Citizens@City
Mobile Application for Urban Problem Reporting

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Abstract. Urban problems, such as holes in the pavement, poor accesses to wheelchairs or lack of public lighting, are becoming pervasive. Despite the fact that most of these problems directly affect life quality and sometimes even safety, not everyone has the readiness or initiative to report them to the proper authorities. This fact makes these “black spots” difficult to identify and the repairing process slow. Citizens@City is an Android mobile application that allows the general population to play a more active role in the identification of these problems by reporting them to the proper authorities in a simple and fast way. Moreover, citizens will have the possibility to follow the identification and repairing processes, and know at a given moment its status (e.g. identified, repairing scheduled, solved). Additionally, it will also allow the proper authorities to identify and manage the reported problems, from their identification until they are solved.

Keywords: Mobile Applications, Urban Problem Reporting, Android.

1 Introduction

Current urban problems, e.g. missing or eroded crosswalks, holes in the pavement, poor accesses to serve handicapped citizens or lack of public lighting, are becoming a general concern, since they affect citizens’ life quality. Despite the potential impact, not everyone is ready to take the initiative to collaborate with the proper authorities in the identification and repairing of these problems. Hence, these “black spots” may cause avoidable accidents and may become more severe if remain unsolved. For instance, the light outage on some streets may increase criminal actions on those areas, or leaving a hole opened may cause someone to fall in.

This paper presents a different way to report the mentioned problems other than filling paper forms in the City Hall, for instance. Citizens@City is intended to mobilize the citizens to help on this management and keep the urban area as safe and clean as possible in a short time frame. The best way found to do this is letting citizens carry their own reporting tool, so we propose a mobile application running on a smartphone.
Urban problem reporting is a worldwide issue. Most common approaches are based on manual reporting or emailing. There exists limited information on available applications. The most relevant is PDX reporter (http://www.portlandonline.com/), an application for iPhone and Android platforms developed for the city of Portland. PDX allows citizens to interact with the city concerning problems or issues with publicly maintained infrastructure. PDX Reporter requires a permanently active internet connection and does not permit the citizens to follow the identification and repairing processes, or know at a given moment its status.

Another application with a similar purpose is “My Street”, a web application made available by the Portuguese Government to all citizens that can report problems on registered City Halls (http://www.portaldocidadao.pt). The users may report a problem exclusively from a web browser, selecting its location on a map and providing its basic information, consisting on a category, subject, description, image and the user contact. Limitations of web applications for the purpose of reporting urban problems include limited availability, no automatic geo-referencing and relying on the memory of citizens to report problems at a later time.

In this work we propose a different way to report the mentioned problems other than filling paper forms or using web interfaces. Citizens@City is an Android mobile application to mobilize the citizens to help on this management to keep the urban area as safe and clean as possible in a short time frame.

The rest of the paper is organized as follows. In Section 2, we describe the proposed approach, including the different working contexts, communication and security issues. In Section 3 we present the proposed architecture and in Section 4 we explain the development and deployment options. Section 5 details the tests carried out and finally, in the last section we conclude the paper and describe possible lines of future work.

2 Proposed Approach

In this section, we start by introducing the main goals of Citizens@City, including different contexts, and proceed by presenting and explaining communication and security issues.

2.1 Introduction

The main functionality of Citizens@City is to allow citizens to report urban problems. Anyone can run the application and report points of interest (urban problems expressed by subject, description, location, and an optional picture of the spot). The location can be inserted specifying an address, selecting a point on a map or retrieving GPS coordinates automatically from the mobile device. Only registered users have access to the full functionality of the service. A paradigmatic example of registered user functionality is the possibility of following up the repairing process of the problems submitted, otherwise impossible when points are submitted anonymously. There can be two roles for registered users: administrator and general user.

The system allows users to browse the reported spots in a list or, alternatively, view them in a map. It also permits that the user filters and searches points using keywords or