WEATHER NOTIFICATION SYSTEM USING GSM

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ABSTRACT

Weather Notification System is web site systems which use the GSM modem send SMS (Short Message Service) to customer/client for notify the weather information. By using this system customer would be able to get the notify message/information more easily. Before this, customer only can get the notification by manually. They need to request the notification message every time when they hope to know about the weather condition. But, with using this system, the task become more easily. When newweather information is entry or recorded into the system, the system will send the notify message to related customer. Hence, customer only needs to request to the system one time. Then, the system will update the notify message every time without waiting for customer asking for.The main advantage of this system is that it help customer get the notify message more easily. It is also helpful for staff to manage the web site.

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LIST OF ABBREVIATION

Acronyms	**Definition**
WNS	Weather Notification Using GSM
GSM	Global System for Mobile Communications
PC	Personal Computer
HTTP	Hypertext Transfer Protocol
PHP	Hypertext Preprocessor
SQL	Structured Query Language

PART 1

INTRODUCTION

1 Introduction

There are a unit under Malaysian Meteorological Department has provided Short Message Service (SMS) to their user. Once the users asking the weather updated information by sending message to the system, they can get their request message directly from the system. Although the system service have a good idea but the system is still no useful to the user.

User cannot get to know the weather conditions automatically, they only can get the information when they send message to asking the system service. This becomes inconvenient for user. The user should get the information or message about weather as soon as possible, so they have time to do preparation. User can also prepare or make changing early if they can know the weather condition automatically. As an example, when a driver prepare to progress some outdoor activities but unluckily the day will be raining, if they can get the weather condition of the day early, this will useful for them to make changing or cancel the activity. There are some people whom are doing outdoor activity, such as fishermen, construction worker, farmer, lorry driver and etc., their work are depend to weather condition. If there are raining, they are forced to stop their work or dangerous with their work.

Hence, users are automatically getting the necessary information once they are register in the system. Thus, the users no need to asking the system every time when they want to get the information.

1.1 Problem Statement

Weather Notification System in Malaysia which under unit Malaysian Meteorological Department has provided Short Message Service (SMS) to their user. Once the users asking the weather updated information by sending message to the system, they can get their request message directly from the system. Although, the service provided by the system have match their purpose to sending message but the system is not fully developed and effectiveness.

User cannot get to know the weather conditions automatically, they only can get the information when they send message to asking the system. This become inconvenient for user especially when they are some emergency casesuch as raining, Storm, flooding and others happening which will affect their daily work. This system client is working related to architecture construction, under him have much construction work which will affected by badly weather, such as raining. If he facing badly weather, he will need to stop his work. So, he wishes that he and construction worker can get the information or message about weather as soon as possible. Then, the staff and worker under him will have time to do some preparation before starting their daily work. Meanwhile, the users can edit or make changing early if they hopefully to know the specify notification at specify time, weather condition and location only. As an example, when the construction worker prepare to progress some outdoor activities but unluckily the day will be raining, if they can get the weather condition of the day early, this will useful for them to make changing or cancel the activity.

Hence, weather notifications which can notify the users automatically are very important in the cases.

1.1.1 Objective

The objectives of the system developed are:

i. To studies the effectiveness between database and weather notification system.

ii. To designs a weather notification system by using PHP language.

iii. To develop a prototype of weather notification system using Global System for Mobile Communications (GSM).

Review of Previous Work

1.2.1 Architecture Construction Worker[1]

The architecture construction workis related to the work which to build out a building.When build a building, a bad weather such as raining, storming and others will affect their daily work. Sometime they need to stop their building work because of the bad weather condition. While, under Mr. Lee, there have much construction project which might affected by weather condition. Hence, he and his construction worker who wish to get the weather notification early. Then, with using this system their safe when do the construction building can be assure. Meanwhile, sometime because raining, flooding or others badly weather condition make the construction worker can no progress or finish their task in time and even though affect their safe. These bring them a lot inconvenient when facing bad weather .Hence, Mr. Lee and his worker hope to receive weather information early and can make preparation early if they facing badly weather condition.

Before this, if the workers hope to get or receive notification, they need to send request message to the Malaysian Meteorological Department and waiting for the reply. This brings a lot of inconvenient to their work.

Thus, Mr. Lee wish to have a system which that can receive the weather information more easily and notify the worker. With the use of WNS, the construction work can perform with more easily and convenience.

1.2.2 MCB (Marine Corps Base) Quantico Mass Notification System [2]

Based on preliminary research that has conducted before proposing title of this project, there are many problems that users facing when using the SMS service that had been provided by the unit of Malaysian Meteorological Department. Therefore research of other alert or notification system had been conducted .And then, found that the MCB Quantico Mass Notification System that for the marine have the similarity purpose of this project.

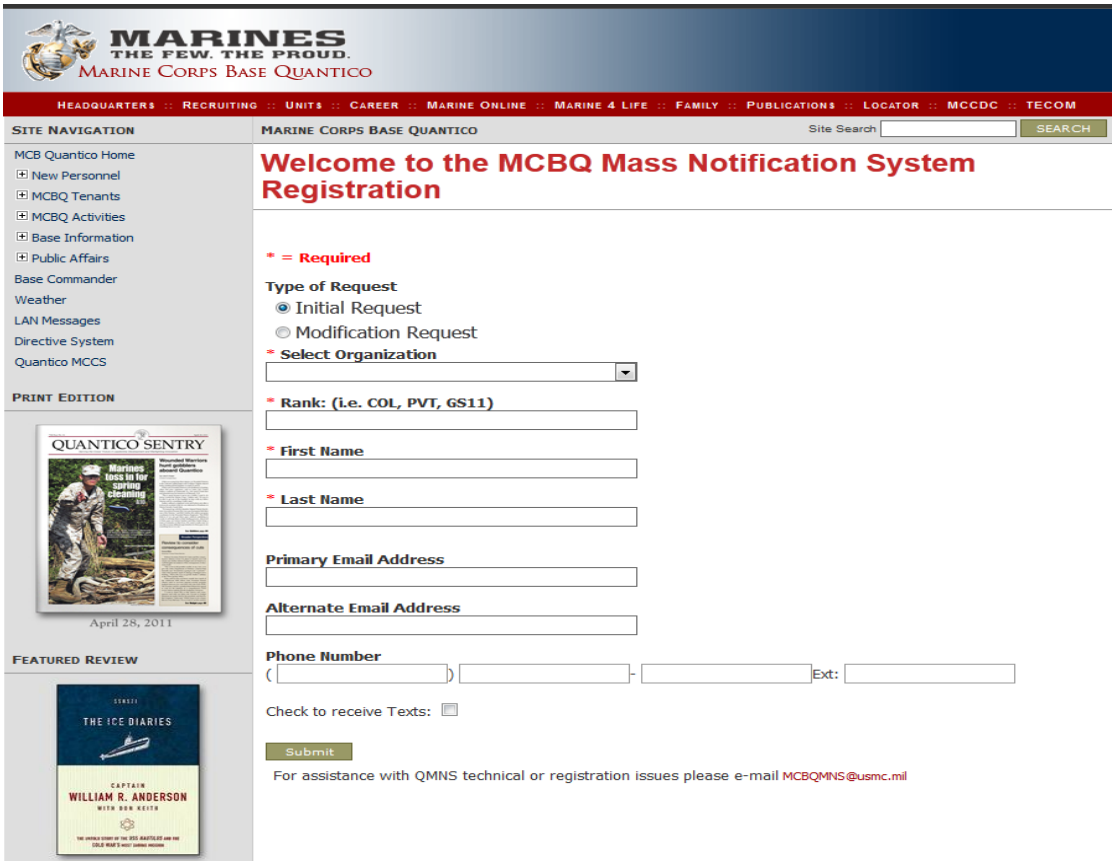


Figure 1.1: MCB (Marine Corps Base) Quantico Mass Notification System Register Page

The Marine Corps Base Quantico Mass Notification System (MNS) is designed to rapidly disseminate important Base traffic, weather and force protection condition (FPCON) information to Base personnel and the affected neighbouring population. The MCB Quantico Mass Notification System is a subscription-based service means that each person who wishes to receive notices must individually register their contact information. The Quantico MNS is capable of disseminating messages via e-mail and phone. The population or base personal can select one or both methods to receive notifications. All e-mail notifications or SMS are sent simultaneously though the system whenever where you are and what are doing. If the system does not reach the message to population or base personal, it will attempt to leave a message on the population or base personal to answering machine or voice mail.

The system is reviewed because of the method using SMS to notify the user about information is same with this project. Even though, the suspect user and the information

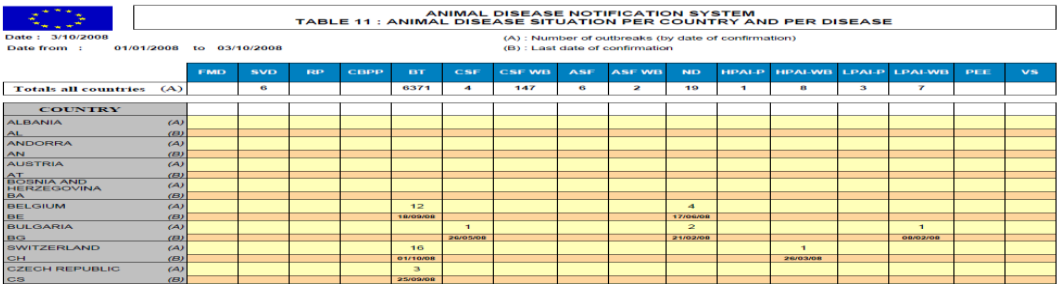
type need to disseminate are difference with WNS (Weather Notification System Using GSM) but the objective are same which both also can spread message automatically via the system. This method is useful because it can make sure that the users are automatically getting the necessary information once they are register in the system. Hence, the users no need to asking the system every time when they want to get the information.

1.2.3 Animal Disease Notification System (ADNS)[3]

The Animal Disease Notification System (ADNS) application is a notification system that has as its main purpose the registration and documentation of certain important infectious animal diseases. It is mainly a management tool that ensures detailed information about outbreaks of these animal diseases in the countries that are connected to the application. This permits immediate access to information about contagious animal disease outbreaks and ensures that trade in live animals and products of animal origin are not affected unnecessarily.

The administrator in a Member State enters information on outbreaks into the ADNS. Information on primaries is automatically sent to all Member States and the Commission. The Commission correlates data and transmits the information on primaries and secondary outbreaks to the veterinary headquarters of the Member States every week. However, when the first outbreak of a contagious animal disease occurs (i.e. Classical Swine Fever or Foot-and-

Mouth Disease), the situation has to be considered extremely urgent. In some cases, due to the particular high-speed diffusion of some diseases, the reaction has to be immediate. For this reason 24 hour (round the clock) control on these notifications is needed. In view of this, the Head of Unit in DG Sanco can be contacted via GSM/mobile telephone and in case of disease outbreaks, the Head of Unit and/or other colleagues can then come to the office to cover the epidemic event.



ANIMAL DISEASE NOTIFICATION SYSTEM
TABLE 11 : ANIMAL DISEASE SITUATION PER COUNTRY AND PER DISEASE

Date : 3/10/2008
Date from : 01/01/2008 to 03/10/2008

(A) : Number of outbreaks (by date of confirmation)
(B) : Last date of confirmation

		FMD	SVD	RP	CBPP	BT	CSF	CSF WB	ASF	ASF WB	ND	HPAI-P	HPAI-WB	LPAI-P	LPAI-WB	PEE	VS
Totals all countries	(A)		6			6371	4	147	6	2	19	1	8	3	7		
COUNTRY																	
ALBANIA	(A)																
AL	(B)																
ANDORRA	(A)																
AN	(B)																
AUSTRIA	(A)																
AT	(B)																
BOSNIA AND HERZEGOVINA	(A)																
BA	(B)																
BELGIUM	(A)					12					4						
BE	(B)					18/09/08					17/06/08						
BULGARIA	(A)						1				2				1		
BG	(B)						26/05/08				21/02/08				08/02/08		
SWITZERLAND	(A)					16							1				
CH	(B)					01/10/08							26/03/08				
CZECH REPUBLIC	(A)					3											
CS	(B)					25/09/08											

Figure 1.2: Table of Animal Disease Notification System (ADNS)

ADNS has similarity to Weather Notification System Using GSM (WNS), both of them also using GSM as a method to spread information and the information are spread automatically by the system. The difference between them is ADNS can give the admin take control to the system when some emergency case as critical outbreak of a contagious animal disease. In currently this purpose, WNS still no necessary need this function yet.

1.2.4 Victim Notification System (VNS) [4]

The FBI is a partner with the U.S. Attorneys' Offices and the Federal Bureau of Prisons in the automated Victim Notification System (VNS). VNS is designed to provide victims with information about their cases. This free, computer-based system provides two important services to victims: information and notification. This information is available in both English and Spanish. VNS can include details about scheduled court proceedings and about an offender's custody status, such as placement in community corrections centres, furlough, release, or death.

The FBI's victim specialist should be in contact with victims during the investigation stage of the case. Notifications that may be provided include the arrest of a suspect and scheduling of a release hearing, whether the case is being referred to state or local authorities, and when a case may be administratively closed. Victims will need to register with the FBI office handling their case. They will receive a Victim Identification Number (VIN) and a Personal Identification Number (PIN) that will allow them to access the VNS system. VNS now has an Internet-based website.

Figure 1.3: Home Page of Victim Notification System (VNS)

VNS had been reviewed because this system had same purpose by notify the user automatically. The main difference between VNS and WNS are the users of VNS need to receive VIN and PIN to allow them access into the VNS. While, WNS are open to all who are interested to use WNS.

1.2.5 Patient Notification System (PNS)[5]

PNS provides general contact information, including their preferred method of notification. The user will being notified by email, telephone, or fax, which more convenient to their daily life. PNS will be used the email provided by user as the purpose to instantaneous, track able, accessible, even on travel.

Some case like the therapy is withdraw or recalled the system will immediately and automatically notifies the registrant. Every effort will be made to notify registrants within 24 hours manually by the admin to the users. Each registrant will also receive a letter by first-class mail to ensure receipt of the information.

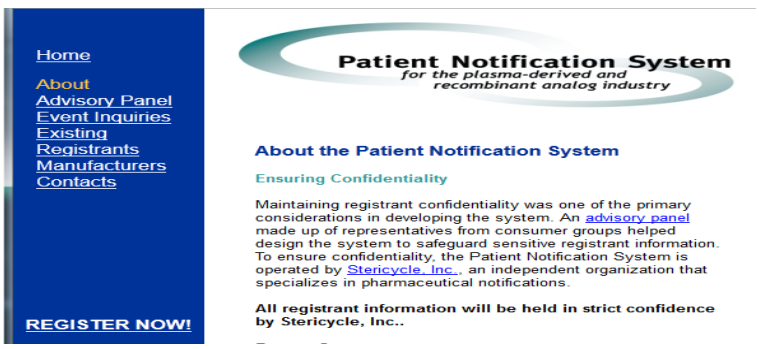


Figure 1.4: Home Page of Patient Notification System (PNS)

The similarity of the PNS with WNS is both of them will be automatically notices message to their user. The difference is some of the function in PNS needs the administration to notify the message manually.

1.3 Current System and its Limitation

Every system has its own ability as well as weaknesses. Sometimes, the system can't fulfil the entire user requirement but having certain limitation. Below are the description notification system and their respecting limitation.

Current System	Description	Limitation
Architecture Construction Worker [1]	Receive weather information from the Malaysian Meteorological Department. Then, notifythe worker and make preparation early if facing bad weather condition.	Request weather information from the Malaysian Meteorological Department and waiting the department reply.
MCB (Marine Corps Base) Quantico Mass Notification System [2]	Rapidly disseminate important Base traffic, weather and force protection condition. subscription-based service	Unable to resend the message automatically once the users didn't receive the message.
Animal Disease Notification System (ADNS)[3]	Registration and documentation of certain important infectious animal diseases	The system is less users friendly. A lot of icons in the system without explanation of the icons.
Victim Notification System (VNS)[4]	Contact with victims during the investigation stage of the case. Include the arrest of a suspect and scheduling of a release hearing.	Unable to detect whether the users had been receive the message or not.
Patient Notification System(PNS)[5]	General contact information, including their preferred method of notification. The user will being notified by email, telephone, or fax,	Some of the function no really automatically to used.

Table 1.1: Description of Current System and its limitation.

1.4 Method of Approach

The method will be approach for construct WNS is Rapid application development (RAD).Following figure will show the sample of RAD Model.

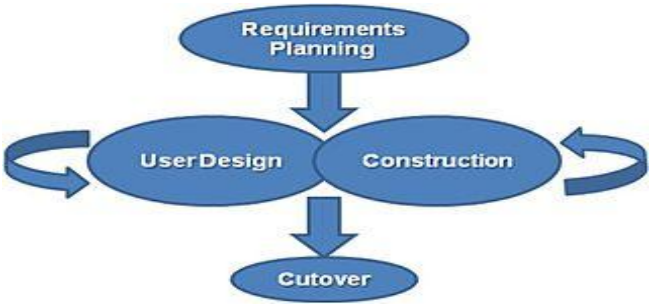


Figure 1.5: Rapid Application Development (RAD Model)

Rapid application development (RAD) is a software development methodology that uses minimal planning in favour of rapid prototyping. The "planning" of software developed using RAD is interleaved with writing the software itself. The lack of extensive pre-planning generally allows software to be written much faster, and makes it easier to change requirements.

There are advantage and suitable to use RAD methodology to develop WNS. Below will show the advantage of using RAD methodology:

- Flexible and adaptable to changes.
- Prototyping applications give users a tangible description from which to judge whether critical system requirements are being met by the system. Report output can be compared with existing reports. Data entry forms can be reviewed for completeness of all fields, navigation, data access (example drop down lists, checkboxes, radio buttons, etc.).
- RAD generally incorporates short development cycles - users see the RAD product quickly.
- RAD involves user participation thereby increasing chances of early user community acceptance.
- RAD realizes an overall reduction in project risk.
- Pareto's 80 - 20 Rule usually results in reducing the costs to create a custom system.

1.5 Scope and Limitations of Weather Notification System Using GSM (WNS)

The scope and limitation in WNS:

i. Mainly focus on Weather Notification in Malaysia area.

ii. Weather Notification system is a prototype system and the content is using dummy data.

iii. A device used in this project:
- Q24 GSM Modem as the modern that act as messaging device which will send notification or message to user.

iv. Tools that used to build the interfaces and the database:
- PHP and MYSQL

v. Extra software or service to support this project:
- Task Scheduler which uses for schedule or set time to delete weather data, insert weather data and send SMS automatically.
- Weather Web Service is a web service which will inform and transfer the weather data once the user asking weather data by using specify API key.

vi. The method will be used in the process of development of Weather Notification System is RAD (Rapid Application Development).

vii. The target user is constructor worker, whom their job always affected by the weather condition.

1.6 Outline of Material Presented in Report

In the overall progress of part 1, here is the outline of every topic:

(a) Part 1.1 is about problem statements and objectives of the system. In this topic, we can figure out the purpose of the system.

(b) Part 1.2 is about review of previous work or research and relationship to current project. To make user understand more about the system, figure 1.2.1, 1.2.2 and 1.2.3 have been included in this chapter.

(c) Part 1.3 is about the description of current system and its limitation. As no perfect system in this world, the current system also has its own weaknesses and limitation. All the description and limitation of the current system has been outlined in Table 1.3.

(d) Part 1.4 is about explanation of terminology. The study of terms and their use is extremely important to make the user understand some of the technical words which they are unfamiliar with.

(e) Part 1.5 is about method of approach. This topic highlights the development methodology of the system which shall be followed throughout the development process.

(f) Part 1.6 is about scope and limitations of the study. This is for the effectiveness of the overall system by narrowing the range of the study.

PART 2

REPORT BODY

2.1 Software Requirements Specifications (SRS)

The purpose of this SRS document is to specify software requirements of the Weather Notification System Using GSM (WNS). The requirements will be presented using textual descriptions to explain concepts, different types of diagrams to illustrate complicated interactions, and tables to relate relevant information.

The main purpose of the system is for notify user or member about the weather through the notification message which automatically send by the system.

The intended audience of this document is the user or member that involving in the development of weather notification system.

2.1.1 Product Perspective

This section shows the product perspective with other related products. Weather Notification System Using GSM connected to any network. This means that it can share resources with any other computer. Hence, visitor can view through some simple function of the system.

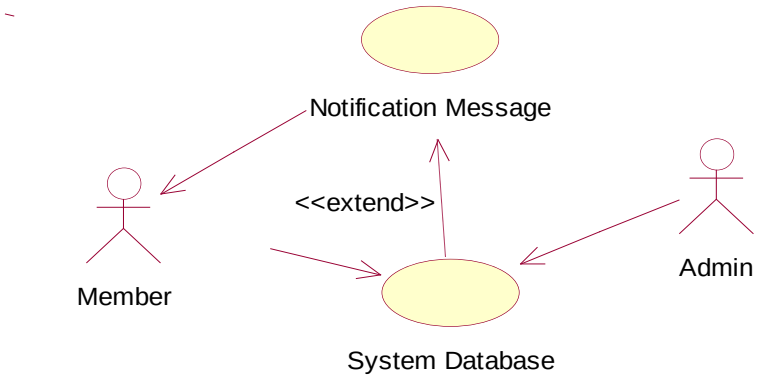


Figure2.1: Weather Notification System Use Case Diagram

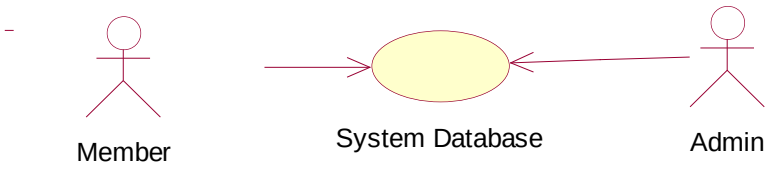
The table below shows the functions for each use case in Weather Notification System Using GSM:

User Case	Function
Notification Message	System database controller automatically sends or transmits the notification message to related member.
System Database	Users can save or modify the data inside the database .Different user have different permission to save or modify the data. As an example, member only can save or modify the personal information, they do not have permission to save or modify the weather information.

Table 2.1: Description of Use Case

2.1.2 System Features

2.1.2.1 Use Case System Database [SRS-REQ-WNS-V01-01]



2.1.2.1(a)Brief Description

This use case describes how a user can edit or modify the data inside the system database. The actors starting this use case are users whom have been successful login.

2.1.2.1(b) Stimulus

The stimulus for this use case is for every user who that had been successful login of this system. But, there are certain specified entry or modify data only provided for the admin. As an example, only admin can entry or modify the weather data, member are not available to do it. While, the system member only can do is entry or modify their personal data. The table below had shown all the detail description of the System Database Use Case.

Use Case:	**System Database**
ID:	UC-001
Scope:	User Entry or Modify Information into the System Database
Priority:	User need to login into system before progress the use case.
Summary:	User can entry or modify of the data inside the system database with certain condition or permission .Example, member only can entry or modify their personal information. While, the admin can entry or modify the weather data information.
Primary Actor:	Member, Admin
Supporting Actors:	System Database
Stakeholders:	None
Generalization:	None
Include:	None
Extend:	Notification Message
Precondition:	The user must been successful to login.
Post-conditions	User had been successfully to save into the system database. The data insert will be included into the process of notification system.
Trigger:	Users want to entry or modify the data inside the database.
Normal Flow:	F1. User can choose to login by clicking the login