# Software Requirements Specification: Development of an SMS Scheduling Application for Interactive Labs

1. **Introduction**
   1. **Product Overview**

This project is aimed at developing a mobile application for scheduling interactive internet Laboratories. The application utilizes the GSM network over which Short Message Services are sent.

The project is also set out to create a configuration web service (more like a dash board) for administrator for viewing configuring the use of the sms scheduling system for any interactive iLab.

**1.2 Purpose**

This project is intended to ease the scheduling of iLabs by use of mobile phones. Although an online application already exists for scheduling interactive laboratories, it’s rather inconvenient and inflexible. However, a survey carried showed that 8.52% of students do not have convenient access to internet. Nonetheless 97.44% of the students are availed with GSM based mobile phones which by default support Short Message Services.

This project is also aimed at extending the iLabs’ platform into the field of mobile phones, one that the iLabs has not yet explored.

**1.3 Scope**

This research targets students in the Faculty of Technology, Makerere University under departments of Electrical and Computer Engineering who will be carrying out interactive experiments. It will therefore be based on the iLab Interactive Experiment architecture.

A pilot study is expected to be carried out on one of the classes supposed to carry out an interactive iLab. The Infrastructure of the system will be set in the Faculty of Technology with support from SMS service providers.

**1.4 References**

The functionality of the SMS scheduling system is based on the iLab Scheduling –Overview document by Jud Harward and Philip Bailey retrieved from http://icampus.mit.edu/iLabs/architecture/downloads/downloadFile.aspx?id=54

1. **Overall Description**

This section describes the functionality of the proposed system, the user characteristics, general constraints, assumptions and dependences.

* 1. **Product Perspective**

This project is based on the iLabs Shared Architecture to create an alternative means of scheduling for interactive labs. The project is based on creating databases and communication links between the databases and the User-side Scheduling Server which is within the Interactive Shared Architecture.

The major aim of this application is to interact with and update the USS (User-side Scheduling Server) Database. The USS database stores and retrieves the time slots for the users.

The 'client application' in this case is the phone's built-in SMS functionality. The user writes an SMS in a predefined format.

The configuration dashboard will also enhance the use of the system on any interactive iLab. It will facilitate the sms scheduling system to be well configured prior to its use. Also the dashboard will display statistical review on how the system was used, that is, the messages sent by the user and how they were responded to by the sms application.

* + 1. **Functions of the SMS**
    2. Reservations are done primarily bySMS message request.
    3. The system responds to a request with an acknowledgement of receipt.

2.2.3 The system responds with a positive/negative feedback regarding a user reservation request. In case of negative feedback, alternative reservations are sent to the user.

* + 1. System allows only one reservation for any user at a time.
    2. Users make requests using their unique user-names and labname (or the labname acronym as provided by the lab administrator) that are already registered and authenticated on the online service broker. Unauthorized users will be unable to schedule experiments.
    3. The system updates the reservation record in real time.
    4. The system reminds users of their reservations to ensure they carry out the experiments

**2.2.2 Functions of the SMS – Schedule DashBoard:**

1. The Dashbaord is supposed to provide an interface to create lab configurations required by the system so as to enable scheduling of users before the scheduling application is enabled to function.

2. The Dashboard will enable the administrator to have a statistical review of the application performance, so as to see if the system is achieving its core requirements.

3. The application is to be configured through the dashboard every time the application is to be used by students to schedule for interactive labs.

4. The dashboard is only to be accessed by the respective lab administrators (the group manage\_users\_on\_uss) group as identified by the ISA.

* 1. **User characteristics**

There are two major stakeholders, the student, who is the major system and the lab administrator who is the administrator and the overseer of the system.

Below are the end user characteristics of the lab;

* 1. The user should send a request for the reservation
  2. The request sent should be acknowledged by the system with the return message.
  3. The user should also be in position to receive the feedback confirming or denying the request. The denied request should be attached with the recommended free time slots that can be availed to him.
  4. The user should also be in position to receive reminder messages about the scheduled laboratory prior to his laboratory if he/she so wishes.

The lab administrator has the following application user characteristics;

1. The administrator should configure the application to support given interactive lab for sms scheduling before the students start the actual scheduling.
2. The administrator should be able to view history and a statistical review of the application, observing the message sent by the user and the response of the application.
3. The administrator should be in position to view the error messages that are sent to the users when the messages sents are wrongly formatted.

**2.4 System Quality Attributes**

**2.4.1 Performance**

The system will schedule experiments for one user at a time. It will work on a ‘first come first served’ basis under the assumption that not more than one user will send an SMS to the system. There will be a difference of at least one second between the text messages received from the various users. It will also require configuration from the lab administrator before it is used.

**2.4.2 Accessibility**

The system will be accessed by any student who has a mobile phone and has registered online with iLabs@MAK service broker. The system is also being designed to support interactive iLabs that are deployed in other universities. Documentation of the system and manuals are to be provided so as to ease the setting up of the system.

**2.4.3 Affordability**

Every user will incur a certain cost depending on his/her mobile network service provider tarrifs when sending messages to schedule an experiment.

**2.4.4 Security**

The system uses usernames to ensure that different users are unable to make reservations for other people unless they know their passwords.

The application dashboard is designed to be accessed only by administrators authorized to mange users in uss. In this way, not all users will be authorized to access the dashboard.

**2.4.5 Usability**

The system will be simple for every student to use given that they know the format of the messages depending on the functions they require the system to provide.

The application dashboard has been designed with the concept of human computer interactions and computer user expirence in mind. It has been designed with similar concepts of the ISA.

**2.4.6 Portability**

The system can be accessed from anywhere by any registered member as long as he/she is able to send an SMS message.