URBAN REAL ESTATE
RESEARCH UNIT

URERU SMART CITY SERIES PART 1:
OVERVIEW AND ANALYSIS OF CAPE TOWN'S DIGITAL CITY STRATEGY

URBAN REAL ESTATE RESEARCH UNIT

OVERVIEW AND ANALYSIS OF CAPE TOWN'S DIGITAL CITY STRATEGY

Authors: Luke Boyle & Isabella Staines

The Urban Real Estate Research Unit would like to thank the City of Cape Town for the time, cooperation and support they provided in order for this research to take place.

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

Published by:
Urban Real Estate Research Unit
Department Construction Economics and Management
University of Cape Town
Private Bag X3 Rondebosch 7701
South Africa
Tel: +27 (21) 650 3443
Email: julie.thompsett@uct.ac.za
URL: www.ureru.uct.ac.za

Table of Contents

source: https://www.weforum.org

CONCEPTS/TERMINOLOGY:

Application Programme Interface:

An Application Program Interface (API) is a set of routines, protocols, and tools for building software applications. Essentially, an API specifies how software components should interact. A good API makes it easier to develop a program by providing all the building blocks. A programmer then puts the blocks together.

Digital City:

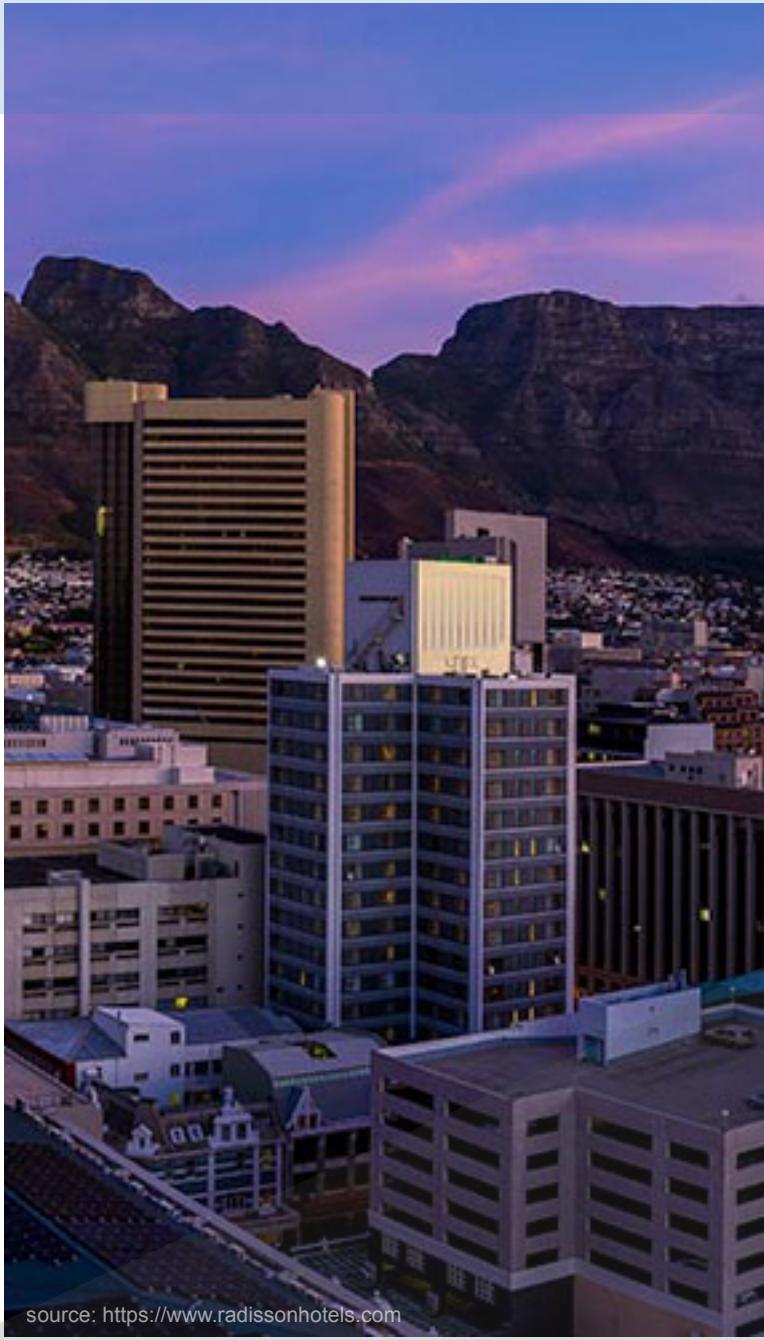
Naturally, Information and Communication Technology (ICT) is the core component of a Digital City and all other urban aspects (citizens, services, communities, relationships, communications, information and knowledge, human and social capital) are joined through these technologies (Cocchia, 2014). Concepts around digital cities are typically characterised by technological interventions to solve issues relating to the ways in which cities are managed and operated.

Digital Economy:

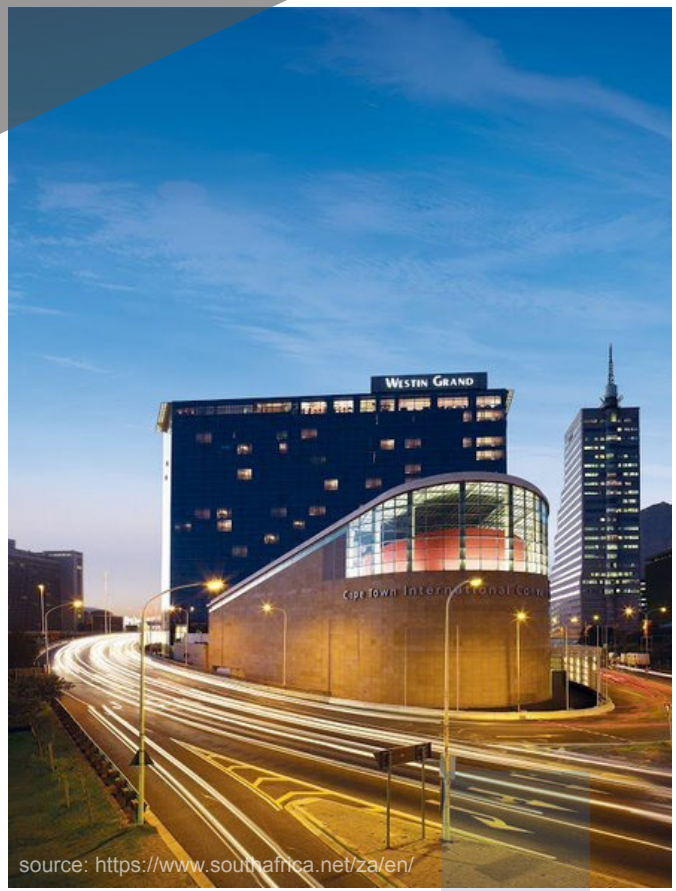
A digital economy is commonly understood as the economic processes, transactions and interactions based on digital technologies. Hojeghan and Esfangareh (2011) describe it as an economy that is based on electronic goods and services produced by, and traded through, electronic commerce. The digital economy includes a large array of industries from healthcare to advertising and even agriculture. Today, the digital economy is becoming increasingly intertwined with more traditional conceptions of economic activity as traditional business are becoming increasingly digitised.

Digital Infrastructure:

Refers to the cables, switching facilities, and equipment needed to create and support telecommunication networks and services, computing facilities, computers and devices that connect to these networks (City of Cape Town, 2016).



source: https://www.radissonhotels.com



source: https://www.southafrica.net/za/en/

Enterprise Resource Planning:

Enterprise Resource Planning (ERP) is business process management software that allows an organisation to use a system of integrated applications to manage the business and automate many back office functions related to technology, services and human resources.

ERP software typically integrates all facets of an operation — including product/service planning, development, manufacturing, sales and marketing — into a single database, application and user interface.

Fourth Industrial Revolution (4IR):

The Fourth Industrial Revolution (4IR) is characterised by a fusion of technologies that is blurring the lines between the physical, digital and biological spheres. It is characterised by the exponential proliferation of emerging technological breakthroughs in fields such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, materials science, energy storage, and quantum computing. The 4IR is characterised by a much more ubiquitous and mobile Internet, accessed by smaller sensors that have become cheaper and have more processing power due to artificial intelligence and machine learning (Schwab, 2016). One of the key pillars of this revolution is connectivity supported by increased computing abilities.

Information and Communication Technology:

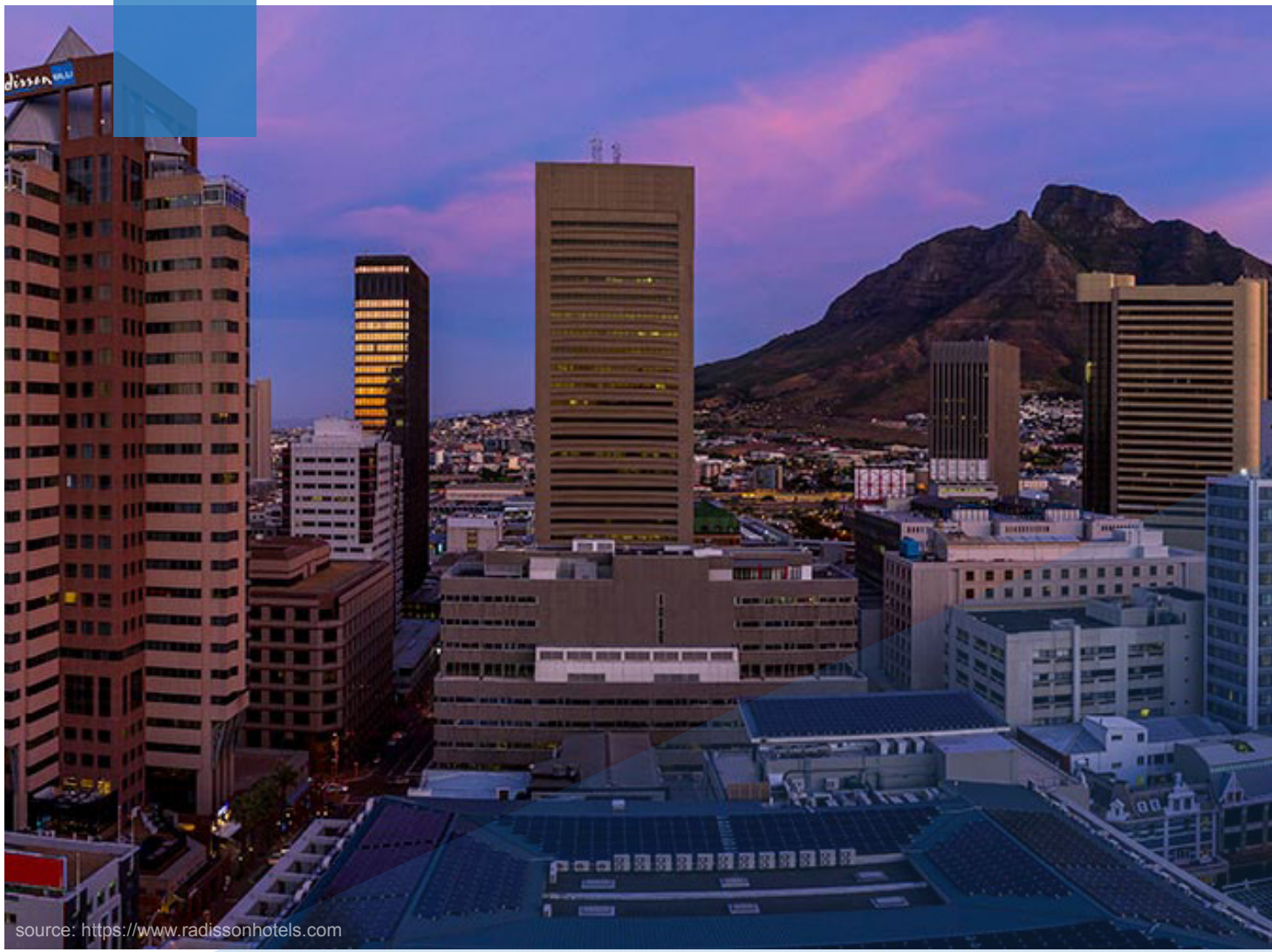
Information and Communication Technology (ICT) refers to technologies that provides access to information through telecommunications. It is similar to Information Technology (IT), but focuses primarily on communication technologies. This includes the Internet, wireless networks, cell phones, and other communication mediums.

Smart City:

ICT is ever an important element characterizing the Smart City, but it is not the only one and involves a number of other aspects (Cocchia, 2014). Instead, the concept is more synonymous with the strategic use of enabling technologies to support key objectives of a city. Thus, a smart city cannot simply be realised by investing in distributed sensors and digital technologies and their corresponding solutions (Barns, 2018). It requires a reinvention of governance that involve transforming the way local governments work internally and how they partner with citizens and other partners (Cosgrave, Doody, & Walt, 2014).

SETTING THE SCENE

In today's urban environment, local governments have to deal with increasingly complex mandates, social inequalities and economic growth in a context of increasing environmental and economic uncertainty (Baud et al., 2014). In Africa, these complexities are exacerbated by rapid urbanisation and the subsequent proliferation of urban poverty. This necessitates more efficient and effective management and governance of urban systems (Slavova & Okwechime, 2016; Meijer & Thaens, 2018). Given the increased role of ICT and its potential to advance the management and coordination of cities, contribute to their economic success, and improve the quality of life of its residents (Backhouse, 2015), many African cities are beginning to explore smart city interventions as a means of overcoming the rising challenges of urban development and sustainability. As such, cities are now having to respond to the opportunities and challenges that arise on the back of an increasingly technological world, which requires a radically different view on how a city needs to operate to accommodate the engagement between technology, citizens, institutions and the built environment.



source: https://www.radissonhotels.com

INTRODUCTION TO THE REPORT SERIES

source: https://www.weforum.org

As the world enters this Fourth Industrial Revolution (4IR), breakthroughs in all spheres of technology are being made at an exponential rate, effecting almost every aspect of society (Schwab, 2016). This inevitably means that Information and Communication Technology (ICT) has a truly transformative power in any modern city. As a result, technologies now play a key role in the visions put forward by urban institutions when planning for the future (Townsend, 2013). To this end, smart urbanism is emerging at the intersection of future urban visioning, technological development and infrastructure (Luque-Ayala, McFarlane, & Marvin, 2016).

However, there is currently a lack of both theoretical insight and empirical evidence to assess the implications and consequences of smart city development in different urban contexts (Luque-Ayala, McFarlane, & Marvin, 2016). This is particularly the case in Africa where the smart city concept is still relatively new and needs further exploration (Chourabi et al., 2012).Nevertheless, several African cities are embarking on a quest to achieve 'smart city' status (Watson, 2015; Tshiani & Tanner, 2018). In South Africa, a number of metros have already adopted some form of ICT policy to support service delivery and socio-economic development (Odendaal, 2006). Now the label 'smart' or 'digital' city is firmly on the political radar as a tool for attracting investment and driving socio-economic development (Odendaal, 2006). This is exemplified by the most recent State of the Nation Address where President Cyril Ramaphosa called for South Africans to start imagining smart cities of the future. Furthermore, former Cape Town Mayor Patricia De Lille stated her aspiration for Cape Town as becoming the first truly Digital City in Africa. Despite these grand aspirations little is understood by what this means, how it will be achieved, and by whom.

In an attempt to shed some light on the above, the Urban Real Estate Research Unit (URERU) has set out to explore Cape Town's smart city aspirations and the various challenges and opportunities that exist for Smart City development within an African context. Furthermore, the research series will highlight what it means to be 'smart' in an African context and the role the City of Cape Town (CoCT) is beginning to play in this space.

The series is structured into four reports which are outlined below:

- **Report 1:** Critical Analysis of Cape Town's Digital City Strategy.
- **Report 2:** The Current State and Characteristics of Cape Town's Smart CitY Implementation.
- **Report 3:** Identifying the Opportunities and Challenges that exist for Cape Town as it embarks on its Smart City journey.
- **Report 4:** What it means to be 'smart' in Africa and the way forward for Cape Town's Smart City agenda.

By the end of the report series we hope to illustrate the policy mechanisms in place to drive Cape Town's smart city aspirations, how far the city is along its path to becoming 'smart', and what is needed to drive successful smart city development in Cape Town. Further, this report series aims to contribute to the limited research on what it means to be a smart city in a context characterised by rapid urbanisation, limited government resources and capacity, informality, and growing inequality.

This first report will outline the key elements of the CoCT's 'Digital City Strategy' and provide some critical analysis of this strategy. It is important to note that the Digital City Strategy highlights the role that the CoCT intends to play in driving a vision for a Smart City and facilitating this vision, as well as the administrative and service delivery functions it performs as a municipality. Thus, the strategy is not an overarching blueprint for a smart/digital city as this requires the involvement and support of a large variety of different entities with differing interests, perceptions and skills. Visions of a smart city as outlined in the terminology section won't be achieved through the City (CoCT) alone.

In essence, the strategy analysed in this report attempts to outline the CoCT's vision for the development of a smart city, and how they (as a municipality) can help facilitate the achievement of that vision. It also includes strategies that they aim to implement as a municipality to improve their own operations with the enablement of technology. This means that the Digital City Strategy includes a broader vision for Cape Town as a smart city (that incorporates key development objectives) and also highlights how it will utilise technology to improve the administrative functions of the CoCT. For example, the strategy will include both external policy mechanisms that would support greater internet connectivity across the city, as well as internal policies and protocols that would enable the more effective use of CoCT data for public services such as policing or traffic control.

Presently the Digital City Strategy is an internal document in draft form and is not available to the public. Special permission was granted to URERU to access this document for the purposes of this research project.


source: https://www.southafrica.net/za/en/

[1]The words 'the City', for the purposes of this report series refers to the City of Cape Town municipality that carries out the administrative functions and service delivery of government and is also seen as the central driver of a smart city strategy for Cape Town. The terms the City and the City of Cape Town, can thus be viewed interchangeably.
The word 'city' refers to an urban hub where a large number of people live and work, namely: Cape Town.

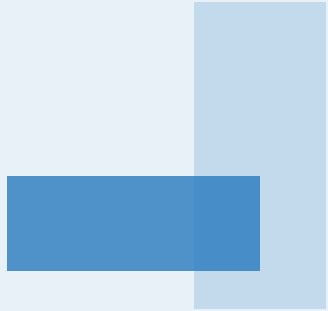
CONTEXTUAL BACKGROUND

In 2013, the African Union (AU) outlined a 50-year goal for making African cities smarter through a strategy of accelerated development and technological progress (Slavova & Okwechime, 2016). In the years following the establishment of this agenda, many African cities have embarked on a journey to become smarter (Backhouse, 2015).

Cape Town is firmly on this journey and is considered to be a leading city within smart city development in Africa. This is in part due to the pragmatic visions of politicians who recognised the transformative role of ICT in urban development and governance at an early stage. Additionally, there are other key advantages that Cape Town has in driving such ambitions. According to a recent digital readiness assessment the Western Cape outperforms the rest of South Africa in a number of key indicators, namely: household and individual internet access, telecommunications infrastructure, mobile device use, and education (Research ICT Africa, 2015). Further, the adoption of technology in the Western Cape by wealthy individuals and businesses mirrors that of many developed economies (Research ICT Africa, 2015). This leads to another key factor supporting Cape Town's smart city aspirations; its position as a global tech hub. The city has a well-established digital economy and is arguably the centre of the African tech sector. The vast majority of South African start-ups and venture capital activity is focused in the Cape Town region (City of Cape Town, 2016). This means there are a pool of workers highly skilled in tech-related fields and a concentration of investment into tech-related business providing an environment where tech-innovations can take root. This provides a natural asset to any local government looking to drive smart city development.

Despite this, there are factors that hinder the City's ability to promote smart city development. These are primarily centred around digital skills, infrastructure, accessibility and affordability of connectivity. This is primarily related to digital equity or digital inequity which is most commonly referred to as the digital divide. This digital divide is impacted by affordability, income, and geographic distance from developing economic hubs. In 2002, Bridges.org highlighted a range of constraints, such as: physical access to technology, and capacity and training that stand in the way of Cape Town's smart ambitions. Central to this is the high cost and availability of internet connectivity. The cheapest mobile data product in South Africa is five times more than the cheapest for the rest of Africa. Moreover, mobile expenditure as a share of individual income in the Western Cape is significantly higher than many other African countries (City of Cape Town, 2016). These constraints cannot be minimised by merely addressing infrastructure distribution when wealth disparity is such a prevalent issue in this country.

Despite these significant barriers, overall the city is well poised to become the "first truly digital city in our region" (City of Cape Town, 2016, p. 5).



[2]Digital readiness refers to the preparedness to embrace technology in its entirety. This extends beyond the assessment of ICT and broadband networks to include an assessment of the policy environment, digital skills base and issues of affordability, accessibility and use.

[3]Digital Equity is a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy and economy. Digital Equity is necessary for civic and cultural participation, employment, lifelong learning, and access to essential services (The National Digital Inclusion Alliance, 2019).


source: https://www.radissonhotels.com

METHODOLOGY

This research adopted a single case study methodology using Cape Town as the case. The inquiry that underpins the report series was built around a suite of factors expected to shape the smart city trajectory of Cape Town. As such, the generalisability of this study is limited, however, the study has the potential to provide valuable insights into smart city agendas for cities across Africa.

Data collected for the study was primarily based on semi-structured interviews with key stakeholders involved in Smart City development in Cape Town. Interview participants were selected using expert sampling which was followed by snowball sampling. The selection of respondents was ended when no new names were mentioned in interviews. There was a total of 12 respondents that were interviewed for this study. Secondary data in the form of policy documents and presentations were used to supplement the interview data. A qualitative analysis of the data followed collection and NVivo was used to identify emergent themes.

BACKGROUND TO THE CITY'S DIGITAL CITY STRATEGY

In 2000, the CoCT initiated its first 'Smart City Strategy' with the aim of achieving City objectives such as job creation, economic growth, improving resident's engagement as well as building a system of high-quality public services that could be made accessible to a wide range of citizens. Therefore, the original vision was created by the CoCT to devise ways to use technology to meet key development objectives and to best serve its citizens. This occurred years before any African city was beginning to explore the concept of smart urbanism.

The catalyst from which the strategy was born was the UniCity initiative that integrated the seven separate municipalities that existed in Cape Town into one overarching municipality as a means of modernising the way the City was run and reversing some of the legacies of apartheid city planning and management. Members of the IT department saw this as an opportunity to digitise the business processes of the organisation and integrate them into one digital system. Thus, the smart city strategy laid the foundation for significant investment in business process integration and automation to promote efficiencies in its systems and service delivery (City of Cape Town, 2016). What followed was the largest implementation of an Enterprise Resource Planning (ERP) system and to this day forms the digital backbone of the organisation and its smart city aspirations. The ERP implementation was viewed as international best practice in the smart/digital city space.

Out of this early adoption of technologies to optimise city processes, a more comprehensive vision for Cape Town as a tech-driven city grew to include broader development objectives. This has been informed by international best practice around the globe as well as other smart city and digital competitiveness practices. The strategy sought to develop coherent ideas surrounding city leadership, policy development, service delivery and the creation of a digital democracy. Two key aspects of this development are the Broadband Project and the SmartCape initiative. Both were aimed at addressing the digital divide and providing access to internet connectivity and technology. The timeline below outlines key developments of the CoCT's development in the field of smart urbanism from 2000–2015. The most recent review of the strategy took place in February 2016 meaning that it has not been updated in the last three and a half years.

Whilst there is no official policy document in the public domain that outlines the CoCT's strategy to become Africa's first truly digital city there is an internal document that is used to guide this journey. This document forms the basis of this first report and is now known as Cape Town's Digital City Strategy. However, the term digital and smart are ambiguous and there is no clear definition of what either of the concepts mean. This is briefly outlined below.

source: https://www.southafrica.net/za/en/

DIGITAL VS. SMART CITY

Whilst there are a range of terms used to describe how cities and technology intersect, there is no clear or agreed definition of a 'digital' or 'smart' city. Furthermore, the ever-changing concepts of smart and digital are underpinned by the changing role of technology in society (Willis & Aurigi, 2018), meaning that the concepts are likely to remain fluid and ambiguous. Creating consensus around definitions for smart or digital cities is beyond the scope of this research project and we do not intend to contribute to this debate. However, we put forward our understanding of the common intersection of thoughts when it comes to interpretations of what is 'smart' and what is 'digital' in the urban environment. This is outlined briefly below.

A digital city can be understood as a city deploying ICT solutions to drive and improve public service provision and create efficiencies through digitising the various functions of a City. ICT is the core component of a digital city and the focus is on investing in distributed sensors and digital technologies and their corresponding solutions (Barns, 2018). For example, the Internet of Things (IoT) and smart sensors are considered to be central to concepts around digital cities. Thus, the notions behind this conceptualization of a digital city is that new technologies can be utiliised to optimiise the way cities are managed.

A smart city can be understood by a City that leverages the strategic use of enabling technologies to support key urban development objectives. A key distinction here is that solutions derived within a smart city do not necessarily need to be driven exclusively by technology. Hence, for a smart city the emphasis is less on technology and more on solutions to urban challenges that involve innovative methods of governing and engaging with citizens. Thus, it requires a reinvention of governance initiated by transforming the way local governments work internally as well as reconceptualizing how they engage and partner with citizens (Cosgrave, Doody, & Walt, 2014).

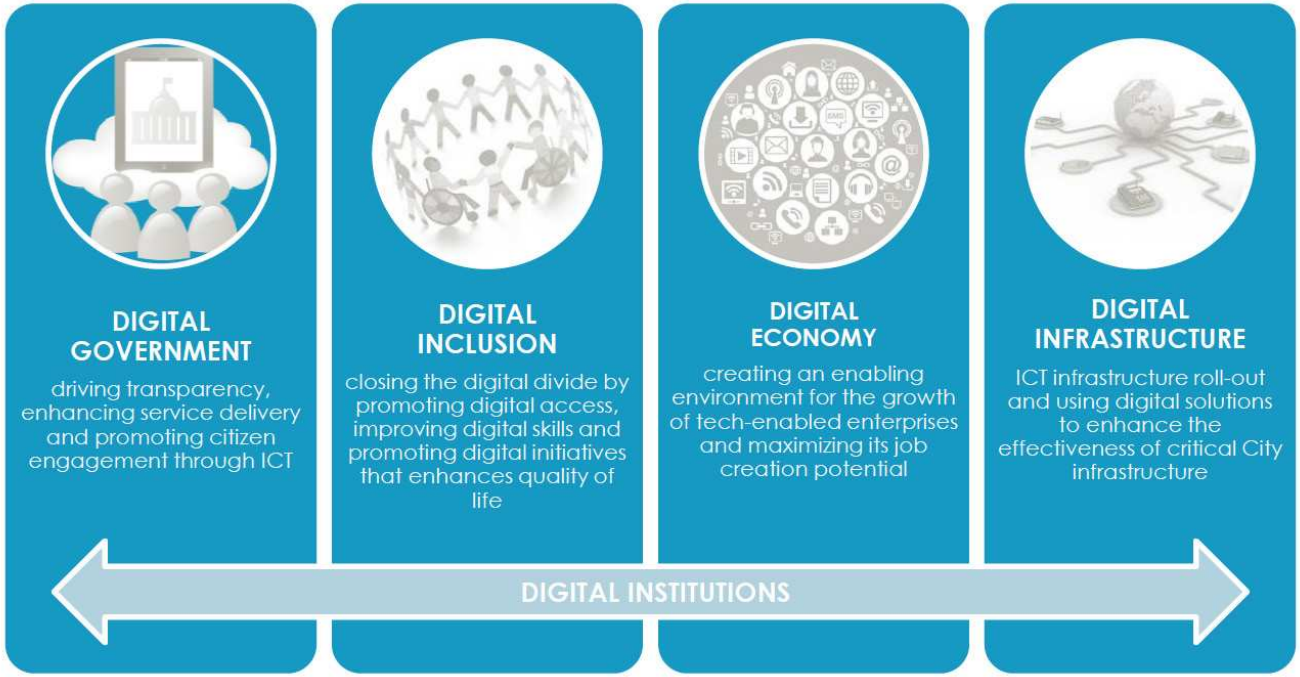
The CoCT's digital city strategy document uses the term 'smart city' and 'digital city' interchangeably. This distinction is outdated and is perhaps used as a means to not complicate the content of the strategy across the various departments of the organisation. The strategy does however outline that a 'smart city' is not necessarily a 'digital city' or even a technologically advanced one. Further, it points out that while a 'smart city' uses technology as an enabler to meet city objectives, a 'digital city' is more focused on introducing technology to improve a city's digital operations. The strategy highlights that there are consistent themes between the two, namely: the attention to harnessing technology, optimizing institutions and growing the overall digital economy. The reality is that the content of the document demonstrates a blend of both smart city and digital city approaches. Nevertheless, it is important to note that whilst the document states that the terms smart and digital interchangeably, the document and the various officials from the City insist on referring to the document and its implementation as a digital city strategy and not a smart city strategy.

THE FOUR PILLARS OF THE STRATEGY

The Digital City Strategy put forward by the CoCT has four dimensions or pillars, namely: digital government, digital inclusion, digital economy and digital infrastructure. These pillars have been informed by examples of best practice in local government innovation as well as the various development frameworks outlined by local, regional and national government. As such, the strategic pillars support the vision of Cape Town to:

- Be a prosperous city that creates an enabling environment for shared equitable economic growth and development.
- Achieve effective and equitable service delivery.
- Serve the citizens of Cape Town as a well-governed and effectively run administration.

Whilst the strategy is set out in four distinct pillars, it is important to note that the implementation of the pillars is not executed in isolation and the pillars represent four themes under the overarching strategy for the organisation. Below is a brief outline of the four strategic pillars.



source: City of Cape town

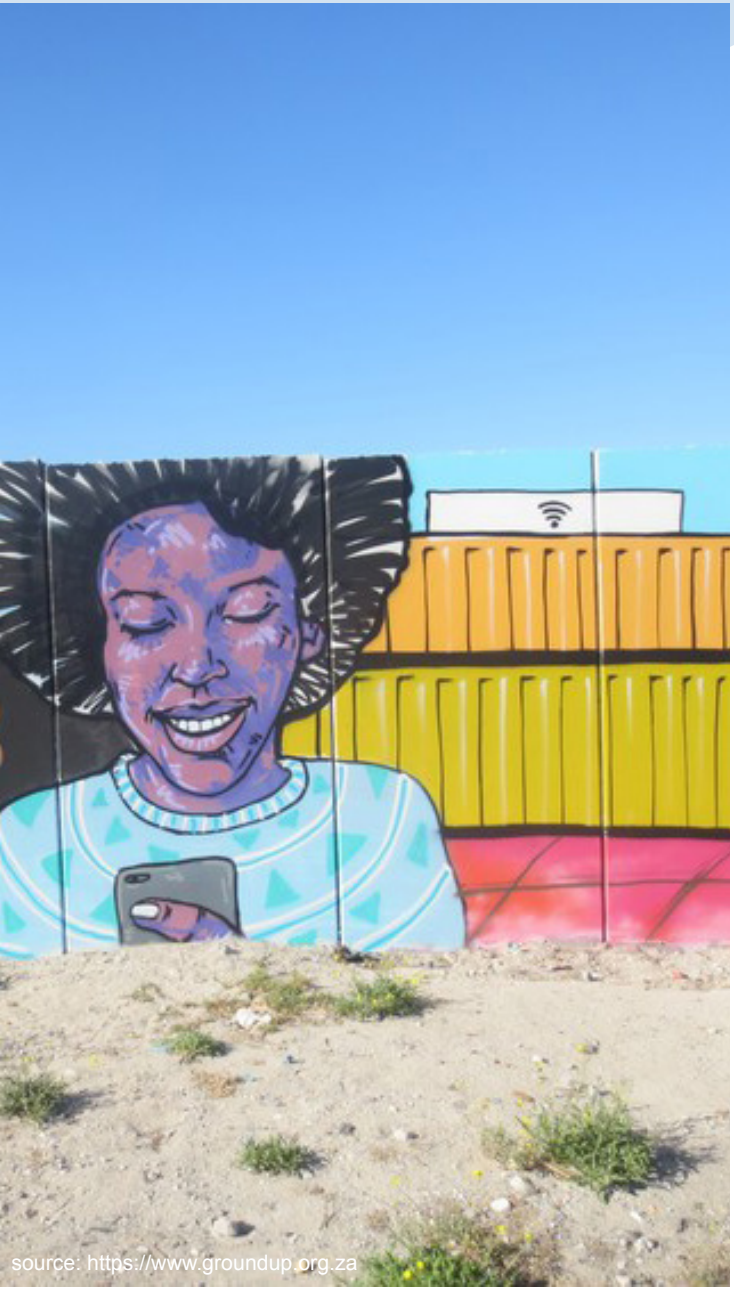
DIGITAL GOVERNMENT

This aspect of the strategy is centred around how the CoCT operates. The main focus here is to use technology as a tool to enable improved service delivery to citizens and create an efficient organisation. The backbone of this pillar is the ERP system that the City introduced in the early 2000s. The system has been operating ever since and has integrated all of the organisation's business processes into a single digital platform.

Key principles of this pillar as outlined in the strategy, such as open data portals, inclusion, and innovation, have been acknowledged but not adequately acted upon. For example, the open data portal is up and running but does not have an Application Programme Interface (API) which would allow applications to be developed from city data. In terms of inclusion, the City aims to ensure that digital technology is employed to enhance access to a broader audience, this would most logically be driven by the development of a City of Cape Town application or app, yet this is still to be developed. Lastly, while the document outlines the key principle for this pillar as seeking out and encouraging innovation, the CoCT's institutional arrangements make it difficult for innovation to take root. Thus, whilst the content is considered and logical given the City's objectives, they appear more theoretical than demonstrable. Furthermore, many of the initiatives that stem out of these objectives are superficial and often lack tangible plans.

source: https://sabrangindia.in

DIGITAL INCLUSION


source: https://www.groundup.org.za

The digital inclusion pillar of the strategy deals specifically with efforts to “shrink the digital divide” (City of Cape Town, 2016, p. 19). The digital divide refers to disparate access to, distribution and use of technology and connectivity, most notably between the rich and poor (Wilson, 2006). In order address this, an effective plan needs to be set in motion. This plan is underpinned by three key principles, namely: creating partnerships with outside actors, focusing investment in areas of low demand, and driving skills development. These key principles are a solid foundation from which to base action to address the digital divide and some well-formulated initiatives have emerged out of this. For example, the very successful SmartCape initiative provides free internet and computer access in public libraries across the city. The strategy also aims to devise a series of projects that showcase how ICT can contribute to a better quality of life, especially for young people who are more vulnerable to unemployment.

However, some initiatives, such as free Wi-Fi on MyCiti buses, missed the mark as the cost of providing Wi-Fi on buses in a context where this kind connectivity is expensive was not thoroughly considered. Additionally, there was no detail relating to the key principle of creating partnerships with NGOs and other spheres of government to achieve the key objectives of this pillar. Conversely, some initiatives had a clear and detailed action plan. An example of this is the initiative to establish paperless clinics. Considering this has far less impact on addressing the digital divide than developing collaborative programmes with other state actors, civic organisations and private sector, it is peculiar how this initiative has such a developed action plan. What’s more is that initiatives that arguably provide tangible means of addressing digital inclusion, such as developing digital skills and driving ICT usage, were lacking detail and did not provide much in terms of innovative strategies to meaningfully address the digital divide.

If the City is going to make the idea of a smart city one that appeals to people across all demographics, it needs these projects to be both accessible and appealing to all citizens, especially those without access to technology. Investing in ICT user-end skills and reconceptualizing citizen engagement are important factors in this ongoing process.

DIGITAL ECONOMY

The City's focus on the digital economy perhaps indicates an emphasis on creating a globally competitive city that attracts investment and talent, as opposed to embodying solely 'smart' city ideals which tend to be more holistic. Nevertheless, having a burgeoning digital economy has a significant role to play in smart city development and Cape Town has a major asset in this area as it can play a major role in economic growth. For the most part the skills and investment vehicles required to drive this sector are largely in place.

The key principles informing this pillar are centred around creating an enabling environment for tech businesses, job creation, and building on Cape Town's image as an innovation hub. The objectives that support these principles are appropriate and relevant to the City's objectives. Despite this, details regarding the specific initiatives that develop from the objectives are vague and provide little in terms detailing how they will be achieved. Again, it is evident that while the City understands what needs doing, they are falling short on many of their initiatives as the organisation has not yet devised appropriate systems of implementation. Many of the initiatives currently stated seem to be empty or unclear in a number of instances.

source: https://sabrangindia.in

DIGITAL INFRASTRUCTURE

In terms of the Digital City Strategy, digital infrastructure refers to the networks that form the IT backbone of a city. Essentially, it is the services and hardware required to support IT capabilities. Digital infrastructure is arguably the foundational enabler for a digital government, digital inclusion and the digital economy.

The CoCT aims to be the most connected city in Africa with the lowest cost of connectivity. In order to achieve this the City must develop or support the development of infrastructure that enables this. This means focusing on developing Cape Town's web-hosting capabilities, mobile telecommunications, data centres, fixed broadband and last-mile connections. However, the City owns less than 10% of Cape Town's digital infrastructure and also has significant budgetary limitations. Instead of trying to duplicate or compete with the digital infrastructure of the private sector, the City acknowledges that it must rather focus on collaboration, recognizing its own limitations in term of resources and ability to respond to changing consumer and market needs.

The Digital Infrastructure pillar represents the most developed aspect of the City's digital city strategy and the approach taken by the City in terms of this pillar resembles what one would expect to see in a Smart City Strategy. It illustrates a clear understanding of infrastructure's central role in the City's overarching strategy and the critical role that the private sector will need to fulfil in terms of providing digital infrastructure. The initiatives presented in this pillar are detailed and well-formulated. An example of this is the Broadband Project where the City has used its procurement muscle to connect public buildings with high capacity fibre in an attempt to partner with Internet Service Providers (ISPs) to bring affordable connectivity to impoverished parts of the city. This project is currently on hold pending a business review, but it highlights the smart practices that show the transformative potential of using ICT in attaining certain development objectives. This epitomises the 'smart' practices that focus on creating coalitions with private sector to provide the environment to enable the delivery of digital infrastructure.

source: https://www.weforum.

CRITICAL ANALYSIS OF THE STRATEGY

The City of Cape Town has the makings of a robust and comprehensive strategy for supporting smart city development. The IT department, which is essentially responsible for developing the Digital City Strategy, recognised early on the potential benefits that ICT interventions can introduce to complex challenges associated with public administration. Their forward-thinking efforts has paved the way for other African cities to drive technological adoption in local government and have achieved international recognition for the pioneering work that they have achieved. As a result, Cape Town is leagues ahead of other African cities in terms of smart city development and they have the experience and skills to effectively roll out smart city programmes. Hence, the digital city strategy illustrates a level of maturity that would be reflective of an industrialised city of the Global North.

Despite the promising leadership that has taken place in the City regarding developing a strategy for a smart/digital city, there are two key issues that emerged out of the analysis of the strategy.

These are:

- The lack of substantive content (particularly around implementation) of the strategy.
- The strategy lacks truly ground-breaking models of working to really tackle the core challenges that the city faces.

source: https://www.dailymaverick.co.za

THE STRATEGY LACKS SUBSTANCE

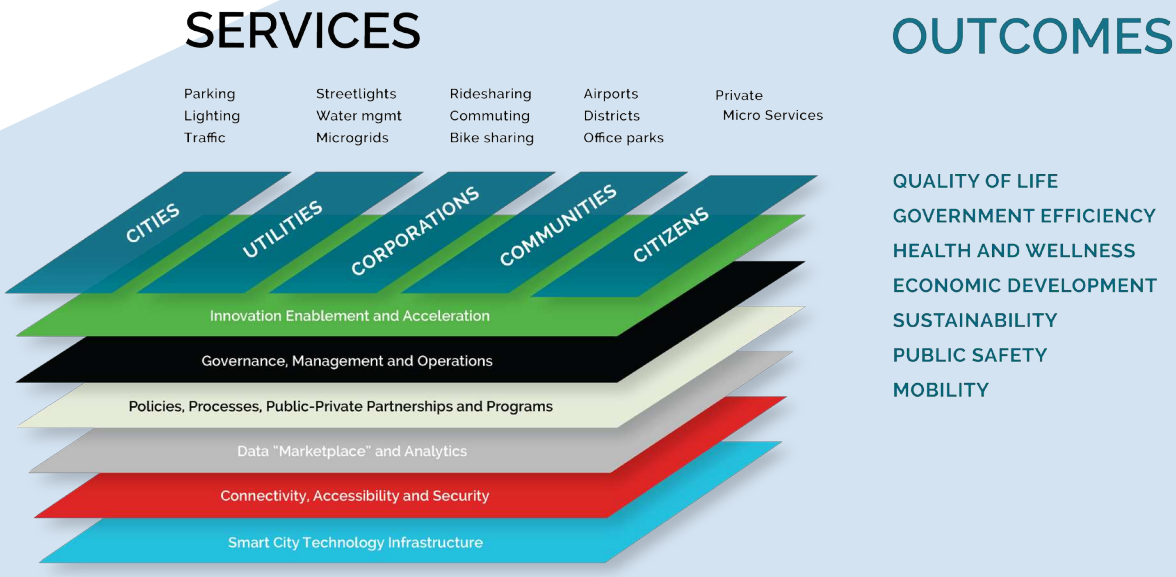
Whilst the strategy highlights the awareness and comprehensive understanding of what is ideally required to build a smart city, what is striking about the strategy is the distinct absence of substantive content that would enable the various departments of the City to align their mandates to an overarching smart/digital city strategy. The entire Digital City Strategy is approximately 40 pages.

There are few concrete implementation vehicles outlined in the document that can be applied across the organisation. The strategy does however demonstrate the City's awareness of the shortcomings it has in terms of not driving an integrated portfolio and the lack of institutional mechanisms to support the strategy, but it is clear that they are yet to formulate mechanisms to develop such institutional arrangements.

In terms of defining the implementation of initiatives the document does outline specific interventions for each of the four pillars. The detail of these initiatives ranges from very vague to very detailed and the strategy does not demonstrate a consistent plan of how to implement the various initiatives. It is clear from the strategy that some initiatives have highly developed plans that are well-formulated with clearly defined action plans, whilst others are poorly defined and lack tangible application.

An additional institutional concern from the analysis of the strategy document is the lack of material regarding the partnerships that are critical for the success of delivering a smart city. For example, Western Cape Government seems like an obvious partner in Cape Town's smart city development, yet the strategy barely mentions such a partnership. The document does stress the importance of forging partnerships with private sector in terms of providing digital infrastructure, however, more comprehensive plans for developing various partnerships to build a smart city are required. This entails developing an institutional structure that creates an enabling environment for collaboration and partnerships with internal and external organisations.

SMART CITY ECOSYSTEM



source: https://iiot-world.com

THE STRATEGY IS NOT GROUNDED UPON 'SMART' MODELS OF OPERATION

As mentioned above, some initiatives in the strategy are accompanied with detailed action plans where there has clearly been considerable focus. However, many of these detailed initiatives do not really address key development objectives of the City (i.e. bridging the digital divide). Thus, much of what is put forward in the strategy is not ground-breaking or disruptive in nature and at times seems superficial. To this end it becomes clearer why the CoCT has continued in labelling the strategy a Digital City Strategy rather than a Smart City Strategy as the majority of what is proposed does not fundamentally alter how the City operates but more looks to ICT to improve its operations. This highlights that while in theory the strategy aims to facilitate the development of a smart city, the content of the implementation vehicles put forward are more concerned with the City and its operations. The earlier example of paperless clinics adds weight to this opinion. It is argued that to transition into a smart city, the CoCT needs to fundamentally change its processes and embed innovative practices and partnerships (across and outside the organisation) to provide a platform from which smart city development can be based. For the most part, it is using technology to optimise traditional models of operation by essentially adding a digital layer to conventional practices. This limits the ability of technology to truly have an impact on addressing the development challenges that Cape Town faces. This concern is outlined by Willis and Aurigi (2018) who stress that a system of technocratic governance where issues are treated like 'technical problems' and are given 'technical solutions' could potentially solve surface problems but fail to address deep-rooted structural issues, as well as further centralizing power and decision-making which leaves the citizenry powerless. level is exponential. Further, the monitoring of the strategy ought to use indicators that are reviewed at closer intervals to ensure that they are relevant and that they are adequately tracking the process of the City's smart city development. This suggests that the concepts around smart urbanism are yet to be fully adopted and understood by the political leadership of the City and the strategy does not receive the attention that it should.

Despite this, there are pockets of smart and innovative practices taking root within the city of Cape Town. This is exemplified through the City's emergency dispatch system, EPIC, which has revolutionised the way the CoCT responds to emergency calls. What is missing are coherent strategies that link these innovative pockets into a concrete and unified policy, or set of policies, that embed these practices across the organisation.

Lastly, the intervals in which the strategy is reviewed reveals a somewhat minor critique, but perhaps speaks to a more structural issue that these concepts are not receiving the political support that they require. The Digital City Strategy is reviewed every five years, or as required. This is likely to be insufficient as the current rate of change and growth in both the ICT and startup sphere on a global level is exponential. Further, the monitoring of the strategy ought to use indicators that are reviewed at closer intervals to ensure that they are relevant and that they are adequately tracking the process of the City's smart city development. This suggests that the concepts around smart urbanism are yet to be fully adopted and understood by the political leadership of the City and the strategy does not receive the attention that it should.

source: https://vienna.impacthub.net


source: Marvel Studios

CONCLUSION

Cape Town has embarked on an exciting and challenging digital journey. The Digital City Strategy indicates an intent for the City to engage with smart city development and it is clear that, unlike many other African cities' claims of being smart, Cape Town has devoted a significant amount of focus into what is actually required to achieve a smart city within an African context.

Presently, the strategy places a strong focus on operational aspects and driving competitiveness to attract talent and investment. The CoCT needs to focus on the extent to which it works for its citizens more than the desire to compete with other emerging digital or smart cities on a global level. Beneath the plans for Cape Town's digital development exists a layer of economic imbalances, educational gaps and income disparity that permeates multiple layers of city life. When it comes to reviewing the City's strategy, it is important to avoid technocratic governance by being open to systematic changes and re-evaluating the changing needs of both businesses and citizens.

While the City may be aware of how to proceed, effective implementation mechanisms need to be decided on in order to go beyond merely identifying what needs to be done. Further, there needs to be a sense of leadership that pervades all levels of the organisation in order to create an appropriate system of institutional support based on an in-depth understanding of each department's responsibilities and how it relates to a coherent strategy. This would likely enable the CoCT to embed their strategy more effectively into the organisation.

In terms of smart versus digital there is a certain importance of minimizing any superficial claims of 'smartness' until the City's strategy has been thoroughly reviewed and more detailed and pervasive plans of action have been established. While many of the initiatives are in the right ballpark, their lack of practical application at this moment leaves them sounding somewhat empty or vague.

While the 'smart city' process has already begun in many respects, fundamental changes within the City structure as a whole may still be required in order for Cape Town to make further leaps on its digital journey. There is still a great distance to travel but the CoCT has a strong platform to do this.

The next report in the Smart City Research Series will examine the characteristics of Cape Town's smart city journey and where it currently stands in terms of implementing the four pillars of the Digital City Strategy.

BIBLIOGRAPHY

Backhouse, J. (2015). Smart city agendas of African cities. African Conference of Information Systems and Technology, (pp. 7-8 July 2015). Accra, Ghana.

Barns, S. (2018). Smart cities and urban data platforms: Designing interfaces for smart governance. City, Culture and Society, 12, 5-12.

Baud, I., Scott, D., Pfeffer, K., Sydenstricker-Neto, J., & Denis, E. (2014). Digital and spatial knowledge management in urban governance: Emerging issues in India, Brazil, South Africa, and Peru. Habitat International, 44, 501-509.

Bridges.org. (2002). Taking Stock and Looking Ahead: Digital Divide Assessment of the City of Cape Town. Cape Town: City of Cape Town.

Chourabi, H., Nam, T., Walker, S., Chourabi, H., Nam, T., Walker, S., Gil-Garcia, J. R., Mellouli, S., Nahon, K., Pardo, T., Scholl, H. J.(2012). Understanding smart cities. An integrative framework. In 2012 45th Hawaii International Conference on System Science. IEEE. Pp. 2289-2297).

City of Cape Town. (2016). Digital City Strategy (Draft 9). Cape Town: City of Cape Town.

Cocchia, A. (2014). Smart and digital city: A systematic literature review. In R. Damero, & C. Rosenthal-Sabroux (Eds.), Smart City: How to Create Public and Economic Value with High Technology in Urban Space (pp. 13-43). Heidelberg: Springer, Cham.

Cosgrave, E., Doody, L., & Walt, N. (2014). Delivering the Smart City: Governing Cities in the Digital Age. . London: Arup, Liveable Cities.

Hojeghan, S., & Esfangareh, A. (2011). Digital economy and tourism impacts, influences and challenges. Procedia-Social and Behavioral Sciences, 19, 308- 316.

Hoornweg, D., & Pope, K. (2014). Socioeconomic Pathways and Regional Distribution of the World's 101 Largest Cities. Working Paper. Toronto: Global Cities Institute.

Kitchin, R. (2014). The real-time city? Big data and smart urbanism. GeoJournal, 79(1), 1-14.

Luque-Ayala, A., McFarlane, C., & Marvin, S. (2016). Introduction. In S. Marvin, A. Luque-Ayala, & C. McFarlane (Eds.), Smart urbanism: Utopian vision or false dawn? (pp. 1-15). New York: Routledge.

Meijer, A., & Thaens, M. (2018). Urban technological innovation: Developing and testing a sociotechnical framework for studying smart city projects. Urban Affairs Review, 54(2), 363-387.

Odendaal, N. (2006). Towards the Digital City in South Africa: Issues and Constraints. Journal of Urban Technology, 13(3), 29-48.

Prisecaru, P. (2016). Challenges of the fourth industrial revolution. Knowledge Horizons. Economics, 8(1), 57.

Research ICT Africa. (2015). Western Cape Digital Readiness Assessment. Western Cape Government, Department of Economic Development and Tourism, https://www.westerncape.gov.za/assets/departments/economic-development-tourism/digital_readiness_full_report.pdf.

Schwab, K. (2016). The fourth industrial revolution: what it means, how to respond. Davos: World Economic Forum.

Slavova, M., & Okwechime, E. (2016). African smart cities strategies for Agenda 2063. Africa Journal of Management, 2(2), 210-229.

The National Digital Inclusion Alliance. (2019, July 2). Definitions. Retrieved from Digital Inclusion: https://www.digitalinclusion.org/definitions/

Townsend, A. (2013). Smart Cities: Big data, ivic ackers, and the quest for a new utopia. New York: WW Norton & Company.

Vu, K., & Hartley, K. (2017). Promoting smart cities in developing countries: Policy insights from Vietnam. Telecommunications Policy, 1-15.

Willis, K., & Aurigi, A. (2018). Digital and Smart Cities. London: Routledge.

Wilson, E. J. (2006). The information revolution and developing countries. Cambridge, MA: Massachusetts Institute of Technology Press.