* 1. **Introduction**

Today, we live in a world of virtual reality. It makes sense to say that none of us can live without our computers and mobiles and other gadgets. With mobile devices becoming more and more essential to survive with, people have started storing more and more confidential data and information on their mobile devices. In most cases, it is the information that happens to be more important than the computer or mobile itself. So, what happens if your mobile or laptop gets stolen or is lost? Wouldn't it be terrible to know that an unauthorized user has complete access to your information? Taking all of this in mind, Mobile Anti-Theft system is developed.

While some stolen mobile phones will wind up in pawn shops, sold on the street corners or in online classifieds, the vast majority of stolen devices are now being shipped internationally. International markets (particularly countries in Africa, Latin America, and Asia pacific) pay a premium for Smartphone’s, with the high demand pushing the prices way up made nearly $4 million in 8 months as middleman selling phones to Hong Kong, where they can fetch as much as $2000 per phone. (Arieanna Schwebber).

Even in Nigeria and Ghana most Mobile users are alarmed at the rate of GSM phone theft in the country, the experience pales into nothing when compared with happens in South Africa. South Africa easily qualifies as the headquarters of telephone theft on the African continent. In the average, Vodacom and MTN receives about 10,000 phone theft a month, no thanks to the activities of GSM phone thieves in down town Johannesburg, Lagos and Accra who make life difficult for cell phone subscribers. [1]

MATS will consist of a number of essential anti-theft features that many other devices do not contain. It will use android built in feature to retrieve the information about the change of SIM on your mobile phone incase its get lost or stolen; this project will also help in tracking down your stolen mobile with GPS and GPRS technology built in most of the smart phones to identify the location of your mobile phone.

* 1. **Problem Statement**

Mobile anti theft system is a project which helps us to track the location of the   
mobiles, when the mobile user loses his mobile phone. In Africa as well as in many parts of world there are no mechanisms in place which can help the owner of the mobile recover his mobile phone. Herein we propose to develop a system which is autonomous and intimates with the owner via SMS when it detects SIM change.

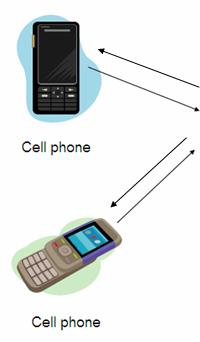
* 1. **Background of Project**

Currently, Africa now has more than 650 million mobile phone subscribers: that’s more than either the United States or the European Union. And it’s a market that has seen explosive growth. Since 2000, the mobile phone market has grown 40-fold, from 16.5 million, according to the World Bank Ref link: [2]. It is now making sense to say that none of us can live without our computers, mobile phones and other gadgets. In most Africa countries, with mobile devices becoming more and more essential to survive with, people have started storing more and more confidential data and information on their mobile devices. In most cases, it is the information that happens to be more important than the computer or mobile phone itself. So, what happens if your mobile or laptop gets stolen or is lost? Wouldn't it be terrible to know that an unauthorized user has complete access to your information? Taking all of this in mind, the Mobile Anti-Theft system is developed.

* 1. **Project Scope**
* The Mobile Anti-Theft System will be installed on only mobile phones with Google android operating system.
* Further on SIM change SMS can be received only if the thief’s SIM has enough currency in it.
* To get the location of the mobile phone it needs to have GPS built in it. To get the postal address the mobile should have GPS as well as GPRS and be connected to the internet.

**1.4.1 Further improvement of the system can perform the following functionalities.**

* Functionality of the Mobile Anti Theft system can be extended so that when requested it sends the recent call log through which the owner can contact the recently dialed numbers of thief and get to know more about the thief.
* I proposed to add functionality later wherein the owner of the mobile can retrieve his data stored on the mobile via internet and can add or delete his personal data on the phone or even lock the phone.
* Also, I will add functionality for taking the snapshot of the possessor and send it over to the owner.
* In addition we proposed to make the application accessible in other mobile platforms like iPhone, Symbian, Blackberry and Windows Mobile phones.
  1. **Architecture**

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* 1. **Significance**

Almost every owner of a costly mobile handset fears the nightmare of losing his mobile phone. We have come across many middle class people losing costly mobiles and unable to get back the same even with the help of police officers. And in AFRICA there is no system in place to help such people. Seeing their plight and the upcoming android platform which promises to be present on ever upcoming handset

* 1. **Chapter Organization**

In this report we have briefly described about the introduction of our project. How it works, its limitations, future enhancements. We have also explained about system problem statement and description in which we have specified the issue and the impact of the mobile theft. We have also explained the project background that is the needs for implementing the project. Also, the project scope, objective activities and deliverable were also been elaborated for how the project will work. The system architecture was also explained which shows the diagrammatic pictorial of how the system will interact. We have taken time to explain some literature review of the objective, activities and deliverables on this project.

**2.1 Literature Survey**

Android is a new and very user friendly operating system for mobile devices which includes key applications, middleware and even uses Linux Kernel modified version. (Android, 2013)

Initially developed by Android, Inc., which Google backed financially and later bought in 2005, Android was unveiled in 2007 along with the founding of the Open Handset Alliance: a consortium of hardware, software, and telecommunication companies devoted to advancing open standards for mobile devices. The first Android-powered phone was sold in October 2008 Ref link: [3]

Android is open source and Google releases the code under the Apache License. This open-source code and permissive licensing allows the software to be freely modified and distributed by device manufacturers, wireless carriers and enthusiast developers. Additionally, Android has a large community of developers writing applications ("apps") that extend the functionality of devices, written primarily in a customized version of the Java programming language. In October 2012, there were approximately 700,000 apps available for Android, and the estimated number of applications downloaded from Google Play, Android's primary app store, was 25 billion. A developer survey conducted in April–May 2013 found that Android is the most popular platform for developers, used by 71% of the mobile developer population. [4]

These factors have contributed towards making Android the world's most widely used smartphone platform,[5] overtaking Symbian in the fourth quarter of 2010,[6] and the software of choice for technology companies who require a low-cost, customizable, lightweight operating system for high tech devices without developing one from scratch.[7] As a result, despite being primarily designed for phones and tablets, it has seen additional applications on televisions, games consoles, digital cameras and other electronics. Android's open nature has further encouraged a large community of developers and enthusiasts to use the open-source code as a foundation for community-driven projects, which add new features for advanced users [8] or bring Android to devices which were officially released running other operating systems.

Android's share of the global smartphone market, led by Samsung products, was 64% in March 2013. [9] The operating system's success has made it a target for patent litigation as part of the so-called "smartphone wars" between technology companies. [10][11] As of May 2013, 48 billion apps have been installed from the Google Play store, [12] [13] and as of September 3, 2013, 1 billion Android devices have been activated

While writing applications on desktop, you are “master of your own domain”. You can launch main window and no of child windows as in dialog boxes. From our viewpoint we are on our own, features which are supported by OS, and mostly unaware of any other programs running at same time. While there is no interaction between other programs we can communicate with MySQL or any other database typically using an API like frameworks atop it. Android has comparably same concepts packaged in a different way and structured for crash-resistant. [14]

Activities

Activity can be explained as building block of user interface. We can consider activity as Android analogue for window or dialog in desktop application. It can even be possible that activity not having a user interface, while the code packaged in the structure of services or content providers.

Content Providers

For any data stored in a device Content Providers offer a level of abstraction which is accessible by various applications. In android development it encourage us to make our own data which can be accessed by other applications and even build our own content provider which gives you a complete control over how that data can be accessed.

Intents

System messages which run inside the device, various applications notification such as hardware changes like SD card inserted, notifications of incoming data like SMS arrived and even application events are called as Intents. It doesn’t only allow you to respond to such intents but also to initiate other activities or let know when particular event occurs such as suggest WIFI availability when in range.

Services

All the above stated Activities, intent receivers and content providers are all short   
term and can be terminated any time whereas services are intended to run continuously   
independent of other activities such as play music while using other applications, in here   
music controlling is no longer available but the service keep running in the background.

**2.3 Stuff at Your Disposal**

Network

Android based devices are generally with Internet ready. We can take benefit of internet as we wish in any level from raw java sockets to built-in Web browser which is based on Webkit.

GPS

Most of the android devices have access to GPS which can tell where the device is exactly located on the earth using Google Maps. GPS also helps in locating the desired location where we want to travel and even shows the places around us where we commonly go in everyday life which makes it easy to travel otherwise can be to locate the device and its movements in case the device is stolen

Phone Services

Android devices are similar to other phones which are typically used to make calls, send SMS and can be used for multimedia applications to download music anytime anywhere and games and everything else what we expect from a modern telephonic technology.

**2.4 Why Android**

* Zero start-up cost to begin development with

The tool required to develop any android applications is free of cost and Google charge very small fee deal out application in the market. [15]

* Freedom to innovate

Android OS is an open source platform which is based on Linux kernel and other open source libraries. Moreover are free to build applications which runs on android devices and even free to extend platform as well. (Grell, 2010)

* Freedom to collaborate

Android developers are encouraged to share code with others and they don’t even have to sign an NDA to do this. According to a survey conducted by Black Duck Software, the amount of open source libraries and mobile applications grew at a rate of 168% faster on Android compared to any other platform from year 2008-2009. (Grell, 2010)

* Multi-platform support

Android OS are supported on several different hardware devices including various phones and tablets.

* Multi-carrier support

Android powered smart phones are offered by most of the carrier services.

**2.5 Tracking the Black Market**

An insatiable appetite for smartphones has turned the black market into a global enterprise, efficiently sending ill-gotten gadgets wherever demand is greatest. But no one has a complete picture of the size or scope of the black market. One can only catch it in glimpses. In a report for NYPD, Timlin found stolen phones changing hand all over the city. "We saw bodegas, we saw local laundromats, and we saw back-alley sales," he says.In March, the California attorney general announced the arrests of two individuals who allegedly paid homeless people to buy discounted phones on a two-year contract, and then shipped the devices in bulk to Hong Kong. There, phones can sell for $2,000 each — 10 times as much as in the states. The accused allegedly took in almost $4 million in less than a year.

**2.5.1 Larger Than Thefts**

I hate the guys who do this type of stuff," says Marc Rogers of the online security firm Lookout. He is a hacker who frequents forums where information on the black market for cellphones is exchanged.

He says that in the global game of cat and mouse, the mouse is usually faster. For example, some European authorities created blacklists, where users could report stolen phones and block them from being used again on other networks.

But Rogers says criminals quickly realized that by shipping devices to foreign countries, they could sidestep the blacklists and probably sell for close to retail price.

Law enforcement tends to focus on thefts on the street and in subways. But Rogers believes police will only make progress when the black market itself is squeezed.

He says the security features in Apple's new operating system, like fingerprint ID and the requirement that you enter a password before resetting the phone, are a good start.

"Ultimately, it would be fantastic if we could get it set up so once a device is stolen, the only value there is from the parts," he says.

New York police will be on high alert when Apple's new iPhone goes on sale Friday. Since the first iPhone debuted six years ago, they've noticed that every new Apple product comes with a spike in street crime.[16]

**3.1 OBJECTIVE**

To research on the issues faced with mobile theft, the growth rate of mobile phone usage as compare to PCs and Laptops, Physical and data Security issue with Mobile phone.

**Activities:**

* Investigate the trend of World black market activities relating to mobile phone Document the number of stolen mobile phones that wind up in pawn shops, sold on the street corners or in online classifieds,
* Investigate the number of stolen mobile devices that are shipped to international markets (particularly countries in Africa, Latin America, and Asia pacific)
* Document the trend of Anti-theft mobile response activities in Africa,
* Evaluate the use of mobile SMS as an integral part of mobile devices and mobile applications

**Deliverables:**

* Data showing the trend of mobile phone theft and re-sale on the world black market
* Data map showing the number of stolen mobile devices that appear on international markets
* Information on Anti-Theft Mobile responses in Africa
* Documentation on the use of mobile SMS by mobile device users

**3.2 OBJECTIVE**

To build an Android client application which will automatically send SMS when SIM card is changed and also when user needs to know the location of the lost or stolen mobile phone.

**3.2.1 Activities:**

* In this project I am going to examine how SMS technology via the APIs provided by Android can help us in track the location of the stolen or lost phone.
* This project will get information from the user at phone installation; this information will be used to capture all the information about the phone; like the IMEI which is unique per phones.
* Get the user relative phone number for receiving SMS in case the phone get lost
* SMS function which will send automatic SMS text message to an alternate phone number immediately when SIM is swapped on the registered for phone.
* This app will take the relative phone number at first registration on the platform and store in a database,
* When the user phone get lost or stolen, then the application will launch the SMS automatic process from the lost or stolen mobile phones with the number the user entered during the registration
* Finally it will send a “report of a stolen or missing phone” message to the alternate phone.

**3.2.2 Deliverables:**

* Users registered with unique identification on the application
* SMS messaging services in the MATS for sending and receiving SMS in a stealthy mode incorporated into application
* The Application is able to sends Automatic SMS as soon as SIM swap happened the lost or stolen phone in a stealthy mode
* When requested the application sends the location of the lost or stolen phone via SMS

**3.3 OBJECTIVE**

To design an application by means of which we can track the location of the mobile phone of the desired user when it been stolen or lost.

**3.3.1 Activities:**

* To track the location of the smart phones.;
* The project will consist of Android client application which will send an SMS when user requested for the phone location.
* I am going to use position tracker functionality which works on GPS (Global PositioningSystem) and GPRS on any smart phones. This will be used to fetch the latitude and longitude satellites of the location of the mobile
* Send the location information and send it as a SMS to the requestor phone from the stolen phone
* Moreover if mobile is connected to the internet it will retrieves the postal address from Google maps.(ZHANG Hao, 2011) .

**3.3.2 Deliverables:**

* Use goggle or yahoo position tracker to get the location of the stolen or lost phone
* Get the location through google map in case the stolen or lost phone has internet connections.
* The application retrieves the location of the lost or stolen

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