Smarter thinking for smart cities

By Alan Mitchell, KPMG Cities Global Center of Excellence

Technology offers some incredible opportunities to revolutionize urban infrastructure. However, a smart city will only be considered successful if it enriches the lives of all its citizens.

Few outside of India may have noticed when the state of Maharashtra, home to Mumbai, recently pledged to install low-energy LED lighting along all its streets. These bulbs can cut electricity costs by as much as 80 percent as well as drastically reducing CO_2 emissions (a spinoff of reducing energy consumption).

Even fewer may have considered such a move to be an example of a 'smart city' investment, a term more often associated with shiny new, sustainable, high tech developments such as pneumatic waste collection or driverless vehicles.

Yet the Maharashtra initiative is a perfect example of smart thinking emerging in response to concerns over greenhouse gases, finite energy sources, and rapid urbanization that is pushing existing infrastructure to its breaking point. United Nations forecasts suggest that space will have to be found for a staggering 2.5 billion extra city dwellers by the middle of the century.[1]

Smart cities promise a bright future where all citizens can lead healthier, more fulfilling lives. According to industry coalition group the Smart Cities Council, a smart city is one that "…uses information and communications technology to enhance its livability, workability and sustainability."

Setting the pace

Smart thinking often involves collecting and 'crunching' data to inform key decisions. Smart meters measure electricity, gas and water usage, while traffic sensors report on road conditions and congestion. For a modest outlay, consumers can buy special gauges that tell them exactly how much energy is being consumed by different household appliances. In Rio de Janeiro, advanced weather monitoring data is used to predict precisely where flooding may occur following a storm, in order to alert residents and emergency services.

We may be unaware of some of the smart developments taking place under our streets. Intelligent waste water systems can sense higher levels of floodwater, and switch off certain channels automatically, preventing sewage contaminating lakes and rivers (South Bend, Indiana[2]).

> **"It's no use having a sophisticated waste water system if large parts of the population live in slums with no access to utilities."**

1. *World Urbanization Prospects,* United Nations, 2014.
2. *Smart Cities Council (see: http://smartcitiescouncil.com/article/how-smart-wastewater-management-saved-indiana-city-millions)*

The latest pneumatic waste systems carry every type of household and industrial waste through underground pipes to central collection points. In Qatar's Lusail City, one of the new smart cities currently under construction, 18 kilometers (km) of pipes will be able to collect 68 tonnes of waste daily, without the need for any trucks.[3] Sweden leads the world in efficient refuse disposal, sending just 0.7 percent of household waste to landfill, compared with 34 percent in Europe as a whole.[4]

Transport is another big beneficiary of smart technology. London's contactless payments facility for buses, trains and underground metro enables travelers to traverse the city smoothly without queuing for tickets, with an easy top-up facility. In many countries, users of public transit can find out when the next train or bus is due, via signs at stations or even on their smartphone apps. Parking lots now tell drivers where the vacant spaces are, while advanced traffic control systems will soon be able to sense congested sections of road, and change the timing of signals, to speed up the flow of vehicles in busy directions.

Smart cities can't thrive without ubiquitous connectivity, in the form of comprehensive, high-speed, fixed and wireless broadband accessible to all businesses, institutions and people across every type of device. Any new infrastructure investment, whether buildings, utilities or transport, must consider cutting edge use of technology, to reduce energy usage and increase safety, productivity and convenience.

It's not just about technology

Although a key enabler, technology alone will not make a city smart. A holistic, inclusive perspective is essential, to ensure that new ideas are centrally planned and benefit all residents and workers. It's no use having a sophisticated waste water system if large parts of the population live in slums with no access to basic services. And, even the cleverest road traffic solutions won't work without a significant investment in mass transit and cycle lanes. Getting the vision right for a smart city is a fundamental building block.

Stricter laws on energy efficiency, pollution and recycling may get results, but should be applied with prudence, to avoid stifling innovation and putting too much of a financial burden on the businesses that employ the city's people. IT security is a further worry, with large amounts of personal data entering into municipal and private databases, making them more vulnerable to cyber-attack. Cities need to strike a balance between control (regulation) and innovation where both can co-exist.

Given the complexity and the long timescales, strong, visionary leadership is required to push forward ideas and initiatives that won't always be universally popular. Any smart city blueprint should, therefore, allow for inevitable changes in administration. Finally, those responsible for planning must never forget that they are ultimately accountable to the citizens, whose needs and desires should shape policy and benefit in improved quality of life considerations in the long-term.

In summary, technology is an important ingredient to a smart city, but equal contributions of leadership, vision and balance between control and innovation will prove to be the right recipe for success.

Talking points

- Will a smart city improve the quality of life for all inhabitants, offering good education, healthcare, housing, transport and sanitation, low crime rates and clean air?
- Can the infrastructure of the city support a thriving economic base offering employment and entrepreneurial opportunities?
- Is the city built on sustainable foundations that provide future generations the same benefits as today?

3. *Exploring urban solutions through technology in Qatar,* Qatar Construction News, 28 May 2014.
4. Swedish waste management 2014, Avfall Sverige.

Contact us

Dane Wolfe
Marketing Manager
Global Infrastructure
KPMG International
T: +1 416 777 3740
E: dmwolfe@kpmg.ca

Pranya Yamin
Marketing Manager
Global Infrastructure
KPMG International
T: +1 416 777 8094
E: pyamin@kpmg.ca

kpmg.com
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