

## CHAPTER 2

### THEORETICAL FOUNDATION

#### 2.1 GSM

Most of the cell phones currently use the GSM (Global System for Mobile Communications) system. In the past, the acronym GSM stood for Groupe Spécial Mobile, a group formed by the Conference of European Posts and Telegraphs (CEPT) in 1982 to research the advantages of a European standard for mobile telecommunications. <sup>6</sup>It is a type of mobile phone that is used to receive and make calls. It was first offered to the public in the year 1991. It was first offered in Finland. GSM uses the TDMA (Time Division multiple Access) technology. To use the GSM technology, one has to buy a SIM (Subscriber Identification Module) chip. One then would slip this chip into a slot which is found in the back of a cell phone. If one wants to change his hand phone, one would simply have to remove the chip from one phone, and slip it into another phone, and one would be able to receive calls to the same number. One is also able to use the chip abroad, since the different networks from different companies in different countries have roaming agreements. The major features provided by GSM are:

- It is more secure as it uses encryption to make phone calls more secure
- Data networking
- Group III facsimile services
- Short Message Service (SMS) for text messages and paging
- Call forwarding: This service allows the subscriber to transfer or forward a call to another party.
- Call Barring
- Caller ID

- Call waiting
- Multi-party conferencing: This service is similar to a conference type service, where several calls may be connected with all parties talking to each other.

The GSM subscribers are all connected through a GSM Network.

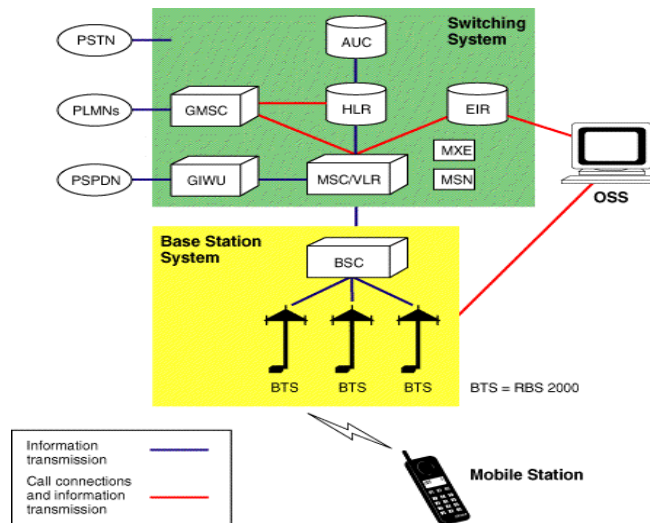


Figure 1: The GSM Network System

The GSM Network is divided into three main systems:

- the switching system (SS)
- the base station system (BSS)
- the operation and support system (OSS)

SS( The Switching System) consists of five parts, which are:

- 1) Home Location Register (HLR) is the database which stores information about the subscribers. This includes the Subscriber Authentication Key (Ki) for each Subscriber Identity Module (SIM).

- 2) Mobile Services Switching Center (MSC) is a component that performs the switching functions of the telephone.
- 3) Visitor Location Register (VLR) is a database which stores temporary information about the subscriber.
- 4) Authentication Center (AUC) is a database which stores the International Mobile Subscriber Identity (IMSI), the Subscriber Authentication Key (Ki) and the defined algorithms for encryption.
- 5) Equipment Identity Register (EIR) is a database which stores the identity of the mobile to prevent calls from unauthorized mobile stations.

BSS(Base Station Service) consists of two components – The Base Transceiver System (BTS) and the Base Station Controller (BSC).

BSC: It provides the physical link between the MSC and the BTS. A number of BSCs are handled by an MSC. Its functions are:

- Cell configuration data
- Call handover
- Control of radio frequency

BTS: This handles the radio interface to the mobile station. A group of BTS is controlled by a parent BSC.

Other elements:

MXE: This node handles the short message service, cell broadcast, voice mail, fax mail, e-mail, and notification.

MSN: The MSN is the node that handles the mobile intelligent network (IN) services.

GMSC (gateway mobile services switching center): This is a gateway which is used to connect two networks.

GIWU (GSM networking unit): This is actually physically found at the MSC/VLR. It is made up of both the hardware and software that provides an interface to various networks for data communications. Through GIWU, one is able to switch between speech and data during the same call.

GSM companies often have large numbers of customers. To keep track of these customers, they would need a database so that they would be able to store the information of the customers.

To serve the customers better, the companies in the cellular industry would need a CRM (Customer Relationship Management) System.

## **2.2 CRM (Customer Relationship Management)**

Customers are very important to cell phone companies. One strategy to manage the customers systematically is CRM or Customer Relationship Management. CRM allows customers to better communicate their needs so that the company is able to come up with products which will match their needs. The company would therefore be able to meet or exceed customers' expectations will therefore be met, or even exceeded

According to Tutorial-Reports.com, CRM can be categorized into three types:

- Operational CRM: It refers to those programs and services which serve the customers. Examples are Call Centers, Transactional and/or self service websites, and customer-centric business processes.
- Analytical CRM: This refers to the tools and strategies that are used in order to make customer-focused decisions. The information that is gained from the Operational CRM is used here. Examples include Data Mining and Business

Intelligence. An example of a program which deals in Analytical CRM is Selligent AnalytiX. Using a program like this, one would be able to view sales from different angles, such as by product, by department, by region, and even by sales person. By using this information, a company, for example, could give a raise to an employee who has shown outstanding performance. If the sales of a particular region are lower than expected, the manager can then analyze what has caused the low sales.

- Collaborative CRM: This will be discussed in detail later as this is the main focus of this paper.

The CRM system that a business implements should be in line with the strategy of the company. Since customer acquisition and retention are very important, it would be better if the company had a customer strategy. This is based on the overall strategy of the customer. In the GSM industry, for example, it is very important to make sure that the customers are satisfied with the company's services. If they aren't, they can simply switch to a competitor's product.

Therefore, they should have a very effective Call Center system which will be able to serve the customers in such a way that their expectations are at least met. If possible, the expectations should exceed expectations. Also, their Billing System should be quick, accurate, and efficient. In addition, to be able to gain and retain a big part of the cellular market, the various cellular companies are coming up with special features and different packages to satisfy the customers' needs and wants.

The company therefore needs to have a very effective system which will be able to handle the different kinds of packages that are offered. Customers now are much more interconnected through the Internet. If one is disappointed with a

provider, he would just have to post it on a forum or on a public blog, and practically the world is able to gain access to the bad press.

Collaborative CRM:

To eXP Carde further about what Collaborative CRM is, we must first define it.

According to me, mariosalexandrou.com best defines what Collaborative CRM is.

According to the website, Collaborative CRM is:

“Collaborative CRM facilitates interactions with customers through all channels (personal, letter, fax, phone, web, e-mail) and supports co-ordination of employee teams and channels. It is a solution that brings people, processes and data together so companies can better serve and retain their customers. The data/activities can be structured, unstructured, conversational, and/or transactional in nature.”

The advantages of Collaborative CRM are:

- The company is able to serve the customer more efficiently as everything from the back end systems to the front end system is integrated Customers are therefore more satisfied.
- It cuts the time taken to serve customers, thereby cutting costs. Also the agent is able to serve more customer sin a day.
- It prevents different departments from having to work twice.
- One is able to view the information at real time.
- It prevents duplication of information between departments.

### **2.3 Call Centers**

Call Centers are the forefront of CRM. It is one of the ways through which a customer interacts with their provider. Nowadays, the most frequently asked questions have been pre recorded to save time and money. However, if the customer still needs to talk to someone in order to answer a query or help solve a problem, then the customer could be connected to someone.

A pre requisite to ensure the smooth process of serving customers in a quick and efficient manner is to have real time access to their information. The person who is serving the customer is therefore able to gain access to the information that is needed in order to be able to solve the customer's problem. Also, the customer may not have to wait long for the problem to be solved. The person will therefore not have to waste time in asking for the required information. Since the amount of time per customer is reduced with such a system, the call center would be able to serve more customers per day. This is important in order to keep the customer happy and loyal to the provider, as the barriers to shifting to providers due to dissatisfaction are low.

Also, information gained through call centers can be used to improve the services of the provider. The needs and wants of the customers can be understood so that they can then be met. If for example, a lot of customers find it confusing to use the 3G service, then it would ring an alarm bell to the provider that they should improve or start educating their customers on how to use the service. Also, suggestions from the customers can be used to build attractive and appealing ad campaigns.