

Africa is ready to leapfrog
the competition
Through Smart Cities
Technology



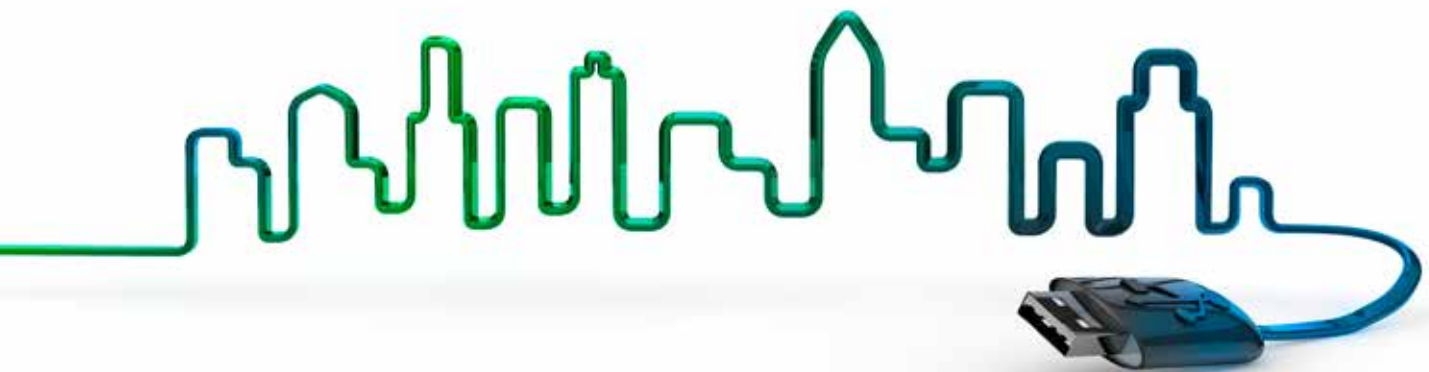
Introduction

Over the past decade large multinational Information Technology (IT) companies have begun predicting Africa to be “the next big market” due to the emergence of many rapidly growing economies.

All Cities are unique from their geographic layout to their architecture. They do however have common objectives such as the safety and security of their citizenry and the provision of services in the form of utilities and transportation networks. They also face common challenges while attempting to remain competitive in securing sufficient resources to maintain and grow the city. African cities have particular challenges stemming from years of hostilities and neglect of infrastructure. Rapid urban migration of the population is placing demands on existing infrastructure and transportation networks which are beyond their original design.

Over the past decade large multinational Information Technology (IT) companies have begun predicting Africa to be “the next big market” due to the emergence of many rapidly growing economies. As such it is a fair statement to make that many African cities are at the cross road of velocious development in one shape or another, providing the unique opportunity for cities to innovate and lead a new generation of thinking whilst demonstrating tangible benefits to their citizens and to the world.

When compared to mature cities like London and New York, African cities can currently be considered to be behind the ‘competitive’ curve. However this is not a pre-destined outcome as African cities can, through the successful adoption of the ideology and technology underpinning the Smart Cities concept, become globally competitive. It is through the adoption of advanced technologies and lessons learned from mature cities that the anticipated growth need not be one step at a time, but rather exponentially in functional, economic and social aspects. This paper reviews the Smart City concept and focuses on the contemporary African drivers enabling her cities to leap frog the competition into 2025 and beyond.



The establishment of a Smart City is not a one stop process: it is a journey.

What is a Smart City?



Different cities have different needs and these needs present themselves at different occasions.

There has been a lot of media attention around the concept of a Smart City. Broadly speaking, a city can be defined as 'smart' when investments in **human and social capital** and traditional (transport) and modern (ICT) **communication infrastructure** fuel **sustainable economic development** and a **high quality of life**, with a **wise management of natural resources**. Stated differently, the ultimate goal of a Smart City is transformational: to achieve enhanced quality of life for citizens and deliver tangible benefits at national, provincial and municipal levels while leveraging our natural resources judiciously.

Where does a city start?

The establishment of a Smart City is not a one stop process: it is a journey. This journey is completely dependent on the maturity status of each individual city and the material pain points being experienced in that city. Different cities have different needs and these needs present themselves at different occasions. However, Cities can be classified into three main types:

- **The Legacy City:** A Legacy City is typically characterised by a large established city with aging infrastructure. The population is stable and is sustained by immigration. The motivators and challenges driving the adoption of a Smart City typically centres around the constant funding, infrastructural upgrades and the maintenance of high levels of social infrastructure and citizen welfare.
- **The New City:** Mostly found in emerging territories like Asia and the Middle East. The challenges and drivers for change in these kinds of cities would be the improvement of the life cycle of procurement of a city. The focus would typically centre on the funding structure, regulatory control, design, construction and operations.
- **The Transitioning City:** Transitioning Cities are typically found in growth territories where you see large established entities undergoing rapid urbanisation and population expansion. These are predominantly found in geographies like South Asia and Africa (South Africa). The key drivers and challenges for these kinds of cities are the implementation and provisioning of infrastructure as well as the strategic planning and associated funding thereof.

What makes up a Smart City?

The five primary layers or dimensions within a Smart City.

Infrastructure

Smart cities consist of both hard infrastructure like houses and roads and soft infrastructure like governance, leadership and innovation. The hard infrastructure needs to be physically present. Without roads and transportation networks, it would be impossible to provide alternative transportation options to citizens as a means of reducing traffic congestion. Similarly the soft infrastructure needs to be strategically present. The Leadership Model adopted needs to consist of two key components:

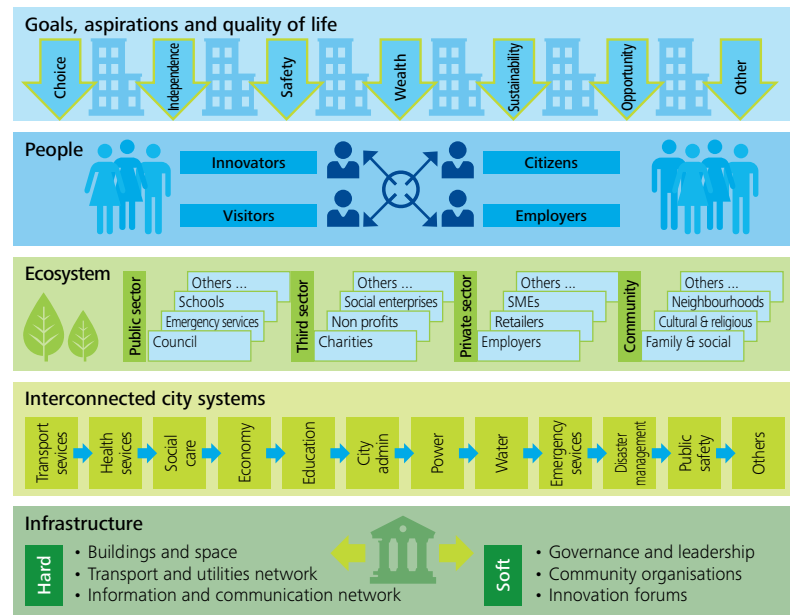
- i. A strong political mandate and a will to enhance service delivery; and
- ii. An unambiguous vision of the role of technology fulfilled across the various governmental departments;

Interconnected

City Systems are key: Inter-departmental collaboration is a base requirement to ensure a consistent and aligned vision of the various city departments, but also to maximise the data (intelligence) being derived from their respective data resources.

- The Strategic representation of multi-faceted and multi-disciplinary relationships within the **ecosystem** need to be recognised and respected. City governments are no longer the key drivers but merely a stakeholder in the larger ecosystem that is the city.
- The key stakeholders in the city are its **citizens**. Equal opportunity needs to be afforded to all thus allowing innovation to transpire in a healthy and motivated environment. The risk marginalising those less fortunate and thus increasing the already prevalent divide needs to be monitored carefully and safeguarded against.
- The **goals, aspirations and quality of life** are the key drivers of all Smart Cities. Whether the point of departure is safety and security, sustainability, wealth creation or freedom of choice. These visions need to be translated into clear and tangible strategies.

The Dimensions of a Smart City



The key stakeholders in the city are its citizens.

According to a study performed in October 2013 by the United Kingdom Department for Business Innovation & Skills¹, six cities were assessed as to how they were working towards delivering new digital services, or 'Smart Services' to their citizens. Interestingly that while all of the cities faced different challenges and drivers from the outset, there were an additional three themes that presented themselves.

- All inclusive **risk management** structures and mechanisms to **support pioneering innovation**;
- Procurement procedures being reviewed to support smaller local companies thus encouraging **local business growth**; and
- **Data Analytics** is integral in enhanced service delivery.

The six cities assessed are: Chicago; Rio de Janeiro; Stockholm; Boston; Barcelona; and Hong Kong.

African advantages

One could argue that the biggest driver launching the African continent into the twenty first century is the rise of the African middle class.



Taking the previous Smart City themes into consideration, we can now consider why African cities are advantageously positioned to start adopting Smart City technologies thus gaining a competitive edge into the mid twenty first century.

1. Limited legacy drawbacks

African cities' advantage for technological adoption far surpasses their Eastern and Western counterparts as many of the cities don't suffer from crippling costs associated with the maintenance of legacy infrastructure and systems. Cities have the opportunity to start with the latest technology available thereby immediately thrusting them as competitors into the global market place. Countries like Ethiopia, Libya and South Sudan don't have substantial telecommunication cable installations and thus wouldn't need to consider the upgrade path from analogue to ADSL, they can immediately look to move forward with a pure implementation of the latest 5G/ LTE network. Additionally they wouldn't have to worry about the cost and resource provisioning surrounding patching and upgrading of sections of existing but outdated network components. Naturally, this network facility will immediately impact local businesses that hadn't invested in costly IT infrastructures and datacentres that would otherwise now be running on potentially outdated servers. It is through the provision of advanced networking facilities that businesses can almost immediately port their services through provisioned cloud infrastructure, reaching a global audience with very little overhead to consider, and thereby start positioning themselves as powerful competitors in geographies never previously considered.

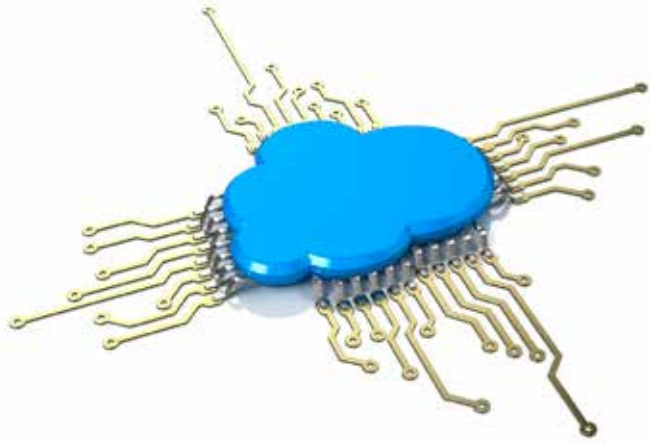
2. Youthful consumer population

One could argue that the biggest driver launching the African continent into the twenty first century is the rise of the African middle class. Africans are also aspirational, with African consumers wanting the same things as other consumers across the world: choice of food and housing; entertainment and interconnectivity; and access to the latest fashion trends. According to the African Development Bank Chief Economist Mthuli Ncube "it's the middle class that drive demand in an economy," as it is the middle class who have the greatest disposable income.² This, coupled with the fact that Africa has a disproportionately young population with 62% of the population under 25 years of age, makes for an interesting consideration as to the quantum of tomorrow's consumer market. With the European Union predicting that, "by 2025 more than 20% of Europeans will be 65 or over, with a particular rapid increase in numbers of over- 80s". It is hardly a surprise that mature businesses are casting more than an interested eye over the continent as a youthful population provides a secured consumer base for many decades to come.³

3. Urbanisation

As African cities continue to rapidly grow, the trend of urbanisation increases. Predictions of a global super-urbanisation move with 70% of the world's population being urbanised by 2050 includes the perspective that in the next 30 years, roughly 50% of Africa's population will be living in cities.⁴ With a young population anxious to better their living conditions, consolidated into the condensed geographical space of a city, appropriately enabled and empowered, can result in a powerhouse of innovation. An example of where this has been realised is the Nairobi Innovation Hub in Kenya. An environment was built and filled with some of the brightest minds in the country with the sole focus of encouraging innovative behaviour.⁵ The concept was so successful that it was replicated in other cities.

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The past five years have seen Africa experience the fastest telecoms growth worldwide.

4. Entrepreneurial Culture

Anyone who has travelled to Africa will notice her peoples' 'Can Do' attitude. Africans operate within an environment where anything and everything is possible. This, from the homeless person standing at the motorway intersection accepting rubbish from passing traffic for a small donation to the street-side vendor (hawker) who sets up a makeshift hair salon in the shade of a leafy tree, with nothing but a battery powered electric shaver and a cardboard box on which to sit. If there is an opportunity to generate business, the opportunity is generally welcomed with both hands. This 'Can Do' approach has resulted in African businesses being recognised globally for innovations made within industry. An example of this is the BAI-Finacle Global Banking Innovation Awards of 2012 and 2013 where two major African Banks were recognised for their innovative approach and advancement of retail banking, specifically, *Most Innovative Bank of the Year Award* was awarded to First National Bank, a Division of FirstRand Limited in 2012 and Standard Bank of South Africa earned the Innovation in Societal and Community Impact Award in 2013.⁶

5. Connectivity

Traditionally connectivity has been poor to non-existent to most countries within Africa. However with the advent of the mobile telecommunication industry, the impossible has become achievable and people are now connected through the use of mobile telephony. The past five years have seen Africa experience the fastest telecoms growth worldwide. The African mobile subscriber growth remains the fastest in the world, witnessing massive growth over the past decade. On average mobile subscription penetration has reached 72% across Africa with varying country penetration rates and is expected to continue growing until 2017 at which point Africa will have an estimated subscription penetration value of 97%.⁷

6. Overarching governmental leadership strategically positioning ICT as an enabler

Statistical data shows correlations between African countries with very low internet access and low levels of health, education, and income suggesting a connection between socio-economic development and digital/mobile phone usage. A Deloitte study found that 10% increase in mobile phone penetration is linked to an increase in a middle/low income country GDP of 1.2%. This follows from the ensuing economic activity that people engage in as a result of being "connected". As such internet access can be seen as both an indicator of socio-economic well-being as well as well as a predictor of participation in the mainstream economy. ICT as access is increasingly being seen as a very necessary tool for development.⁸

This correlation is being recognised by prominent African leaders and they are calling on their countries public sector to take action. An example is that of Trevor Manuel (*South African Minister in the Presidency*) who openly spoke out at South Africa's GovTechnology Conference in November 2013 stating that "... the (SA) constitution doesn't give us an option: it says we must improve the quality of life of each person and free the potential of each person. It doesn't say we can leave people behind. We recognise that IT, the great enabler, can help us release the potential of each person. We can push the boundaries of enablement through IT." (*Business IT Africa*, page 26).⁹

Summary

African cities are well positioned to leapfrog into the mid-21st century.

Due to increased access to connectivity and the associated predicted urbanization, African cities are going to have to start focusing on what the city of tomorrow will look like. African cities are well positioned to leapfrog into the mid-21st century. Without the successful adoption and appropriate selection of technology, African cities will indeed be left behind as more and more Africans look for brighter futures on other continents.

So if Africa is being referred to as “the next big market” by multinational IT companies, and it can immediately enhance the quality of life for the citizen, the private sector and the public sector alike, the question that begs an answer is why isn't it happening faster?

Contact



Dave Kennedy
Managing Director, Risk Advisory Africa
Tel: +27 11 806 5340
Email: dkennedy@deloitte.co.za



Navin Sing
Director, Risk Advisory, Forensic
Tel: +27 (0)31 560 7307
Email: navising@deloitte.co.za



Peter Gross
Senior Manager, Risk Advisory
Tel: +27 21 427 5706
Email: pgross@deloitte.co.za



Nazeer Essop
Head of Public Sector, Deloitte South Africa
Tel: +27 12 482 0268
Email: nessop@deloitte.co.za

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