Chapter 22
A Review of Notifications Systems in Elder Care Environments: Challenges and Opportunities

Sandra Nava-Muñoz
UABC, Mexico & UASLP, Mexico

Alberto L. Morán
UABC, México

ABSTRACT

For more than a decade, notification systems to support the care of older adults in settings such as hospitals, nursing homes, and homes have been developed. These systems aim to assist in the care process, trying to ensure the safety and wellness of the elderly, and thus to maintain or increase their quality of life. This chapter identifies challenges and areas of opportunity for the implementation of notification systems in these environments, considering a technological perspective. In this work, the authors firstly present a literature review of notification systems in the elderly care environments mentioned above. Subsequently, they propose a taxonomy to classify the reviewed works, and discuss a set of challenges and areas of opportunity that technology can offer in this environment. These areas of opportunity are projected as specific features in each of the identified healthcare environments.

1. INTRODUCTION

For several decades, Information and Communication Technologies (ICTs) have been used to provide support in the health care of older adults. These diverse types of technological interventions include notification systems. The purpose of notification systems is to inform a user (receiver of the notification) about a particular situation (event) through a medium and with a specific purpose. Notification systems have been widely studied in office environments (Ackerman & Starr, 1995;

DOI: 10.4018/978-1-4666-3986-7.ch022

Gaver, 1991; Heiner, Hudson, & Tanaka, 1999). However, more recently, attention has been paid to them in environments, such as everyday life environments or health care environments, including: home (Agarawala et al., 2004), hospitals (Mitchell, Spiteri, Bates, & Coulouris, 2000), and nursing homes (Chung-Chih et al., 2008) etc.

Based on a literature review we identified that the features of the domain (e.g. the environment, users, purpose of notification, etc.) define key aspects of the notification, which in turn makes the requirements for the notification system to be different for each type of environment. As a first example, consider a notification system for office environments, which is characterized by the following aspects: (1) the office worker (user of the service) stays most of his/her time on his/her desktop (single place, low mobility), (2) the process of sending and presenting the notification seeks to minimize user disruption, because s/he is carrying out his/her main activities (primary tasks, low intrusiveness), and (3) the content of the notification is variable, as most information is presented with low criticality (Wilson, 2006).

As a second example consider a nursing home, which is characterized by the following aspects: (1) the formal caregiver (notification user) has a high degree of mobility and changes in activity within the residence, because s/he is responsible for the care of several older adults (multiple places, high mobility) (Nava-Muñoz, Morán, & Favela, 2010), (2) a notification must be perceived by the caregiver when it is sent, in some cases, the caregiver is performing secondary activities (indirect) to adult care, and the notification calls him/her to perform part of his primary care activities (secondary tasks, high intrusiveness), and (3) the content of notifications is related to the safety or health of a human being, in this case an older adult, which is considered a content with a high level of criticality.

This chapter focuses on the study of notification systems in health care environments, particularly those that target the healthcare of the elderly, including hospitals, nursing homes and private homes. The introduction of notification systems in these types of environments aims to ensure the safety and wellness of the elderly, as well as maintaining or increasing their quality of life. The aim of this study is to identify challenges and areas of opportunity for implementing notification systems to assist in the care of older adults in these types of environments.

The rest of the chapter is structured as follows: The following section briefly describes the caring process for an older adult and the importance of introducing notification technologies in this process. Section 3 presents the proposed taxonomy and classification of the notification systems reviewed. Subsequently, in Section 4, we discuss some of the challenges and opportunities identified for the development of notification technologies in these environments. Finally, Section 5 presents the conclusions of this work.

2. ELDER'S CARE PROCESS

Caring for an older adult may be complex, depending on factors such as his/her state of physical and mental health, the degree of independence in the execution of his/her activities, etc. (Feinberg, 2002).

According to the latest estimates of the United Nations, the worldwide elderly population (65 years and over) is expected to grow (United Nations, 2001). This increase in population affects the number of older adults with disabilities. Data from the World Health Organization indicate that 7.05% of the world population are older adults with moderate or severe disability (WHO, 2010).

Older adults live in a different way than the rest of the population. This is due to the consequences of the diseases and injuries they have suffered throughout their lives, or due to the problems of old age. On the one hand, the disabilities of the elderly prevent or hinder the execution of Basic and Instrumental Activities of Daily Living (BADLs