

# INTRANET BASE-SMART AGENT ALERT SYSTEM USING EMAIL AND SHORT MESSAGE SERVICE (SMS) BROADCAST

Edem Eyibio Francis <sub>1</sub> and F. U. Ogban <sub>2</sub>

Department of Computer science, University of calabar, calabar. Nigeria.

E-mail of the corresponding author: [eyibioedem@gmail.com](mailto:eyibioedem@gmail.com)

## ABSTRACT

The internet has changed the face of communication and enables more people to reach more other people than ever before. In this work, we employ the robustness of the internet by developing a smart agent alert system that delivers spy information instantly. The short message service (SMS) and Email capabilities were maximized to achieve this, seven model blocks were used: SMS model, Email model, the administrator console, the mail checker, web handler, the web interface and database model. SMS model is responsible for routing the SMS, it connect with the short message service centre (SMSC). When the system sends a text message to a user, the phone actually sends the message to the SMSC, which stores the message and then delivers it when the recipient is on the network. Email model is responsible for sending the message to the user; it connects to the mail checker to report back to the system where the mail is delivered to the user. The administrator console is an administration tool that enables Email and SMS Alert (EMSA) System administrators to administer the EMSA system components. As an integral part of the EMSA System, the console works as an independent process. It enables EMSA system administrators to manage actions related to user and changing data, activation and deactivation of the EMSA system, and controlling the web handler and mail checker.

**KEYWORDS:** Alert system, Smart Agent, Short message service (SMS).

## 1.0 INTRODUCTION

Computer with the power of the internet have thrived in aiding communication among people. The telephone system which is the main communication system that was invented several year ago, had undergone a great improvement, so much that today we have fixed wireless phones, mobile phones and internet enable phones. With the rapid development of mobile phones come several services like the short messaging services (SMS), multi-media messaging services (MMS), internet services and other, which are readily available and add to the usefulness of mobile phones. Alert systems are becoming increasingly essential tool for fast and reliable communication. In this work we present a way to bring information to students through the availability of phones, with short message services (SMS), capacity and email through the internet, example of such information are student examination result. This examination result will be sent to student mobile phones with or without internet facilities on their phones. Intranet base-smart agent alert system with email and short message services (SMS), enable student to get their result in a convenient and accessible way. This work shows the implementation of such system and considers the security issues associated with the system.

## 1.1 BACKGROUND TO STUDY

Historically, notification system start in 1970's with the use of fax for documentation transmission. ( Glantz; 2003 ). It evolves into electronic mail, most commonly referred to as email or e-mail approximately in 1992. (Glantz; 2003). It is a method of exchanging digital message from an author to one or more recipients. Some early email system required that the author and the recipient both be online at the same time in common with instant messaging. Today's email systems are based on a store and forward model. (Rathore; 2006 ). Emails servers accept, forward, deliver and store the message, neither the user nor their computer are required to be online simultaneously. They need to be connected on briefly, typically to an email system for as long as it takes to send and receive the message. According to BBC (2002) The first SMS message was sent over the Vodafone GSM network in the United Kingdom on 3 December 1992, from Neil Papworth of Sema Group, UK (now Airwide Solutions) using a personal computer to Richard Jarvis of Vodafone using an Orbitel 901 handset. The text of the message was "Merry Christmas". Modern short message services (SMS), text messaging is understood to be massaging from one mobile phone to other mobile phone.(Alomari, 2008). RADIOLLNJA

became the first network to offer commercial person-to-person short message services (SMS), in 1994. Today's, text messaging is the most widely used mobile data service, with 74% of all mobile phone users worldwide.(Alomari, 2008).

With the invention of electronic mail (email) and short message services (SMS), it brought about notification system where email and short message services (SMS), can be used to send alert to individual to inform them about event, meeting and emergency etc.

### **1.3 DEFINATION OF PROBLEM**

Up till today, especially in developing countries, there exists the problem of checking examination results through notice boards in anxiety. Although most universities, even those in less developed countries now make examination result available on websites. The level of internet availability in less develop countries is still low and quite expensive. Even in develop countries where most homes have internet access, most universities now provide examination result on their website and this is a very common practices. While website seems to be a very good options in countries where internet is readily available, its impact could be less felt and it can be quite expensive in countries with poor internet access. In such places student will have to pay for internet services to check their grades. Similarly, the privacy that should be uphold with respect to results publishing is not through public display.

### **2.0 LITERATURE REVIEW**

Short messaging service (SMS) user interface result checking system, a system proposed and design by Emmanuel Rotimi Adagundo of Obafemi Awolowo University, ile-ife, Osun state, Nigeria and Oludele Awodele, Sunday Idowu of Babcock University, ilishan-romo, Ogun state, Nigeria, are good proposals. The system uses the short messaging service (SMS), which leverages the readily available infrastructure provided by GSM operators to provide a means of cheap and fast communication between the students and the university.

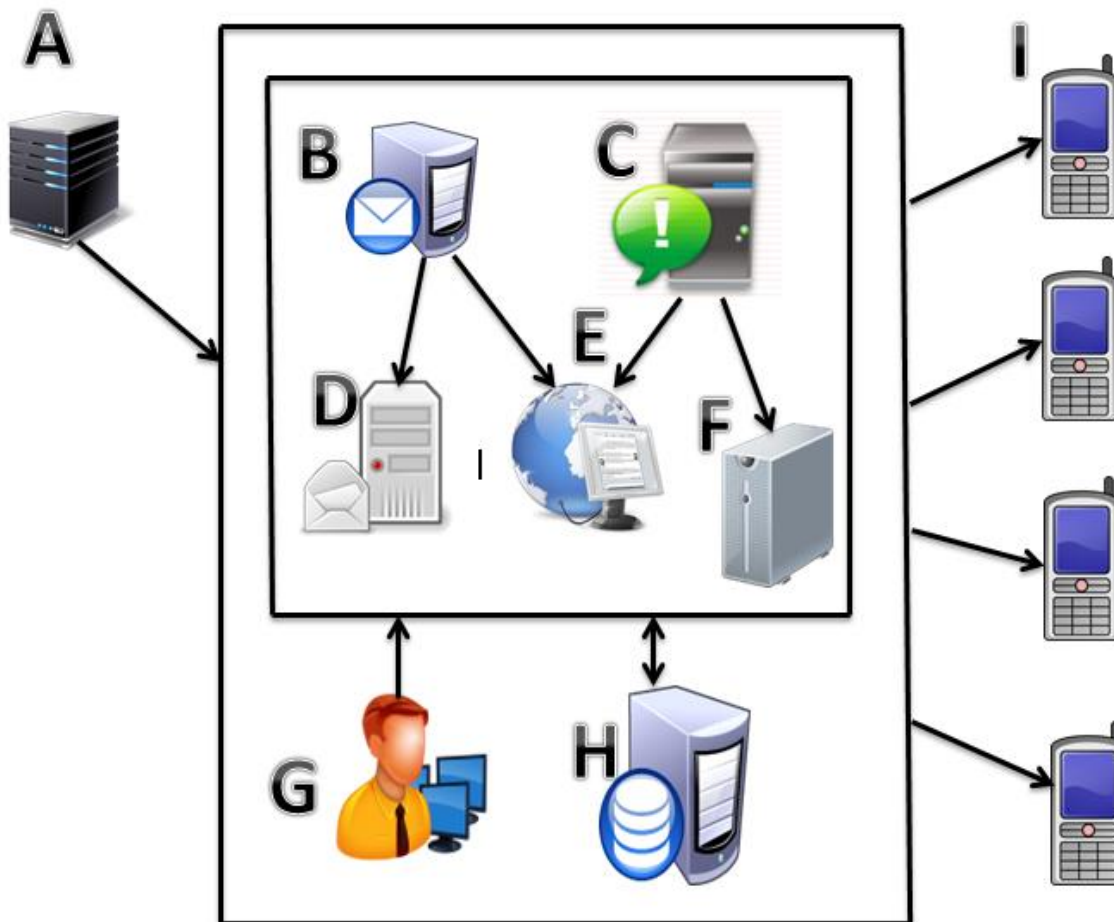
SMS-based transaction alerts system is a system proposed and design by C.F de Villiers (2010). The system is used in the banking sector to alert users about their daily transaction through short messaging service (SMS). Transaction alerts in the context of this system refers to push short messaging service (SMS). That is send to the bank customer which notifies them about an event in their account.

### **3.0 METHODOLOGY**

The proposed system will be using SMS which is independent on the telecommunication infrastructures provided by the GSM operators to provide a means of cheap and fast SMS alert system. There are two methods of SMS widely used in applications; there are push and pull SMS application. But this system will only use the push application. A push SMS application is one whereby a message is sent from the application to the recipients; it is a one way message application. In other words, it is the mobile application (in this case, SMS user interface application) that initiates the massage. An example could be a university that automatically send result to student as soon as the grades are available. The student do not request for the grades, the do not take any action or reply and are not charge for receiving the SMS. The SMS will be delivered to them in a matter of seconds regardless of where they are, as long as their mobile phone is within their network coverage area.

SMS application can be applied or used for two kinds of services; the independent and the dependent service; this system will be built on the independent service. Independent service involves using solely a mobile phone or a GSM modem and the application server (the system running the SMS application). The option offers limited benefits, but it is easy and fast to setup. It does not require authorization of the service provider or connect to any third party SMS provider. The GSM modem use a regular subscriber identity module (SIM) which has a normal phone number, and messages that originate from the phone attract the standard cost or traffic. (Awodele et al, 2009).

The Intranet base-smart agent alert system is divide into 3 subunit; examination process system, examination and mobile phone.



**A. Examination Result Processing System. B. Email Alert Model**  
**B. SMS Alert Model. D. Mail Checker. E. Web Handler**  
**F. Short Message Service Centre G. Administrator Console.**  
**H. Database Server I. Mobile Phone (users).**

Figure 3.1 Examination Result Alert System Model Diagram

The email and SMS alert system consists of five modules: result processing system, email alert model, SMS alert model, mail checker  
 Administrator console, mail checker, web handler/Web interface, database and mobile phone (users).

- a) Examination result processing system: Examination result processing system that automatically takes student examination result raw scores as input, and generate a student transcript as output.
- b) Email model: - Email model is responsible for sending the message to the user; it connects to the mail checker to report back to the system if the mail is delivered to the user.
- c) SMS model: - SMS model is responsible for routing the SMS, it connect with the short message service centre (SMSC). When the system sends a text message to a user, the phone actually sends the message to the SMSC, which stores the message and then delivers it when the recipient is on the network.
- d) Mail checker: - The mail checker is designed as an unlimited queuing system with a limited number of connections to mail servers. Currently, it supports up to 20 simultaneous connections to the Internet/intranet, which can be extended to suit particular operator's needs
- e) Web handler/ web interface: - The web handler is the interface to the SMS alert system database Active Server Pages (ASP) has a server-side script interpreter that enables running Visual Basic scripts on the Web server. This script can make calls to the Web handler and send the results out through the Web server to Web browsers. The web interface is the interface towards the user of the SMS alert system.

- From the web interface the user can register, update parameters, change his/her PIN, be informed about his/her PIN in case he/she forgets it, and send trouble reports to the SMS alert system administrator.
- f) Short message service centre (SMSC): - SMS-Alert system is built by interfacing them to an SMSC, which is the heart of a SMS network. It would basically be a service provider (Carrier) which would use its wireless network for sending and receiving messages from the SMS Alert subscribers.
  - g) Administrator console: - The console is an administration tool that enables email and SMS alert system administrators to administer the email and SMS alert system components. Most actions ordered from the administrator's console are also verified and handled by the controller. As an integral part of the email and SMS alert system, the console works as an independent process. It enables SMS alert system administrators to manage actions related to user and changing data, activation and deactivation of the email and SMS alert system. The console allows administrators to perform operations such as, starting and stopping the SMS alert system updating the user database, uploading student result and dispatch alert.
  - h) Database server: - The database stores user data obtained during registration or retrieved using the Web interface.
  - i) Mobile phone (users): - The user in this case is the student who's SMS and email alert will be forwarded to. The user must have and active email address to enable email alert and a functioning mobile phone number to enable SMS alert.

#### 4.0 RESULT AND FINDINGS

The aim of this work is to develop an easily extendable and modifiable email and SMS examination result alert system. The need for such a system is due to the long duration accessibility of student examination result, which require student to provide personnel data, such as mobile phone numbers and email address. The advantage of an SMS alert system include low implementation action costs, ease of use (users don't need to learn a new skill to use the system as it base on email and SMS), and extendibility.

One of the most important requirements of this system, other than the ability efficiently and effectively send SMS and email, is that it should be easily extendable, allowing for future add-ons and improvements. A database must also be developed hat can be easily and efficiently queried for information and a message protocol must be designed so that the system can parse send SMS.

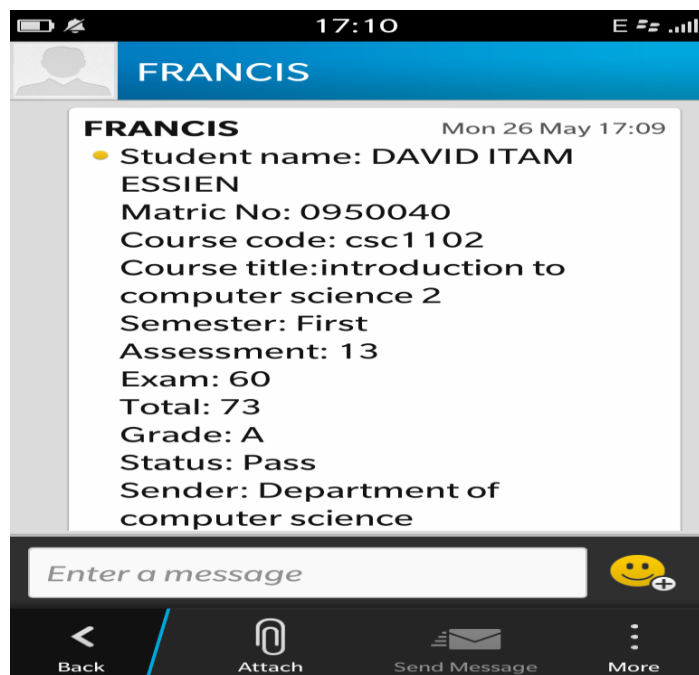


FIGURE 4.1 SMS OUTPUT

The rapid and accelerating move towards use of mobile technologies has increasingly provided people and organizations with the ability to work away from the office and on the move. The invention of mobile

technology bring new trend in computing world. With mobile technology, now came the era of mobile computing environment. This provides peoples with the ubiquitous computing environment. In the near future, people would be able to do various computing task anywhere and anytime. Intranet base-smart agent alert system with email and short message services (SMS), enable student to get their result in a convenient and accessible way. This is done by pushing the result to the students (sending it to their phones), The system uses the short messaging service (SMS), which leverages the readily available infrastructure provided by GSM operators to provide a means of cheap and fast communication between the students and the university.

### 5.3 CONCLUSION

In this work, we have successfully developed an email and SMS alert system which send spy information such as student result information to their mobile phones and email addresses. GSM modem was used to support the sending of the email and SMS. For small and medium operations, our approach of using GSM modem to implement the system is ideal from the perspectives of cost and data volume, the technical aspects for such a system are revealed.

The email and SMS alert system is a typical example of service for the future telecommunication world where today separate networks, the PSTN and data network, will coverage it successfully integrates telephone and internet e-mail service. The email and SMS system server user can be informed about their examination result though their phones without connecting to the internet. The implementation problems solved were integration of computer and telephone, synchronization requirements.

Use of the GSM-SMS system will provide enormous benefits, such as; Cost savings by opting for a wireless system, significant amounts of resources, The continued lowering cost of GSM-SMS transmission will also make the system more cost effective in the future, ease of expansion no additional equipment needs to be installed when expanding to a new area or region, ease of upgrade the GSM SMS is designed with the future in mind and it could easily be upgraded to take advantage of new technologies, especially with the expected entry of 4G cellular technology in the next few years.

### REFERENCES

- Alomari, Z. (2008). UUM Mail Notification System Using Mobile SMS Application. Master thesis, Malaysia: University Ultra Malaysia.
- Adagunodo, E. R., Awodele, O. & Ajayi, O. B. (2007). SMS banking services: A 21st century innovation in banking technology. *Issues in Informing Science and Information Technology*.
- Adagunodo, E. R., Awodele, O. & Sunday I. (2009) SMS User Interface Result Checking System. *Issues in Informing Science and Information Technology*.
- Awodele, O., Adagunodo, E., Akinwale, A., Agbaje, M., & Idowu, S. (2009). An Improved SMS User Interface. *Interdisciplinary Journal of Information, Knowledge, and Management*.
- Glantz M.H., Usable Science: Early warning systems: Do's and Don'ts. Report of workshop, 20-23 October, Shanghai, China, 2003.
- B. Rathore, O. Herrera, S. Raman, M. Brunner, P. Brunati, U. Chavan, M. Dilaj, and R. Subramaniam, "Information Systems Security Assessment Framework (ISSAF) draft 0.2.1 Information System Security Groups," 2006.

### BIBLIOGRAPHY

- Agar, J. (2003): Constant touch: A global history of the mobile phone. Cambridge: Icon. Baron, N. S., (2005): Instant messaging and the future of language, *Communications of the ACM*, Vol. 48, No. 7, pp. 29-31.
- Abas, Z., Lim, T., & Woo, T. (2009). Mobile Learning Initiative through SMS: A Formative Evaluation. *ASEAN Journal of Open and Distance Learning*.

GSM Association (July 2000) “What is SMS?”[Online] Available at:  
<http://www.gsmworld.com/Technology/sms/intro.html>

ICT Indicators database. Ling, S. H (2005). SMS to get your exam results.

Mayer, I. (2002), “Using text messaging to improve student organization and motivation”, [Online] Available at :<http://ferl.becta.org.uk/display.cfm?>

Naismith, L. (2007): Using text messaging to support administrative communication in higher education. *Active Learning in Higher Education*, 8(2):155-171.

Nonyongo, E., Mabusela, K., & Monene, V. (2005). Effectiveness of SMS Communication Between University and Students. South Africa: Institute for Continuing Education, University of South Africa.



The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:  
<http://www.iiste.org>

## CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

**Prospective authors of journals can find the submission instruction on the following page:** <http://www.iiste.org/journals/> All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

## MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

## IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

