# UNIVERSITY NOTIFICATION SYSTEM

GROUP 15

INTERNET TECHNOLOGIES AND INFORMATICS FOR SOCIETY

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GROUP MEMBERS

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|---|---|
| OTAALO, JOHN CHRISPINE | 073758 |
| KARSAN, RICHARD SETH | 077353 |
| BAKASA, JOSHUA NEYOLE | 074061 |

# Chapter 1: INTRODUCTION

## 1.1: Background

Strathmore University is a private university that was started in 1961 as an A-level College by a group of professionals and is situated in Eastern Africa; Nairobi Kenya. The university has grown over the years and by 1991 it had expanded into a fully-fledged college specializing in professional business and Information Technology oriented programmes (Sevilla and Shabaya, 2007).

In the year 2001, Strathmore University enrolled its first group of degree students. Currently, the university comprises three faculties, a School of Accountancy and two Institutes. More than 5,100 students are enrolled at the university undertaking different programmes in the core areas of business and information technology (Sevilla and Shabaya, 2007).

In 2005 Strathmore University embarked onto a journey towards automation of its teaching and administrative processes. E-learning now complements the delivery of lectures, audio visuals have been set up in classrooms supported by the wireless LAN technology allowing unlimited access to the Internet. The automation went further to library services.

Students, Sponsors, Employers or Suppliers are demanding for more accurate information and faster services. Students, for example, would like to check for their fee balances, enrol in their respective courses, pay fees, check attendance and maybe print their results on-line away from campus. The University agreed to the demand by implementing Academic Management System (AMS) (Sevilla and Shabaya, 2007).

The problem in the current systems (E-learning and AMS) the students are not able to get real-time information on the marks updated and material posted in E-learning without being logged onto the system. This leads to students complaining about out dated information not getting information at all.

## 1.2: Problem Statement

Currently, students at Strathmore University are not able to get real-time information on anything updated in E-learning or AMS. Students rely on module leader for feedback from the lecturer. They also have to continuously check for updates in the system.

## 1.3: AIM

The aim of this project is to develop a web application system and an android application which will enable students to get real-time information on the changes made in E-learning and AMM (Academic Management Module) of the AMS. The project will result to an application that

facilitates students to receive direct information from the lecturers about any changes made to the schedule or any urgent information the lecturer wants to communicate to the class. The project will enable students to get the information through their mobile devices e.g. phones.

### 1.4: Specific Objectives

1. To design an android and web application platform that will allow lecturers to have direct communication with any class.

2. To simulate AMS as marks are updated the students are able to get notification (real time notification).

3. To simulate E-learning as materials are uploaded the notification is sent to the students in respective class.

4. To certify the notification about changes made in E-learning, AMS and any information the lecturer wants to deliver to the class are sent to student's mobile phone number and no one else's.

5. To develop a web application platform that will allow lecturers to have a direct communication channel with any class.

### 1.5 Justification

This solution is necessary to the problem since it keeps the students updated on any changes concerning their classes. Also it is the easy way for the lecturers to communicate to the entire class away from class. The solution will increase communication also reduces inconveniences caused by lack of communication or real time information.

### 1.6: Scope

The sample data to be used will be defined in the system such as courses, units and phone numbers, the AMS will be integrated with the communication portal for sending updates using the sample data, testing will be done in Firefox and no other browsers, the interfaces will be interactive and friendly for easy use, authentication will be provided mainly through passwords.

### 1.7: Limitation

Despite the fact that the project will bring awareness to students about their learning information on real time based information, there are some limitations that might come up. One of them there's a need for a subscription to messages so as to get free messages. Secondly it will be only one way communication from the lecturer to the class but the vice versa will have to use the module leader.

# CHAPTER 2: LITERATURE REVIEW

## 2.1 Introduction

This chapter evaluates the existing literature on the Academic Management System in Universities in Kenya, existing Communication channels and E-learning and the adoption of mobile technology which simplifies communication. It explores the success and the challenges faced by the system which brings the development a system into necessity.

## 2.2: History

Strathmore University is a private university that was started in 1961 as an A-level College by a group of professionals and is situated in Eastern Africa; Nairobi Kenya. The university has grown over the years and by 1991 it had expanded into a fully fledge college specializing in professional business and Information Technology oriented programmes. In the year 2001, Strathmore University enrolled its first group of degree students. Currently, the university comprises three faculties, a School of Accountancy and two Institutes (Sevilla and Shabaya, 2007)

## 2.3 Current way of Working

Usually when a student comes for an interview his personal details are collected by the admissions office system, where the details are stored for further reference if the student is accepted in the University. When a student is accepted in the University the details are used by the AMS (Academic Management System), E-learning, Finance System, Cafeteria System and Library System. Through the use of AMS the students are able to check their fee balance, enrol in their respective courses, print receipt and results, checking attendance and getting exam card. Nevertheless E-learning offers the students with lectures materials being visual or audio that have been presented in the classroom. The advantages of the systems is the ability of the students to access materials anywhere by wireless connection also the ability of the students to see their progress report in school (including the attendance, financial report and performance).The systems have been adopted to some universities but not all the universities use the system in spite of the of the competitive advantage the systems offer.

## 2.4: Gaps in the existing systems

The systems implemented work as expected in spite the requirements such as internet connection in order to gain access to the system. The systems been web based requires regular updates to be in the state of art to meet the current web standards. The systems offers information but not real time information because time is a major factor when it comes to information, e.g. imagine a student coming from Kahawa having a single class around 1515 hours and when he/she reaches

school he/she gets the information the class is cancelled, this happens because the entire class has to wait for information from the module leader to spread the news in actual scenario a module leader can't spread the information to all students.

Moreover, when materials are updated in E-learning or Marks are uploaded in the AMS the students don't get real time information on the changes done in the system. The current systems doesn't support real time passing of information to the students and also offers one way communication from the module leader to the lecturer and vice versa, this making all the students to depend on module leader for any changes done.

## 2.5: Technologies

### Web Application and API

The assumptions that the web application will be running on is that courses and units are predefined by the academic office, students once registered in a certain course all their information is collected including the phone numbers. The functions of the lecturer will be updating marks, materials and sending notifications to students, all this will be integrated with communication portal which uses API from text local which offers bulk SMS, files, surveys, tickets and picture delivery (About Us: textlocal.com, 2014). The API will check the message to send and the phone numbers the message should be sent to, this will also apply when marks and materials are upload or updated in the system. The administrator will be responsible in purchasing the bulk SMS and checking if the messages are delivered. All the information will be stored in the database for easy retrieval and update of the information.

### Android

Android is a mobile operating system (OS) based on the Linux kernel and currently developed by Google. With a user interface based on direct manipulation, Android is designed primarily for touchscreen mobile devices such as smartphones and tablet computers, with specialized user interfaces for televisions (Android TV), cars (Android Auto), and wrist watches (Android Wear). The OS uses touch inputs that loosely correspond to real-world actions, like swiping, tapping, pinching, and reverse pinching to manipulate on-screen objects, and a virtual keyboard. Despite being primarily designed for touchscreen input, it also has been used in game consoles, digital cameras, and other electronics. As of 2013, android had most of the devices being used operated under android.

# CHAPTER 3: METHODOLOGY

## 3.1 Introduction

Methodology is defined as a guide used in the process of developing, applying and maintaining a computerized system (Introduction and Overview, 2008).

There are a number of methodologies in the field of system analysis and design:

1. Structured System Analysis and Design (SSAD) is the technical approach to analysis and design of information system.

2. Object Oriented Analysis and Design is the software development approach that models a system as a group of interacting objects. Methodology is used to analyze, design and develop application using objects and their relations and message based communication to each other.

Among the above listed methodologies, Object oriented analysis and design is a more suitable approach for the system. The reason why this type of methodology is suitable for the system are as follows:

1. Complex software can be broken down into various objects making it easy to manage the code.
2. Better performance since the system will be reviewed per module.
3. Enable producing flexible and easily maintained systems

## 3.2 Analysis

Software requirements are defined as detailed description of the expected purpose and environment for a software that is being developed (Rouse, 2007). Some of the requirements are:

1. Output: this tries to confirm if the results of the finished system are the ones expected initially when the software was developed. Expected outputs are documents, interactive interface, and real-time information.
2. Input: This is how accurate the data was entered into the system and how uniform the system is when it comes to data entry.
3. Process: this is based on the proper expected operations of the system such as sending the message to the numbers in that respective class only.
4. Performance: this relies on how fast and the number of people that can use the system at a given time.

System analysis is defined as the process of building a lucid model of the proposed system (Rosenblatt, 2012).The approach used in system analysis is the requirements modeling. In requirement modeling there is an investigation of what the proposed system should do in order to meet the user needs. In the case of Mobile Academic Students Portal

The system functional requirements are:

1. It should be able to register a class or classes.
2. It should be able to register a lecturer
3. It should be able to give really time notification in case of updates in the system. Simply sending a message to all students when changes are done.
4. It should be able to add and remove a class
5. It should be able to add students phone numbers

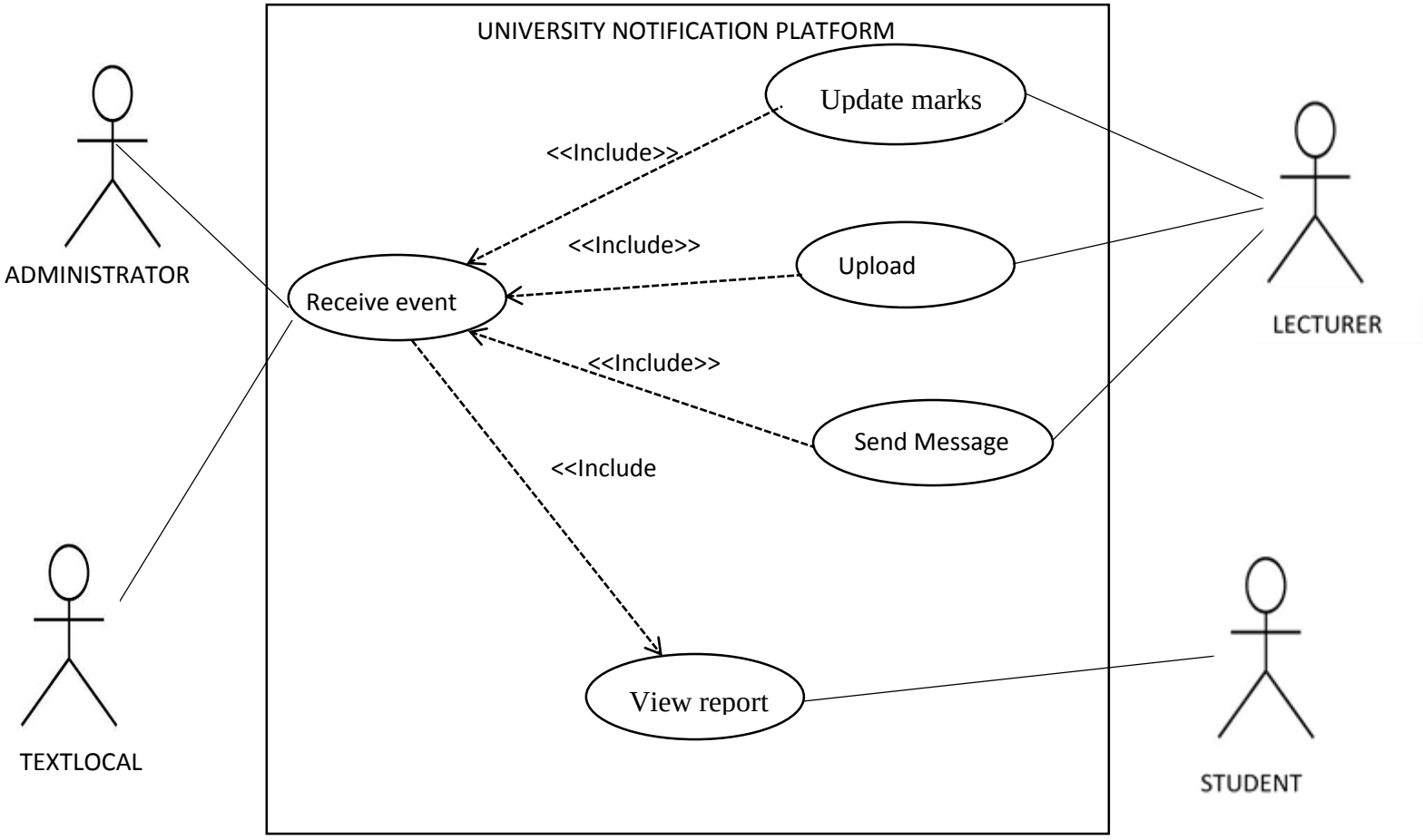
The system's non-functional requirements are:

1. Speed, which is important when giving notification to students
2. Accuracy and reliable at all times.

## 3.3 Design

System design is defined as the process of creating physical representation which satisfy the requirements for the system that have documented. This is done by finding out the required inputs, outputs and processes (Shelly & Rosenblatt, 2012).

The use case diagram below explains how the system works. The administrator will assign students to classes after admission and assign lecturers duties or units to teach per course. The lecturer then uploads notes, updates marks, updates attendance and sends notifications to these students and their parents. The students and parents will just view the message and get satisfied with it.




## 3.4 System Development Tools and Techniques

The programming language to be used in this project is PHP, Html using Sublime Text as the text editor for the platform development will use objects and classes concepts to develop the system because is a simpler approach to programming.

The phone application will target the Android Platform from Android 4.0.3 (Ice Cream Sandwich). Android Studio will be the most preferred Android Development Platform since it is easier to set up and has a much light AVD (Android Virtual Machine).

## 3.5 Deliverables

At the completion of the proposed information system the following modules will be delivered

1. A simple E-learning module containing the details of various courses and materials posted
2. Academic Record Module containing the details of students performance in a specific class
3. Communication Module containing the contact information of all students and a certain class for easy communication.
4. System analysis document: document containing a detailed description of the system which will be used for future referencing for maintenance or updating.
5. A website which enabling the user to use it anywhere despite the platform been a mobile device, desktop computer.

6. An Android mobile application that enables the student or parents to get the notifications of any changes by the lecturer and to enable the lecturer communicate easily from his or her phone to the students or parents easily without necessarily using his or her computer.

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