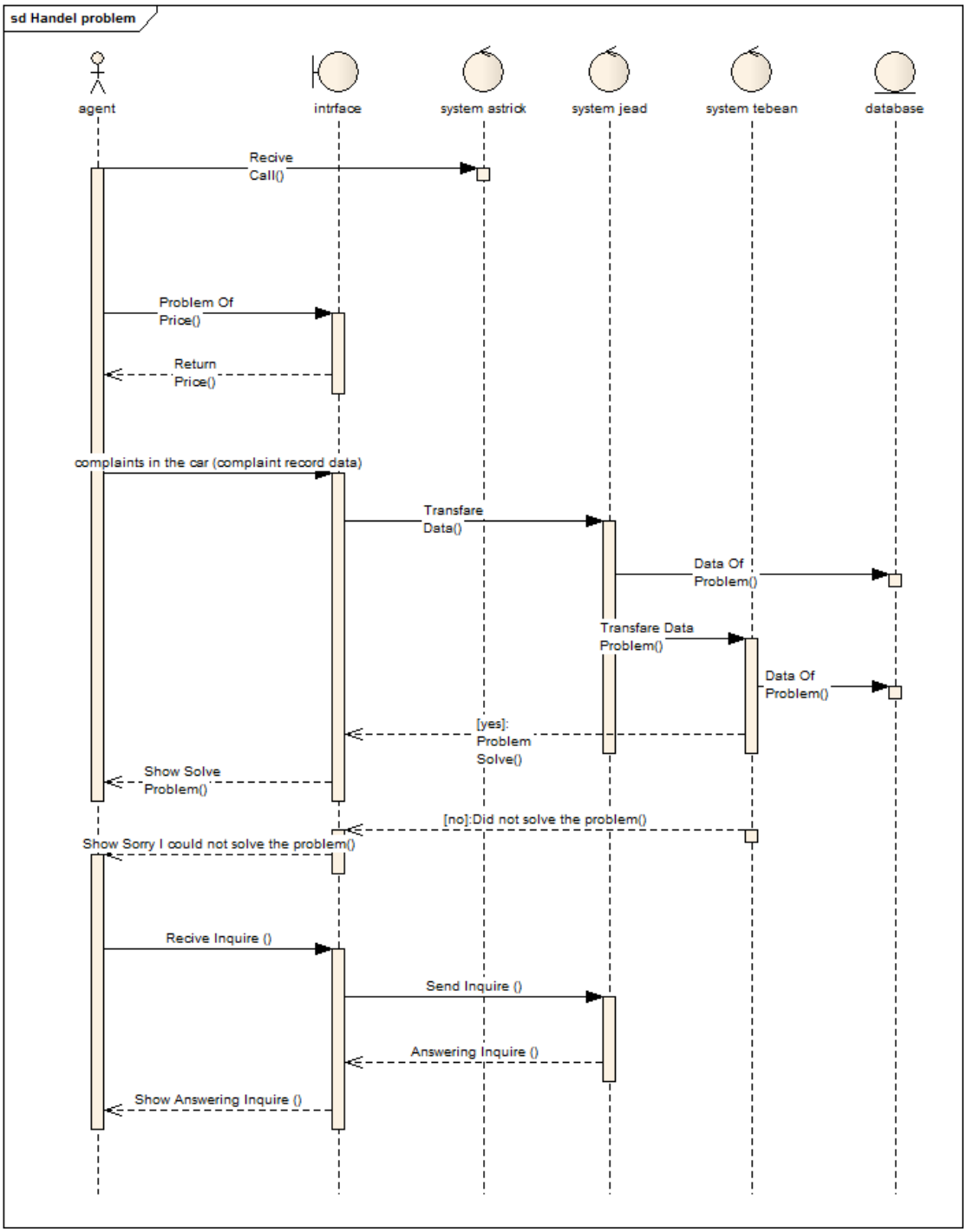

Figure (3.6) Sequence diagram for the handle problem

3.5.3 ACTIVITY DIAGRAM:

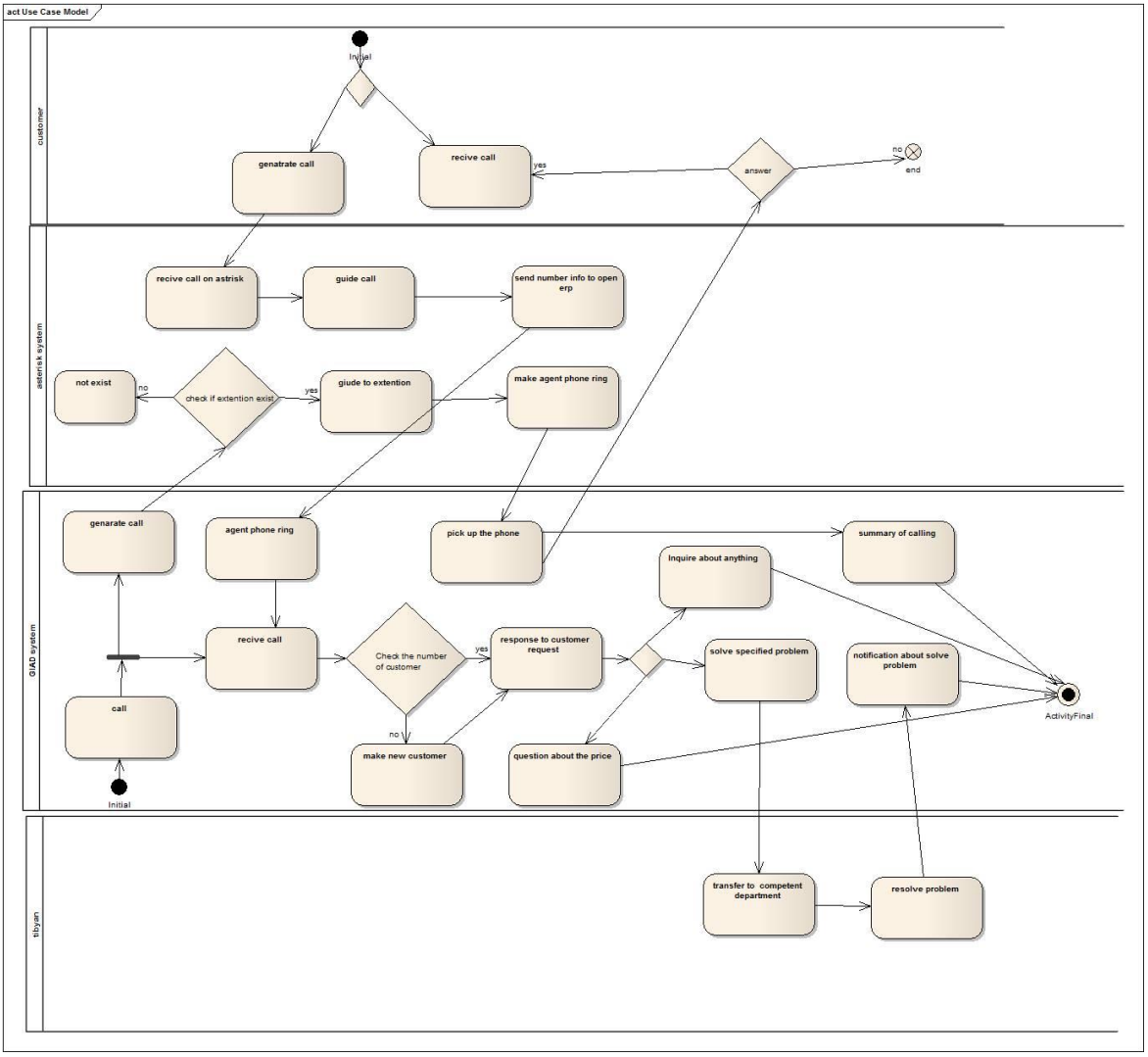

Figure (3.7) Activity diagram for the system

CHAPTER 4

IMPLEMENTATION

4.1 INTRODUCTION.

4.2 CONFIGURATION ON ASTERISK SOFTWARE.

4.3 CONFIGURATION CLICK2DEAL.

4.4 CUSTOMIZATION AND IMPLEMENTATION OPENERP.

4.1 Introduction:

This chapter describes the way that we are going to setup and configure the asterisk software and the way to handle and how to deal with the problem in order to respond faster to customer service issues.

It includes three sections: first section about how can setup and configure on software asterisk, second our work will be execute on real company with their requirement (GIAD AND TIPYAN CAMPANYES) so about the OpenERP customization and implementation and how connected will done and how to deal with the problem, the report on OpenERP and translation of module.

4.2 CONFIGURATIONS ON ASTERISK SOFTWARE:

We installed asterisk and we're working on a Linux system, and we entered it through any Internet browser or by terminal and installed it across apt get install asterisk command and asterisk has a number of files , three most important**:**

1- SIP

In order for our phones to communicate with each other, we need to configure an account for each phone in the channel and add a new extension and all information associated with it**.**

2- EXTENSION

Asterisk registers as a client to another SIP server and makes SIP sessions to receive and places calls to this server. Incoming calls are routed to an asterisk extension**.**

3- Ami

The Asterisk Manager Interface (AMI) allows a client program to connect to an Asterisk and trying to track the state of a telephony client inside Asterisk This interface is often used to integrate Asterisk with existing business processes and systems and this file content all configuration about aim like test and connection by adding username and password.

4.3 CONFIGURATION CLICK2DEAL:

we have entry to asterisk server that exists inside the OpenERP Is placed information of the API inside that through which way we can access for API admin for special asterisk by which we can determine a channel of communication and give admin extension on the way can access the system and then let's test the communication between the asterisk and OpenERP and then we work of the configuration of the phone, we can use the IP phone or the softphone and have the same way settings and we will make the configuration for two IP phones first IP phone be given the same extension that was given to the click2deal (Admin) and second IP phone given the different extension but necessary be registered all their information in the SIP.conf .

We have tested the connection by attempting to connect from the second IP phone to the first IP phone to admin and the IP phone will rings and will show the pop in the other OpenERP to show all the data on the caller and this our system has the advantage its contact any customer we have already registered and this is done by access to their data and press the call button and my IP phone will ring and after Lifting the handset then customer phone will Rings.

4.4 CUSTOMIZATION AND IMPLEMENTATION OPENERP:

4.4.1 PROCEDURCE OF CUSTOMIZATION:

CRM module content of many models any model describes specific information through GUI form.

4.4.1.1 SETUP CLICK2DEAL MODULE:

The Open ERP-Asterisk connector is made of several modules they are specific to Asterisk and not work without them: (asterisk_*click2dial, asterisk _click2dail_crm, base phone, base_ phone popup, event phone, web_action_request).*

This operation of install modules adds 3 functionalities:

1- It adds a *Dial* button in the partner form view so that users can directly dial a phone number through Asterisk.
2- It adds the ability to show the name of the calling party on the screen of your IP phone on incoming phone.
3- It adds a phone icon (*Open Caller*) in the top menu bar to get the corresponding to the calling party in one click.

This module installed on OpenERP, and requires two additional Python libraries: *phone numbers* and py-*Asterisk* to install.

For the click2dial feature, Open ERP will communicate with Asterisk through the Asterisk Manager Interface (AMI). So the first step is to configure AMI:

- create a new AMI account for Open ERP
- Configure AMI to accept requests from Open ERP for click2dial.

Then check that you can access the AMI from the Open ERP server and Log on as administrator on Open ERP.

4.4.1.1.1 CONFIGURE ASTERISK SERVER(S):

First, you must create one or several Asterisk servers. The click2deal module supports several Asterisk servers (for each OpenERP user, you will configure on which Asterisk server he is connected).

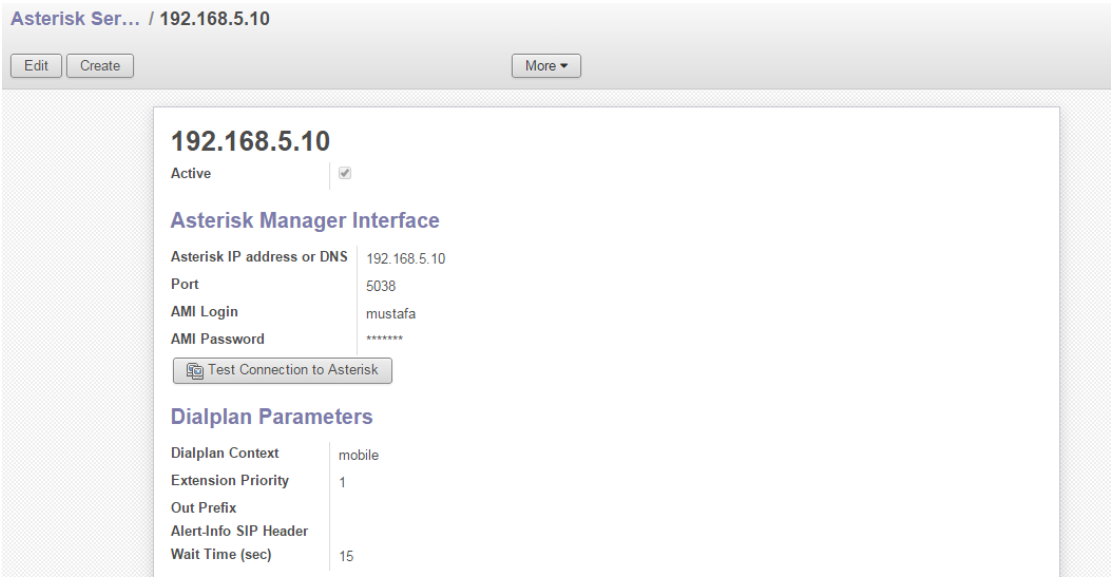

Figure (4.1) **Asterisk Server**

Second step give the user (agent) ability to receive and make calls via OpenERP and this happened after make specific extension for him in the server (asterisk) then make multiple configuration on OpenERP on user side

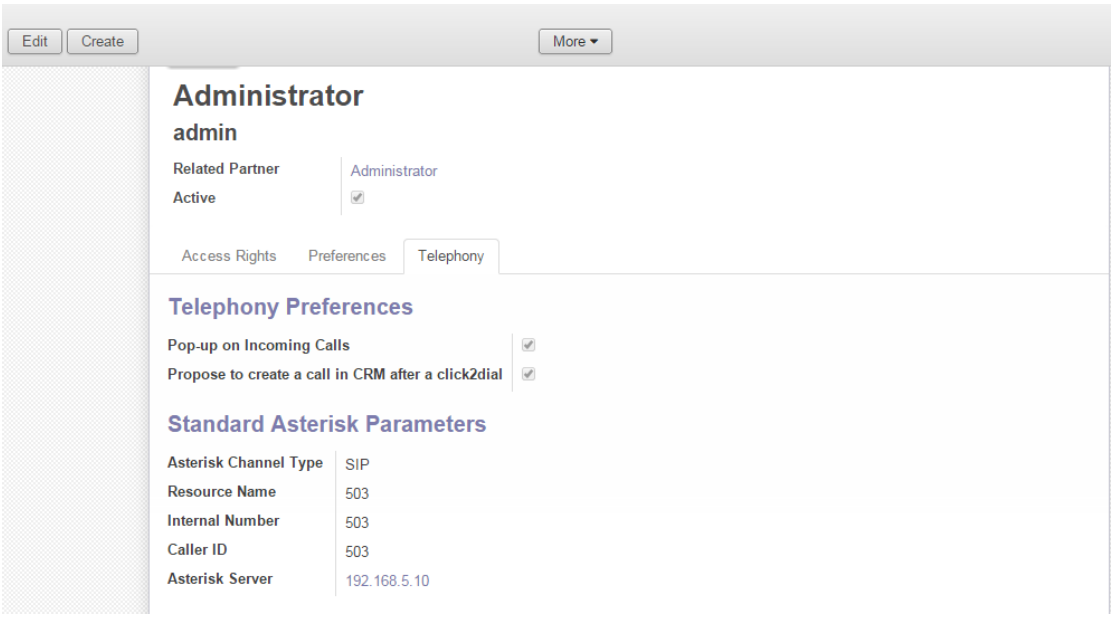

Figure (4.2) Administrator Form

After we connected the OpenERP and asterisk the real process will begin.

4.4.2 THE PROCESS:

4.4.2.1 WAITING CALL:

While extension idle that is mean at this stage, the agent is in a state waiting for the call and the phone is idle.

4.4.2.2 RECEIVE CALL:

Then when the extension ringing that is mean at this stage, the agent on GIAD will receive and answer customer call.

4.4.2.3 HANDLE CALL:

After the agent on GIAD was answered to the call, then if can handle the problem they are some process will be done.

4.4.2.4 FETCH AND COMPARE DATA:

When user calling to GIAD service number the system fetch the phone number and compared it with the customers phone numbers that is in data base ,if the phone number matched with any of the phone number that in the database then will return all information about this customer if not match new record will be create .

4.4.2.5 COLLECTING CUSTOMER INFORMATION:

When the agent of GIAD answer on the phone he begin to full his form with specific information about his customer and identify if he deal with individual customer or company , information like customer name, phone number ,address, email ,fax and code that it is a unique for each customer, identification that give him the personal information that help to verify from the customer and hold three information (type of identification , date and number of identification) ,guarantor name ,address and phone number that any customer needed to complete his procedures in buying a car ,customer status that show GIAD assessment of this customer and observation .

4.4.3 DETERMINE THE PRICE AND COMPLIANT MODELS:

We create new models price model and compliant model to facelifted the deal with other branches that related with GIAD.

The product price form show information about product that may customer need like product price ,full price, type of product and show the information that may administration or agent need like price date , observation about the product ,product code, quantity of product and installment. And the price lists show the product, price and serial.

Figure

(4.3) Price List

The compliment form about specific problem or service that is customer required and this form forward to TIPYAN company ,form view divided for two parts according to authority of each companies (GIAD,TIPYAN) first part hold information that GIAD can deal with it and TIPYAN can see but cannot update it and this information like customer type, gender , compliment ,this form will be transfer through many status to be complete after that the information will be forwarded to TIPYAN company in order to solve the problem and they are three levels (draft ,conform and done) .

The Second part hold information that TIPYAN can deal with it and GIAD can see but cannot update it and this information about if the problem has been solved or not and the reason and description about it and also transfer through three levels then return to TIPYAN with the solution .

Figure (4.4) Compliant Form

4.4.4 DISPLAYING PRIMARY INFORMATION ABOUT TIPYAN:

It displays information about TIPYAN Maintenance Company and how customers can be communicating with them and the ways of connecting.

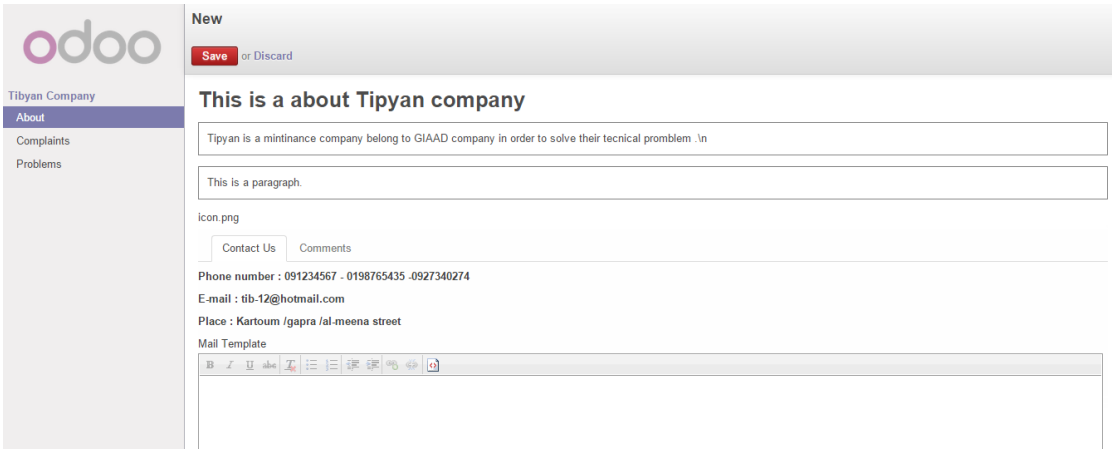

Figure (4.5) TIPYAN Form

4.4.4.1 IDENTIFYING PROBLEM:

The form display problem description, type and this form will be full from the agent of TIPYAN.

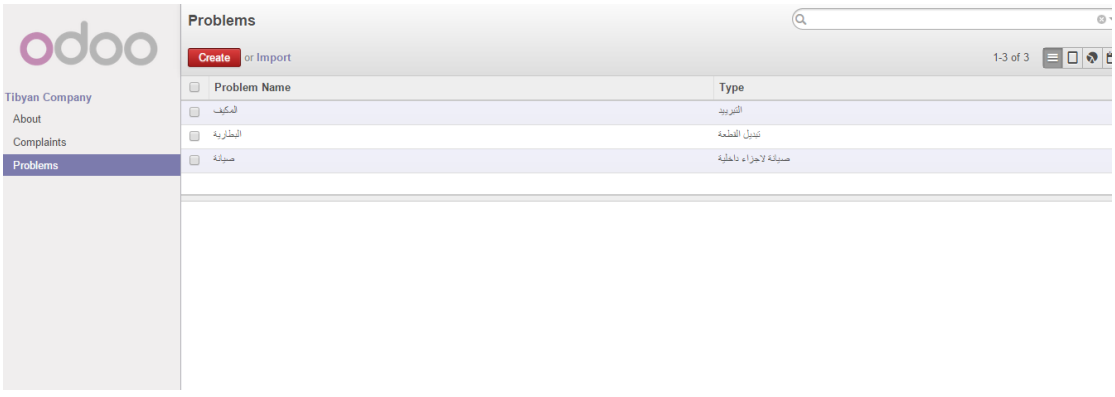

Figure (4.6) Problem Form

4.4.5 STORAGE IN DATABASE:

The information of the form will storage in a temporary storage until the activities done then specific information of specific form will be stored in database and this represents as the main process .

4.4.6 GENERATING REPORTS:

Generating reports is most important part that must be performed in our system is extracted analytical reports on the customer problems, Questions, and requirements, and viewing compliant that related by one or more customer. Depending on these reports can make business information (BI) admin which help to analyze data and identify the problems, caused, to improve productivity and ensure user loyalty.

CHAPTER 5

RESULTS

5.1 INTRODUCTION.

5.2 RESULTS.

5.1 INTRODUCTION:

This chapter discusses the final results of the System.

5.2 RESULTS:

After applying this system on the GIAD company we have the following results:

- Faster response to customer's requests.
- Facilitated capturing the customer's information by appearance automatically the form on the screen immediately after receiving the customer call Instead of the traditional method which takes extra time to do it.
- Appling this system help GIAD company to improve the after sales operations by located to the maintenance company that the GIAD deal with and the provision of continuing to respond to all requests.
- Appling this system to inform the customer about any piece of information, rather than send a message in the traditional way and we have provided the possibility of direct dialing the customer by phone number located in database and be contacted from inside the OpenERP.
- Appling this system help decision maker to take specific action in order to generate new business case example (sail forecasting and benchmarking).

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION.

6.2 RECOMMENDATIONS.

6.1 CONCLUSION:

This system integrate CRM system with call center via asterisk software to help in management, analysis, build long term business between enterprise and customer, enhance customer service and increase quality of CRM.

This system has been generated using VOIP technology which considers the base of this research.

The main idea in this research is solving the problem of depending on integration between CRM system and asterisk software and capture the customer information details from CRM system.

This system done by: study of the current system of the company ,identify short comings in the system ,use OpenERP in developing the new system ,integration OpenERP with asterisk ,generate and receive call, retrieve the customer information, new register to customer information ,receive complaints and transfer to complaint authorities and response to customer inquiries .

Generate reports from the complaint, price list, lead and opportunity which help the administrator to make decision.

The reports have been generated using Q-web technology.

6.2 RECOMMENDATIONS:

To make this system more reliable and provide attractive services we recommend doing some tasks:

- Improve the system through having the ability to sending and receiving message via asterisk.
- Improve the system to distribute incoming call to other departments of the company.
- Enable the asterisk to connect using voice and GTALK use goggle service with asterisk to send and receive free calls with other goggle users and plain old telephones tool.
- Improve the system by making voice mail integration.
- Connect network camera to asterisk.

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APPENDICES:

(A) EXPLAIN FORMS UML

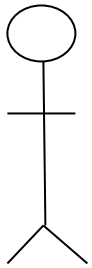
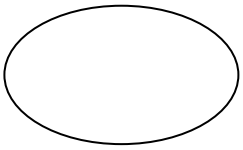
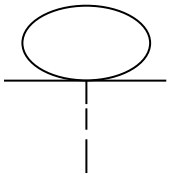
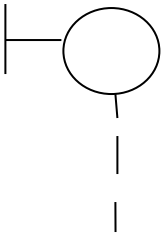
Explain Figure	Name Figure	Figure
An actor is anything outside the system that interacts with the system to complete a task.	Actor	
Each use case on the diagram represents a single task that the system needs to carry out.	Use Cases	
A system components	Object	
It is usual to display use cases as being inside the system and actors as being outside the system.	boundary	

Figure (A1) EXPLAIN FORMS UML

(B)UML RELATIONSHIPS

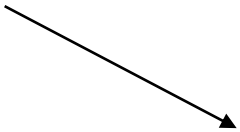
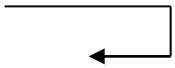
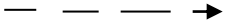
Explain Figure	Name Figure	Figure
The association is the link that is drawn between actor and a use case. It indicates which actors interact with the system to complete the various tasks.	Associate	
Use the includes link to show that one use case includes the task described by another use case.	Include	
Use the Extends link to show that one use case extends the functionality of another use case at specific Extension Points.	Extend	
A self-message can represent a recursive call of an operation or one method calling another method belongs to the same object.	Self-massage	
The sender sends the message**.**	Message	
Results of procedure calls.	Return-massage	

Figure (A2) UML RELATIONSHIPS