

Chapter 20

A Mobile Application for Helping Urban Public Transport and Its Logistics

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ABSTRACT

Urban growth in developed countries has made highly difficult the logistics of public transport in many cities. This issue is a consequence of the increase in the number of public transport routes, which has caused that citizens do not know important information on such routes. Especially, data about stops, terminals, timetables, paths and which are the easily reachable places for each single route. On the other hand, smartphones have become very popular in the last lustra. This kind of device has high-end services such as cameras, high-tech sensors and Global-Positioning-System (GPS) navigation, to mention only a few. Thus, since mobile phones are useful and practically ubiquitous, they should be applied to collective-transport logistics, giving the edge to citizens in an economic manner. Ergo, to solve the aforementioned problem, we propose here an approach based on using technology connected to mobile phones, the GPS and the Internet.

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INTRODUCTION

Concerns about the environmental impact of urban transport are growing along with population density and urban congestion. Thankfully, awareness of the need for sustainable urban development is also on the rise and the coordination of traffic and logistics is receiving greater attention. Yet the need is urgent for more efficient and effective transport systems that not only address costs but also fully tackle environmental issues such as noise, air pollution, vibration and visual intrusion.

Nowadays, the logistics of the transport services has become a very complicated matter in some cities. This issue is a priority governmental concern for industrialized countries, because

1. It is a relevant source of (air and noise) pollution;
2. It appears to be a decisive criterion for tourists if they consider the return to a specific city (cf. Albalade & Ben, 2010; Khadaroo & Seetenah, 2008); and
3. It affects the daily life of people, and then local governments are constantly argued by dwellers to improve public transport services.

People continue to come together in urban areas for a better quality of life, a trend that will certainly continue. Currently, about half of the world's population lives in urban areas, a figure estimated to increase to over 60% by 2030. Because the importance of this problem is manifested by the large amounts of subsidy that are invested in urban public transport systems (cf. Mackett & Edwards, 1998; Serebrisky et al., 2009; Simpsom, 1994). Besides, the so-called green organisations have an increasing concern in improving the environment in many cities. One alternative is to promote the use of public transport, but people often perceive several disadvantages of it, such as the uncertainty of when the transport will arrive, travelling time and the lack of comfort (cf. Beirao & Sarsfield, 2007).

To mitigate some of those inconveniences, we propose in this work the implementation of a public-transport geolocation system. This system can contribute to successful urban development, which entails several social, environmental, political and economic benefits (cf. Gwilliam, 2003; Alcantara-Vasconcellos, 2014).

In this chapter, we introduce a mobile application that provides helpful information on public transport routes. This app enables citizens to plan better their transportation activities. So, they do not waste too much time waiting for the bus or asking for stopping points. This application:

1. Presents the bus stops in a map with a brief description;
2. Approximates how far away the bus is from the nearest stopping point;
3. Roughly estimates the travelling time; and
4. Shows the nearest places of interest on the map.

This app monitors buses in real time, and this feature helps to identify unexpected delays. In this way, this app may be found useful, not only by citizens, but also by operators and transport managers.

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