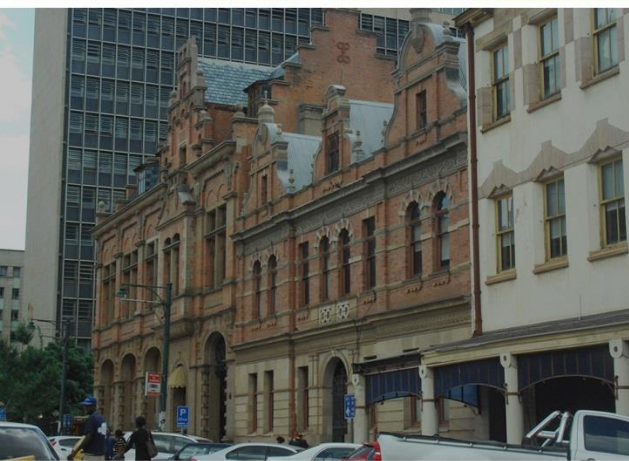




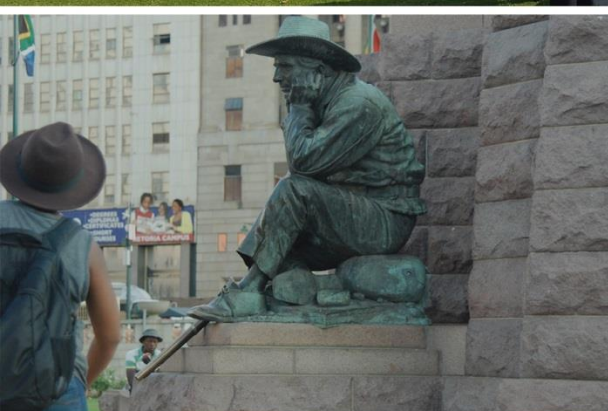
To what extent can free wireless broadband infrastructure reinvigorate Church Square in Pretoria?

by Katlego Innocent Pule

A research report submitted to the Faculty of Engineering and the Built Environment, University of the Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of Master of Science in Engineering.

Johannesburg 2015

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG



Declaration

I declare that this research report is my own unaided work. It is being submitted to the degree of Bachelor of Science in Urban and Regional Planning Honours to the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination to any other University.

.....

Katlego Innocent Pule

.....11th..... Day of ...November ...2015...

Abstract

Some critics of the information age believe that technology could potentially add to a public space's genius loci as the internet is fast becoming ubiquitous in cities. Through investigating this phenomenon, this research report explored the impact of free wifi in Pretoria's Church Square focusing on how it affects the functions and user's social interactions within the space. The methods used for exploring this were adopted from existing case studies employing user surveys and various observations techniques. The findings revealed that free wifi alone cannot alter the user's social interactions and the functions of Church Square to a great extent as there are other contributors to the space's genius loci. Despite this limitation, the presence of free wifi adds another dimension by encouraging alternative methods of communication in Church Square.

In loving memory of my mother

Thandi Nooi Anna Pule

It was your soul that touched us all.

Your time on earth was a heavenly gift from God.

For those of us who knew you, your presence made us laugh.

Memories of you linger my mind as I face each day.

I'll forever live my life with love and patience,

Because that was your way.

Thank you for the life lessons

During your short stay

How I wish to have framed your smile

To hang it in a permanent way...

It was your soul that touched us all

*Adapted from the song memories by Rocco featuring Marcel
(2007).*

Acknowledgements

Conducting this research has been enjoyable and enlightening. Faced with numerous obstacles in 2015, completion of this research would have been an impossible task had it not been for the help of the following:

- God Almighty. Through You, all things are possible.
- My supervisor Doctor Alex Mary Parker. Thank you very much for guiding me and giving me useful insight on my topic. I am most grateful for the patience and belief you had in me throughout 2015.
- To my family for their love and support. Ntaoleng and Sihle Kunene – thank you for all that you have done for me this year. I really appreciate how you have stood by me in 2015 and kept me motivated, even in the midst of all the obstacles I faced in pursuing my honors. Thank you for taking good care of me whilst I was a guest in your beautiful home. To Lesego, Sphiwe and Dineo – thank you all for keeping me in your prayers and wishing me well throughout this period.
- To my grandparents, Mr. and Mrs. Jiyane – thank you for all the love and support you have shown me in 2015. All I ever wanted to do was to make both of you proud.
- The rest of my family – thank you for all the wishes.
- My funders – the Postgraduate Merit Award board, and Ms. Thato Pharatsi without whom the 2015 academic year would not have materialized. To Thato – thank you for believing in me and granting me the chance to pursue my honours degree. The world needs more women of your stature who believe in education.
- Abraham Ajibade, Wetu Memela, and Nthando Mthimkhulu – thank you for your support in persuading me to stick to my original topic for the research. My academic year would have gone a different route had I not listened to you all. To the rest of the clique – Nompoti and Mitch – your love and support does not go unnoticed too. Thank you.
- My classmates – thank you for the support.
- Thembanani Mkhize – Thank you for being super cool and mentoring me throughout this research.
- The lecturer who inspired me to pursue this topic – Solam Mkhabela. Thank you for being such a significant figure throughout my undergraduate in urban design.
- To Garth Klein – thank you for all the assistance you gave me with regards to my literature review.
- The rest of my lecturers – thank you for making me understand the planning profession through your lens.
- Project Isizwe – thank you for your cooperation and the information provided to make my research report a success.
- The City of Tshwane – the people that partook in the surveys – thank you for your time and cooperation in contributing to the Church Square study.

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Acronyms

CS: Church Square

CBD: Central business district

FIZ: free internet zone

ICT: Information and communications technology

ISPA: Internet Service Provider Association

NDP: National Development Plan

NPO: Non-Profit Organisation

UN: United Nations

Chapter 1: Introduction – technology meets public space

In the urban design profession, much of the 20th century debates on public space have been centred on the decline of the public realm in cities. One of the first few authors to suggest this view was Richard Sennett in 1977 in his book *The Fall of the Public Man*. As a result, this posed for an interesting debate to the floor of the urban design profession, which saw a lot of theorists and academics supporting his view such as Putnam (1995, 1996), Carmona, Heath & Tiesdell (2010) and Banerjee (2001) to name a few. When looking at the context from which this view arose, one can see why the likes of Sennett (1977) would suggest this narrative of loss in the public realm. One of the underlying causes of the public realm's decline according to Banerjee (2001) was the 'communications revolution' of the information age where people could socially interact with others without being physically present. This was achieved through telecommunicating with telephones or using a desktop computer to access the internet from home. This resulted in people not having to occupy public spaces just to interact, which was different from what it was like in ancient Greek agoras (Carmona et al, 2008). The Greek agoras were public spaces where citizens engaged in both planned and unplanned interactions.

However, 15 years later, the same underlying cause of the public realm's decline can be viewed as an attractor to public spaces as opposed to what was proposed by Sennett. Due to the advancement of technology in the 21st century, internet demand has increased significantly as more and more people are getting connected. Internet activity has expanded beyond our private enclaves into the public realm through ubiquitous computing in public spaces (Hampton, et al., 2010). Ubiquitous computing enables the ability to access the internet in public spaces through wireless connectivity using a laptop or a smart device (Weiser, 1993). Thus the public space becomes an open internet café to a certain extent. Ubiquitous computing has gained momentum in municipalities across the globe, particularly in South Africa. Just recently the City of Tshwane in collaboration with Project Isizwe implemented ubiquitous computing for its residents in public spaces. This comes after Jacob Zuma's 2015 State of the Nation Address Speech earlier this year which emphasized the rollout of wireless broadband infrastructure to improve internet access for South Africa (Mawson, 2015). This saw the first phase of broadband rollout across schools and government institutions in South Africa (Alfreds, 2015). This is part of the government's Nine Point Plan which is strategically targeted at stimulating

economic growth (Zuma, 2015). This Nine Point Plan was informed by the National Development Plan formed back in 2011, with one of its milestones ensuring that all South Africans have access to high speed broadband (Cooperative Governance Traditional Affairs, 2014). The government's broadband policy, South Africa Connect, has reflected positively to multinational corporations such as the United Nations (UN), labelling it as an excellent policy which takes into account the demand and supply aspects of the market (Staff Writer, 2014). Drafted back in December 2013, South Africa Connect was also well received by broadband giants, Cisco, as a comprehensive policy for the country (Alfreds, 2015). This could see more public spaces around cities in South Africa offering free (although limited) internet access to people.

Prompted by these developments, my research has explored the extent/impact/influence ubiquitous computing has had on public space in South Africa, through the case study of Church Square in Pretoria. The square has a rich history and has always been the hub of Pretoria's public life (Pretoria, 2015). The research shows that the introduction of free wifi internet has not significantly impacted the functions of Church Square as anticipated. The findings suggest that wifi may not be attracting new users to this public space but that new forms of communication are occurring in this square alongside traditional forms.

Why ubiquitous computing?

Regarding this new trend in public spaces in cities, it becomes necessary to understand how the introduction of information and communications technology (ICT) affects public space functions: whether it augments public space in a positive or negative manner. According to Hampton et al. (2010), the internet has the potential to reconfigure the public realm. This study speaks directly to this point in trying to assess the impact of the internet in public spaces. It has been noted that this topic has not been researched enough in recent literature, and requires further exploration in understanding the role of ICT in the information age in spaces (Hampton, et al., 2010). This research is important in the South African context because the introduction of ICT further connects the country to the global world where more and more people are being connected to the web. ICT has the potential to redefine the images and perceptions of post-apartheid cities' from being historic remnants of apartheid.

Based on my experiences of public spaces in Johannesburg, themes of under-utilization or lack of maintenance characterize spaces such as Mary Fitzgerald Square and Pieter Roos Park. Both Mary Fitzgerald Square and Pieter Roos Park in Johannesburg are examples of public spaces which are under-utilized. These are in desperate need for revitalization in order to attract more people. They could be seen as potential spaces for ubiquitous computing. Consider the location of Pieter Roos Park for example: it is surrounded by the University of the Witwatersrand's main and education campuses which could attract a lot of students for the free wifi. This could be seen as one way of reviving a public space without having to redesign the physical aspects of it such as public furniture.

With regards to the introduction of ICT in public spaces, it is not clear if more people will be attracted to public spaces. Despite case studies in Finland, Oulu (2014) and North America of Bryant Park (2010), this particular topic has not been explored yet in South Africa. It is also important to note that South Africa is still one of the most unequal countries in the world where the gap between the haves and the have-nots keeps increasing. Inequality in South Africa is greater now than what it was during apartheid according to Oxfam (Kings, 2014). Therefore, not everyone in South Africa has access to a smart device or laptop which is compatible with internet activity, leading to one of the limitations of this ICT approach in cities.

Research question

To what extent can free wireless broadband infrastructure impact the functions in Church Square in Pretoria? In this report, I define functions as the following: social communication interactions (verbal) between people; activities people do for leisure, work, economic opportunities (trading).

Researchable sub-questions:

- How does the introduction of internet access in Church Square impact social interaction?
- "Who" used the space before and after the introduction of internet access in Church Square?
- How will internet access impact the design and function of the square?

- Does the introduction of internet access attract more people to Church Square?

Case study: The selection of Church Square

I selected Church Square in Pretoria Central Business District as the case study for the research because it is one of the few public spaces in South Africa which consist of ubiquitous computing that has very few barriers to entry compared to the Library Lawns of the East Campus of the University of the Witwatersrand in Johannesburg. Anyone can access Church Square at any particular time whereas at the Library Lawns, you need special permission to access the space if you are not a student of the university. I also selected Church Square on the basis that it contrasts the prevailing argument of the public realm's decline due to the amount of people present in the space. Church Square is always filled with people either having their lunch break, or playing soccer, or even interacting with others – there is always some activity going on.

The main advantage of Church Square over other public spaces in South Africa is that it provides free wifi internet to users. Considering the country's expensive ICT context, free wifi internet has potentially positive benefits for the population of Church Square.

Methodologies and research methods

The methods adopted for this research report originate from Keith N. Hampton, Oren Livio, & Lauren Sessions Goulet's (2010) study of ubiquitous computing in public spaces of North America. Despite this adaptation, the research methods adopted were modified for Church Square solely due to the nature of Hampton et al.'s (2010) study. Their study focuses on seven public spaces as opposed to one, requiring more than one author and more time being allocated.

Hampton et al.'s (2010) study shares one fundamental theme with mine: understanding the impact of wifi internet in public space. Their study informed mine significantly because it is one of the most recent studies on ubiquitous computing in public spaces. Hampton et al.'s (2010) study is far more detailed and comprehensive due to the duration of the study and resources available. Hampton et al. (2010) began with their research findings since May 2007. The study consisted of five different observers studying seven urban public spaces in North America. The

observations on site were executed using psychology's behavioural mapping techniques of understanding person-centred and place-centred trends (Hampton et al, 2010; Ittelson et al, 1970; Sommer & Sommer, 2001). Not to mention that this study was shared amongst three authors, gathering the findings for this particular research of ubiquitous computing is not a simple task. Therefore due to the limited time and resources that was assigned for the Church Square study, I could not adopt Hampton et al.'s (2010) research methods entirely.

Approaches used for the surveys and observations

This research report used both quantitative and qualitative approaches for the surveys and fieldwork to ensure the comprehensiveness of the whole research process. The research report combined the objective aspects of a quantitative approach which provided insight on the quantifiable reality on whether people came to Church Square primarily for the wifi access or not which was explored in the surveys. The subjective aspects of the qualitative approach analysed the social interactions within Church Square in relation to the wifi access which was also explored in the surveys. The survey also covered the qualitative aspect of how Church Square has changed since the installation of free wifi in December 2014 in terms of user population. This particular survey targeted existing informal traders in the space as well as any surrounding shops or restaurants.

The observations employed a qualitative approach through mapping where the majority of the activity occurs in Church Square at different times of the day.

Two sets of surveys were completed: one for the users of the free wifi internet and one for the informal traders and surrounding shop owners/waiters/waitresses/parking guards in and around Church Square. A total of ten surveys were conducted with the users of Church Square in Pretoria between the Monday the 24th and Friday the 28th of August 2015 with each survey lasting between 10-15min. The user criterion was not gender specific as electronic devices are used by both males and females in Church Square. This particular survey was targeted at those using the wifi enabled devices in Church Square. The age range for the participants was from 18-75, thus not limiting the type of people who would use wifi enabled devices in Church Square.

In addition to the ten, a total of four surveys were conducted with three informal traders and one waiter from the Café Riche restaurant which is located on the west

side of Church Square in Pretoria between the Monday the 24th and Friday the 28th of August 2015 with each survey lasting between 5-10min. This particular survey was aimed at shop owners/waiters/waitresses/parking guards based on the premise that they may have witnessed changes in the square over a longer period and be able to comment on the introduction of wifi. Church Square has only one restaurant adjacent to it. The rest of the buildings include commercial banks, the North & South Gauteng High Court, post office, and a tertiary institution.

Observations

All observations for this research were undertaken by me due to the nature of the research not requiring intensive fieldwork. Between Monday the 24th and Friday the 28th of August 2015, a total of five visits were made to Church Square. I opted to go during the week because that is when the square is at its peak with regards to user frequency as opposed to the weekend or on a public holiday. Each visit lasted nine hours. Overall, each visit involved standardised observational procedures and techniques:

- Doing a head count on the number of users present at different time intervals: 8-9am; 10-12pm; 1-2:30pm; 3-5pm;
- Observing the different age groups present on site;
- Doing another head count on the number of users using smart devices/laptops versus those without at those respective time intervals.
- Observing where the different types of activities occurred in Church Square as well as the pedestrian traffic.

The observations regarding the different types of activities required a mapping technique. I recorded the time of that particular activity and then marked out the locations of these activities on the map.

Additional data acquired

The statistics from Project Isizwe (responsible for the wifi intervention in Church Square) on the frequency of the wifi usage in the space were acquired by communicating with the appropriate people in charge of the Church Square project who granted me access to the relevant information. Other statistics on the % of residents/locals in Pretoria, as well as South Africa who have access to a smart phone/tablet were acquired by accessing the relevant cellphone companies' websites who can provide relevant documents for 2015.

Conclusion

Chapter two will continue the discussion of public space as the public realm and the role of internet in cities. Chapter three will then introduce the case study of Church Square in Pretoria and provide an overview of internet activity in South Africa. Chapter four unpacks the findings of the case study and begins to formulate trends of the analysis. Chapter five will then synthesize the concluding thoughts of the research report and discuss the potential of ubiquitous computing in urban public spaces in South Africa.

Chapter 2: Literature review – The public realm: in decline or evolving?

Introduction

The following chapter seeks to challenge the populist views of the public realm's decline by posing a different perspective. I argue that the public realm has evolved and extended beyond the physical settings it once used to be characterized in. This is made possible through the role ICT plays in urban areas which I will demonstrate throughout this chapter. This will be followed by existing case studies of ubiquitous computing in cities from North America and Finland.

Public realm definition is out-dated in the 21st century

In the book *Public Places – Urban Spaces* by Carmona et al. (2010), they provide a useful definition of the concept in understanding that it does not only relate to the physical setting of space, but of the social activities occurring within that space. When being in the public realm, one is exposed to unplanned gatherings and interactions with a diverse network of people (Hampton, et al., 2010). The public realm consists of both physical and social aspects of space, meaning the different spaces that facilitate public life and social interaction (Carmona, et al., 2010). In broad terms, public life is understood as the comparatively open universal social contexts that oppose private life which is more intimate and has controlled access to family and friends (Loukaitou-Sideris & Banerjee, 1998). The private realm is mostly categorized as the home environment where an individual is less vulnerable to exposure (Hampton, et al., 2010). Both the public and private realm sits within opposite ends of the physical space scale. The next realm which exists sits between the public and private known as the parochial realm. The parochial realm is found in settings outside of the home environment such as the workplace, shops, and restaurants. A parochial realm has more diversified ties and is less intimate than those found in the private realm (Hampton, et al., 2010). The public realm is characterized as having the following functions: a political forum for display and action; common ground for social interaction; intermingling and communication; a platform for information exchange and social learning (Strauss, 1961). All these functions were traditionally associated with urban public spaces since the height of ancient Classical Greece back in 5 BC (Carmona, et al., 2008). Therefore the public realm and public space are two interrelated concepts as the public realm is the by-product of public space.

However, we now live in a period where the internet has reinvigorated the public realm's sense of place. The communications revolution has modified the genius loci of the public realm which was found in urban public spaces (Bridge & Watson, 2010). The internet extends the functions of the public realm through social media. Social media was not considered to be the public realm to the likes of Carmona et al (2008; 2010), which is why I state that their definition is out-dated.

Has there been a decline of the public realm?

During much of the 20th century, many authors believed that the public realm was in decline. This view gained a lot of momentum and has dominated urban design literature of Western contemporary cities. Authors such as Carmona et al (2010) believed that there has been a loss in public life due to the decrease in demand for public space in spaces during the 1900s in cities. This stemmed from one of the first few theorists to propose this view, Richard Sennett (1977) in his book *The Fall of the Public Man*, which suggested that the socio-economic and political factors have rendered the public realm obsolete during the 20th century. Echoing this narrative, Putnam (1995, 1996) suggests that there has been a decline in the civic spirit in the US since WWII. I do agree with this point in the sense that the public realm was affected significantly by the global transformations (globalization) which shaped urban environments today. However, I am not agreeing with the notion of the public realm's decline. Banerjee (2001) mentions that one of the structural underlying causes which have attributed to the public realm's decline is the communications revolution.

The information technology transformation of the information age or the 'communications revolution' as Banerjee (2001) would put it, has made it possible for individuals to detach themselves from public space. He held the view that this revolution would potentially remove all social life from public spaces (Banerjee, 2001). Graham & Marvin (1996) argued that the role of the internet in the 1990s facilitated the trend towards privatism as desktop computers were limited for home-centred environments. In my opinion, this view is fatalistic in believing that information technology could render the public realm obsolete, or if E-commerce will replace shopping malls. Despite the curiosity, I think it is too extreme to determine to what extent it will alter the public realm. But I also believe that it does not decline the public realm, which I will argue throughout this chapter.

Those who believe that the public realm is not in decline

My view on the public realm contrasts the above mentioned views of Sennett and Carmona. I believe that the public realm has extended beyond the physical settings. Despite the populist view, others believe that the public realm is not declining. Critics such as Fyfe (1998) are of the opinion that these views on its decline are overstated. Hajer and Reijndorp (2001) argue that this negative view on the public realm is too narrow. They believe that urbanity is complex and dynamic, and that we cannot limit ourselves to the traditional city, meaning that we must not only restrict public space to parks and streets but to other emerging spaces (Hajer & Reijndorp, 2001). I agree with this view because the urban network is expanding every day. People's social networks have changed drastically since the 19th century (Hampton, et al., 2010). This is characterized by privatism (Fischer, 1992), where people's personal discussion network takes place in the private realm (Hampton, et al., 2010). Some of these emerging public spaces as mentioned by Hajer & Reijndorp (2001) are coffee shops, restaurants or bookstores – which are classified as 'third places' according to Oldenburg (1999). He defines them as "...great variety of public places that host the regular, voluntary, informal, and happily anticipated gatherings of individuals beyond the realms of home and work" (Oldenburg, 1999: 16). Oldenburg (1999) further states that elements of public life exist in these third places and we should not discard them, despite not having explicit civic functions of the agora or the forum. Based on Oldenburg's (1999) view on public life in third places, one may argue that an overlapping between the public and parochial realm exists in third places. Therefore an individual may find similar interactions which occur in urban public spaces in third places too.

However, as much as I agree with this side of the public realm argument, I must admit that it can be problematic. These emerging spaces or 'third places' are mostly places of consumption where you require financial means to participate in public life. Where does that leave the individual without those means? As a result they are excluded from public life, which is something that should be given right to all human beings.

Public spaces in the Global South

From looking at the literature, one gets an understanding of the public realm in Western developed countries, and not so much from the developing ones. This is

problematic because one cannot assume that a public square in New York is the same as a public square in New Delhi. The existing literature has little relevance to cities of the Global South due to their different histories and conditions which shaped them. There is lack of literature in public spaces of the Global South, which is one of the main reasons why I am doing this research.

Public spaces in South Africa

When looking at the emergence of public space during the 20th century, the public realm in South Africa was limited to the minority of the population due to apartheid. During apartheid, equal rights of all citizens to access quality public spaces were denied to the non-white population in South Africa. The planning practices of the state during apartheid created an uneven distribution of public space throughout South Africa which is still prevalent today. Due to the fact that apartheid planning favoured the minority group of the white population, comprising of well-located settlements with access to public space, the non-white population were located in settlements where public space was not planned for (McConnachie & Shackleton, 2010). This limited the population in relying on the street as the primal form of public space in townships. A study undertaken by McConnachie & Shackleton (2010), indicates that the more affluent suburbs where the majority of the white population resided, had a higher area of green space per capita, compared to the townships and informal settlements where majority of the non-white population resided. This is an example of how the ruling class' interests manifests through public space (Carmona et al, 2008). Restriction of public space could be interpreted as preventing a citizen's right to the environment which is enshrined in Section 24 Schedule 1 of the Bill of Rights (The Bill of Rights of the Republic of South Africa, 1997).

In post-apartheid South Africa, existing public space has fallen into disarray due to the general perception that they are unsafe (Safer Spaces, 2015). A study by Kruger & Chawla (2002) showed how children felt vulnerable to use Joubert Park due to the safety issues. As a result, the parents preferred it if their children stay at home as they fear for their safety in the space. As a response to this, the real estate market facilitated the demand for gated communities by capitalizing on the issue of safety. The rise of gated communities in South Africa since 1994 is partially responsible for this neglect of the public. These developments end up commodifying these public

facilities. This is true when looking at developments such as the Waterfall Estate in Johannesburg where one has to be a resident to access the biking trails along the greenbelt (Century, 2014). Therefore the facilities of Waterfall are solely exclusive to its residents.

Safety is a major issue in South African public spaces. Just recently, there was a rape and murder incident at Rhodes Park, east of Johannesburg involving two couples being attacked around 18:30 on Saturday the 17th October (Mchunu, 2015). Since then, authorities have increased security measures in and around Rhodes Park, warning residents to not use the park when it gets dark (Mchunu, 2015). With crime being a fundamental issue troubling many South Africans, gated communities gained popularity, particularly in metropolitan regions such as Gauteng (Landman & Schonteich, 2002). This approach of privatizing space to increase safety as a result attracts criminal activities to neglected public spaces making them unsafe (Lemanski, 2004). Gated communities such as Midstream in Centurion consists of good urban design principles such as pedestrianization but are only exclusive to its members. This means that you have to pay for good public life in some parts of South Africa.

Not all public space is in decline in South Africa

It is interesting to note that not all public spaces are in disarray. Zoo Lake in Johannesburg is a prime location for Joburgers for all their leisure activities during the weekend. It is a public park which opened back in 1908 donated by Beit and Co. (City of Johannesburg, 2015). You will find a variety of activities from families having picnics, or people enjoying their Sunday run, or musicians come to perform their music (Vanderstraeten, 2014). Another reason for Zoo Lake's success is due to its Bowling Club which attracts people of all ages (Vanderstraeten, 2014). People tend to boast of Zoo Lake's user demographic, stating that it exhibits inclusiveness and is non-racial in any way given South Africa's segregated past (Vanderstraeten, 2014).

The ICT revolution extending the public realm beyond the physical

In an increasingly digitized world, the information age keeps unveiling its various facets that present new and complex dimensions to urbanity for planners. Communication between people and the function of cities is influenced by technology to a certain extent daily (Hennig & Volger, 2013). To date, it still has not

been projected as to how cities will develop in their absolute form in the information age due to their dynamism (Carmona, et al., 2010). And because of this dynamism, we as planners should encourage open-minded thinking and flexible approaches to urbanity. Digital telecommunication networks have the potential to transform and reconfigure the urban (Mitchell, 1995). As a result, this could displace the required social conventions of interacting in traditional public spaces with newer, innovative forms of urbanism (Aurigi, 2005). Some of these social conventions include face-to-face interaction, which was previously the only means of communicating with others in public spaces. It has been stated that asynchronous communication (communication without face-to-face contact) proves to be more convenient which separates the users both in space and time, and does not require travel (Carmona, et al., 2010). Meaning one person can talk to their friend or family relative without being physically present. Asynchronous communication is gaining momentum globally as 75% of the planet's internet users utilize mobile messenger apps daily on their smartphones (Statista, 2015). It is the opposite of the conventional verbal communication method which can be exercised through social media and instant messaging applications (Whatsapp, Facebook Messenger, WeChat, Blackberry Messenger, Skype, and Twitter to name a few). Asynchronous communication enables the individual to interact with social ties found in both public and private realms such as parks and their homes respectively.

This is made possible through new innovative methods for interaction between individuals via social avenues through images, videos and avatars in any location at any particular time (Erickson, 2010). These developments have seen the growth of virtual spaces such as social media which add a whole new dimension to public space. This has ultimately signified that the role of internet has supplemented existing forms of communication (Quan Haase, et al., 2002).

This means that communication technology could provide new opportunities for urbanity which could prove to be revolutionary. Through telecommunication technologies such as the internet, people will be able to work from home or from a coffee shop (Hampton & Gupta, 2008; Mitchell, 1995). For some individuals, coffee shops that provide wifi proved to be an ideal setting for productivity compared to the office (Hampton & Gupta, 2008). What telecommunication does is grant the individual choice for a more flexible lifestyle (Graham & Marvin, 1999). No longer is

internet access limited to the private realm of our homes or internet cafés. The presence of smartphones also plays a crucial role. Smartphones are mobile computers which allow the individual to make telephone calls in addition to sending and receiving emails (About Tech, 2015). This means that anyone with a smartphone can access the internet through wifi or mobile broadband.

With regards to public space, it is still unclear to what extent telecommunication technology will impact on public space which is why I am doing this research. According to Castells (1996) and Sassen (1994), face-to-face contact will still remain as the primary mode of interaction in public space, believing that public space will not be threatened by new emerging technologies. However, critics of this emergence of telecommunication technology in the information age believe that it will exacerbate the existing issues related to segregation and privatization. Kroker (1996) views this wired culture as creating a socially disconnected society embracing loneliness. Meaning that more and more individuals experience isolation from the real world as they are consumed by the virtual world. When looking at the context of Kroker's (1996) view, it makes sense why he would think this way. The internet was still associated with the desktop computer which could be accessed in the private realm during the 1990s as mentioned earlier. Kroker's (1996) view is contradicted by the significance of asynchronous communication through the multiple social ties an individual maintains through mobile messenger apps in the 21st century. An individual seated in a public park using their smartphone may seem to be alone from one's view, but in actual fact are not. They may be interacting with their networks through mobile messenger apps such as Whatsapp or social media such as Facebook.

Despite these views of how telecommunication technology could potentially perpetuate the ills of social disconnect, I am of the view that it could create endless opportunities which could enhance urbanity in a positive light. Telecommunication has the ability to offer pragmatic solutions for people's livelihoods (Crang, 2000). Rheingold (1993) was one of the first few people who believed that communication technologies could potentially revitalize the public realm, bringing back public life in traditional public spaces. This is where the likes of Hampton et al. (2010) may have adopted this view in believing that the internet has the potential to reconfigure the public realm as mentioned earlier. Advocating this argument, I will now present the

concept of ubiquitous computing, which could be a prime example of using telecommunication technology to revive public spaces.

Ubiquitous computing – a new function for public space?

Ubiquitous computing has as its goal the nonintrusive availability of computers throughout the physical environment, virtually, if not effectively, invisible to the user (Weiser, 1993). Unlike virtual reality, ubiquitous computing will integrate information displays into the everyday physical world (Weiser, 1993). Its proponents value the nuances of the real world and aim only to augment them (Weiser, 1993). And unlike current personal digital assistants, ubiquitous computing will be a world of fully connected devices, with cheap wireless networks (Weiser, 1993).

The study of **ubicomp** (ubiquitous computing) in urban spaces is referred to as “urban computing” (Ylipulli, et al., 2014). It is an emerging multidisciplinary field considering public places such as cities and parks as sites for computing, including interaction between humans and such environments (Ylipulli, et al., 2014). Due to the nature of ubiquitous computing, it enhances the existing functions of public space. In most third places such as coffee shops and restaurants, wifi connectivity is offered as a way to lure customers into these third places. The interesting part of this is that these third places provide the choice of doing office-related activities such as browsing particular websites, sending emails, or even searching for freelance work. These third places create temporary environments which eliminate the need for a fixed office with the required infrastructure (Powell & Meinrath, 2008). This is an on-going trend globally, where more people are getting connected through the internet. Even in South Africa, where in third places such as Wimpy and McDonalds are being used by adults and teenagers for the wifi (Oxbridge Academy, 2015). However, there are limitations in using ubiquitous computing in third places as I have mentioned earlier that it could potentially exclude those who do not have access to the necessary devices.

Even though ubiquitous computing research has gained momentum in the 20th century, there is still a level of ambiguity attributed to its theoretical and methodological background (Ylipulli, et al., 2014). This means ubiquitous computing as an emerging discipline is still in its premature phase as there is no fundamental theory validating its content. With regards to the methodology, it is unclear on how to assess the impact of ubiquitous computing in public spaces as it covers many

aspects of urban design, IT, and sociology. According to Hampton & Gupta (2008), it is still uncertain on how wireless internet will reconfigure public spaces.

Another limitation to this discipline is its context. It is mostly applicable for developed nations as they already have efficient ICT infrastructure in their cities. Thus the existing studies have little relevance for the cities in the Global South.

Existing case studies of ubiquitous computing

Oulu, Finland

The city of Oulu in Finland with its 190 000 inhabitants (Oulun kaupunki , 2015), implemented a municipal wireless network (Ojala, et al., 2011). Ylipulli et al (2014), did a study of the appropriation of a municipal WIFI network (panOULU WLAN) in public spaces. The WIFI provides free unrestricted internet access to the users at the various WIFI hotspots. The University of Oulu established an Open UBI Oulu test-bed which monitors the WIFI activity and people's interaction. According to their research data, Ylipulli et al (2014) states that panOULU WLAN has increased in its user base significantly as the demand for internet has become like a public service. Despite the success of panOULU WLAN, they do mention that the appropriation of ubicomp in urban settings is a complex process which requires more in depth studies.

Wi-fi use in third places: Seattle & Boston

This case study may not relate to ubiquitous computing in public spaces such as public squares or parks. Ubiquitous computing takes place in Oldenburg's (1999) third places for this case study. The interesting aspect of third places is that they exhibit similar public life which is found in those conventional public spaces (Oldenburg, 1999). Therefore excluding research on third places will limit my findings significantly.

Hampton & Gupta (2008) embarked on an ethnographic study of how WIFI influenced social interactions in four different cafes. Two of the four were paid wifi cafes while the others were free. The study determined two typologies for the different users in the wifi cafes: 'true mobiles' and 'placemakers' (Hampton & Gupta, 2008). True mobiles viewed the cafes as places for productivity where they either focused on work or studying/research (Hampton & Gupta, 2008). Whereas the placemakers viewed the cafes as hangout spots for leisure (Hampton & Gupta,

2008). What Hampton & Gupta (2008) revealed from their results is that both typologies illustrated the shift away from privatism to public-privatism. This means that true mobiles preferred to use the cafes as an escape from home or work to continue with their work. However, this did not allow for new opportunities for unplanned social interaction in the cafes according to their data (Hampton & Gupta, 2008).

Assessing the impact of wireless internet in 7 parks & plazas in North America

Hampton, Livio, and Goulet, undertook a study examining the impact of ubiquitous computing in urban public spaces in North America. In doing the study, they set out a hypothesis which views the internet as having the potential to reinvigorate the public realm, yet maintaining that it can also encourage forms of privatism (Hampton, et al., 2010). The main intent for this particular study was based on the fact that this aspect of wireless internet has not been explored enough, which is similar to my intentions for Church Square. After comparing the findings of all 7 parks & plazas, they found that wireless internet has a way of allowing individuals to create their own parochial realms encouraging a level of privatism within a public despite communicating with a wider social network through social media and instant messaging space (Hampton, et al., 2010). They conclude in stating that wireless internet alone cannot reshape public spaces due to the fact that other factors also play a role in influencing space (Hampton, et al., 2010).

Conclusion

This chapter sought to demonstrate obsolescence of the public realm definition for our contemporary context. Critics of the 20th century could not foresee the advancement of technology impacting people's lives based on their views. No one could. The world is far too dynamic and unpredictable. The communications revolution has altered the public realm's sense of place to an extent where an individual can be present in a private realm, yet still within the public one simultaneously. As a result, the demand for internet keeps growing globally with various cities in North America and Finland implementing ubiquitous computing in public spaces. However, this may be limiting considering how the demand for internet in developing nations, particularly in South Africa, does not resemble that of the developed nations. Chapter three will then discuss the overall context of internet activity in South Africa which will be followed by the introduction of the Church Square case study.

Chapter 3: ICT in South Africa – contextualising ubiquitous computing with Church Square

Introduction

This chapter seeks to give an overview of South Africa's internet context, as access to the internet has become a priority for the state. This has seen the rise of wifi hotspots all over the country in restaurants, cafes, and even taxi ranks. The chapter will then begin to introduce the non-profit organisation responsible for some of these interventions, along with Church Square as it recently became a free internet zone (FIZ).

Internet access in South Africa

Internet demand keeps increasing in post-apartheid South Africa amongst citizens. One key aspect facilitating this demand is the presence of free wifi hotspots, allowing people to access the internet for free, provided that they remain within the parameters of the hotspot. By 2013 there were already 1 000 fully operational free hotspots across South Africa (Staff Writer, 2013). The Internet Service Provider's Association (ISPA) mentioned that internet access is fast becoming a utility such as water and electricity for the population in South Africa (Alfreds, 2015). However critics still believe that the ICT infrastructure is not where it should be. Fixed broadband penetration for 2014 was recorded at 3.1% compared to wireless broadband of 28.7% (Van Zyl, 2015). This shows how more South Africans are accessing the internet from their mobile devices compared to their desktop computers. South African cellular operator, MTN, saw an increase of 63% in mobile data capacities for 2013 while its rival, Vodacom, was receiving 75% more mobile data circulation per device than in 2012 (Van Zyl, 2015). Overall, 48% of South Africans used the internet in 2014 (Alfreds, 2015). However, this does not tell the full story. Statistics show that broadband costs are a limiting factor for South African internet users (Alfreds, 2015).

Reasons for limited internet use

Despite the 48% of the South African population having access to internet, there are those who are excluded from the benefits of internet due to the expensive internet rates. Low income communities tend to be the most affected because having access to the internet has turned into a privilege (Vuma Reputation, 2015). Figure 1 below indicates that the prevalent issue hindering adequate broadband

penetration in South Africa is that internet is relatively expensive. The average broadband costs for a South African is worth ten times more than that of a citizen residing in the United Kingdom (Van Zyl, 2015). The other prevailing trend was that internet in South Africa is relatively slow (Project Isizwe, 2015). ISPA has called on the South African government to invest more money into broadband infrastructure for better faster and reliable internet connectivity (Alfreds, 2015). Currently, the average consumer in South Africa pays an exorbitant fee for broadband to receive a slow connection than what it would be in the United Kingdom (Van Zyl, 2015).

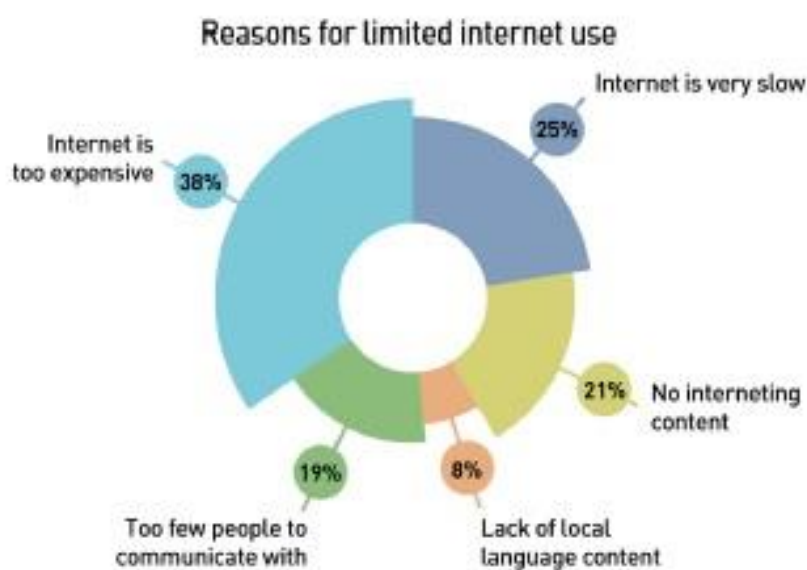


Figure 1: pie chart illustrating the reasons for the limited internet use in South Africa (Project Isizwe, 2015). Expensive internet rates continue to be the dominant contributor to the limited internet use in South Africa.

Where people are currently accessing the internet

With the advancement of technology and the role internet plays in our lives, we can now access internet everywhere we go through our smartphones. It has gone beyond the private realm of our homes which contributed to the public realm's decline as echoed by the likes of Sennett (1977) and Carmona et al (2010). Internet access is no longer restricted to our homes through our desktop computers. It is all around us. At home, work, even in public spaces where it never existed before. The ever growing market for smartphones perpetuates this as more and more South Africans are buying smartphones. According to Effective Measure (2015), 91.7% of internet users own a smartphone in South Africa as illustrated by the graph below.

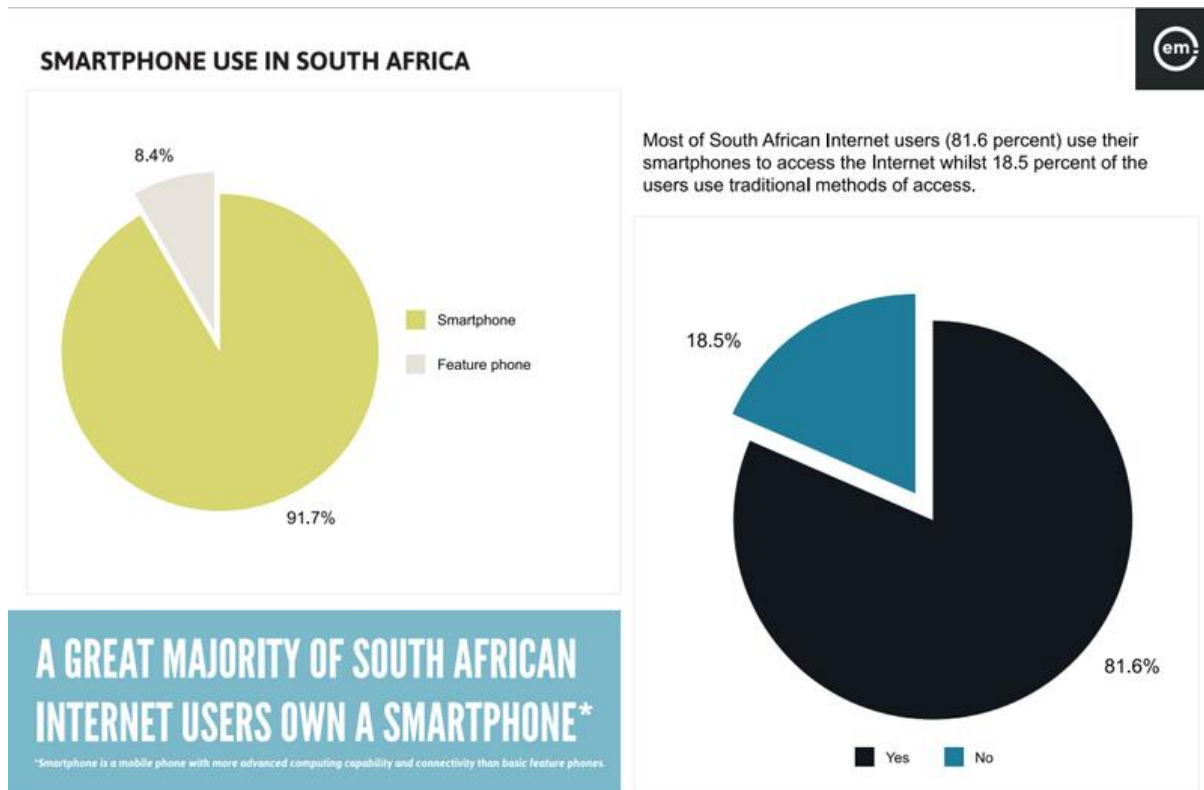


Figure 2: pie charts showing smartphone ownership in South Africa (Effective Measure, 2014). Majority of South Africans are accessing the internet through their smartphones.

This trend can be seen in South Africa as Figure 3 provided by Project Isizwe's (2015) data base indicate that people are accessing internet in other spaces such as educational institutions, the workplace and internet cafes, despite home still being the preferred location. In places such as restaurants and hotels, we have seen the emergence of free wifi being offered by wifi network company AlwaysOn, which operates in over 850 hotspots (Staff Writer, 2013). Just recently, NPO Project Isizwe installed free wifi for both the Gugulethu and Khayelitsha taxi ranks in Cape Town officially on the 31st of July 2015 (Vuma Reputation, 2015). Now commuters can access information around education and news more conveniently (Vuma Reputation, 2015). This initiative follows on from Project Isizwe's initial free wifi rollout on the back of the City of Tshwane's BRT provision in December 2014 which grants commuters free internet access while on the bus (Orangeink, 2015). These initiatives by Project Isizwe are significant, particularly in the South African context, where commuters can spend several hours between work/school and home on the roads. This is a perfect example of how the role of the internet has become ubiquitous in our lives.

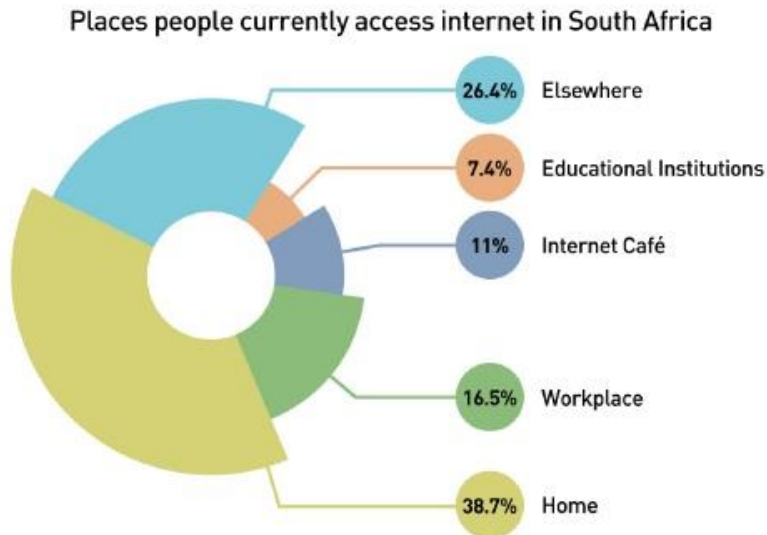


Figure 3: pie chart indicating the places where people access internet in SA (Project Isizwe, 2015).

Church Square – the hub of Pretoria

Tshwane Metropolitan

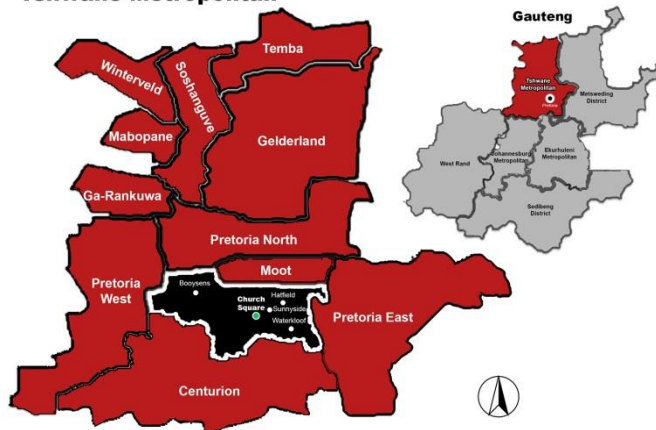


Figure 4: contextual map locating Church Square in Pretoria. Contextual map done by Katlego Pule (2015), and aerial photograph adapted from Google Maps (2015).

Church Square is one of South Africa's iconic public spaces famous for its rich heritage and history. Market Square as it was once known, functioned as a multipurpose open space hosting commercial activities from the market, as well as sporting activities until a church was erected in 1856 (Pretoria, 2015). The Dutch Reformed Church was removed from the square due to its tower being declared as a hazard to its users (Heritage Portal, 2013). Once the church was removed, an affiliate of Paul Kruger, Sammy Marks, donated a fountain in 1905 which was located in the middle of Church Square as illustrated below in Figure 4 (World Digital Library,

2014). A few years later, the square was redesigned in 1910 by Rees Poole (Artefacts, 2015), which then included an electric tram terminal (Heritage Portal, 2013). In 1954, the Paul Kruger statue was unveiled in Church Square at the vacant spot left by the fountain (Heritage Portal, 2013). The Paul Kruger statue is surrounded by four other statues resembling the soldiers from his time of battle (Show Me, 2009).



Figure 5: image showing the fountain donated by Sammy Marks in Church Square in 1905 (World Digital Library, 2014).

Church Square is relatively open allowing for maximum sunlight coverage. The northern part of Church Square has the most trees along the edges of the grass islands, while the southern part has fewer trees. The Southern part of Church Square is elevated approximately five metres from the ground giving the user a view of the whole square. Church Square is located within the most central part of Pretoria CBD anchored by Paul Kruger Street running from North to South and both WF Nkomo Street and Church Street running from West to East respectively. Church Square lies 1.7km north of the Pretoria Train Station along Paul Kruger Street. Church Square is surrounded by numerous institutions as illustrated on Figures 7 and 8, demonstrating the type of user that would traverse the space.

The heights of the buildings surrounding Church Square are mid-rise range between 14m-20m resembling building densities of parts of Johannesburg's inner city. Towards the Eastern side of Church Square consists of an FNB bank, PEP clothing retail outlet, John Craig retail outlet. The Southern side of Church Square consists of a PC Training Business College Tertiary institution, a Standard Bank and an Areyeng BRT station which is still under construction. The Western side of Church Square consists of the

Café Riche restaurant, The South African Post Office, and the Ou Rasdaal building. Towards the Northern side consists of the North Gauteng High Court which was known as The Palace of Justice where the infamous Rivonia Trial took place (Show Me, 2009).

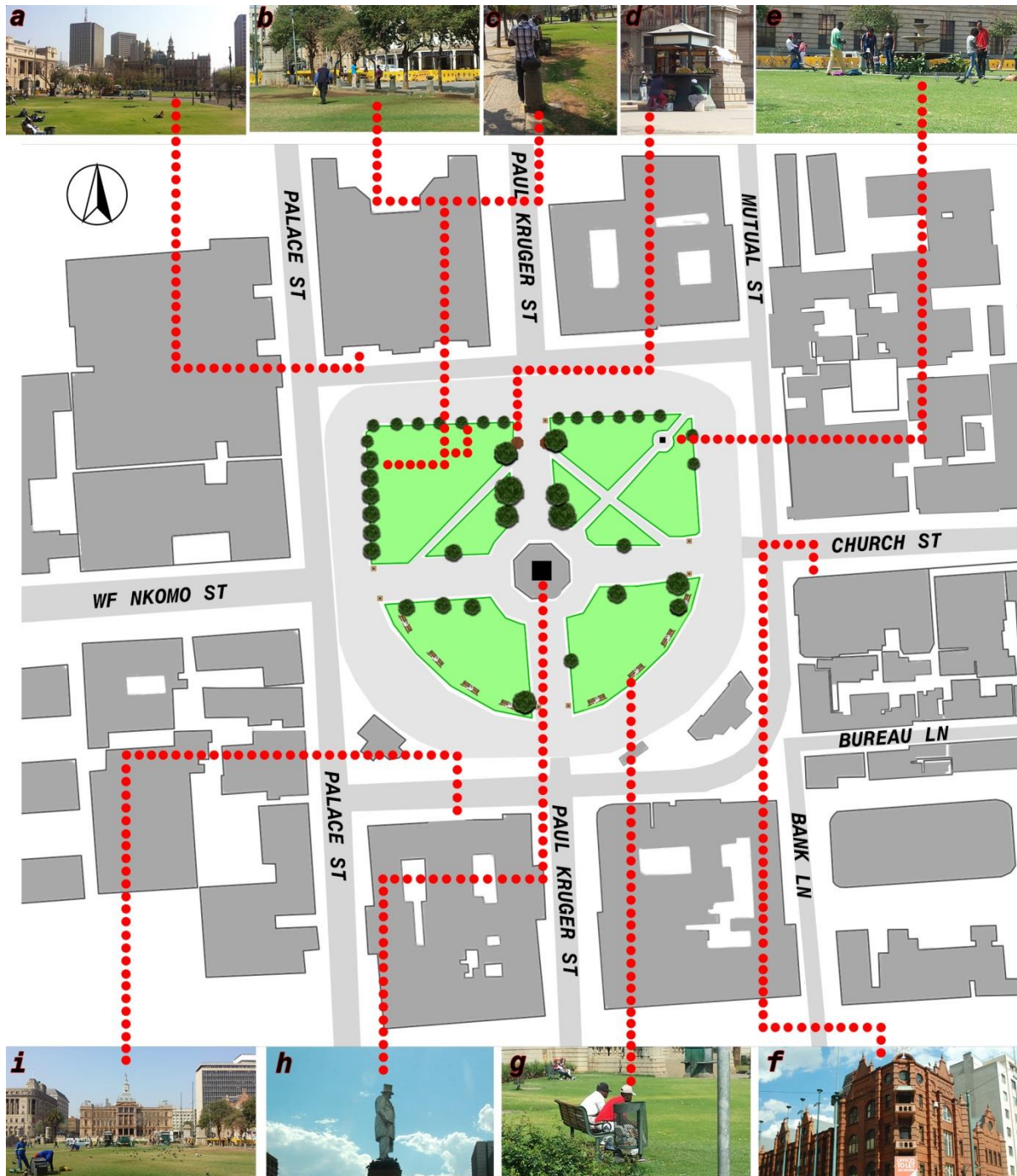


Figure 6: Map illustrating the main elements of Church Square.

- a) Palace of Justice designed by Sytze Wierda in 1902 (Artefacts, 2015).
- b) Bollards which are located at the north end of Church Square.
- c) A student using their laptop while leaning on a bollard.
- d) An informal trader using one of the gazebos in Church Square. There are two gazebos at all four entrances in Church Square.
- e) A fountain located at the north end of Church Square. This fountain should not be confused with the Sammy Marks one, which was moved to the Pretoria Zoo once Church Square was redesigned (Heritage Portal, 2013).
- f) Tudor Chambers designed by John Ellis in 1904 (Artefacts, 2015).
- g) People using one of the four benches in Church Square as they engage in 'people-watching'.
- h) Paul Kruger statue which is located at the centre of Church Square.
- i) Old ZAR Council Chamber designed by Sytze Wierda in 1891 (Artefacts, 2015).



Figure 7: map illustrating the context of Church Square within the surrounding tertiary institutions and intermodal transport station. The blue and white filled triangles represent the surrounding tertiary institutions and the yellow and white filled triangles represent the surrounding train stations. Map courtesy of Google Maps (2015), edited graphics by Katlego Pule (2015).

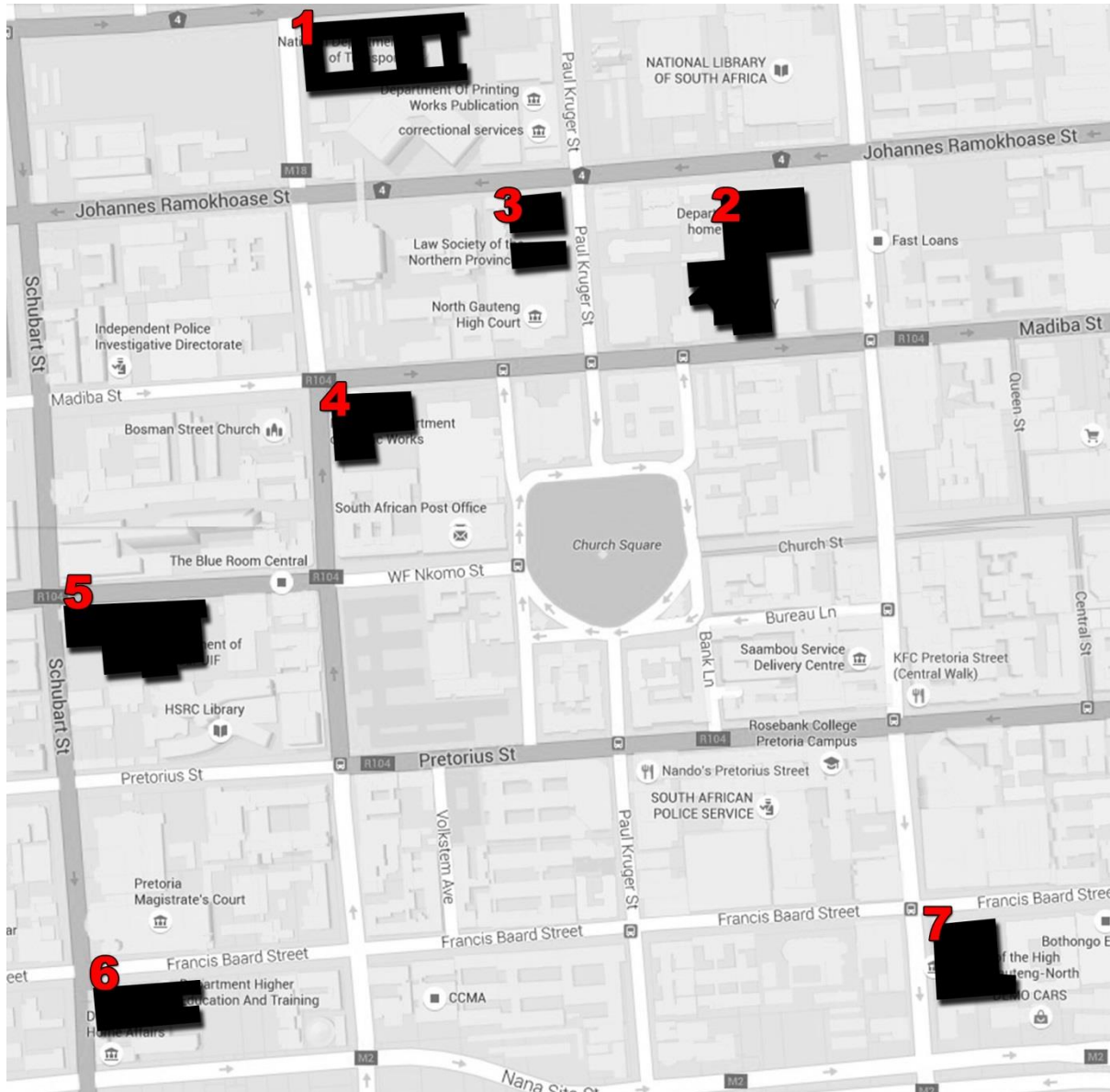


Figure 8: map showing the context of Church Square with regards to government institutions. Map adapted from Google Maps (2015) and edited by Katlego Pule (2015).

1. National Department of Transport
2. Department of Home Affairs
3. Law Society of the Northern Provinces
4. National Department of Public Works
5. Department of Labour UIF
6. Department of Higher Education and Training
7. Master of the High Court: Gauteng North

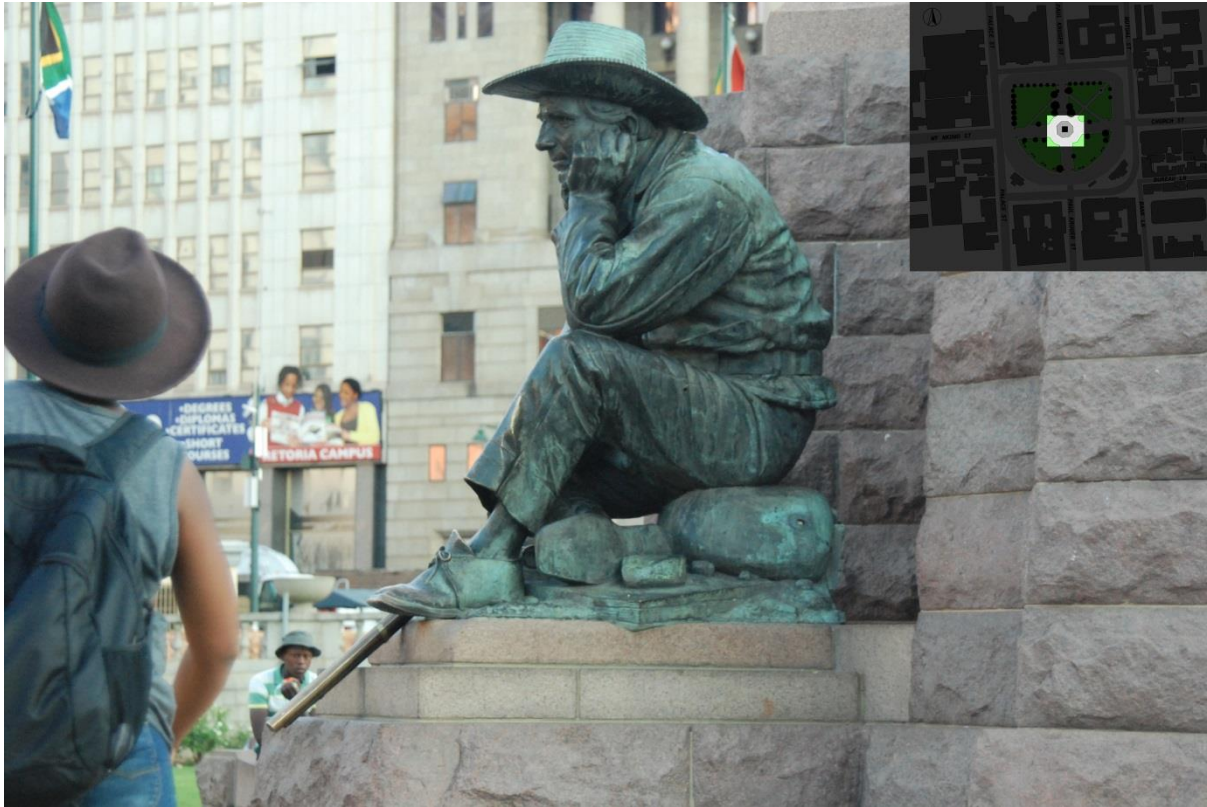


Figure 9: image of one of the four unknown Boer soldiers surrounding the Paul Kruger statue (Pule, 2014).

Due to its location, Church Square is central to Pretoria central's commercial and administrative activity. Many government and municipal departments are within close proximity to the square. Based on observations, users of Church Square use it as a destination. Some would bask in the shade from the trees on the lawns during their lunch break, while others sit on the bench and read the local newspaper, and is a local gathering spot for students to meet up with their friends after class.



Figure 10: image illustrating the infamous Palace of Justice that hosted the Rivonia Trial to right; and adjacent to it is the Post Office building (Pule, 2015).



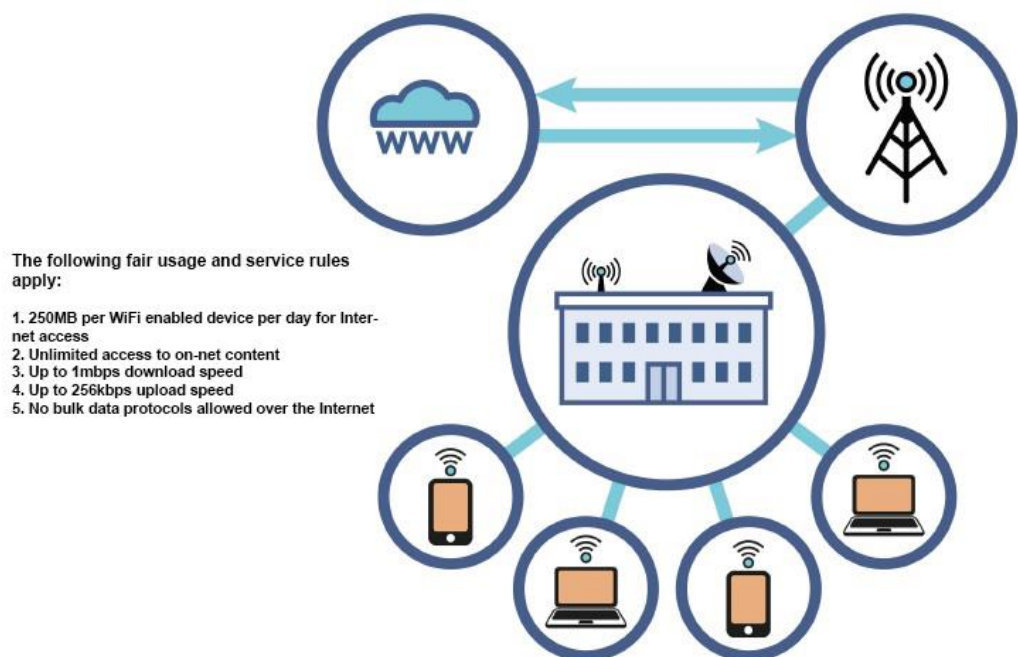
Figure 11: image of the southern part of Church Square which is much more elevated than the northern part (Pule, 2015).

Church Square becomes a FIZ for users

The City of Tshwane municipality became the first metropolitan municipality in South Africa in 2013 to offer free internet in public spaces for its residents (Mudzuli, 2013). Church Square is one of the public spaces selected in offering free wifi internet to its

users courtesy of Project Isizwe. The NPO formed a private-public relationship with the City of Tshwane municipality by facilitating the deployment of ICT infrastructure which enables people to access subsidized internet at various wifi hotspots (Project Isizwe, 2015). These wifi hotspots are called FIZs (Free Internet Zones) which are situated throughout Pretoria CBD, with Church Square included. A FIZ allows wifi enabled devices such as smartphones, tablets, or laptops to connect simultaneously to gain access to free internet as illustrated by Figure 11 (Project Isizwe, 2015). Church Square, along with surrounding tertiary institutions such as Tshwane University of Technology's Soshanguve Campus and University of Pretoria's Hatfield Campus, were some of the first few locations for the first initial rollout of FIZs (Mudzuli, 2013). These were strategically selected so that the youth can better access education and employment opportunities according to the Executive Mayor of the City of Thswane, Kgosietsi Ramokgopa (Mudzuli, 2013). According to Project Isizwe, the City of Tshwane authorities have approved an additional 1 848 sites through Pretoria to be provided by the end of 2016 (Project Isizwe, 2015).

Here's how it works:



WiFi devices connect to the access point that connects to the Internet

Figure 12: a typical illustration of how exactly a FIZ works (Project Isizwe, 2015).

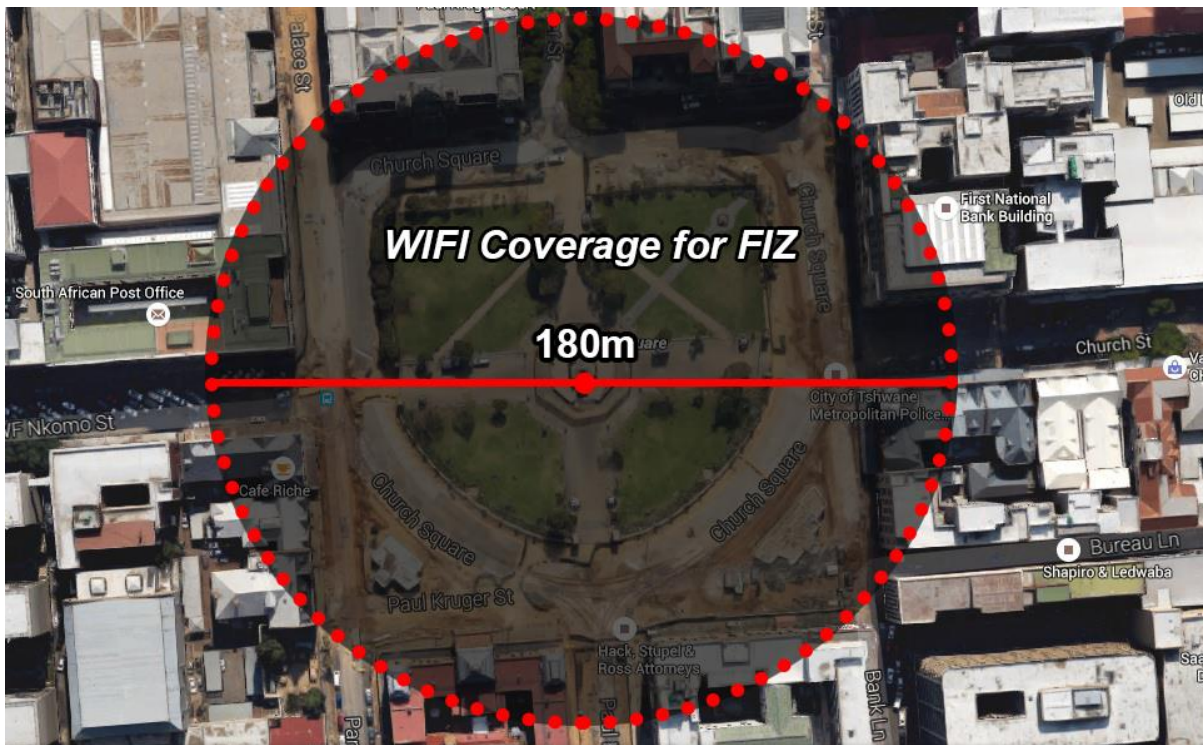


Figure 13: map illustrating the free wifi internet coverage for the FIZ in Church Square (Google Maps, 2015). Edited graphics by Katleo Pule (2015).

Despite the negative contributing factors affecting internet penetration in South Africa, FIZs in Tshwane as a whole portray a positive image for internet access. Project Isizwe records an average of 165 000 users accessing their FIZs monthly, which represents approximately 22% of Pretoria central's population (Frith, 2011; Project Isizwe, 2015). According to Statistics SA (2015), 48.6% of the population of Tshwane metropolitan remains without access to the internet versus the 51.4% who do. This just further illustrates how South Africa's broadband penetration is still relatively low. As a result, this taints the common perception of the techno-savvy and policy makers that the internet has become a service just like water and electricity because lower income groups do not have access to it, thus not regarding it like a service. The team at Project Isizwe claim that the reason for the expensive internet rates in South Africa is a result of telecoms not investing a lot of money in expanding their networks (Project Isizwe, 2015).

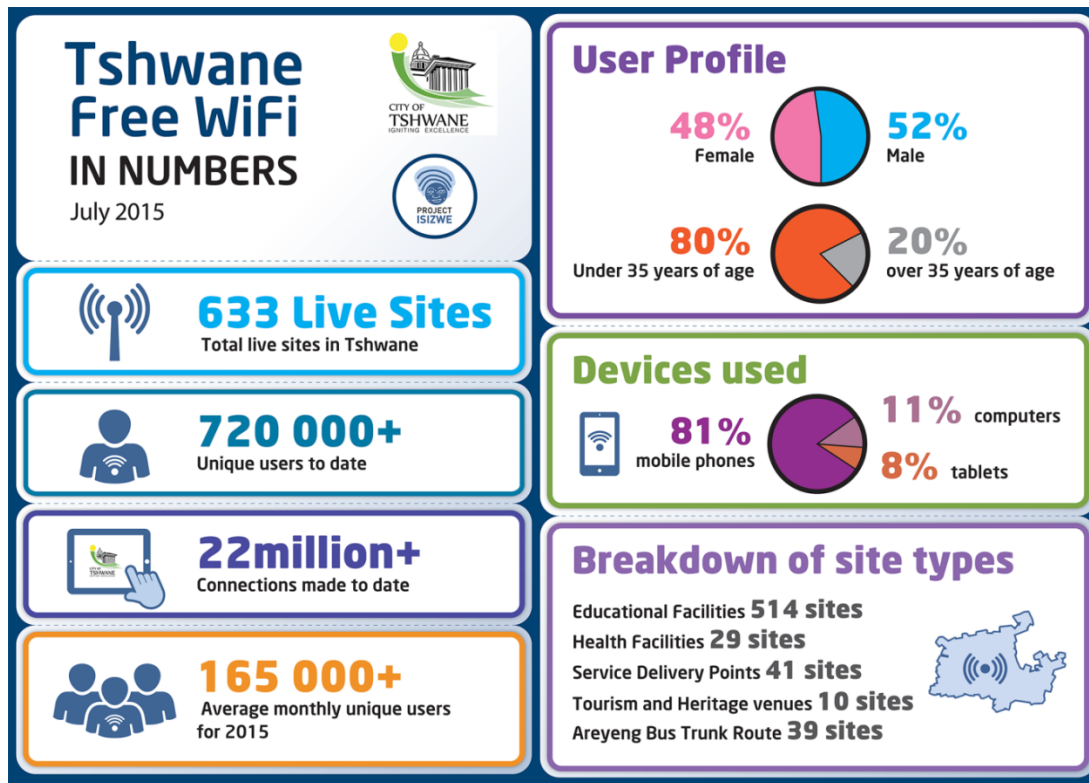


Figure 14: overall statistics of the Tshwane Free Wifi since it was first introduced in November 2013. (Project Isizwe, 2015)..

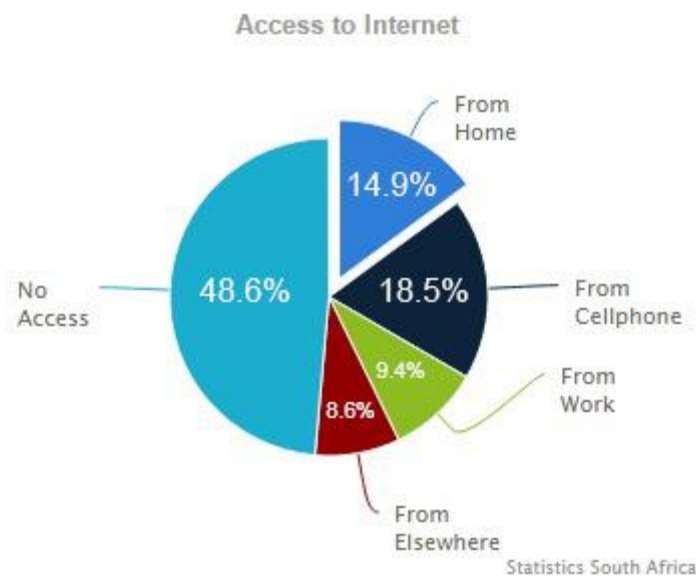


Figure 15: illustrates the percentage of the population of Tshwane without access to the internet access versus those with access (Statistics South Africa, 2011).

Project Isizwe's mandate is to make internet access as convenient as possible in order to break the digital divide (Project Isizwe, 2015). Project Isizwe COO Zahir Khan states that the poor have long been excluded from accessing the internet due to the expensive data rates in South Africa (Vuma Reputation, 2015). This is true when

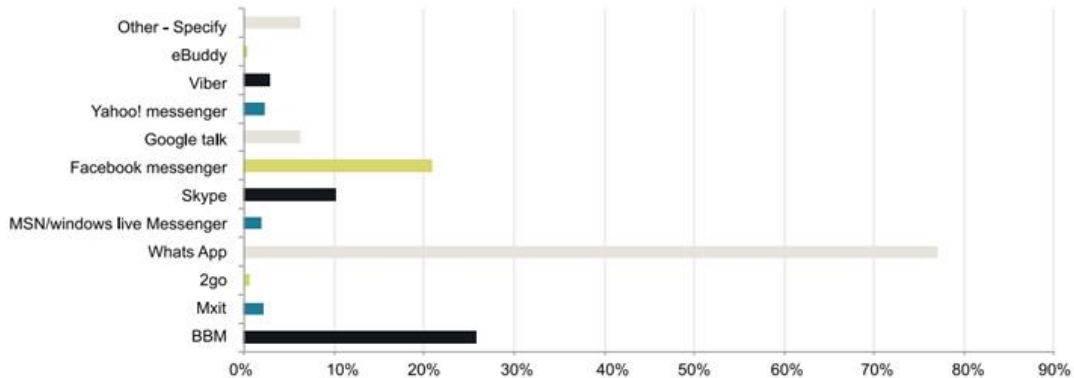
you consider how those with smartphones communicate. What we have seen is that the dominant method of communication relies solely on internet data, which is currently expensive (Mudzuli, 2013). Whatsapp is most used instant messaging application in South Africa according to the graph below adapted from Effective Measure (2015). Therefore having a smartphone in South Africa is crucial with regards to communication and accessing information.

However, Project Isizwe is only tackling part of the issue. The bottom line remains that only those with wifi enabled devices can benefit from the FIZs. Therefore it would be futile if there are FIZs in the city while people do not have the means to access them. Statistics show that only 18.6% of residents in Tshwane access the internet from their smartphones, which is the preferred mode compared to computers and laptops (Statistics South Africa, 2011). Thus the barriers to purchasing a smartphone should be mitigated for those who are affected by the digital divide. Major cellular network operators such as MTN and Vodacom have begun making smartphone accessible by offering cheap alternatives from the high-end brands. In 2014, MTN launched their Steppa Smartphone which costs R500 (Greenway, 2014). The Steppa is a wifi enabled device comprising of all the basic functions much like any other smartphone on the market as it scored 3/5 in one of the HTXT reviews (Greenway, 2014).

FACEBOOK'S 16 BILLION DOLLAR PURCHASE OF WHATSAPP WILL PUT FACEBOOK AS THE MARKET LEADER IN INSTANT MESSAGING APPLICATIONS IN THE COUNTRY, AND GROWING



WHICH INSTANT MESSAGING APPLICATIONS DID YOU USE THE MOST IN THE LAST 30 DAYS?



A detailed look at the use of instant messaging applications in South Africa reveal that WhatsApp is the most commonly used tool South Africans use via their mobile phones, followed by BlackBerry Messenger. Since March, WhatsApp has increased its marketshare of messaging by around 7 percent.

Figure 16: bar graph illustrating the various IM apps used amongst South Africans, with Whatsapp being the most used (Effective Measure, 2014).

Conclusion

This chapter sought to give an overall context of South Africa's internet activity with relevance to ubiquitous computing. Statistics show that broadband activity is slowly gaining momentum in South Africa, but is hindered by socio-economic factors such as the expensive internet data rates and smartphone access. It is also important to note that internet demand in South Africa has not reached that level where it can be regarded as a service by the majority of the population. Just under half of the Tshwane population does not have internet access (Statistics South Africa, 2011). Despite these negative statistics, municipalities have begun addressing this issue by installing free wifi hotspots, with City of Tshwane being the first in collaborating with NPO, Project Isizwe with the rollout of broadband in low income areas. This resulted in Church Square becoming an FIZ, targeting those with smartphones to access the internet for free. Chapter four will then present the findings and analysis from the study to begin to understand the impact of free wifi internet in Church Square.

Chapter 4: Findings and analysis of Church Square

Introduction

This chapter will begin to present the findings and analysis of the study conducted at Church Square in attempting to answer the research question. The observations section will paint an overall picture of the type of activity that goes on in the square at different time intervals. This will then be complemented by the FIZ hourly behaviour statistics for Church Square to get a deeper understanding of what goes on in the square. This will then be followed by the survey findings which will present both qualitative and quantitative data relating to the sub-research questions.

Observations on site

From the five days that I was on site, I observed the square at different time intervals. I worked out an average for the number of users present in the square.

Table 1: represents the observations of Church Square for the specified intervals between the Monday the 24th and Friday the 28th of August 2015. (CS=Church Square).

<u>08:00-09:00</u>	<u>10:00-12:00</u>	<u>13:00-14:30</u>	<u>15:00-17:00</u>
50-80 people present	100-200 people present	350-450 people present	150-200 people present
80% of activity occurred towards South-end of CS due to the sunshine while the North-end was shaded	60% & 40% of activity occurred at both the South & North-end of CS respectively due to coverage of the sun reaching the shaded parts	55% & 45% of activity occurred at both the South & North-end of CS respectively	60% & 40% of activity occurred at both the South & North-end of CS respectively as more people sought shade during this period
55% of people were seated; 20% were standing; 25% were walking through CS	58% of people were seated; 18% were standing; 24% were walking through CS	61% of people were seated; 17% were standing; 22% were walking through CS	66% of people were seated; 14% were standing; 20% were walking through CS
60% were students; 5% senior citizens; 2% informal traders; 10% municipal cleaners; 23% adults (28-49 years old)	67% were students; 3% senior citizens; 4% informal traders; 26% adults	73% were students; 4% senior citizens; 5% informal traders; 2% construction workers; 10% adults; 6% primary + high school	71% were students; 5% senior citizens; 4% informal traders; 3% primary + high school pupils; 17% adults

pupils

20% of CS population used visible wifi enabled devices; 40% communicated with someone physically present; 5% read newspaper/magazine/book; 35% engaged in people-watching	27% of CS population used visible wifi enabled devices; 46% communicated with someone physically present; 20% engaged in people-watching; 7% read	33% of CS population used visible wifi enabled devices; 42% communicated with someone physically present; 22% engaged in people-watching; 3% read	29% of CS population used visible wifi enabled devices; 47% communicated with someone physically present; 22% engaged in people-watching; 2% read
65% were alone; 25% in pairs; 10% groups of three or more	57% were alone; 21% dyads; 22% groups of three or more	46% were alone; 17% dyads; 37% groups of three or more	63% were alone; 20% dyads; 17% groups of three or more
2% listening to music through earphones	5% listening to music through earphones	3% listening to music through earphones	3% listening to music through earphones



Figure 17: image illustrating Church Square towards the North-end at 12:00pm noon as it reaches its peak (Pule, 2015).

Hourly behaviour for the Church Square FIZ

There exists a strong correlation with the user frequency of the FIZ and the nature of activity in Church Square. The graph below illustrates the number of users accessing the FIZ in Church Square for July 2015. Church Square reaches its peak during the week, with Wednesday and Thursday receiving the highest number of users. This could be due to the fact that most students attend classes during those days based on their timetables. Church Square still receives a fair number of users during the weekends but not as much as during the weekdays. The numbers on the x-axis on Figure 17 represent the respective hour for the day (7=07:00/7am). The FIZ starts receiving numbers as early as 07:00 in the morning with the frequency decreasing from 19:00 onwards. Based on my findings from the survey, some of the traders state that a lot of people come through to Church Square on a regular basis. After talking to a student who was passing by Church Square mentioned the following:

“It’s never empty. It’s always full with people all the time.” Anonymous.

Unfortunately I could not obtain additional statistics for the other FIZs for Pretoria central to compare Church Square's user frequency due to time constraints. Therefore it is problematic to claim if the user frequency of the Church Square FIZ is sufficient or not.

Nearly 12 000 people use the Church Square FIZ in a single day. This figure accounts for 7.2% of Project Isizwe's FIZ users across Pretoria central FIZs (Project Isizwe, 2015). Given Church Square's pre-existing population, central location and its urban design principles, these figures are justified. With an average population of 2 000-7 000, these figures illustrate Project Isizwe's success with installing free wifi in Church Square. This further proves that people do use the free wifi internet regularly in Church Square.

However, it is important to note that this graph illustrates the number of people accessing the FIZ in week per day. It does not necessarily mean that one will guarantee to find 12 000 people in Church Square present. The 12 000 figure represents the number of users recorded from time interval 07:00-22:00 for the FIZ. One important fact to note is that the FIZ is not limited to those present within the parameters of the square. The FIZ reaches 90m from the centre by the Paul Kruger statue allowing those in the surrounding buildings to access it. As long as an individual remains within the perimeter of the Church Square FIZ, they can access

the internet. Therefore one may be using social media while being in the Post Office building.

User frequency vs hourly behaviour

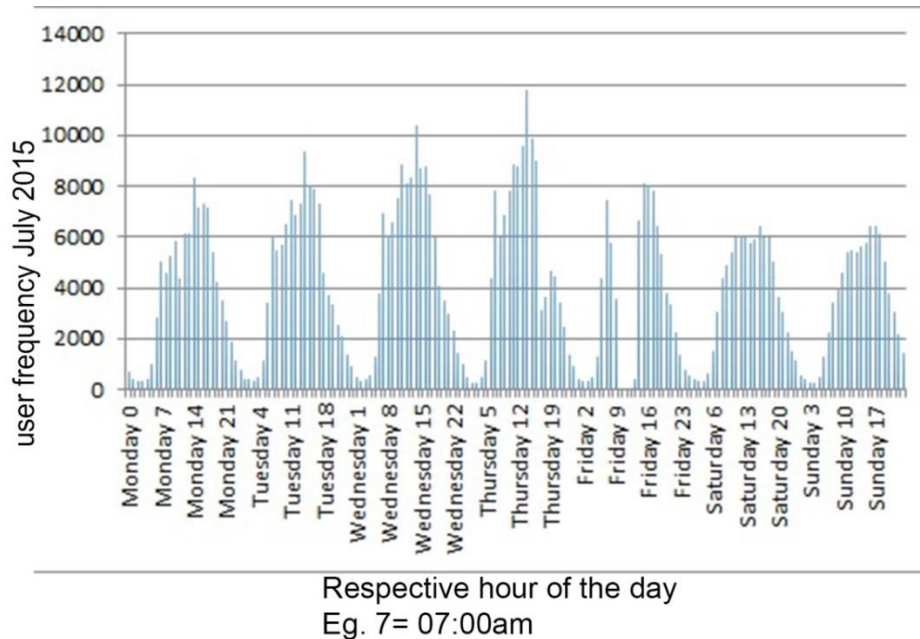


Figure 18: bar graph illustrating the user frequency and the hourly behaviour for the FIZ in Church Square for July 2015 (Project Isizwe, 2015).

Survey findings for Church Square

Does the introduction of free internet access attract more people to Church Square?

In answering this question, I sought to explore whether or not internet access has the ability to repopulate contemporary urban public spaces, with Church Square being the case study. Given the South African context, internet access has the potential to attract more people to public spaces assuming that it has become a service just as pundits have claimed. As mentioned earlier, internet in South Africa is relatively expensive and is not accessible to everyone which further exacerbates inequality. Therefore through the provision of free wifi internet in Church Square courtesy of Project Isizwe, could potentially bring in the numbers. Thus attracting more people with wifi enabled devices to Church Square.

However, the findings from the survey portray a different story. From the survey, only 3% of the people who inhabited Church Square during that week that partook in the survey mentioned that they come solely for the wifi. This small result illustrates that free internet access is currently not the main attractor to Church Square. It should be

noted that the free wifi is adequately advertised throughout the inner city of Pretoria through visible signage on bins, billboards, bus stops, as well as the Areyeng BRT.

A site's popularity is dependent on a number of factors such as urban design characteristics, population density and the local culture (Hampton, et al., 2010). It is worth noting that Church Square as a public space had a pre-existing population of users before the introduction of free wifi. A waiter from Café Riche, Thabang (2015), who partook in the survey mentioned that he has not seen an increase in users in Church Square since they brought in the wifi. He has been working there for the past five years which is long enough to have seen Church Square was turned into a FIZ .

“Church Square has always been filled with people for a long time.” – Thabang, waiter at Café Riche.

This struck similarities with the study Hampton et al. (2010) of the seven parks & plazas they examined in North American cities. They believed that internet could revitalize and repopulate public spaces (Hampton, et al., 2010). However, their findings and observations proved to counter this view. Bryant Park for instance, supports this view at great lengths. Out of the seven parks & plazas, it had the highest number of wifi users with 51% stating that it was an ideal space to do work (Hampton, et al., 2010). Hampton et al. (2010) concluded in stating that internet access as an attractor to public space is influenced by the existing context of the space as some public spaces may have a higher population density, resulting in more users. The general consensus of that study was that internet access cannot bring in more people to a public space, despite the case of Bryant Park. To a certain extent, this trend exists in Church Square. Because it is predominantly inhabited by students due to its central location to tertiary institutions, the intention to come to Church Square will differ to that of Bryant Park. Students do not only use the internet to do their work. They use it for entertainment purposes and to interact with their networks through social media. The survey indicated that only 2% of the users in Church Square used the free wifi internet for their research and work. The dominant reason for using the free wifi was for social media (60%) and instant messaging (90%) amongst the users of the survey. Other categories included online gaming and browsing the internet which were recorded at 10% and 40% respectively amongst users of Church Square.

'Who' used Church Square before and after the introduction of free wifi?

Has the demographic changed ever since the City of Tshwane brought in free wifi to Church Square? I had assumed so. My initial thought was that the free wifi would force the older age groups out of Church Square due to their incapacity with electronics, while attracting a much younger age group. Based on the observations in Church Square, the majority of the users are categorized within the age group 18-30. These were primarily students. On average in a week, 65% of the population in Church Square are students during the time interval of 08:00-12:00; 78% between 13:00-15:00; 70% between 15:00-17:00. Other age group categories such as 30-50, teens and senior citizens, amounted to negligible portions of the population in Church Square. This is also reflected in the survey done by the traders. Peter (2015), who sells ice cream, indicated on the survey that a lot of young people from school used Church Square. Thabang (2015), the waiter from Café Riche indicated on the survey that a wide range of people use the space including students and old people.

However, was it always like this? There were some mixed reviews regarding this matter. For some, Church Square has not exhibited any changes since the introduction of free wifi. According to Keiju (2015), an informal trader selling ID sized photos in Church Square who has been using the space since 2000 claims it has not changed. He indicated on the survey that Church Square has not changed much since the introduction of free wifi. Peter (2015), who has been trading in Church Square for approximately eight years, also claims that Church Square has always had people and has not changed. Yet for Thabang (2015), the waiter from Café Riche believes that there has been a change in Church Square ever since the introduction of free wifi. He states that people are much more comfortable to bring their laptops to the space now. This is interesting because based on the observations in Church Square, 69% of the population had a visible electronic device on average, although only 3% of the 69% accounted for laptops.

Therefore it remains unclear whether or not if there have been any changes based on my findings. All the traders gave interesting answers yet they somehow seem to contradict each other. Perhaps interacting with more people who have knowledge of what it was like before would have aided this part of the study.

How will the introduction of free wifi internet impact on the design and function of Church Square as a public space?

Here are some of the basic functions of public space adapted from Carmona et al (2010):

1. To facilitate commercial activity
2. Through the projection of sacred or political values
3. To project status and wealth of the elite
4. To facilitate recreation and civility

For the purposes of this study, we are only going to focus primarily on the first and fourth functions because they relate to Church Square.

Church Square makes for a great escape from the high buildings and busy roads of Pretoria CBD. People tend to enjoy the sun under the trees, or play soccer on the lawns, or sit on the benches to read the newspaper or to 'people-watch'. These all represent the recreational functions of Church Square. Now with the introduction of free wifi internet, ubiquitous computing adds another dimension to the recreational functions of Church Square.



Figure 19: image illustrating how people are attracted to Church Square mostly because of its sense of place (Pule, 2015). It is still too premature to predict if the free wifi will be the main attractor to this space.

The assumption in answering this question was that the introduction of free wifi internet would alter Church Square to an extent where it does not facilitate recreation and civility. Potentially turning it into a work space just like in Bryant Park where majority of the users go there for work purposes (Hampton, et al., 2010). But for Bryant Park to be viewed in this light is due to its design. In Bryant Park, one has access to small tables and chairs, much like in café or restaurant, which resembles that of a 'workspace' setting (Hampton, et al., 2010). This results in a lot of people bringing their laptops to do work as the most dominant user profile were young and old professionals (Hampton, et al., 2010). This is an example of a contextual effect where an environment can influence the type of activity in a space (Hampton, et al., 2010).

Church Square, however, is different from Bryant Park. Its contextual effect does not facilitate a 'workspace' environment due to the way the square is designed and laid out. Church Square does not have those small tables and chairs like those found in Bryant Park. It has a total of four benches. This forces people to either sit on the grass, ledges, or on the steps towards the south end of the square. Therefore Church Square's contextual effect facilitates a more relaxed environment. With ubiquitous computing coming to the fore, it becomes that people with electronic devices need to be catered for in public spaces. While on site, I noticed that there were not many laptop users in Church Square. As mentioned earlier, only 3% of the users with visible electronic devices had laptops. Could this be based on the contextual effect Church Square exhibits? When looking at the 3%, they were all seated on the bollards where majority of the trees are located within the northern part of Church Square. Each bollard under the trees creates a parochial realm (home territory) for the individual. It is also important to note that it is difficult to use a laptop in sunlight. This explains why the southern end of the square is busier than the northern part through the day. It is from here that we begin to see how the introduction of free wifi has facilitated the creation of these parochial realms for people within Church Square who do not want to be located where it's busiest.

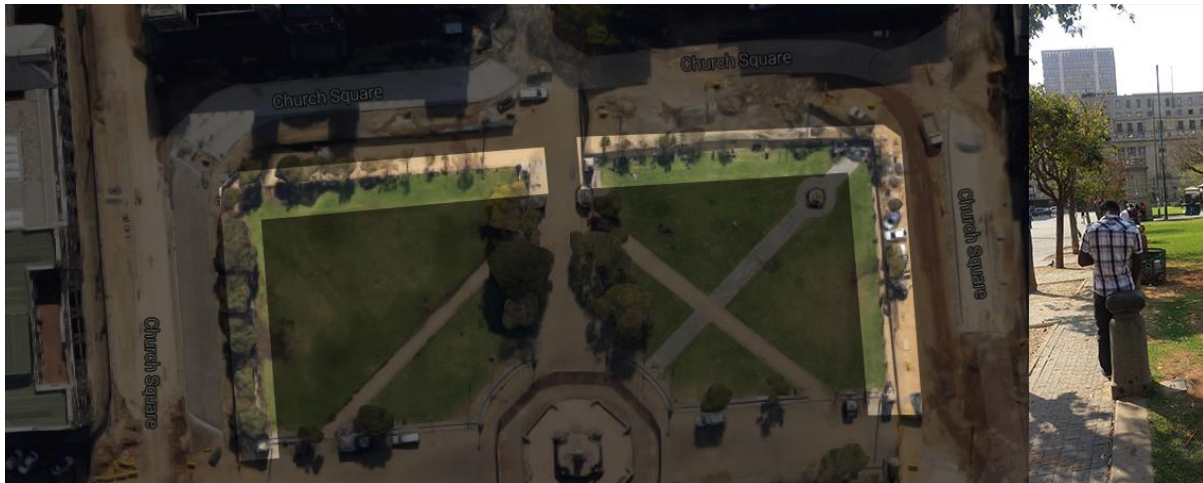


Figure 20: map illustrating the bollards which are located at the northern part of Church Square. This section of the square a lot of people who arrive without any companions. Map adapted from Google Maps (2015) and image by Katlego Pule (2015).

So can ubiquitous computing change Church Square's function of facilitating recreation? No, as I have explained how public space facilities can influence the function of an environment to a great extent. But these alone cannot guarantee a desired contextual effect. As mentioned earlier, factors such as the pre-existing population and local culture of a space can influence an environment (Hampton, et al., 2010). However,

With regards to the free internet altering the existing commercial activity from the informal traders is of little relevance. My initial assumption was that the traders would have to consider advertising their products online. But this was not the case. The trade activity which occurs in Church Square is on a small scale. Their trade is not categorized as a business which would account for advertising expenses as they cater for the market in Church Square solely. The traders hardly require any basic facilities in Church Square based on what they sell. Their products range from sweets, cigarettes, snacks, to newspapers and books. Even Keiju (2015) who sells ID sized photos has not been affected by the introduction of the free wifi internet.

How does the introduction of free wifi internet impact on social interaction in Church Square?

In answering this question, we first have to ask ourselves: will free wifi internet perpetuate aspects of privatism? Critics such as Kroker (1996) would certainly concur with this view. This is based on the assumption that the internet would

disconnect people socially while being consumed in the virtual world. In undertaking this study, I myself had assumed the same thing. My initial thought was free wifi internet would encourage people to be on their electronic devices creating numerous private enclaves within Church Square.

Of the 69% of the population which had visible electronic devices, 82% were alone, 13% were in pairs, and 5% were in groups of more than people. The survey findings further support these figures with 50% of the users claiming that they come to the park alone, 40% of the users who had planned gatherings of meeting their friends/family, and only 10% who came with companions to Church Square on the day. We begin to see a recurring theme that most wifi users tend to be alone when they are in Church Square. But that is still not enough to prove that internet access perpetuates loneliness in public spaces. Perhaps they were utilizing their phones because they were alone. The observations showed that normal face-to-face verbal communication still occurred despite the majority of the people in Church Square being alone. Whether this form of communication is the most dominant in a space like Church Square where ubiquitous computing is present is another question.

Unfortunately I could not get access to statistics that showed the general user activity of the Church Square FIZ due to time constraints. This would have helped the study in exploring if asynchronous communication was the dominant mode of communication. When looking at 69% of that population which had visible electronic devices, one would easily assume that asynchronous communication was the dominant mode of communication.

The survey showed that 90% of the wifi users in Church Square used the free wifi internet to interact with their social networks through the instant messaging app, Whatsapp, with only 60% being accounted for social media (Facebook, Twitter, and Instagram). This form of interaction cannot be ignored due to its popularity. So we begin to how free wifi internet facilitates asynchronous communication because it is dependent on internet connection for it to function. Thus those who come to Church Square alone with their electronic device may seem to you as though they are not interacting with anyone but when you begin to take into consideration the asynchronous aspect of communication, then you realise that they are actually communicating with a wider network of people.

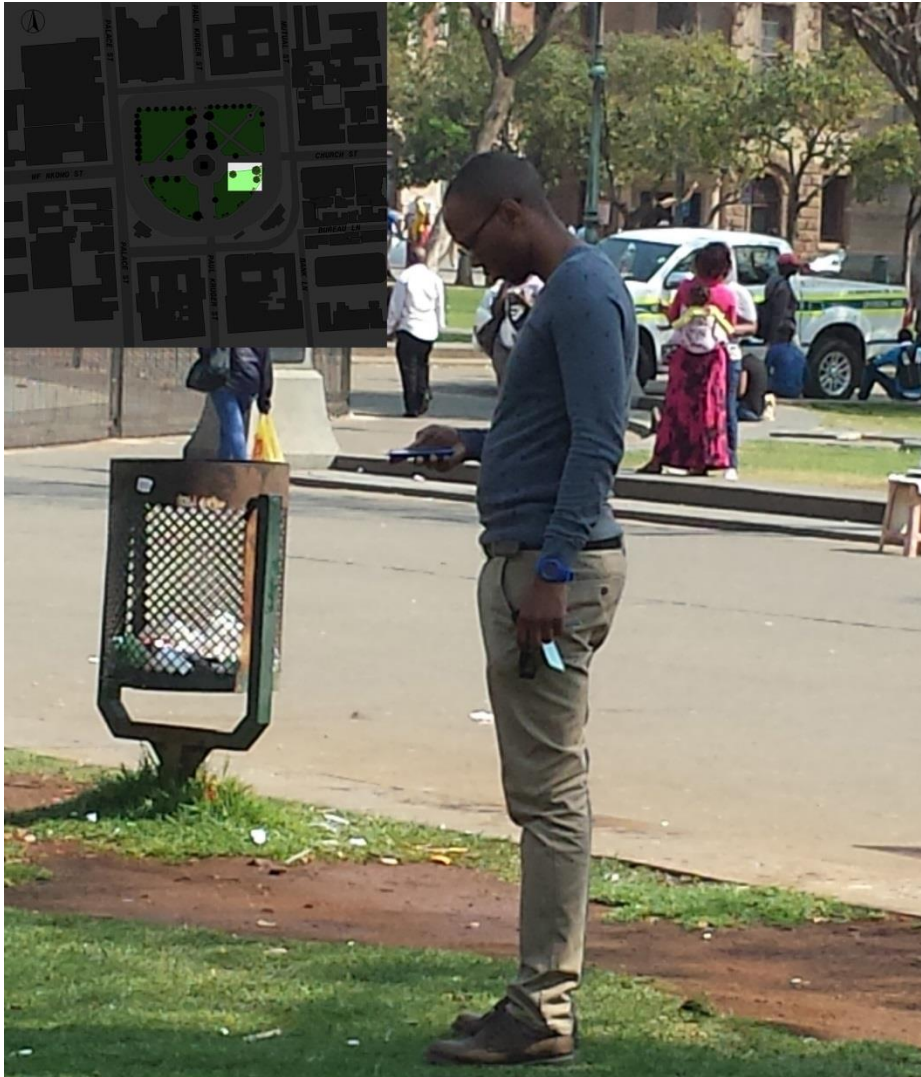


Figure 21: image illustrating a man using his smartphone (Pule, 2015). Asynchronous communication is the dominant mode of interaction in Church Square. Despite this man being alone, he could be interacting within a wider network of social ties.

Conclusion

This chapter began exploring the extent to which Church Square can be altered through the presence of internet access. The findings and observations showed that internet access has not impacted Church Square significantly as expected. I had initially thought that internet access would either attract more people or facilitate privatism. This is when I came to the conclusion that internet access alone has not reconfigured the public space of Church Square because other factors have to be considered. However, it should be noted that this result is based on the study's limitation of using a small sample size. Despite this result, internet access has impacted on social interactions in Church Square significantly. Users of Church Square can interact within a wider social network without having to rely on planned

or unplanned interactions, as asynchronous communication was the dominant mode of communication according to the survey.

Chapter 5: Conclusions

The public realm debate within the urban design profession will never reach a consensus because of its multi-faceted nature. The public realm has evolved significantly from what it was categorized as during the 19th and 20th century by the likes of Sennett (2010) Loukaitou-Sideris & Banerjee (1998) and Carmona (2008) (2010). The reason for its evolvement is due to how it now exists beyond the traditional urban public spaces due to the communications revolution, which was a main contributor for its decline (Banerjee, 2001). This resulted in people interacting with others from the private realm, particularly from their homes. One of the aspects of being in the public realm is experiencing unexpected encounters with strangers – a domain with hardly any barriers to entry facilitating democratic interaction. This can all happen online nowadays. An individual from South Africa can communicate with another individual from Sweden through the internet. The internet is fast becoming omnipresent in first world cities such as New York and Oulu as we have seen with the case studies presented. However, this is of limited relevance for cities in the Africa where broadband penetration is growing at a slow rate of 0.4% (Staff Writer, 2014). Internet access is relatively expensive for people in Africa as it accounts for approximately 32.2% of the average monthly income as opposed to 1.5% in first world cities (Staff Writer, 2014).

Due to the fact that the demand for internet is fast growing in the world, it will soon become omnipresent in our lives. Approximately 40% of the world's population has access to the internet (Staff Writer, 2014). As a result, we have seen policy emphasis being placed on ICT infrastructure investment in South Africa as critics claim that this could boost the country's GDP (Alfreds, 2015). The South African government has already begun with the first phase of broadband rollout across eight district municipalities (Zuma, 2015). These efforts further facilitate the rise of ubiquitous computing in public spaces as we have seen in Church Square. Internet activity can happen anywhere nowadays with the help of mobile broadband granting an individual internet access from their smartphone. Despite the digital divide, statistics show that more people in South Africa are getting access to the internet through their mobile devices. It has been predicted that there will be an increase in internet users from the 15 million in 2014 to approximately 20 million internet users within the next five years (Staff Writer, 2014). One can only wonder how the future of public spaces will be, considering at how our society keeps changing and adapting.

Therefore it is only logical to understand why critics such as Banerjee (2001), Kroker (1996), Loukaitou-Sideris & Banerjee (1998) and Carmona et al (2008)(2010), and Sennett (1977) view concepts of the public realm and the internet in the manner they did.

To what extent can free wireless broadband infrastructure impact the functions and interactions in Church Square in Pretoria?

The functions of Church Square remain unchanged

In doing this study of Church Square, I wanted to unpack the extent to which free wifi internet alters the space. The main functions of Church Square facilitate recreation for the users who want to unwind from the city and commercial activity for the traders in the square. My initial assumption was that the introduction of free wifi internet into Church Square reconfigures the functions to an extent which jeopardizes both recreation and commercial activities. The findings however, showed how the presence of internet hardly affected those functions. Both the traders and users of Church Square still managed to use the square for trading and as a recreation space without having to adjust to the presence of internet. Some of the traders stated that there has not been a change since the introduction of wifi, despite the waiter mentioning the increase of laptops in the square.

Communications revolution does not facilitate a decline in the public realm for Church Square

Early speakers of the public realm such as Banerjee (2001) labelled the communications revolution as being the main contributors to its decline. However, this study of Church Square has shown the ambiguities of this view. Church Square has always boasted of a vibrant public realm according to locals, defying the notion of decline. It is one of the few symbolic public spaces in South Africa that has maintained this reputation during the post-apartheid era. The findings show that the presence of free wifi internet in Church Square does not facilitate a decline in the public realm, thus challenging the notions posed by the likes of Banerjee (2001). This certainly contradicted my initial possible outcomes because I had assumed that the introduction of free wifi in Church Square would push out the older user profile and attract a much younger user profile due to their tech-savvy knowledge.

Internet in Church Square does alter social interaction...but not in the way we had anticipated

For this theme of the study, I had assumed that the presence of free wifi internet would have a contextual effect on the users of Church Square to use their wifi enabled devices. As a result, I saw this as a form of privatism mobilising individuals to create their own enclaves or Hampton et al.'s (2010) parochial realms. In these realms, interactions with others are often restricted by the individual. The findings do support this theme, but only to a certain extent. Majority of the population in Church Square were seated alone. However, the internet cannot be the main contributor this trend. The survey showed that majority of the people in Church arrived alone. If the internet was the main contributor to people being alone in Church Square, then we would have seen the entire population occupied with wifi enabled devices all the time. One of the visible contributing factors which were discussed in this study was the role of urban design principles. The presence of the bollards in the northern end of the square attracted people who wanted to access their parochial realms with electronic devices in Church Square. But bollards are not meant to function this way. Bollards are used to restrict access of motor cars into a space. Therefore the lack of street furniture in Church Square encourages the lonesome user to the northern end which consists of the bollards.

This portion of the population may have seemed to be alone at the time, but were perhaps communicating within a wider social network. The survey showed that the dominant mode of communication was asynchronous communication, compared to the pre-existing verbal method. However, this result was based on the small sample size of the study. Perhaps a different result would have emerged if the sample size was increased and accessing the FIZ user activity for Church Square.

The impact of Wireless broadband in public spaces

Much like Hampton et al. (2010), I believed that ubiquitous computing could revitalize public spaces. From the findings and the analysis, it becomes clear that the presence of internet cannot reconfigure the activity or repopulate a public space as we thought it would. Internet access alone cannot function as an attractor for public spaces because there are other significant factors which are to be considered such as urban design principles of the space, its location, and the pre-existing population. The study supports this argument significantly given the socio-economic context of internet access in South Africa, despite Church Square offering

free internet access. Perhaps the limited 250MB of data a user receives at the Church Square FIZ might be a contributing factor to the repopulation aspect. Maybe we would begin to see a rise in user frequency of the Church Square FIZ if the data bundle was increased to 1GB worth of data. The additional 750MB worth of data, grants the user more freedom to stream videos online for longer periods.

It is important to note that ubiquitous computing is a new phenomenon and has only gained momentum over the past ten years. Thus it may be justified as to why the presence of internet access in public spaces cannot alter the functions to the extent we may have anticipated. Therefore, internet access may not impact on the functions of public spaces at the current moment, but in the next 20 years we may see some significant results when it is regarded as a service to everyone.

Reasons for why free wifi internet has not altered the use of Church Square as predicted

Firstly, the view that wifi could potential reconfigure a public space is too extreme. Findings from the study show that the presence of free wifi internet has a limited impact on the use of Church Square. However, it does add another dimension to the space that did not existed before. Users can now interact with their extended social ties through their smartphones for free without jeopardizing the other pre-existing methods of communication in Church Square. The findings show that despite the growing presence of asynchronous communication through smartphones, verbal face-to-face communication was equally ubiquitous in Church Square.

Secondly, the limited public furniture limits the impact of free wifi in Church Square. Based on the findings, there are only four public benches in Church Square which leaves the majority of the users to be seated on the grass. More benches or tables and chairs that could be used as working spaces would enable wifi to have a greater impact. These urban design elements would encourage the usage of wifi enabled devices to a greater extent than solely being limited to the four benches and the grass for seating options currently in Church Square. Urban design elements such as public furniture are fundamental in the shaping of a public space as the presence of chairs and tables could potentially create a 'workspace' environment for Church Square much like in Bryant Park.

Reflections of the study

In undertaking this study, I sought to find out if the presence of wireless broadband affected the activities in Church Square believing that it would encourage more people to use their wifi enabled devices. The findings from the study were what I had initially predicted but the methodology used showed some limitations.

The aim of the user survey not explicit enough

The user survey was supposed to find out if people came to Church Square solely for the FIZ. However, my findings showed that the survey was not explicit enough in finding out the main reasons for people coming to Church Square. This is one of the limitations I discovered towards the end of this study because exploring the reasons would have aided the analysis significantly.

Limitation of the user survey focused on one particular group of users in Church Square

The user survey for the study placed emphasis on the wifi users of the Church Square FIZ, neglecting the other users without wifi enabled devices. A comprehensive survey would have incorporated all users of Church Square to further analyse the reasons behind Church Square's maximum user capacity. One of the main reasons for this constraint is attributed to the limited resources for the time given for the study which leads to the next limitation.

Limited resources for the nature of the study

The nature of this study requires a lot of time and additional assistance for the fieldwork. Looking at Hampton et al.'s (2010) study, which shares similarities to mine, spanned over a long period with their first initial fieldwork beginning in 2008. Due to the number of authors, the study was far more comprehensive than mine as they considered a variety of aspects related to social interaction (Hampton, et al., 2010). This allowed them to analyse in detail the various facets of social interaction including the attentiveness and availability of each users in the respective public space.

The selection of the Church Square case study

For researchers who would like to continue this study from their respective disciplines, should consider selecting potential public spaces that will offer free ubiquitous computing. It is important for researchers to study a public space before and after the implementation of wireless broadband to track the changes which are

attributed to the presence of the internet. This was a crucial limitation as I could only get second hand knowledge of Church Square's sense of place from current users and surrounding businesses. Not only would the findings of the study be richer, but the author could then begin to predict the extent free internet will alter that particular space. At this point, it is difficult to predict the future of Church Square's users based on my findings alone.

What this research has shown

This research has shown how the presence of technology in a public space can supplement its functions. Through the Church Square FIZ, users can now access the internet for free on their smartphones which was a function limited to private realms when desktop computers were introduced in the early 1990s (Graham & Marvin, 1996). The Church Square FIZ also facilitates more diversified means of communication as opposed to the conventional verbal face-to-face mode through social media and instant messaging apps. Even though critics such as Graham & Marvin (1996) claimed that the internet perpetuated the trend towards privatism, this research showed how it could facilitate more participation in the public realm. The research provided a counter argument to the popular view that the public realm was in decline due to the communications revolution (Banerjee, 2001). The Church Square case study helped prove my argument by showing how the users of the FIZ were communicating within a broader social network while being present in the square. The presence of the internet did anything but facilitate a decline in the public realm in Church Square.

We have currently seen other municipalities introduce free internet connection for its residents. Despite it being classified as a local municipality compared to Tshwane's metropolitan status, Stellenbosch proposed free internet for its residents back in 2013 however there have been delays in its rollout (Alfreds, 2015). Just recently, the City of Johannesburg announced Braamfontein as a free wifi zone as part of the Braamfontein Wireless Mesh project targeting 1 000 hotspots by the end of 2015 (Staff Writer, 2015). This ultimately means that more existing public spaces in South Africa will begin to have free wifi internet for its users. As a result, free wifi will soon become an important component in designing public spaces for post-apartheid South Africa. Thus through the presence of free wifi internet, people will no longer

have to rely solely on their network providers for internet access due to their expensive rates.

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Hashim

Questions for interviews

Questions for the users of the public square

- How often do you use this space? *Fridays*
- What time of the day do you use this space? *1am*
- ③ ② ➤ Do you come alone or with friends/family? *alone*
- ① ➤ For what reason/purpose do you come to Church Square for? *rese*
- Do you have a smart device? *Phone with internet access? Tablet? Laptop?*
- Do you feel free in using your smart device and why? *safe*
- ④ ③ ② ① ➤ How fast is the internet speed of the wifi in Church Square? *good*
- What do you use the free wifi for?
Facebook/Twitter/Instagram/Whatsapp/Skype, surfing the internet/online gaming/downloads/work? *research*
- ③ ➤ Do you communicate with your friends using the free wifi on social media? *yes*
- ① ➤ Would you still come to Church Square if there was no wifi? *yes, family*
- How did you find out about the free wifi in Church Square? *billboard*
- ① ➤ Are there any other places where you have access to free wifi? *no*
- ③ ➤ When you come to Church Square, do you see other people using smart devices? *all age groups, data is expensive*
- Do you like having access to free wifi in Church Square? *yes*
- Do you support the installation of free wifi in public spaces in general? *yes*

Questions for the businesses/shop owners/ people around the public square

- How long have you been operating in this area?
- ⑤ ➤ How different was Church Square before the installation of free wifi?
- When is Church Square the busiest during the day? As well as during the week.
- ② ➤ Who uses the public square?
- Do you provide free wifi for your business? (relevant to restaurants and shops)
- Do you ever use the space? If so, what for? If not, elaborate why?

Patrick

Questions for interviews

Questions for the users of the public square

- How often do you use this space? *3 times a week*
- What time of the day do you use this space? *10am*
- ③ ② ➤ Do you come alone or with friends/family?
- ① ➤ For what reason/purpose do you come to Church Square for? *chill* *don't use it.*
- Do you have a smart device? Phone with internet access? Tablet? Laptop?
- Do you feel free in using your smart device and why? *unsafe*
- ① ➤ How fast is the internet speed of the wifi in Church Square? *Fast*
- ④ ③ ② ① ➤ What do you use the free wifi for?
Facebook/Twitter/Instagram/WhatsApp/Skype, surfing the internet/online gaming/downloads/work?
- ③ ➤ Do you communicate with your friends using the free wifi on social media? *yes*
- ① ➤ Would you still come to Church Square if there was no wifi? *yes*
- How did you find out about the free wifi in Church Square? *at school*
- ① ➤ Are there any other places where you have access to free wifi? *no*
- ③ ➤ When you come to Church Square, do you see other people using smart devices? *yes*
- Do you like having access to free wifi in Church Square? *yes*
- Do you support the installation of free wifi in public spaces in general? *yes*

Questions for the businesses/shop owners/ people around the public square

- How long have you been operating in this area?
- ③ ➤ How different was Church Square before the installation of free wifi?
- When is Church Square the busiest during the day? As well as during the week.
- ② ➤ Who uses the public square?
- Do you provide free wifi for your business? (relevant to restaurants and shops)
- Do you ever use the space? If so, what for? If not, elaborate why?

SFiso

Questions for interviews

Questions for the users of the public square

- How often do you use this space? *at MON-FRI*
- What time of the day do you use this space? *depends mid-after*
- ③② ➤ Do you come alone or with friends/family? *alone*
- ① ➤ For what reason/purpose do you come to Church Square for? *relax-me-time*
- Do you have a smart device? Phone with internet access? Tablet? Laptop?
- Do you feel free in using your smart device and why? *safe*
- ① ➤ How fast is the internet speed of the wifi in Church Square? *average*
- ④③②① ➤ What do you use the free wifi for?
Facebook/Twitter/Instagram/Whatsapp/Skype, surfing the internet/online gaming/downloads/work? *research*
- ③ ➤ Do you communicate with your friends using the free wifi on social media? *✓*
- ① ➤ Would you still come to Church Square if there was no wifi? *yes*
- How did you find out about the free wifi in Church Square? *device hotspot*
- ① ➤ Are there any other places where you have access to free wifi? *Townhall/made*
- ③ ➤ When you come to Church Square, do you see other people using smart devices? *yes*
- Do you like having access to free wifi in Church Square? *yes, opportunity, access*
- Do you support the installation of free wifi in public spaces in general? *yes*

Questions for the businesses/shop owners/ people around the public square

- How long have you been operating in this area?
- ③ ➤ How different was Church Square before the installation of free wifi?
- When is Church Square the busiest during the day? As well as during the week.
- ② ➤ Who uses the public square?
- Do you provide free wifi for your business? (relevant to restaurants and shops)
- Do you ever use the space? If so, what for? If not, elaborate why?

Lebo

Questions for interviews

Questions for the users of the public square

- How often do you use this space? *everyday*
- What time of the day do you use this space? *8-9 11-13*
- ③ ② ➤ Do you come alone or with friends/family? *7*
- ① ➤ For what reason/purpose do you come to Church Square for? *wifi*
- Do you have a smart device? *Phone with internet access? Tablet? Laptop?*
- Do you feel free in using your smart device and why? *yes + safe*
- ① ➤ How fast is the internet speed of the wifi in Church Square? *alright could be better*
- ④ ③ ② ① ➤ What do you use the free wifi for?
Facebook/Twitter/Instagram/Whatsapp/Skype, surfing the internet/online gaming/downloads/work?
- ③ ➤ Do you communicate with your friends using the free wifi on social media? *✓*
- ① ➤ Would you still come to Church Square if there was no wifi? *no*
- How did you find out about the free wifi in Church Square? *friend*
- ① ➤ Are there any other places where you have access to free wifi? *College*
- ③ ➤ When you come to Church Square, do you see other people using smart devices? *✓*
- Do you like having access to free wifi in Church Square? *✓*
- Do you support the installation of free wifi in public spaces in general? *✓*

Questions for the businesses/shop owners/ people around the public square

- How long have you been operating in this area?
- ③ ➤ How different was Church Square before the installation of free wifi?
- When is Church Square the busiest during the day? As well as during the week.
- ② ➤ Who uses the public square?
- Do you provide free wifi for your business? (relevant to restaurants and shops)
- Do you ever use the space? If so, what for? If not, elaborate why?

Sboniso + Nonfundo

Questions for interviews

Questions for the users of the public square

- How often do you use this space? *2-3 weeks*
- What time of the day do you use this space? *depends*
- ③ ② ➤ Do you come alone or with friends/family? *Sometimes*
- ① ➤ For what reason/purpose do you come to Church Square for? *wifi music*
- Do you have a smart device? Phone with internet access? *Tablet? Laptop? phone*
- Do you feel free in using your smart device and why? ✓
- ① ➤ How fast is the internet speed of the wifi in Church Square? *slow*
- ④ ③ ② ① ➤ What do you use the free wifi for?
Facebook/Twitter/Instagram/Whatsapp/Skype, surfing the internet/online gaming/downloads/work?
- ③ ➤ Do you communicate with your friends using the free wifi on social media?
- ① ➤ Would you still come to Church Square if there was no wifi? *Id still com*
- How did you find out about the free wifi in Church Square?
- ① ➤ Are there any other places where you have access to free wifi? *Tshwane College*
- ③ ➤ When you come to Church Square, do you see other people using smart devices? ✓
- Do you like having access to free wifi in Church Square?
- Do you support the installation of free wifi in public spaces in general? ✓

Questions for the businesses/shop owners/ people around the public square

- How long have you been operating in this area?
- ③ ➤ How different was Church Square before the installation of free wifi?
- When is Church Square the busiest during the day? As well as during the week.
- ② ➤ Who uses the public square?
- Do you provide free wifi for your business? (relevant to restaurants and shops)
- Do you ever use the space? If so, what for? If not, elaborate why?

Johannes

Questions for interviews

Questions for the users of the public square

- How often do you use this space? *I come everyday*
- What time of the day do you use this space? *mornings*
- ③③ ➤ Do you come alone or with friends/family? *friends and family*
- ① ➤ For what reason/purpose do you come to Church Square for? *to read the newspaper*
- Do you have a smart device? Phone with internet access? Tablet? Laptop? *no*
- Do you feel free in using your smart device and why?
- ① ➤ How fast is the internet speed of the wifi in Church Square?
- ④③②① ➤ What do you use the free wifi for?
Facebook/Twitter/Instagram/Whatsapp/Skype, surfing the internet/online gaming/downloads/work?
- ③ ➤ Do you communicate with your friends using the free wifi on social media?
- ① ➤ Would you still come to Church Square if there was no wifi? *yes*
- How did you find out about the free wifi in Church Square?
- ① ➤ Are there any other places where you have access to free wifi?
- ③ ➤ When you come to Church Square, do you see other people using smart devices? *yes, a lot. very busy during the afternoon*
- Do you like having access to free wifi in Church Square?
- Do you support the installation of free wifi in public spaces in general? *I don't use it*

Questions for the businesses/shop owners/ people around the public square

THABANG - WAITER

- How long have you been operating in this area? *5 years*
- ③ ➤ How different was Church Square before the installation of free wifi? *people bring their laptops now compared to before*
- When is Church Square the busiest during the day? As well as during the week. *during the week*
- ② ➤ Who uses the public square? *all types of people, children, old people, students*
- Do you provide free wifi for your business? (relevant to restaurants and shops) *The wifi reaches this place*
- Do you ever use the space? If so, what for? If not, elaborate why?
During my lunch breaks I smoke



Joyce

Questions for interviews

Questions for the users of the public square

- How often do you use this space? WHEN I GET THE CHANCE TWICE A WEEK
- What time of the day do you use this space? IN THE AFTERNOONS 12
- ③ ➤ Do you come alone or with friends/family? ALONE
- ① ➤ For what reason/purpose do you come to Church Square for? TO RELAX FROM WORK
- Do you have a smart device? Phone with internet access? Tablet? Laptop? PHONE
- Do you feel free in using your smart device and why? YES THEY DONT STEAL HERE
- ① ➤ How fast is the internet speed of the wifi in Church Square? ITS ALRIGHT
- ④ ③ ① ① ➤ What do you use the free wifi for?
Facebook/Twitter/Instagram/Whatsapp/Skype, surfing the internet/online gaming/downloads/work?
- ③ ➤ Do you communicate with your friends using the free wifi on social media? YES I DO
- ① ➤ Would you still come to Church Square if there was no wifi? YES
- How did you find out about the free wifi in Church Square? MY COUSIN
- ① ➤ Are there any other places where you have access to free wifi? YES AT MCDONALDS
- ③ ➤ When you come to Church Square, do you see other people using smart devices? YES I DO
- Do you like having access to free wifi in Church Square? YES INTERNET IS EXPENSIVE
- Do you support the installation of free wifi in public spaces in general?

Questions for the businesses/shop owners/ people around the public square

- How long have you been operating in this area? SINCE THE YEAR 2000, I HAVE BEEN SELLING PHOTOS
- ③ ➤ How different was Church Square before the installation of free wifi? WASNT THAT DIFFERENT
- When is Church Square the busiest during the day? As well as during the week. ITS BUSY ALL WEEK LONG MON-FRI
- ② ➤ Who uses the public square? PEOPLE WHO BUY STUFF, WHO GO TO WORK AND STUDY, TO CHILL WITH FRIENDS
- Do you provide free wifi for your business? (relevant to restaurants and shops) NO
- Do you ever use the space? If so, what for? If not, elaborate why? I SELL PHOTOS FOR ID.

Kgoistimang

Questions for interviews

Questions for the users of the public square

- How often do you use this space? *Yes my first time here, visiting friends*
- What time of the day do you use this space?
- ③② ➤ Do you come alone or with friends/family? *I would come with my friends*
- ① ➤ For what reason/purpose do you come to Church Square for? *It's a nice place to relax*
- Do you have a smart device? Phone with internet access? Tablet? Laptop? *phone*
- Do you feel free in using your smart device and why? *Yes*
- ① ➤ How fast is the internet speed of the wifi in Church Square? *its slower than at College*
- ④③②① ➤ What do you use the free wifi for?
Facebook/Twitter/Instagram/Whatsapp/Skype, surfing the internet/online gaming/downloads/work?
- ③ ➤ Do you communicate with your friends using the free wifi on social media? *friends and family*
- ① ➤ Would you still come to Church Square if there was no wifi? *I would still come here*
- How did you find out about the free wifi in Church Square? *My friend told me about it, that its free*
- ① ➤ Are there any other places where you have access to free wifi? *Not that I know of*
- ③ ➤ When you come to Church Square, do you see other people using smart devices? *I see a lot of students with phones and tablets hanging out*
- Do you like having access to free wifi in Church Square? *Yes*
- Do you support the installation of free wifi in public spaces in general? *Yes*

Questions for the businesses/shop owners/ people around the public square *Peter (street trader)*

- How long have you been operating in this area? *For 7-8 years now*
- ③ ➤ How different was Church Square before the installation of free wifi? *Its always had people*
- When is Church Square the busiest during the day? *As well as during the week. After 10 o'clock, also during lunch time*
- ② ➤ Who uses the public square? *Young people from school*
- Do you provide free wifi for your business? (relevant to restaurants and shops) *NO*
- Do you ever use the space? If so, what for? If not, elaborate why?
I sell my fruits, chips, sweets, smokes to people

GLADYS MAPHAKA

Questions for interviews

Questions for the users of the public square

- How often do you use this space? *SOMETIMES NOT ALWAYS*
- What time of the day do you use this space? *AFTERNOONS AROUND 2 O'CLOCK*
- ⑤ ➤ Do you come alone or with friends/family? *ALONE*
- ① ➤ For what reason/purpose do you come to Church Square for?
- Do you have a smart device? Phone with internet access? Tablet? Laptop? *PHONE +*
- Do you feel free in using your smart device and why? *YES CUZ ITS SAFE TABLET*
- ① ➤ How fast is the internet speed of the wifi in Church Square?
- ④ ➤ What do you use the free wifi for? *VERY FAST*
Facebook/Twitter/Instagram/Whatsapp/Skype, surfing the internet/online gaming/downloads/work?
- ③ ➤ Do you communicate with your friends using the free wifi on social media? *YES*
- ① ➤ Would you still come to Church Square if there was no wifi? *YES, I GO TO THE RESTAURANT*
- How did you find out about the free wifi in Church Square? *AT WORK*
- ① ➤ Are there any other places where you have access to free wifi? *McDs/HFC/WIMPY*
- ③ ➤ When you come to Church Square, do you see other people using smart devices? *YES ALL THE TIME*
- Do you like having access to free wifi in Church Square? *YES*
- Do you support the installation of free wifi in public spaces in general? *YES*

Questions for the businesses/shop owners/ people around the public square

- How long have you been operating in this area?
- ③ ➤ How different was Church Square before the installation of free wifi?
- When is Church Square the busiest during the day? As well as during the week.
- ② ➤ Who uses the public square?
- Do you provide free wifi for your business? (relevant to restaurants and shops)
- Do you ever use the space? If so, what for? If not, elaborate why?
-

Karabo Sithole

Questions for interviews

Questions for the users of the public square

- How often do you use this space? *its my first time I am waiting for someone*
- What time of the day do you use this space?
- ③➤ Do you come alone or with friends/family? *friend*
- ①➤ For what reason/purpose do you come to Church Square for? *waiting for someone*
- Do you have a smart device? Phone with internet access? Tablet? Laptop? *phone*
- Do you feel free in using your smart device and why? *yes*
- ①➤ How fast is the internet speed of the wifi in Church Square? *fast*
- ④➤ What do you use the free wifi for?
Facebook/Twitter/Instagram/Whatsapp/Skype, surfing the internet/online gaming/downloads/work?
- ③➤ Do you communicate with your friends using the free wifi on social media? *yes with whatsapp and*
- ①➤ Would you still come to Church Square if there was no wifi? *yes FB messenger*
- How did you find out about the free wifi in Church Square? *friend told me to use it*
- ①➤ Are there any other places where you have access to free wifi? *no*
- ③➤ When you come to Church Square, do you see other people using smart devices? *not a lot, people are busy*
- Do you like having access to free wifi in Church Square? *yes*
- Do you support the installation of free wifi in public spaces in general? *yes*

Questions for the businesses/shop owners/ people around the public square

- How long have you been operating in this area? *Since September this year*
- ③➤ How different was Church Square before the installation of free wifi? *was not that different*
- When is Church Square the busiest during the day? As well as during the week. *Everyday in the afternoon*
- ③➤ Who uses the public square? *lot of people. Boys & girls & old people*
- Do you provide free wifi for your business? (relevant to restaurants and shops) *no*
- Do you ever use the space? If so, what for? If not, elaborate why?
- *I sell movies & dvd to people when I am in the area*

Field work - observations

- people in park
- black students, teachers,
- birds
- people walking along the road for sun
- lots of pedestrian traffic passing by (students/young adults)
- one student with laptop, three with smartphones

are people using?
ding webshops
sing in sun
ng for benches
ing other the square
is better
ing up dirt
• interaction? 06:46
and gatherings
o people on their phones

r, people are enjoying space without dependence of wifi
e is mostly busy at the south-end around 7-9am

is surrounding the square?
the (FNB/Spaar Bank/Standard Bank - Post Office
also: Public Prosecutors Office - Restaurant

R (FEP/John Brown
camp (R Training Business College
with electronics?

8@ 9AM
came alone: not interacting with anyone
ours (planned interactions)

02AM square began to fill up more
h square doesn't seem to be the hub for urban life in decline

- 09:18 - still on phones (2 were photocalling/6)

- 09:38 as bus reaches Southend, more people were situated there

- 09:57 15 groups

- 09:43 7-10 people on phones

- 10:00AM - more people in square

- 4 people on phones

* wifi coverage ends 10-15m beyond the square

- North end still most dominant in activity

- 11:00AM - more people in square

- more people have settled

- age range 16-80 / even tourists

- more people sitting down

* interactions?

- there are more interactions taking place

- electronic devices? = 3

- used for lunch for a different environment

* not as integrated as much as anticipated

- dinner and

- it attracts a lot of people during the day

- well maintained, people feel safe + comfortable

- 12:03PM more people in square

- some are going on their lunch break

- Southend becomes more busy - people looking for shade, but some are in the sun

indicating that
internet browsing becoming a
service esp. in SA for
not like in Western cities