

## Chapter 3

# Mobile Apps for Acting on the Physical Space

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### **ABSTRACT**

*This chapter focuses on the development of mobile applications in a research strategy that combines computer sciences and architecture and urbanism. The main goal of the research is to develop mobile applications that help specific target people in daily life situations and that clearly contribute for advances in the fields of computer sciences and social responses. The authors discuss a group of mobile apps that were developed for smartphones and tablets and that respond to the following broad goals: 1) mapping of the physical space in order to adapt it to respond better to the users' needs, 2) adaptation of the physical space to the users' needs, and finally, 3) give the users a better knowledge about the physical space they are in. For each app developed, the authors describe the research problem involved, the goals, the development process, and the developed solution as well as the tests conducted to measure their performance. Usability and satisfaction tests revealed that the developed apps have a good acceptance by the target users.*

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## **INTRODUCTION**

With the generalization of the use of mobile devices as smartphones and tablets, mobile apps have had an enormous increase in number, variety, and processing power. The interesting illustration by Fling (2009) regarding the history of mobile shows how fast and powerful was the evolution of devices that allowed mobility and created all different possibilities by the new technologies introduced. We still live the transition from the desktop paradigm to the mobile / wearable paradigm using what, a few times ago, was an unimaginable digital processing power in the palms of our hands. We have this digital power when walking, strolling, jogging around by using digital processors' equipped smartphones as day by day inseparable companion devices. Although originally mobile apps were mainly offered for general productivity and information retrieval, nowadays we can find apps for almost all possible tasks. Using mobile devices became therefore a tool to reach information about almost all aspects of life. In this context developers drove rapidly into other categories that enable citizens to use their mobile devices as their powerful personal assistant. The development of such tools is therefore aiming at a large audience and supersedes nowadays the web tools designed for desktop computers. For several authors as Fling (2009) and Castledine et al (2011) mobile is (still) the next big thing, and a big reason is that it represents a new medium as well as a new business model.

This chapter focus on the development of mobile applications in the scope of work developed in a research strategy that combines computer sciences and architecture and urbanism. One of our broad goals in architecture design is to assess what are the real needs and requirements of users so that we can design buildings and public spaces that respond to them. This situation is especially relevant when we consider groups of population that have more specific needs like elderly, people with disabilities, children and people with low incomes and underprivileged (socially, economically and culturally), lacking functional reading skills and people digitally info excluded.

For this we developed mobile apps that help to observe people's behaviour when using the physical space by mapping it, and apps that directly help people to make choices about their living conditions. For mapping people's behaviour, we developed mobile apps that are in line with state of the art techniques for behaviour observation allowing counting and tracking people when they are using the spaces that are under analysis.

With the goal of adapting the living conditions to the users' needs and obtain the relevant information for achieving that goal we developed three mobile apps, two as an help to deliver inhabitants a description of the recommended characteristics of an appropriate functional programme for their house and a third app that empowers elderly to assess their living conditions regarding the safety of their living space.

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