

## SMART SYSTEM for BatStateU ARASOF- NASUGBU ROTC

FROILAN GUBI DESTREZA, JON – JON RONQUILLO HERNANDEZ,  
LEA BETH BARCELON MENDOZA, MARIEL BAUYON MANALO

*froilan@engineer.com*

College of Engineering and Computing Sciences  
Batangas State University ARASOF Nasugbu, Batangas

**PHILIPPINES**

**Abstract** - Reserve Officer Training Corp (R.O.T.C) is an organization that works under the Armed Forces of the Philippines (AFP). The officers of the ROTC processes such as recording of all the information needed in order to perform the different functions of the system. Officers of the ROTC encounter difficulty in the recording of information and checking of attendance, computing of grades, retrieving and securing of all information it is done through manual process. That is why the proponents proposed the topic entitled "SMART SYSTEM for BatStateU ARASOF - NASUGBU ROTC". The researchers used the prototyping technique to develop the step by step process of the system. The researchers also used the Visual Studio 2008 as the developing tool and MySQL server as the database. This system include database of all information that is required in order to perform the function of the system. The user can print reports of grades and official list of the enrolled students and officers. Complete with full backup and restore feature, the system was also proven to be a helpful source of information. This can help future researchers especially the third year students who may opt to upgrade this proposed system. The documentation produced and the software developed by the researchers and can be used as guidelines or references for future researchers. After thorough analysis, evaluation and testing, this study was found to be a big help to the BatStateU ARASOF – Nasugbu ROTC in terms of convenience, accuracy, security and speed in retrieving of information of any student and officers that is registered in the system. The "Smart System for BatStateU ARASOF - Nasugbu ROTC" for the ROTC students and officers of the BatStateU ARASOF –Nasugbu can be considered for actual implementation for the benefit of the entire University.

**Keywords:** Biometrics Scanner, Announcement system, MySQL Server

### I. INTRODUCTION

The NSTP or also known as National Service Training Program is an institution or an organization that works under the Armed Forces of the Philippines (AFP) for the Government. NSTP has different training courses like Reserve Officer Training Corps (R.O.T.C), Literacy Training System (L.T.S) and Citizenship Advancement Training (CAT) for the high school students. NSTP is responsible for conducting military trainings to college students in all the universities in the Philippines as preparation of becoming an army reserve or a soldier in the future. The NSTP is aiming to mold student that have good moral values as well as to become responsible citizens of our country.

BatStateU ARASOF – Nasugbu is one of the universities that offer NSTP courses which include ROTC and LTS. NSTP is a curriculum requirement for students to be able to finish their baccalaureate degree. It is offered in the first year level of their course.

### II. OBJECTIVES OF THE STUDY

The study aimed to develop a "Smart System for BatStateU ARASOF - Nasugbu ROTC". Specifically, the researchers aimed to determine the acceptability level of the existing and the proposed systems in terms of: accuracy, efficiency, reliability, user friendliness and security.

### III. REVIEW OF LITERATURE

Biometric can be defined as study of methods for uniquely recognizing humans based upon one or more intrinsic physical or behavioral traits (Commission of the European Communities, 1993). Biometric characteristics can be divided in two main classes: Physiological are related to the shape of the body. The oldest traits that have been used for more than 100 years are fingerprints. Other examples are face recognition, hand geometry and iris recognition. Behavioral are related to the behavior of a person. The first characteristic to be used, still widely used today, is the signature. More modern approaches are the study of keystroke dynamics and of voice. A biometric system can provide the following two functions.

It can authenticate its users in conjunction with a SMART card, username or ID number. The biometric template captured is compared with that stored against the registered user either on a SMART card or database for verification. The closest match within the allowed threshold is deemed the individual and authenticated (Rufai, Adigun, Yekeni, 2013).

The SME (Short Message Entity), which is typically a mobile phone or a GSM modem, can be located in the fixed network or a mobile station, receives and sends short messages. The SME was sent to the SMSC. The SMSC (Short Message Service Center) is the entity which does the job of store and forward of messages to and from the mobile station. After

receiving the SME, then SMSC sent the SME to the SMS GMSC.

The SMS GMSC (SMS gateway MSC (Mobile Switching Centre) is a gateway so that MSC that can also receive short messages. The gateway MSC is a mobile network's point of contact with other networks. On receiving the short message from the short message center, GMSC uses the SS7 network to interrogate the current position of the mobile station from the HLR, the home location register (Yusof, 2006).

According to the study of Ruffai, Adigun, and Yekeni (2013) about the College Announcement Notification System, it means the alternate way of notifying students compared to the previous way. Before the members can receive SMS that is sent from the system, users need to register their details to the system. The registration process is very simple, it is similar like register details for new email account but it added a space to enter the member mobile phone number for sending SMS notification purposes. The functionality of College Announcement Notification System is hoped give efficient to the members of receiving notification via SMS directly to their mobile phone. The SMS notification content is just a brief explanation about the event that is going to be held, more details about it can refer to the web based system.

The project objective is to give efficiencies for staff of Sunway University who want to post announcement. To use SMS as an instant notified, for example every announcement post on the website the student receive a SMS about the announcement. In long term of view, this system helps in notify student about things that happen in college.

The scope of the study is to become the most useful media for announcement notification. When the system is run it involves the Sunway University students and staffs that want to use the service. The user of the system should be students of Sunway University and staffs. All users that want to use the system have to become member (Rufai, Adigun, Yekeni, 2013).

Uses a unique form identifier and 128 bit encryption technology. Each voter registration is embedded with both GIS and voting sub-divisional information along with unique identifier to prevent any human and machine errors for capturing the voter personal and demographic data. Each of the voter file is hashed with 128-256 bit or better to prevent tampering or unauthorized changes for ultimate integrity. Saves Voter Registration Costs and Error. It reduces the need for clerical staff that manually types voter information when the voter personal and demographic data are captured automatically with the used of the patented and proven OMR technologies. All data including voter's signature, fingerprints and pictures can be scanned and captured at the same time in forming part of the audit log and database of voter registration. It also eliminates employee overtime costs and data entry concerns and dramatically reduces human error. It can also reduce or eliminate the need to transcribe data and provides for timely management of massive last minute voter registration. Kiosk can be used for biometric capturing, template forming for authentication and verification. For the countries where physical biometrics may be used for identification and

authentication, biometrics such as fingerprints, facial picture and dynamic digital signature are useful means for both verification and authentications. AVANTE solution incorporated all of the capturing, template forming and matching applications of voters for improving the voting integrity (Avante International Technology, 2012).

#### IV. MATERIALS AND METHODS

In this system, the design stage of the process and the chosen concept of the proposed system based on a complete diagram design. The researchers worked with the ROTC officers to ensure that the system used the existing system's design and stages. The researchers use System Development Life Cycle as the technique in developing the proposed system. The researchers use the Prototyping method, because it is the most acceptable technique.

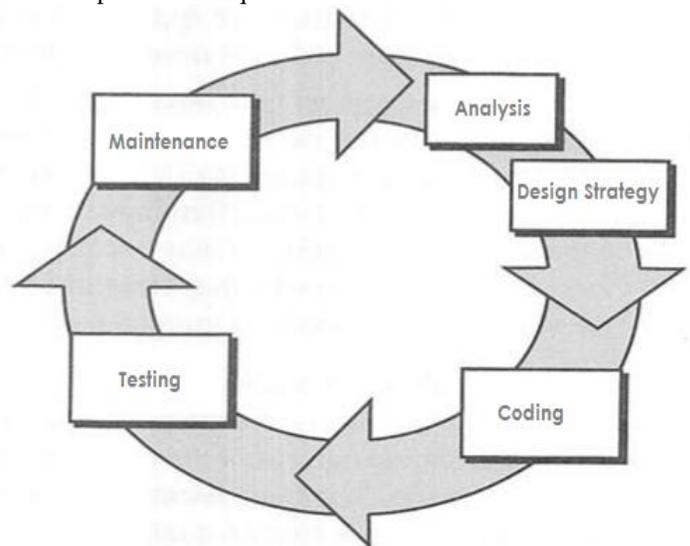


Figure 1. the step by step process in developing the system. The prototyping paradigm (R. Pressman 43)

The used of the Prototyping model is the most suitable model for our design to easily explain the step by step process of the system. It shows how "Smart System for BatStateU ARASOF - Nasugbu ROTC" developed and what requirements were needed.

#### Software Requirement

The researchers used Visual Studio.Net which can modify data and manage database that suits data processing operation and can add, change, find, delete and record. The researchers used Microsoft Windows 7 Ultimate for it is the compatible one with the system, this operating system is very easy to understand because it is user friendly and compatible with any working computer. MySQL Server 5.1 serves as the storage of the system and the database of all the information of the ROTC officers and students.

**Hardware Requirements**

It contains the list of hardware needed in order to develop the “Smart System for BatStateU ARASOF – Nasugbu ROTC” according to its specification.

Table 1. List of Hardware needed for the system.

Hardware	Uses
Biometrics (Finger Print Scanner)	This is used to scan and save the finger prints of the faculty and officers of ROTC for identity and also used in their attendance.
Broadband Stick	This is used for sending SMS like announcement for ROTC students.
Hard disk (139gig)	This is used to save all the details and files in the whole system, serve as the main memory.
Printer	This is used to print the output and other documents needed.
System Unit	It determine the speed of the system, depending on the different process of the system
Keyboard	This is used to input the details of the registration.
Monitor	Used to view and display the forms of the system.

Table 1 contains the hardware requirement in order to create the desired system.

**Preparation And Evaluation**

The researchers prepared and studied the evaluation process by determining how many respondents require. The researchers also prepared in accepting and taking note of the feedbacks and comments of the respondent which improve the proposed system.

Table 2. Guideline Interval for Questionnaire

Scale	Mean Range	Descriptive Equivalent
5	4.21 – 5.00	Excellent
4	3.41 – 4.20	Very Good
3	2.61 – 3.40	Good
2	1.81 – 2.60	Fair
1	1.00 – 1.80	Poor

Table 2 describes the level of acceptance of the proposed system. It also describes the level of interpretation of the system.

**Sampling Procedure**

In the evaluation process, the researchers distributed the questionnaire to evaluate the level of acceptability of the “Smart System for BatStateU ARASOF - Nasugbu ROTC”. The respondents of the study be students of BatStateU ARASOF - Nasugbu who are currently enrolled in ROTC.

Independent Sample T-test formula is used:

$$t = \frac{\bar{D}}{s_{\bar{D}}} \quad \text{where} \quad s_{\bar{D}} = \frac{s_D}{\sqrt{n}} \quad \text{and} \quad \bar{D} = \frac{\sum D}{n}$$

(Independent Sample T-test)

**V. RESULTS AND DISCUSSION**

Before the acceptance of the propose system, the following evaluation has been conducted, the respondents answer the evaluation sheet according to the process that existing have.

Table 3. Frequency distribution of Existing “System for BatStateU ARASOF - Nasugbu ROTC”

Software Quality	WM	VI
Reliability	2.3	Fair
Efficiency	3	Good
Security	2.3	Fair
Accuracy	2.4	Fair
User- friendliness	3.2	Good
<b>Average</b>	<b>2.64</b>	<b>Good</b>

Table 3 shows the evaluation of the respondents of the Existing System for BatStateU ARASOF - Nasugbu ROTC according to reliability, efficiency, security, accuracy, and user-friendliness. The table also shows the weighted mean and the average of the evaluation result.

Table 4. Frequency distribution of the “Smart System for BatStateU ARASOF - Nasugbu ROTC”

N = 10		
Software Quality	WM	VI
Reliability	4.4	Excellent
Efficiency	3.1	Very Good
Security	4.6	Excellent
Accuracy	4.7	Excellent
User- friendliness	4	Very Good
<b>Average</b>	<b>3.88</b>	<b>Very Good</b>

Table 4 shows the evaluation of the respondents of the “SmartSystem for BatStateU ARASOF – NasugbuROTC” according to accuracy, efficiency, reliability, security, and user-friendliness. The table also shows the weighted mean and the average of the evaluation result.

**CONCLUSIONS AND RECOMMENDATIONS**

It is concluded that the existing enrolment system, attendance process and announcement system of the ROTC is considerably less secured and reliable in the creation of “Smart System for BatStateU ARASOF - Nasugbu ROTC”. Smart System for BatStateU ARASOF - Nasugbu ROTC” has exhibited the qualities of an effective and acceptable computer-based system by its users – the ROTC officers and ROTC students. “Smart System for BatStateU ARASOF - Nasugbu ROTC” is a better system to implement than the existing enrolment system, attendance process and announcement system of the ROTC by its higher acceptability rate.

It is hereby recommended that the “Smart System for BatStateU ARASOF - Nasugbu ROTC” for the ROTC students of the BatStateU ARASOF - Nasugbu be considered for actual implementation for the benefit of the entire University; that further enhancements and developments be pursued by the succeeding studies or researches to increase SMART System for BatStateU ARASOF - Nasugbu – ROTC’s fundamentals functionalities and to eliminate possible undiscovered bugs; and that the Visual Basic be explored in a more in-depth

approach by IT students because of its unlimited capabilities to satisfy even the most advanced concepts and peculiar ideas in software development.

## REFERENCES

- Avante International Technology. *Avantetech.com*. February 2012 - 2013. web. 2013.
- Rohanaih Binti Yusof. *The Developmental and Implementation of a Mobile Announcement System - an Analysis Based on Perceived ease of use and Perceived Usefulness*. May 2006. Web. Feb. 2013.
- Rufai M.M, Adigun J. O, N.A Yekeni.(2013). *A biometric Model for Examination Screening and Attendance Monitoring in Yaba College Technology*. Yaba College of Technology.
- Pressman, Roger S. *Software Engineering: A Practitioner's Approach 7th edition*. The McGraw-Hill Companies, Inc., 2010. E-book.