DEVELOPMENT OF SMS GATEWAY SERVICE ON STUDENTS INFORMATION SYSTEM AT SMK SUMATRA 40 BANDUNG

Widi Tritama Mustopo[1]

[1]Teknik Informatika – Universitas Komputer Indonesia
Jl. Dipatiukur 112-114 Bandung
Email: widhi.mustopo@gmail.com

ABSTRACT

SMK Sumatra 40 bandung is a vocational high school that has been build in 2007 at sumatra street, and now have been relocated in pahlawan street no.21 Bandung city, SMK Sumatra 40 have information system base on website for provide service information of SMK Sumatra 40 like activity of school, extracurricular information, presentation of school, announcer of school, information of student.

Base on result of interview with headmaster of SMK Sumatra 40, this system information just for their student that have a NIS for login to system those information will not be conveyed to their parents, and maybe the perants doesn't know there is a system information of student, these information really needed for every parents and students, were parents need to know information about their childs while they study in SMK Sumatra 40, those information is like, grade information, absention information, monthly payment and the others.

Proposition to handle it, we need system that can connected system of student information and their parents in order to give information for parents and can be access from everywhere and anywhere, without attach by place and time. Therefore to handle those weakness, author will develop Short Message Service (SMS) Gateway on student information system at SMK Sumatra 40 Bandung, because every cellular phone even if is not a smartphone it's must be have a Short Message Service (SMS) and of course this will be effective because parents doesn't need to buy any other gadget to running this and every parents nor students already have a cellular phone.

Key Word : SMS *Gateway* , SMS Gateway service Development , Development, Development of SMS, SMS Gateway service.

1. INTRODUCTION

SMK Sumatra 40 bandung is the new vocational high school founded in 2007 in Sumatra street, now move to pahlawan street No. 21 Bandung. SMK Sumatra 40 has a web-based information system that is used to provide information services such as information 40 Sumatran SMK extracurricular activities, the school achievement information, announcements regarding school information, college entrance exams, information job vacancies for graduates of VOCATIONAL SCHOOL Student Information, and more. But based on the results of interviews with the principal of SMK Sumatra 40 there is a lack of system because not all parents are able to access this information system. From these existing problems to resolve it needed a system that would later bridges between information systems student and parents/guardians of students to information on Sumatran 40 can be accessed anywhere by a parent of the student quickly, accurately without bound to time and place, to overcome the weaknesses and shortcomings of this student information system then the author wants to develop information services through the medium of Short Message Service (SMS) Gateway on information systems student at SMK Sumatra 40 , because each Mobile smartphone though not sure to have SMS service certainly will be very effective because the parents do not have to buy other supporting tools and nearly all the students and parents of students already have a mobile phone. By implementing this system, student information about the expected announcements for students, the information value of the students and other information will be fast, accurate up to parents and students.anytime.

1.1 Purpose and Objectives

The purpose of the authors develop the services SMS Gateway on information systems Student at SMK Sumatra 40 Bandung expected information about the studentship will be up to parents and students will be more rapid, precise and accurate..

As for intents and purposes to be achieved include:
1. SMS Gateway Services are able to provide the information the student quick, precise, accurate to parents and students.

2. Provides convenience to parents to get the information on attendanceor presence of their students.
3. Provides convenience to parents to get the information about the costs of such *SPP*.
4. Provides convenience to parents to find out information of valuewithout attachment to the time and place.
5. Provides convenience for the student section to *Surat Peringatan* (SP) to parents who have a trouble with thire childs with the attendance of more than three times *alpa*

1.2 SMS GATEWAY

SMS Gateway can be defined as the gate or the path for the distribution of information by using the Short Message Service (SMS) with it, we can spread the message to a large number at once automatically and quickly. With the use of additional programs that may be made, the sender of a message can be more flexible in the send/receive Short Message Service (SMS) in accordance with the rules set out, such as the system for request and reply in SMK Sumatra 40 which will be developed in this instance. The workings of the SMS Gateway: SMS sent to the number of parents who have been specified, the contents of the SMS is a Format that has been specified in advance, the workings of this research SMS Gateway or SMS received by the Modem that works as an SMS Gateway will then be sent to the SMS Gateway Service system then the system will respond to the SMS. If the Format SMS right then the Modem acts as an SMS Gateway Server will reply too and so on. Then the SMS will be saved in a database and will be shown into the Website SMS Gateway service and also broadcast in which SMS like Announcements sent to every school parents or students.

1.3 Limitation Problem

FAST Limit problems in the development of SMS Gateway service on the student information system at SMK Sumatra 40 encompassed the 3 things, that data is processed, the process, method, user, the software and hardware that used:
1. Data Processed
The data processed when implementing SMS Gateway is a service application, the data, the data value of the *SPP*, and attendance data from the student information system. The data value entered by the teacher and is drawn from the results of studies for each subject as exam,middle exam , last exam , and attendance data filled in by a homeroom.

2. Data Processing
When the value data such *absent*, *SPP* is already filled then the system automatically delivers SMS messages to parents of students in the broadcast, and also data can be seen with the method request and reply where students or parents of students send a message in the form of a format that is already determined.

3. the method
The methods used on SMS Gateway service application this is broadcast and request and reply that integrates with Student information systems in Sumatra 40.

1.4 *Research Method*

The method of research used in the development of SMS Gateway service on the student information system at SMK Sumatra 40 Bandung is a method of development. Development as a method of assessment against the restyling, development and evaluation of program processes and products that must meet the criteria of validity, practicality, effectiveness . Research outline of the stages can be seen in Figure 1.

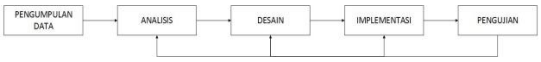


Figure 1.1 step of research
(Sugiyono, 2008)

The following is a description of Figure 1 that is thestage of the research1. Data collection
Data collection can be obtained for direct object of research that supports the way – how to get the data that is:

a. the study of Literature

Study of literature is a method of data collection is done by way of studying, researching, and studying a variety of literature from the library were sourced from books – textbooks, scientific journals, websites on the internet, and reading that there is a connection with the topic of research.

b. Field Study

Field studies carried out by visiting it directly to the place where the system will be developed in SMK Sumatra 40, and field study techniques are as follows:

1. Interview (interview)

The interview is a process to collect information in the form of data and process by doing faqs directly with Mr. Frans Ngadilan as the school principal, Mrs. Yuli and Mrs. Yuni as part student, Mr. Tiwan as teacher and Mr. misbah as Chairman of the Department of RPL and also the maintainer of the website information systems in SMK Sumatra 40.

2. Observation (Observation)

Observation is the collection of information in the form of data and processes in a way observe

directly the existing Student information systems in SMK Sumatra 40.

2. Analysis

Phase analysis of doing by analyzing the problem, an analysis of the running system, analysis of documents, analysis of the running procedures, non-functional needs analysis and analyzing the functional needs of the new system will be applied.

3. Design

Stage design was done by designing or the designer of the data in order to support the development of SMS Gateway Services, designing interfaces, and menu structure that will add new systems that will be applied.

4. Implementation

Stage of implementation is done by implementing the interface design and the service SMS Gateway on the student information system to a programming language, in this case the PHP programming language with Gammu library.

5. Testing

Testing phase conducted directly interact with the application, execute the functions, so that the function is well underway according to your needs.

1.5 Model of Process

Model of the process used in this research is to using the model Prototype, Note Figure 1.2.

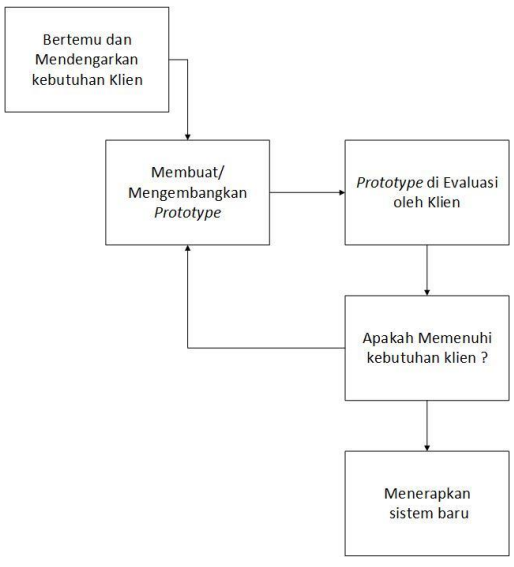


Figure 1.2 *Prototyping* model

(Bambang Hariyanto, Ir., MT., 2004)

On this model begins with a gather information on client needs, this client is a party school SMK Sumatra 40 Bandung.

1. The developer and Client meet and define common objectives or goals and purpose.
2. Identify the needs that are already known.
3. Look for areas that still require definition or additional development.

After that developers perform design to the needs that have been identified at a meeting with the school. The design focuses on the representation of the user or client looking Prototype is evaluated by the client or the school SMK Sumatra 40, this process is repeated until the prototype that was developed to meet the needs of the client.

2. RESEARCH CONTENT

2.1 System analysis in progress

System analysis in progress include the analysis of documents and analysis procedures or data stream. This is done to evaluate and give an overview of the plan of solving the problem at hand. System analysis is the decomposition of an intact information into component parts with a view to identifying the problems, opportunities, barriers and needs that are applied so as to proposed an improvement. This analysis stage is very important because in this stage if there are errors, it will cause an error against the next stage. It needs to be a level of precision and accuracy of the high quality of work to get a good system. Analysis in progress aiming to know more clearly how to work the system and issues facing the system to be used as the cornerstone of the proposed design of the system. The discussion in the analysis system that runs it is the value of the information system on procedures, information systems, attendance, payouts are now walking through the student information system at SMK Sumatra 40 Bandung.

2.1.1 Evaluation system

After doing an analysis of the system that is running on SMK Sumatra 40 Bandung, good analysis of documents and procedures exist, the author finds some problems either directly or indirectly, that may affect the performance of the system.

These problems when are reviewed further will influence on the development of the system. After making the identification of the cause of existing problems, the author also did the observations with a view to collecting data facts or problems on this system. In the student information system at SMK Sumatra 40 find the problems that occur with regards to attendance process, assessment process and payments. As for its problems as in Table 2.1.

Tabel 2.1 Evaluasi sistem yang sedang berjalan

Problem	Solusi
1. The final grade, payment and attendance of students in the process still use Microsoft Office Excel so that the work takes a relatively long time, then the data is uploaded that will be downloaded by students. 2. The information is small will likely be up to the parents	1. Create an information system that can process the data, the data value is absent, the data of payment which would have computerized. 2. student information system-based SMS gateway so that the information can be up to parents or pupils without being bound to time and place.

2.2 Design System

The planning system is a guideline for conduct system development. Planning the system concerns the estimation of physical needs, labor and funds needed to support the development of the system as well as to support its operations after applied.

The design of student management information system with computer-based SMS gateway device on SMK Sumatra 40, intended as a means of spreading information on grades, attendance, and payments automatically.

It is supported by each of the students, parents, and teachers SMK Sumatra 40 bandung almost entirely have the mobile as a media of the sender and receiving information. Then to realize this, the author seeks to develop the student management information system based SMS gateway as a media delivery information so students can quickly and easily get the information on Sumatran 40 CMS. Stages of the design of these systems will be described using a modeling Object Oriented Programming (OOP) with UML (Unified Modelling Language).

2.2.1 System Design Goals

The design of the system aims to create a system architecture and configuration hardware and software, thus resulting a better system. The design of this system is a process of solving problems encountered and aims to build a system that can meet the objectives, needs and goals to be achieved by the company.

2.2.2 General overview of the proposed System

Design SMS Gateway service applications that will be developed in the student information system is run on a computer that is connected to a modem, modem and databases as a bridge connecting PC with mobile (client), this modem that will send information to every parent/guardian mobile students, this modem is connected through the USB port as the recipient (SMS receivers) can be seen in Figure 2.1.

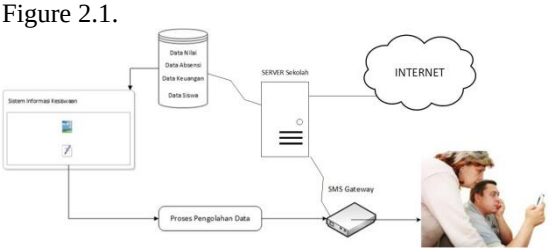


Figure 2.1 System Schemes

This application will accept all incoming SMS and responded automatically (request and reply) Figure 2.2, in accordance with a format that later will be determined, for example SMS format in table 2.1.

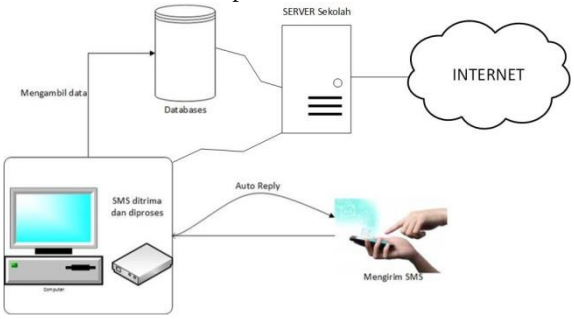


Figure 2.2 Request and Reply schemes

Below is a table format on the table 2.1 sms service.

Table 2.1 Format SMS for *Request and Reply*

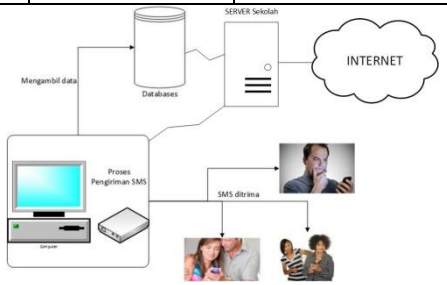
No.	Format SMS	SMS reply Content	Desc.
1	INFO	Format layanan SMS Gateway : Nilai<SPASI>NIS<SPASI>NUPTK ABSEN<SPASI>NIS SPP<SPASI>NIS<SPASI>BULAN @SMK SUMATRA 40 BANDUNG	To find out the format of the SMS available
2	NILAI<space>NIS<spasi>NUPTK	Nilai #namasiswa# pada mata pelajaran #NamaMatapelajaran# yaitu Ulangan : #nilai# , UTS : #nilai#, UAS : #nilai# @SMK SUMATRA 40 BANDUNG	To see information grade (*NILAI*)
3	ABSEN<space>NIS<SPASI>THN AJARAN<Space>Semester	Siswa dengan nama : #NamaSiswa#, Izin anda : #jumlah# , Sakit anda : #jumlah#, alpa anda : #jumlah# . @SMK SUMATRA 40 BANDUNG	To see information absent
4	SPP<spasi>NIS<space>bulan/tahun	Siswa dengan nama : #NamaSiswa#,ortu :#NamaOrtu# pada tgl : #date#	To see information *SPP*

		Membayar SPP : #JumlahRupiah#, #Status[LUNAS/BLM LUNAS]# @SMK SUMATRA 40 BANDUNG	

Information can also be sent by way of broadcast (Figure 2.3), when a condition is met in the table 2.2.

Tabel 2.2 *Broadcast*

No.	condition	Content
1	If the student has reached the Alpha > 3, then the application SMS Gateway will send the SP to parents in order to meet part of the studentship.	Siswa dengan nama : #NamaSiswa# , diberitahukan telah tidak menghadiri kegiatan sekolah sebanyak 3x dimohon kepada orang tua wali siswa tersebut untuk menemui wali kelas. #NamaWalikelas # @SMK SUMATRA 40 BANDUNG
2	The grade will be processed when the data such a UTS, UAS, already entered into databases by the teachers of each subject then parents will receive SMS in the form of a value study results of students automatically	Nilai #namasiswa# pada mata pelajaran #NamaMatapelajaran# yaitu Ulangan : #nilai# , UTS : #nilai#, UAS : #nilai# @SMK SUMATRA 40 BANDUNG
3	If students already pay TUITION FEE payment data then the students entered into the databases *SPP* then the system will automatically send the information SMS *SPP* to parents that the students already pay TUITION FEE by the amount of such.	Siswa dengan nama : #NamaSiswa#, pada tgl : #date# Membayar SPP : #JumlahRupiah#, #Status[LUNAS/BLM LUNAS]# @SMK SUMATRA 40 BANDUNG
4	The school that wanted to provide school information to students or parents of students.	Contoh, INFO SEKOLAH :Besok rabu-kamis 9-10 desember 2015, sekolah diliburkan (pilkada serentak).Terimakasih @SMK SUMATRA 40 BANDUNG



Gambar 2.3 Broadcast schemes

2.3 Needs of Non Functional Software

Software used on the student information system that is on SMK Sumatra 40, as contained in table 2.3.

Tabel 2.3 Software already exist.

No	Kind of sofware	Desc.
1.	Operation System	Windows 7
2.	Data Text	MS.Word
3.	Data Tabel	MS.Excel
4.	*Browser*	Mozilla Firefox
5.	*Database*	Sql server
6.	Application	Dreamweaver CS 3

The software used to support the development of student management information system based SMS Gateway, as contained in table 2.4.

Table 2.4 software Needs

No	Kind of sofware	Desc.
1.	Operation System	Windows 8
2.	Data *Text*	MS.Word
3.	Data Tabel	MS.Excel
4.	*Browser*	Chrome
5.	*Database*	Xampp, MySql
6.	Aplikasi	Dreamweaver CS 6
7.	Library	Gammu

2.4 Needs of Non-Functional Hardware

Hardware that is already available in the CMS Sumatra 40 can be seen in table 2.5.

Table 2.5 existing hardware

No	Kind of hardware	Desc.
1.	*Processor*	3.2 Ghz
2.	RAM	2 GB
3.	Hardisk	80 GB
4.	*VGA*	1 GB
5.	Monitor	15 inci

The hardware needs to support the creation of a system that would be built to run properly can be seen in table 2.6.

Tabel 2.6 Hardware needs.

No	Kind of Hardware	Desc.
1.	*Processor*	4.1 Ghz
2.	RAM	6 GB
3.	Hardisk	1 TB
4.	*VGA*	2 GB
5.	Monitor	15 inci
6.	Modem	Zte & vodafone
7.	SIM Card	Telkom Flash

2.5 The proposed Diagram Usecase

Here is a Use Case Diagram is proposed in order to support the development of student

information systems-based SMS gateway, can be seen as in Figure 2.4.

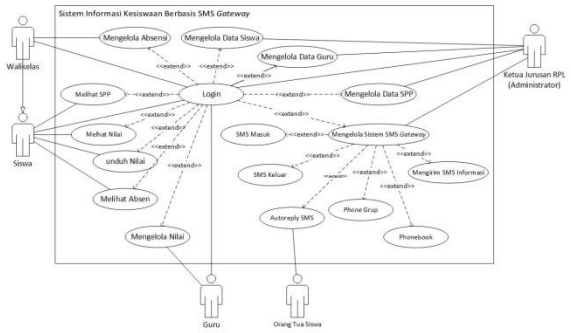


Figure 2.4 *Usecase diagram student information system-based SMS Gateways*.

3. SUMMARY

Based on the results of the analysis, the alpha testing was done and the original purpose of this thesis, then a conclusion can be obtained by applying the service SMS Gateway on the Student is:

1. Parents are highly facilitated by obtaining the information activities of his son in schools.
2. Parents are highly facilitated by obtaining information such as grades, attendance information, information of *SPP*, and also information such as important announcement of the school without being bound to time and place.
3. Facilitate the student Section to call the parents of students who are having problems with attendance.

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