# Chapter 26
# Surviving with SMS

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## ABSTRACT

*The mobile phone is one of the technologies which are widely used these days. It is available in most countries and all people, even children and elderly people can use it. It seems that in the near future, each person will have at least one mobile phone. So it is a good choice for communication in emergency situations, such as a heart attack or after an earthquake. In this chapter, we will survey a number of systems which are designed for communication in emergency situations and then explain three systems which are developed by the authors. The first one is for locating and rescuing victims after an earth-quake. The second system is for calling an emergency team by patients in emergency situations. The third system is for finding lost people with amnesia. In addition, we review some of related works which use mobile phones for communication in emergency.*

## INTRODUCTION

With the expanding use of mobile phones and the development of mobile telecommunications, many features are added to the mobile phones in order to attract more customers. One of the services that was provided on the mobile phone was the SMS (Short Message Service).

The SMS is the transfer and exchange of short text messages between mobile phones. The SMS is defined based on GSM digital mobile phones. According to the GSM03.40 standard (ETSI, 2000), the length of the exchanged message is 160 characters at most, which are saved in 140 bytes depending to how information is saved according to the standards. These messages may be a combination of digits and letters or be saved in non-text binary form. Using the same binary messages, one can also send pictures as well. The pictures, however, are two-color and have a low quality.

SMS messages are exchanged indirectly and through a component known as the SMSC (SMS Center). SMS messages have the following advantages:

- Communication is possible when the network is busy;
- We can exchange SMS messages while making telephone calls;
- Sending offline SMS messages;
- Providing various services such as e-commerce.

One can also receive reports on the status of the SMS message or define a validity period for the SMS message (Nokia, 2001).

Nowadays by inventing new technologies, many services are changed. One of these areas which is using new technologies is servicing in Emergency situations. The services in this field are also changed by effect of mobile phones. For example some telemedicine services are designed for doing first aid for patients in their house by doctor from hospital without needing to go to hospital.

In this chapter, we will survey some of systems which are using mobile phones for communication in emergency situation. Then we will explain three systems which are designed by authors and are based on SMS service of mobile phones.

First we describe our system which is designed for rescuing after earthquake disasters. In this system, we use mobile phone to locate and rescue victims after earthquake.

Then we describe our system which is designed for calling emergency team by patients in emergency situations. For example if patients feeling cardiac arrest, by this method he/she can contacts the hospital easily and the proportionate emergency team will be sent to the patient home with necessary devices.

Finally we explain our system which is designed for finding lost person with Amnesia's

disease. All of the above systems are using SMS for communication.

Using of other systems such as MMS (Multimedia Message Service) is not recommended because these services are not available in many countries and all phones does not support such advanced services. Also, the costs of using these systems are more than SMS.

Another point is that SMS is enough for our needs and we did not need advanced features of those systems. In addition, using services such as MMS in critical situations can introduce problems in network. Because the numbers of messages which exchange are huge and the load which these services put on network is more than SMS, the network may get problems or down the system completely.

Our methods are using GPS (Global Positioning System) to track down the location of persons. But using GPS system is not necessary, because in spite the high precision and accuracy of GPS, this system does not act well in indoor areas (Bamford et al., 2006). On the other hand, GPS system is not available on most of mobile phones and it needs a separate device which increases the expenses. Therefore, using the network based locating system (such as using Cell ID) is also acceptable, although it has less precision.

The main advantages of our methods are as follows:

1. All mobile phones, even black-and-white models and old-fashioned ones are capable to send and receive SMS. So this method covers a wide range of users.
2. The proposed methods can be used in developing countries due to the usage of cell phones and SMS, which is a public and cheap service on the cell phones, widely available across the globe.
3. The majority of cell phones support Java language. So our program runs on the majority of mobile phones.

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