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Mobile city applications for Brussels citizens: Smart City trends, challenges and a reality check

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ABSTRACT

This article combines quantitative and qualitative methods to take a first look at the app economy and mobile services landscape in the City and Region of Brussels, capital of Belgium and Europe. By scraping the iTunes App Store and Google Play market places we get a view on platform distribution, pricing, public vs. commercial, adoption, appreciation and popular categories of Brussels apps aimed at citizens, as well as a view on the app economy in the city. This data is then complemented by qualitative expert interviews with actors in the field, such as cities, interest groups and developers. In the context of the current debate surrounding what constitutes a Smart City and the importance of smartphones and mobile in this area, we perform a reality check, using Brussels as a case. We find that the laggard position Brussels is currently in could be an opportunity to leapfrog in the field of mobile services, but that a focused vision and clear mobile strategy, while thinking of the city as a local innovation platform built on open data, is quintessential to achieving this.

1. Introduction

The year 2008 signified a turning point in the field of Smart City and mobile research for three reasons. For the first time (1) there were more mobile than fixed broadband subscriptions active, (2) more "things" than people were connected to the internet, and (3) more than half of the world's population lived in cities (Burger, 2012; EC Communications Committee, 2012, 2013; Evans, 2011; Silicon Labs, 2013). The first point shows the growing importance of mobile connectivity. As prices for smartphones decrease and their capabilities to run more advanced and appealing software increase, consumers are depending on these devices more and more when travelling in their own cities or other areas, using more services that can increase their productivity, efficiency, communication skills or create experiences that enhance their quality of life.

The second turning point shows how context-awareness and network connectivity is increasingly added to physical objects around us. Sensors are gaining importance in this respect, while the prices for simple and complex sensors are decreasing dramatically (Silicon Labs, 2013), making more and innovative applications and services based on (real-time) sensor data a reality. Rather than relying on static or out-of-date data, sensor networks allow us to gather accurate statistics on a whole range of variables that can impact urban quality of life, and as a consequence, act on these variables. As more technologies gain the potential to interconnect, we however also need to be increasingly aware of the digital footprints and data trails we leave behind when using them.

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The final point indicates that since 2008, more than half of the global population lives in cities. The UN estimates this number will only grow, to a predicted 70% by 2050 (UN Habitat, 2010). As more citizens (and consumers) move to urban areas, actors from the ICT and mobile telecommunications naturally become increasingly interested in offering services that are tailored to life in the urban environment. Cities and local governments are at the same time exploring the role that new ICT services and products can play in increasing the quality of life of their citizens. In recent years, this quest is often captured in the "Smart City" concept. The concept has become key in bridging the research, projects and initiatives exploring the role of technology in urban life.

There is some hyperbole surrounding Smart Cities today. The Smart City concept has been criticized, a.o. for its self-congratulatory tendency, as well as its focus on I(C)T and the potential consequences towards reinforcing a digital divide (Graham, 2002; Hollands, 2008). If insufficient attention is paid to this topic, the strong focus on information technologies in the Smart Cities discourse can dramatically impact the digital divide in the negative sense, creating even larger inequalities and social divisions in the city (Graham, 2002), a far cry from what would be labeled as 'smart'. The various operationalisations of the Smart City, the different interests at play, the potential misuse or even abuse of the concept at its potential pitfalls also constitute recurring critiques and are amongst others subject of this article.

Considering these critiques, the three turning point introduced above point to the fact that the smartphone is – for now – turning out to be the predominant "interface object" that mediates a growing range of urban tasks and provides primary access to Smart City services for citizens (Townsend, 2013; Greenfield, 2013). Of course, the main layer between the end user – citizen in this case – and the smartphones they use are the applications and services running on the devices. They are the connecting layer between the physical location someone is in and the virtual and social information that can be linked to it. Exploring the role of mobile services today and the impact they can have to achieve some Smart City goals in the short to mid-long term is the core and starting point of this article.

The experiments governments have undertaken in the field of mobile government (or m-government) have been the subject of a relatively young stream of literature (see e.g. Kushchu and Kuscu, 2003; Palka et al., 2013 or Abu Thair and Abu-Shanab, 2014) that focuses on the challenges governments may face in this regard. This research decidedly takes the perspective of cities and focuses on the relationship between the city and its citizens, through mobile applications. While other dynamics certainly are at play in the context of the Smart City, this has been the research focus taken. This article aims to make policy recommendations based on the current state of the mobile city services ecosystem in Brussels. This city is an interesting case as it is the capital of Europe, has a very demographically diverse population that faces a wide range of urban challenges (e.g. high unemployment and pertinent mobility issues; see *infra*), but is still manageable from a research perspective and its mobile services ecosystem is still nascent. These conditions provide us with a good case and allow us to introduce some nuance in the mobile services and Smart City debate.

This article starts with a brief overview of different approaches to the Smart City, followed by a closer look at mobile services in this context. Next, we dive into the case of Brussels and provide some more context to the city and its ICT and mobile policies, including a look at the status of open data in Brussels. Then, the methodology used in this article is highlighted, followed by an overview of the state of the art of mobile services available for Brussels. From this analysis, some trends are derived, followed by a reality check of the current state of the mobile ecosystem in the city.

2. Different approaches to the Smart City

The Smart City has been operationalized in many diverse ways, which can differ dramatically based on the perspective of the stakeholder describing the concept. This section briefly outlines two of those extreme approaches and a final one that aims to meet them in the middle.

2.1. The top-down Smart City

"*A city that monitors and integrates conditions of all of its critical infrastructures, including roads, bridges, tunnels, rails, subways, airports, seaports, communications, water, power, even major buildings, can better optimize its resources, plan its preventive maintenance activities, and monitor security aspects while maximizing services to its citizens*" (Hall, 2000). The first approach we assess here adheres to top-down dynamics, often closely related to the technologically deterministic idea of a "control room" for the city. It aims at providing an ICT-based architecture to overview urban activities as well as the tools to (automatically) interact with infrastructures and adjust parameters to predefined optima (IBM, 2009). Hall's definition of a Smart City above illustrates the strong emphasis on optimization through technology. Apart from gathering vast amounts of data, a large part of the processes that essentially constitute this approach consists of the calculations, visualizations and predictions based on the gathered metrics (Campkin and Ross, 2013, p. 3).

In its most extreme manifestation, a top-down approach translates to cities that are planned, designed and built from scratch with the optimization of urban processes through technology in mind. The examples of Songdo and Masdar can be seen as the pinnacle of this particular vision of the Smart City. But both have been heavily criticized for being sterile, overly planned, prohibitively expensive, anonymous, uniform and conformist (Conway, 2013; The Economist, 2013a, 2013b; Sennet, 2013) and the result is that these cities struggle to be completed within the predicted budgets and timeframes and/or do not attract enough economic activity (and thus jobs) so that people actually want to move there.