**Chapter VII**

# Designing for Tasks in Ubiquitous Computing:
## Challenges and Considerations

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## Abstract

*The traditional desktop computing paradigm has had major successes. It also should be noted that we are in a day and age where many good computer and device users are increasingly finding themselves being required to perform their activities not in offices/desktops but in real-world settings. Ubiquitous computing can make possible in the real-world setting what would have otherwise been impossible through desktop computing. However, there is a world of difference between the real-world and the desktop settings. The move from the desktop to the real-world settings raises various issues when we consider the nature of tasks that the ubiquitous devices/applications would be expected to support and the real-world context in which they will be used. A careful study of the nature of tasks in ubiquitous computing can*

*make some design requirements in the development of ubiquitous applications more evident. This chapter proposes ubiquitous application design and evaluation considerations emerging from a deeper understanding of the nature of tasks in ubiquitous computing.*

# Introduction

It is worth acknowledging that the traditional desktop computing paradigm has had major successes. On the same note, it should be observed that we are in a day and age where many people have become good computer and device users. However, these users are increasingly finding themselves performing or being required to (or having to) perform their activities not in offices and desktops but in the real world settings. In describing the situation, Kristoffersen and Ljungberg indicate that the hands of such users "are often used to manipulate physical objects, as opposed to users in the traditional office setting, whose hands are safely and ergonomically placed on the keyboard." (Kristoffersen & Ljungberg, 1999). It is interesting to observe how ubiquitous computing can come in handy toward making possible in the natural setting what would have otherwise been impossible through the desktop computing paradigm. It is therefore not uncommon to encounter a user who "carries out one or many parallel activities from virtually anywhere at anytime while at the same time interacting with other user(s) and/or device(s)." (Bertini et al., 2003).

However, it is worth noting that there is a world of difference between the real world setting and the desktop setting. As we consider the move from desktop computing (fixed user interfaces) to the real world settings, various issues and demands arise when we consider the nature of tasks the ubiquitous devices/applications (and thus ubiquitous user interfaces) would be expected to support and the real world context in which they will be used.

Consequently, it does turn out that a careful study of the nature of tasks in ubiquitous computing can make some requirements in the design and evaluation of ubiquitous applications become more evident, which forms the basis of this chapter. In particular, we will describe the nature of tasks in ubiquitous computing, and then propose and describe ubiquitous application user interface design and evaluation considerations emerging from a deeper understanding of the nature of tasks in ubiquitous computing.

The rest of the chapter is organized as follows; it first provides some background knowledge. It then gives an overview of the nature of tasks in ubiquitous computing. After that we propose and describe ubiquitous application design and evaluation considerations respectively based on the foregoing. We then highlight some open issues and conclude the chapter.

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