



# SMART INTEGRATED INFORMATION SYSTEM (SIIS) FOR COLLEGE CAMPUS

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## ABSTRACT

*The latest advances in the field of information technology and Wireless system can be exploited for accessing the information from anywhere and at any time. The proposed project deals with establishing a “SIIS” –Smart integrated information system is a Smart Electronic and Technological Revolutionary Aid, which can be used in college campus for supporting students and faculties to access various value added services like e-library, Internet web services, e-Student green card, e-teaching/learning, e-Circular, e-banking, e-attendance, Mobile and Emergency calling facility all at the touch of a button in a compact kiosk. The SIIS is made portable and its processor can support multiple functions in compact programming environment. Any number of such kiosks can be placed at multi locations within the campus. The SIIS offers facility to store information which can be analyzed when required. The system also has SIM card slots which can support mobile calls from any service provider surrounding the campus. The SIIS can be operated using Wi-Fi, WLAN, and WiMax network technology.*

**Key words:** SIIS Kiosk, Wi-Fi etc.

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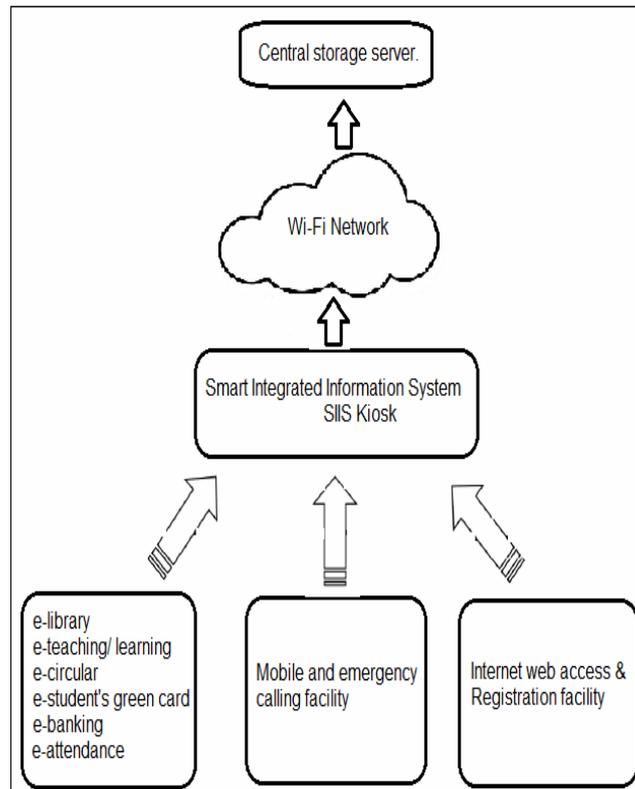
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## 1. INTRODUCTION

This is an age of knowledge and technology explosion. Students and Faculty need to be provided with material to keep pace with the advancements in technology. Moocs (massive open online courses), online resources and e-library form integral part of any advanced learning environment. Hence, a need is felt to incorporate this facility at the click of a button. Students often misuse mobile phones and laptops when allowed to use them in the campus causing distraction leading to poor performance.

Prohibition of mobile phone and laptop usage lead to discomfort and contempt among students. To strike a chord of balance, it is felt that this facility could be made available to the students in a secured way with the help of latest communication devices and protocols.

To develop a smart integrated information system incorporating IEEE 802.11 set of media access control (MAC) and physical layer (PHY) specifications for implementing wireless local area network (WLAN) computer communication in the 2.4, 3.6,5 and 60 GHz frequency bands.



**Figure 1** Topology of SIIS Kiosk Network

To develop software modules for various value added applications such as e-library, Internet web services, e-Student green card, e-teaching/learning, e-Circular, e-banking, e-attendance, Mobile and Emergency calling facility all at the touch of a button in a compact and portable KIOSK.

## 2. LITERATURE SURVEY

- Usman Waziri et.al mainly concentrated on improving the manual methods in adopting a Browser Server structure to design an online integrated information system for demography. The adoption of this system in the National Planning Commission of Nigeria found it easier in successful planning of economic policies as well as National Population Commission of Nigeria [1].
- Ms.Shweta soni and prof.M.D.katkar provided information for all educational colleges such as engineering colleges and others where there is connection between faculty and student which will maintain all student, and lecture records in a much more efficient way with less work [2].
- John.W.Nielsen and Gammon provided information regarding effective drought early warning system consisting of forecasts, and assessments on both national and regional levels [3]
- Martha Mhongole et.al. explored the current models and technologies used in knowledge creation, knowledge sharing and knowledge dissemination practices in Higher Learning Institutions (HLIs) of Tanzania. The authors proposed a model for the development of an Integrated Digital Academic Repository that enhances management, sharing and

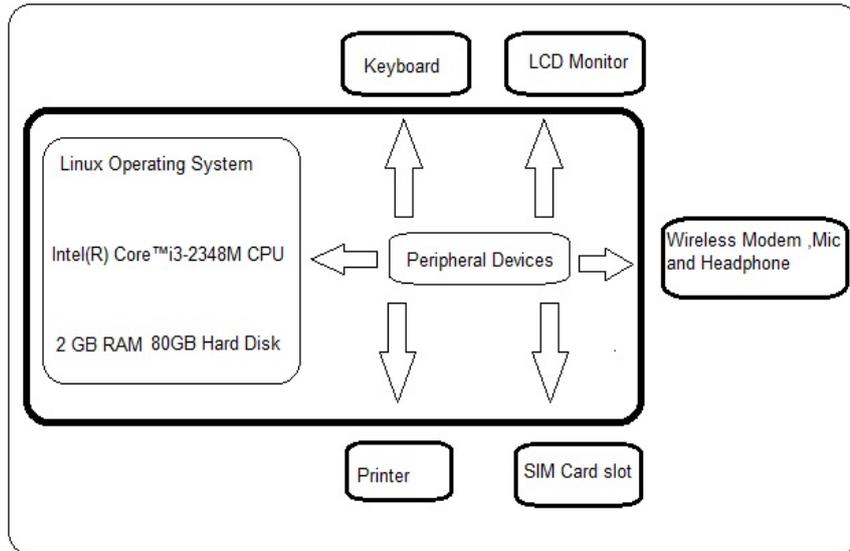
dissemination of Scholarly works produced in HLIs of Tanzania. The work concluded with the conceptual framework of the proposed system [4]

- Tobias Kowatsch et.al. proposed a design that help constructing health information system that can improve the health condition of overweight and obese children by applying evidence based knowledge from obesity perspectives [5]
- Nenad R. Lalic et.al.explains the role and importance of the module informational systems that supports business processes in accounting and management organization. [6]
- Abubakar sulaiman Gezawa et.al.design an online integrated information system which is a web based application that provides information support to admin/users for access and update university student record. [7]
- Manju Khurana and Kavitha Kunhi Kannan describes about National e-governance plan(NeGP) which aim to draw out learning's from various projects implemented in various states/UTs and share their knowledge with decision makers and implementers to benefit them by way of knowledge creation and skill building [8]
- Bodenbenner et.al. explains about the information systems (IS) that coordinate demand and supply in real time electricity market. IS helps to increase the efficiency of electricity markets by managing demand side resources [9]
- P.D.Aher et.al describes about Watershed management is an endowed approach to mitigate the gap between demand and supply of water and other natural resources, Watershed Management Information System (WATMIS) is a viable and generic toolkit for integrated watershed planning and management of its natural resources using multiple technologies like Geographical Information System (GIS), Remote Sensing (RS), Global Positioning System (GPS), hydrological modeling and soft computing tools. [10]
- G.Satyanarayana reddy et.al explains about Management information system (MIS) that provides information for the managerial activities in an organization,MIS provides accurate and timely information necessary to facilitate the decision making process and enable the organizations planning control and operational functions to be carried out effectively [11]
- Jack Diamond and Pokar Khemani describes about the computerized government accounting and payment operations by means of government financial management information systems (FMISs).It helps to provide a wide range of nonfinancial and financial informations.[12]

### **3. SMART INTEGRATED INFORMATION SYSTEM KIOSK NETWORK TOPOLOGY**

SMART Integrated Information system (SIIS) KIOSK is developed as a one touch solution to students and faculties in the higher educational Institutions in utilizing the latest information and communication technology services at the comfort of being inside the campus. A general block diagram of the topology of SIIS Kiosk Network is shown in figure 1. Central storage server is configured based on cloud technology using Blade Server, Gateway with firewall router and accessoires

A schematic block diagram of SIIS KIOSK is shown in figure 2

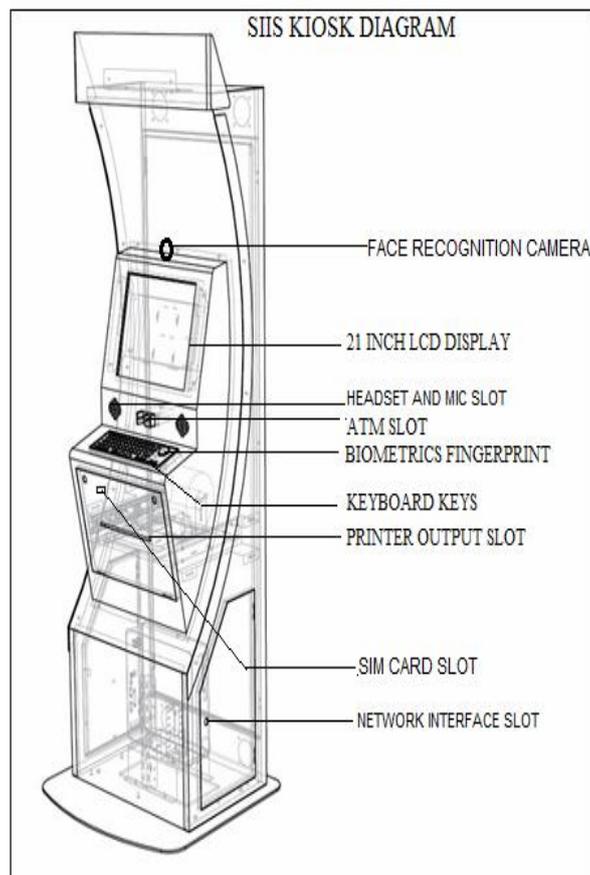


**Figure 2** Block diagram of SIIS Kiosk

SIIS Kiosk can be supported by Wi-Fi network infrastructure which can be deployed at key locations within the college campus. These Kiosk are connected through wireless Wi-Fi modem with data throughput of 100kbps. SIIS information are stored in centralized server in addition to Kiosk hard disk (Back up). SIIS Kiosk are supported with batteries (8-10 hours back up). In general, SIIS Kiosk looks similar to ATM Machine containing 21 inch LCD display, Keyboard, ATM card slot, finger print biometrics and has hardware modules similar to a computer. Under Linux platform the SIIS apps can be installed. These apps are designed using Android code. SIIS apps are graphical user interface (GUI) type, so they are user friendly. Each function is defined with separate blocks in GUI. User can initially give his biometric/password and can login into GUI. With the click of a button, the user can browse all the applications, can access the information and take print out. The SIIS is fitted with the facility of making emergency calls and online payment of bills.

- **Web Services:** High speed internet services can be provided through Wi-Fi. All the information in SIIS Kiosk are centrally stored in the server and Kiosk also has separate hard disk which acts as backup. Computing the individual data base, its authentication, authorization and privileges are achieved through identity management.
- **SIM card Slot:** SIIS Kiosk his designed to accommodate simcard slot in which cell phone SIM of any network service provider can be inserted. Kiosk support GSM/CDMA network for its call processing.

An outline of SIIS KIOSK appearance in the inventor’s point of view is shown in figure 3



**Figure 3** SIIS KIOSK appearance in the inventor's point of view

A dedicated storage space need to be made available in web server which can support following functions like e-library, e-student green card, e-teaching/learning,e-circular,e-banking, e-attendance etc and getting authorization to access information from different locations.

The salient features of SIIS can be summarized as follows:

- Moocs (massive open online courses): Reputed Universities across the Globe are offering value added courses, skill development courses available online leading to certification in state of the art technology is gaining high momentum among academicians and industrialists.
- e-library: huge amount of study materials/books under different disciplines across the world can be downloaded using e-library facility.
- e-student green card: This service gives information regarding students profile, students results and other information regarding the particular student. This information helps the faculty to understand his status and needs.
- e-teaching/learning :This facilitates students and staff to communicate with each other in efficient manner
- e-circular : It helps to communicate important information to the students and faculties
- e-banking: It helps to access the bank account details, used for fund transfer and bill/fees payment.
- e-attendance: Students and faculty attendance can be maintained online using this facility.

- Mobile and Emergency calling facility: This facility helps students and faculties to do emergency calls, voice , video calls and text messaging services. Provision is made in the SIIS Kiosk to insert sim card through sim card and authorized calls can be made , call logs can be view and printed.
- This is an age of knowledge and technology explosion. Students and Faculty need to be provided with material to keep pace with the advancements in technology. Moocs (massive open online courses), online resources and e-library form integral part of any advanced learning environment. Hence, a need is felt to incorporate this facility at the click of a button.
- Students often misuse mobile phones and laptops when allowed to use them in the campus causing distraction leading to poor performance. Prohibition of mobile phone and laptop usage lead to discomfort and contempt among students. To strike a chord of balance, it is felt that this facility could be made available to the students in a secured way with the help of latest communication devices and protocols.

## 4. SYSTEM ARCHITECTURE

### SIIS Software Configuration

Processor: Intel(R) Core™i3-2348M CPU 2.30GHz, supports RAM: 2.00 GB & Hard Disk: 80GB, Operating system: Linux, Application Software: Android, Data transfer Rate: 100Mbps

### SIIS Hardware Configuration

LCD 21 inch monitor screen, keyboard, biometrics system, slot for inserting business ATM cards, SIM Card slot, USB Wireless modem, Hard disk, Connection Supported: Wi-Fi, WLAN, Local LAN, Broadband etc, Peripheral Devices (Optional): Printer, Scanner & Projector etc, Kiosk machine: Fixed or Movable Type, Battery Backup: 8-10 Hours

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