

Foundations for a Mobile Context-Aware Advertising System

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Abstract. Advertisers struggle to reach effectively and efficiently to their customers, continuously seeking to influence them and simultaneously reduce the overall publicity costs. Business areas like the mobile devices industry, together with wireless technologies and interactive environments, bring an huge opportunity for marketing purposes, supporting the chance to turn advertising into a convenient and easily accessible source of information by letting marketers communicate with costumers in a more direct, personal and contextualized way. This paper presents some foundations for the development of a system that will allow context-aware personalized profile-based advertising delivery, by using Bluetooth technology to identify and communicate with customers in a given geographic area, through their mobile devices.

Keywords: Advertising, Context-aware, Personalization, Mobile, Bluetooth.

1 Introduction

Advertising is defined as the non-personal presentation of ideas, products and services, where the identifiable source entity has to pay for it [1]. Also, as the main medium for organizational promotional communication [2], it is constantly morphing in an effort to achieve efficiency gains by maintaining customers or reaching new ones, while using lesser resources. Recently the advertising industry has suffered a major change, especially if taken into consideration the paradigm in which ads were intended to reach as many consumers as possible [3], with low concern about the cost/efficiency ratio. Nowadays, being a profitable business [4] and as technology advances, advertisers can choose between a wide range of communication channels - being the most popular the Internet [3] - in which profits can be optimized, thus improving the advertising cost/efficiency ratio.

The most obvious example of an advertising paradigm change is television: as users achieve more and more control over the contents they want to watch, which means in some cases that they do not have to waste time watching commercials between them [5], advertisers were forced to look for other ways to communicate with them while trying to maintain the advertising overall costs, like using careful product placement in television contents.

This paper proposes a Bluetooth advertising system, which allows basic context data assembly, such as location, time and day, for advertising differentiation and costumer targeting purposes. The system pushes sought advertising to the users' personal mobile device, using the devices' Bluetooth support. This work intends initially to describe and analyze the background literature information referring to mobile advertising efficiency and related work, in order to scientifically support an advertising delivery system proposal, further described and tested on this paper.

2 Background

As this new marketing era forms its groundings, there are some environments that impose themselves as more viable and attractive to both marketers and technology promoters, such as the Internet and the mobile market [2] [3], which try to respond to some of the previously referred issues. M-advertising can be defined as the business of encouraging people to buy products and services by using mobile communications as the medium to deliver the advertisement message. This industry is already taking advantage of the mobile devices proliferation. However, there is a gap between the hardware and software capabilities of mobile devices and the actual use of their features, which can be partially explained by their heterogeneous characteristics. In fact, as mobile devices have many manufacturers and each one has their market segments, approaches and options, there is not a hardware/software standard to use, which hinders the development of applications intended to reach a wider audience. Vatanparast [6] states that today's development in information technology is helping marketers to keep track of customers and to provide new venues by reaching smaller customer segments more cost effectively and with more personalized messages, even though the global mobile advertising industry is in its early years. It is also important to refer that forecasts concerning the growth of mobile advertising are providing enthusiastic information.

Komulainen [7] referred to the potential relevance that mobile advertising could have in the future, underlining some supporting reasons, such as: the high penetration rate of mobile devices which almost totally sets aside the concerns about leaving some costumers out of advertisement campaigns when choosing only the mobile market; mobile devices are personal communication devices and individually addressable, thus ensuring advertisers that by addressing one device, they are addressing the individual that owns it and not someone else, almost 24 hours a day; mobile devices are capable of receiving multimedia and interactive content, which provides a creative potential to marketers and makes feedback analysis more trustworthy. In [6], Vatanparast suggests that mobile advertising, when compared to the existing advertising channels, holds strong promises to become the most powerful targeted one-to-one digital advertising medium by means of offering new and better ways to take advertising messages to users.