

Smart cities for Africa

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The convergence of infrastructure, analytics and communications to enable smart city development has no greater potential than in Africa, where a focus on resource efficiency and productivity will guide the continent's current and future growth.



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Africa's cities are well-positioned to rapidly transform through the greater use of advanced technology and data. Smart applications, revolutionising consumer and utility services are enabling service providers to capture data and apply powerful analytics programmes.

These tools enable cities to improve the access, reliability and resilience of its resources and spaces, from improved traffic and transport management to increasingly efficient provision of water, power and other key services.

Realising this long-term goal requires innovative thinking, planning, leadership and investment – a mix that has not yet been achieved in many developed countries.

Still, the growing body of research focused on the smart city and smart utility sectors can inform the development of African cities now and in the future.

To infuse smart city and utility thinking into the planning process, a number of key items need to be considered in the African context:

- Advancing high speed telecommunications networks and infrastructure.
- The real assimilation of smart-orientated thinking into policy, master planning and delivery.
- The need for Africa-centric baseline data in key markets.
- The realisation of pilot sites that could guide the establishment of smart cities and the uptake of smart utility.

Opportunities are evident in South Africa – Johannesburg and Cape Town in particular – and Nairobi, Kenya, as well as other hubs such as Nigeria, Egypt, Rwanda and Ghana where technology advances are increasingly able to support smart innovation districts.

Smart in Africa

But why is the smart turn important for Africa? The ‘smart’ concept and practice is firmly embedded in many developed countries through a number of innovative approaches to managing cities.

Its growing prominence is pushing business and government to re-think solutions to urban problems and improve living standards through the deployment of technology and high-quality physical infrastructure. Increasingly, the convergence of communications and analytics will help utilities run more efficiently and support the creation smart urban spaces offering greater access to Wi-Fi and the high-speed broadband services that support greater knowledge sector development.

In Africa major infrastructure projects to generate and manage water and power supply are underway. In parallel, African cities are expanding rapidly, placing added pressure on both planning and infrastructure functionality.

The African Development Bank, in *Tracking Africa's Progress in Figures*, notes that between 1960 and 2011 Africa's urban population rose from 19% to 39%. It projects that by 2040, 50% of Africans will be urbanised and that by 2030 urban populations will increase by an additional 350 million people.

In this future, Africans, and a rising middle class among them, are going to demand improved services and world class infrastructure that makes their commute, work, consumption of resources and relationships with utility service providers seamless.

The reasons for developing cities of the future in Africa using smart city and utility technology are compelling. However, uptake, know-how, cost and other associated challenges – such as the digital divide, privacy and security, and the threat of technical glitches and failure – are as much of a challenge in Africa as they are in other parts of the world.

Growing connectivity

With internet penetration in Africa 17% below the world average of 28.6%, the first achievement would be to ensure broader access to true broadband service. Expansion of 3G, 4G and in the near future 5G wireless services, will pave the way for smarter services.

Connectivity is the critical base infrastructure needed to advance a smart Africa, and there is no time like the present. Terrestrial fibre optic cable projects in Africa are gaining momentum. This is a first step in the journey to smart integrated infrastructure for the continent, which combines the utilitarian with the urban.

South Africa's National Development Plan has identified all the components of a smart city as key developmental points for creating a globally competitive location. Lead examples of cities committed to taking up the smart city challenge are Johannesburg and Cape Town, with Durban not far behind.

In South Africa's biggest urban centre, Johannesburg, the need for this approach is ever more obvious – transport, water, power usage and metering, and enhanced telecommunications and connectivity all require more efficient management.

Case studies

Establishing wi-fi for the entire Braamfontein node, high-speed broadband access for the area, upgraded CCTV cameras, systems that allow residents to feed any surplus energy back into the grid, and the introduction of smart metres for electricity that can be remotely controlled, all form part of the plan to turn Johannesburg into a smart city. In tandem, Johannesburg is set on implementing smart utilities in a phased approach, as part of its Growth and Development Strategy

for 2040.

The City of Cape Town launched the Smart Cape Project more than a decade ago, with the goal of ensuring that all residents have free access to basic information and communication technologies. The city says it will spend R185 million in 2015/16, with additional Western Cape Government funding of R11.8 million for broadband infrastructure, and R23.7 million for the Digital Inclusion Project (wi-fi). The city will establish 300 wi-fi access points by the end of 2016 to unlock the power of digital economy, infrastructure, government and inclusion.

These advances in South Africa are supported by the increased roll out of fibre optic infrastructure for high-speed broadband, the foundation of smart cities and utilities. Such infrastructure allows for the implementation of digital monitoring and advanced metering infrastructure to help South Africa – and other cities across Africa – monitor and detect water leaks and enable customers to manage their power consumption.

As with all developments, demands need to be balanced with the economic resources to fund these improvements - and change is not simple. It requires integrated thinking and implementation, political will and a tipping point where the public demands tomorrow's technology today.

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