

Is SA smart-city ready?

 By [Cindy Peters](#)

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With the global smart cities market [projected to reach \\$1.56tn by 2020](#), South Africa still has much to do in terms of meeting the necessary infrastructure and connectivity requirements to smarten up our cities. We interviewed Riaan Graham, sales director at Ruckus Wireless sub-Saharan Africa, on smart city design and development in South Africa, the possible benefits for businesses, and lessons we can learn from countries like Kenya.



Riaan Graham, sales director, Ruckus Wireless sub-Saharan Africa

At what point does a city become a smart city? How would you define a smart city?

A city becomes a smart city when its ecosystem is technology rich, and the technology is leveraged to interconnect different governmental departments to create a single infrastructure that provides services in a productive and efficient manner.

A smart city can be defined as a vision to integrate multiple ICT and Internet of Things (IoT) solutions to manage the assets of a city. Of course, this extends beyond just dropping in technology and hoping for the best. A true smart city is one that is focused on better service delivery, improved municipal services, infrastructure enhancements, and utilising real-time monitoring systems for the betterment of all citizens, to name just a few things.

Where are South Africa's major cities in terms of the process of becoming smart cities?

A number of South Africa's major cities are undergoing phases of re-urbanisation, where we are also seeing new town or city centres coming up – like Cosmo City near Kaya Sands, Johannesburg, for example. The pace of this implementation process varies between city centres, and is largely being driven by demand from the growing populous in these cities – and resultantly the growing stress on available infrastructures, service delivery and the effects of climate change – that are forcing local governments and town planners to think more innovatively and engage in steps to transform these centres into

smarter cities.

Most of the major cities in South Africa have the necessary basic infrastructures needed to move towards a smarter model, however, available capacity and access remain a challenge in under-developed nodes. What we need to realise is that infrastructure and connectivity lie at the heart of smart cities where connectivity allows for effective data collection to ensure positive growth within the cities – tailor made to fit the needs of the people and as well as addressing unique challenges they might be faced with.

What are some of the opportunities that become available in a smart city?

To put this into context, when government departments work as a unit and break away from seeing their functions separately, but rather as one, steps can be taken to improve services provided not only on a consistent basis, but also ensuring better management of sudden natural crises, such as flooding where emergency personnel can be dispatched quickly to save lives.

Another good example of the capabilities with smarter technology would be if traffic lights are fitted with smart sensors and cameras will be able to pick up any incident taking place at an intersection, e.g. a hijacking, robbery or a collision, through efficient and high speed connectivity the sensors will pick up the sound and cameras can be directed to the scene – which can also bode significant gains for effective policing and a safer environment. Further to this, the same technology could be used to measure traffic flows through each intersection in real-time and communicate with the system to recalculate the timing of traffic lights to create better traffic flow. This can significantly reduce traffic congestion and commuters will be able to plan out their routes properly and get to the office on time and less stressed out, which can also influence their productivity.

Another possibility where this technology could influence a positive change is to collect data that will inform the department which roads or intersections aren't experiencing high volumes of traffic. In such instances, the options available will be either switching off the traffic light or dimming the lights for that period of inactivity and once the sensors pick up movement the lights will work as normal. Functions like these could potentially save the council a substantial amount of money on electricity which can be injected back into already existing infrastructure such as free connectivity for commuters to access the network and get information on water issues and traffic in and around their areas etc.

How do you design a smart city? What are the components, and how do they need to come together?

There are six key components to consider when designing smart cities including:

- **Smart energy:** the energy delivered has to be managed through a smart grid, which will give off data that indicates where energy is wasted and plans can be put in place to better manage it.
- **Smart transport:** this will be effective with traffic monitoring, commuters can be notified through an app or software linked to their cars can notify them of traffic within a usual route and an alternative route can be suggested. In the

case of public transport, using buses, taxis and train to commute to and from work. Software can be used to alert the depot if more transport is needed at a particular station using human data collected indicating the number of people at a station in a particular time.

- **Smart data:** analysing raw data from the metro and adapting it to improve the lives of residents. Take residents in Johannesburg that commute to and from work using buses, for instance, every Rea Vaya bus station can be fitted with software that allows commuters to connect to a bus portal and immediately be notified to how long their bus will take to arrive at the station and what the holdup is. This allows for the commuter to decide whether to wait for the bus or get some errands done in the meantime.
- **Smart infrastructure:** ensuring that all new and future buildings are built to function within a smart city. This means ensuring that all buildings are fitted with smart solutions that will help in maintaining and drive additional revenue. In the case of existing infrastructure, audits need to take place to ensure that the smart solutions are fitted in as we do not have the luxury of starting from scratch. The smart solutions fitted in new and old infrastructure will operate via connectivity talking to water, light, road, etc.
- **Smart mobility:** this is how data travels across the network. IoT allows for connectivity between cities and people through their mobile devices. This is where connectivity comes into play to help transform services. Through mobile apps, people will be able to find smart parking using signals, find restaurants etc. The combination of mobility and IoT holds an immense amount of potential to improve customer services and increases productivity. By 2020 there is a potential to connect 50-billion people, processes, data and things.
- **IoT:** with connected devices and smart devices working together, government will have better access to information and provide services through technology to manage residents' needs.

Where does the money come from when developing smart cities in a country like South Africa - how do we justify the infrastructural costs involved?

Currently, the South African government sets aside budgets for each department for a year, where each department sets up their own plan on how to utilise the money.

As such, in order to truly make smart cities a reality, a mind shift has to take place from government level and embracing IoT-led initiatives where more business units become involved in budget discussions allowing IT to have access to funds that can help toward the change of smart cities. Each government department could allocate a portion of their budgets to contribute to the development of systems that will benefit the country as a whole, rather than focusing on smaller projects.

Although this is only a cost solution, South Africa still has a long way to go with a lot of underdeveloped infrastructure and a shortage of sufficiently qualified and skilled people in IT – more work is still ahead, highlighting that the problem is not only financial. To overcome these challenges, resources must be injected at grassroots level, changing the curriculum to align it with the world we will be living in – not only today, but well into the future.

How have other countries in Africa fared in smart city development - what are some of the lessons that South Africa can learn from countries like Kenya?

For smart cities to work, you need commitment from the public and private sector. Kenya is showing the rest of the continent that through proactive legislation and support of technologies designed to enhance the lives of all people, incredible things can happen. Given how quickly IoT has grown over the past few years, more countries will follow suit and use this as a starting point for smart city initiatives

For South Africa, the first step must be for government to sit down and talk about what smart cities will mean for the country and everyone living in it. Secondly, it must identify ways in which the different government departments can work together to make businesses operate in a better environment meaning productivity and efficiency in the work place will be improved. Take for example the Kenyan economy, it offers better living standards for everyone living and working in Konza, the government is showing its commitment to a more liberal and dynamic way of embracing technology. This also builds on other innovations such as M-Pesa which launched in the country in 2007. By the end of 2015, there were already 33-million users of the mobile money system in Kenya alone leaving many analysts of the opinion that the country could

become the first in the world to go completely cashless.

What would smart city development mean for businesses within major SA cities - what are some of the advantages?

Smart city development means that businesses must look at innovative ways to drive growth and awareness through connectivity and the potential advantages to a business operating in a smart city may include:

- Increased business productivity and efficiency;
- Employees will be a lot less stressed – less commute due to better managed traffic;
- Tangible financial results for businesses tying back to productivity and employees with a lot more energy to do more;
- Small business can leverage connectivity to grow and personalise offerings through mobile devices;
- Drive socioeconomic benefits; and
- Business maintenance costs are significantly cut down with smart solutions providing report of wasting within a business.

Cyber security will become a major issue in smart cities, how do we ensure safe and secure smart cities in SA?

Security will always be a concern for technology, but as long as industry standards and global best practices are adhered to, the connection should be secure. As you connect and integrate businesses, people and devices, it becomes more of a risk. For example hackers could access an app that provided parking tickets at a fee and they could manipulate it to create fake tickets at no cost. It is important to ensure that security measures are taken from connectivity points and back-end solutions, through to general hotspot access and of course educating the community on cyber safety is critical.

Riaan Graham is the sales director at Ruckus Wireless sub-Sahara Africa, a position he assumed in 2015. He has a strong focus on broadband wireless access technologies as his field of speciality since 1999. He has worked in the telecommunications field in Africa for 17 years with in-depth knowledge of the MNO and telco markets in East, West and Southern Africa. He studied at Pretoria Technikon where he obtained his qualification in industrial engineering.

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