Design Recommendations for iParks

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Abstract

Communication devices, which are one of the most important materials of our daily lives, have been rapidly changing and developing with each passing day. The more laptops, smart phones, tablet pc's evolve; the more people need internet in anywhere and anytime. Many applications on smart phones require internet connection; otherwise there are no differences between old fashioned cell phones and smart ones. As a consequence of this situation, internet is needed to become more accessible. Therefore, as an important parameter on the design of public open space has started to show its effect. iParks – internet parks or Wi-Fi parks in some resources – are getting more popularized by municipal election campaigns and by clarifying the design principles it would get more common all over the world. This is a public service; that's why, in line of demographic characteristics of the users shape the ultimate design, after surveying and determining users' profile and intensity of use. The internet which is used by people heavily transforms from an indoor recreation to outdoor recreation and this would increase the usage of the parks. In addition to this, Wi-Fi antenna types to be used in park must be placed to cover all parts of the park where would be expected to connect the internet connection. With the identity of landscape architect, it cannot be decided the types of antenna connection, speed, density, energy source and forms such as telecommunication engineer; but they can design the park according to the signal direction of antennas and coverage or integrate it into the existing park. Therefore, iParks require multidisciplinary work.

Keywords: iParks, Wi-Fi parks, wireless internet connection, design recommendations, new parameter on public space design.

Introduction

The Information Age is a period in human history and formed by capitalizing on the computer microminiaturization[1] advances, with a transition spanning from the advent of the personal computer in the late 1970s, to the Internet's reaching a critical mass[2] in the early 1990s, and the adoption of such technology by the public in the two decades after 1990 (Anonymous, 2014a). This evolution of technology in daily life, as well as of educational life style, The Information Age has allowed rapid global communications and networking to shape modern society (Kluver, 2000). Mobile digital communications connect movements of people to movements of data (Mackenzie, 2012).

The ways to connect Internet include traditional dial-up access through the analog modems and broadband options such as ISDN, DSL, Cable, leased lines and wireless. There are several wireless options, available for special Internet access applications. They can be extremely useful for some Internet users (Anonymous, 2014b); especially for who use mobile devices. There are 3G or in some countries 4G services are exist for mobile devices; may be required a fee by GSM operators. But those connection types end battery so fast, and battery means everything on mobile devices. That's why, users mostly prefer wireless connections if it is possible.

The term Wi-Fi[3], commercially used at least as early as August 2000 (Anonymous, 2014c). A Wi-Fi-enabled device can connect to the Internet when within range of a wireless network which is configured to permit this. The coverage of one or more (interconnected) access points— AP, called hotspots—can extend from an area as small as a few rooms to as large as many square kilometres. (Anonymous, 2014d).

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[1] *Miniaturization* (Br.Eng.: *Miniaturisation*) is the trend to manufacture ever smaller mechanical, optical and electronic products and devices. Examples include Miniaturization of mobile phones, computers and vehicle engine downsizing.

[2] *Critical mass* is a concept used in a variety of contexts, including physics, group dynamics, politics, public opinion, and technology. In social dynamics, critical mass is a sufficient number of adopters of an innovation in a social system so that the rate of adoption becomes self-sustaining and creates further growth.

[3] *Wi-Fi*: Wireless fidelity.

Public Wi-Fi Usage

As Wi-Fi has become such a prominent part of our daily lives, it has expanded from indoor space to outdoor space, from private property to public property. In February 2007, the Pew Internet & American Life Project reported that 34% of all Internet users have used a wireless connection, and that 79% of these have logged on from a place other than home or work (Horrigan, 2004).

Establishments offering food or drink indicate the highest potential for providing Wi-Fi service. According to a great many professional articles reporting findings on these places, people have gradually accepted the fact that ubiquitous Wi-Fi may influence the structure of social networks and social relationships (Park, 2010). However, public parks are missing in this discussion as the "third place" revolution, as little parks are quite capable of also offering the wireless experience. Currently, compared to other semi-public places such as coffee shops or bookstores, the number of parks with available Wi-Fi service is negligible. Nevertheless, this phenomenon has exploded rapidly in recent years, especially in urban areas (Wang, 2011). To underscore the willingness of people to use Wi-Fi in public spaces, there are some significant outcomes seen in the survey conducted by New York City's wireless team. Firstly, when choosing between two coffee shops of similar characteristics and quality, 75% of the respondents answered that they would choose a coffee shop that provides Wi-Fi access over one that does not. In addition, over 70% of respondents indicated that the accessibility of Wi-Fi is a significant factor in their decision to stop in and stay for a while. The paradox is that the actual usage of plazas or parks in the NYC metropolitan area is extremely low relative to people's intense desire to enjoy the outdoors (Forlano, 2008).

There is little evidence, however, that wireless emissions pose any danger to human health. W-Fi signals use very low intensity radio waves – 100,000 times less powerful than a microwave. Sitting in a Wi-Fi hotspot for a year would only expose you to the same dose of radio waves as making a 20-minute mobile phone call. Wireless radio waves also diminish significantly with distance. Those who want to reduce their exposure to Wi-Fi emissions should sit more than 1 m away from their router and place their laptop on a table rather than on their lap. Three years ago, research in Holland showed that trees that were planted in close proximity to a wireless router suffered from damaged bark and dying leaves. The Dutch scientists carried out their research on ash trees which had been suffering with bark bleeding and dying leaves. The city of Alphen aan den Rijn, in the West of the country, ordered the study five years ago after officials found unexplained abnormalities on trees which they did not believe had been caused by any known viral infection. The trees were exposed to six sources of radiation with frequencies ranging from 2412 to 2472 MHz and a power of 100 mW at a distance of just 50 cm. Trees placed closest to the Wi-Fi radio developed a 'lead-like shine' on their leaves that was caused by the dying of the upper and lower epidermis. This would eventually result in the death of parts of the leaves (Anonymous, 2014e).

Design Stages

1. Determining user profiles

These emphasized informations lead landscape architects to determine the ultimate design of iParks. But before all, there must be a survey work has to be done on people who may use iPark. There is a good example in Seattle. According to several observations made by students from the University of Seattle, there are four new types of users emerging under the Wi-Fi environment: True Mobile, Socializer, Passer-by, Economically Disadvantaged (Keyse and LeBlond, 2006).

***True Mobile*:** These users treat the public wireless location as a backdrop for their primary activities such as reading or working at their computers. These users remain primarily focused on their tasks and have less interaction with others. The extent to which they can be distracted from their work depends on the atmosphere in their chosen space, but most of those interviewed maintained that they could freely interact with their online contacts. Business travellers or local full-time employees who like to spend some time away from their office and who work with laptops were the main types to form the "true mobile" user group.

***Socializer*:** For Socializers, Wi-Fi is the means to the improvement of sociability in public space because they can engage in casual interactions while they surf the web, check email, and just enjoy the ambiance. They usually participate directly in creating a local community. However, their backgrounds vary; most Socializers tend to be locally employed regulars, students and small business owners. They are usually familiar with the public space and, given the proximity to their homes or jobs, they tend to hang out regularly. Some of them spend time chatting with their friends physically or remotely by Internet, and share information through blogging and the email community. The average time they spent in the coffee shop is the same as the True Mobiles, averaging more than thirty minutes. Moreover, Socializers appeared to be the main user type in the free Wi-Fi community.

***Passer – by*:** Passers-by enter the park for a casual rest or use the park as a meeting place with friends. They usually stay near the main intersection or walk on the path without leaving it for exploration. The cell phone is the main portable device they use to kill time or contact people they plan to meet. The people in the Passer-by category could be tourists, runners, and people who live or work nearby.

***Economically disadvantaged*:** There are people who unable to afford a laptop or Internet. Especially for the low-income community, the public library and the wireless park are the only places for them to update job information and submit resumes. Most of their online activities are directly related to life necessities and news updates.

2. Location & coverage

There are mainly two kinds of antennas[4] have been using for Wi-Fi connection outdoor; horizontal and vertical. According to shape and size of the outdoor space, these antennas must be used to cover whole the park or some expected spaces like a puzzle.

3. User profiles as a design parameter

As *True Mobile* users are apt to spend more time using Wi-Fi than any other user groups, these individuals expect a more comfortable environment to guarantee satisfactory work results. The location for them should firstly avoid direct light in order to improve screen visibility. Then, a long depth of field is conducive to relieving eye fatigue. If possible, activities should be available at a long distance with sounds or views offering the background of a pleasant social environment. the space for True Mobiles should be located away from the main path, and without crossing circulation. Should circulation be unavoidable, however, passing the user in the front is better than in the back, as the laptop screen occupies most of a True Mobile's attention.

As the group looking for fun through communication, the site design for Socializer should mix public use and personal interest as much as possible in order to maximize interaction among people. The space prepared for them should provide multiple alternatives, with the hope of encouraging them to participate in the normal activities taking place in the park. These users' outgoing nature will lead them to enjoy the rest. Moreover, when uploading their status by Twitter or other location-based applications, the location is more likely to draw more out-of-space people. For example, it is recommended that Socializers arrange to meet in gathering centres where they can directly access other event places. Sports facilities such as basketball courts, baseball fields, and playgrounds can be optimal spaces for Socializers. They pay more attention to variations in the surrounding environment. Movable facilities would enable them to observe more easily.

Passer – by users are not the main users of the park, but they are the most observed group in the open space. They treat the open space as a shortcut or temporary stopping point. In terms of wireless signal, Passers-by require continuity rather than speed. The problem of continuity emerges as the area of a park increases. The larger a park's size, the more disturbed is its signal zone.

Public Wi-Fi access provides life essentials to Economically Disadvantaged group. They need the Internet to apply for jobs and update everyday information, but cannot afford private Internet service. Moreover, they are also quite often in need of equipment. The site for the Economically

[4] *Antenna* can be used as AP – Access point – in some resources that refer to Wi-Fi routers.

Disadvantaged group should have indoor space with dedicated year-round accessibility. If possible, the site should be located near public transit, allowing these individuals to use the service quickly as an everyday routine without the need to spend extra time.

4. Vegetation

As a crucial element of the outdoor space design, the vegetation layer can also impact the Wi-Fi space by interfering with signal transmission. Normally, the ideal Wi-Fi space is considered to be a place free of obstacles. However, the design of open space on the premise of this condition is predictably negative. Although trees weaken signals, they do not diminish the average signal strength below -75 dBm (the minimum for a Wi-Fi connection). Therefore, as long as the effect of urban trees is taken into account during the planning of Wi-Fi networks, trees should not interfere with municipal Wi-Fi operation. (Lacán, McBride, 2009).

Discussion & Conclusion

The influence of Wi-Fi use on urban public spaces is uneven and heavily influenced by the character of the space. The popularity of a site for wireless users is determined by the role of reputation, free Wi-Fi, pre-existing population density, urban design, surveillance/harassment, and local culture (Campbell, 2007).

It is inevitable that Wi-Fi will spread outdoor in many countries, soon. USA, UK and Qatar have already successful projects in their country. As mentioned above, user profiles have to be determined firstly, then special spaces must be organised in park for every single profile. Designing a park with Wi-Fi facility is easier than integrating Wi-Fi to an existing one because of the materials in the park. There is no harm for inanimate materials but plants would be affected negatively from the routers. So, it must be tested for urban park plants that the stamina of them. Considering the health of plants to Wi-Fi radiation would be change the project. Wi-Fi is a really important parameter which can increase the usage of the parks, that's why more researches should be done for design perfection.

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