Implementing mobile phone warning systems

Simone Sillem & Erik (J.W.F.) Wiersma
Safety Science Group, Delft University of Technology,
Delft, the Netherlands

Abstract

Many complaints are heard in the Netherlands about sirens that are used to warn citizens in emergency situations. These complaints mainly concern the audibility of the sirens and the fact that deaf and hard of hearing people are not warned at all. These complaints indicate a need for additional means of alarming that can reach more people and can give more information. This paper investigates the possibilities of using two mobile phone technologies to warn citizens: cell broadcast and Text messaging (SMS). The paper explains how cell broadcast and SMS are used for citizen warning and indicates factors that have to be taken into account when implementing these mobile technologies for warning citizens.

Introduction

In an emergency situation the community is warned by sirens. Many complaints are heard in the Netherlands about the audibility of these sirens. Research by De Hond (2003) concludes that 37% of people did not hear the siren on three different test occasions in 2003. Furthermore, research by Jansen (2003) shows that the sound of the siren is 5 dB lower than specified by manufacturers. The sirens are not designed to be heard indoors, but this is reason for many complaints (Vos & Geurtsen, 2003). Moreover, deaf people cannot hear the siren altogether.

The only information a siren provides, is that something is going on. Information on required action is not provided. This is especially important for people who have difficulty comprehending (spoken) language, like the deaf and ethnic groups (Wauters, 2005).

This indicates that there are opportunities for additional means of warning the population. This paper presents two technologies for sending people warning information messages on their mobile phones: Text messaging (known in the Netherlands as SMS, Short Message Service) and cell broadcast. The paper explains how SMS and cell broadcast work and develop factors that need to be taken into account before a government can implement a mobile phone warning system.

Figure 1 presents the different steps of information transformation in an alarm situation. (Jagtman, Wiersma, & Sillem, 2006). Point 0 in time is the start of an emergency situation. After this, the emergency will be identified by somebody. Then,

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