IBM Institute for Business Value

A vision of smarter cities

How cities can lead the way into a prosperous and sustainable future

Overview

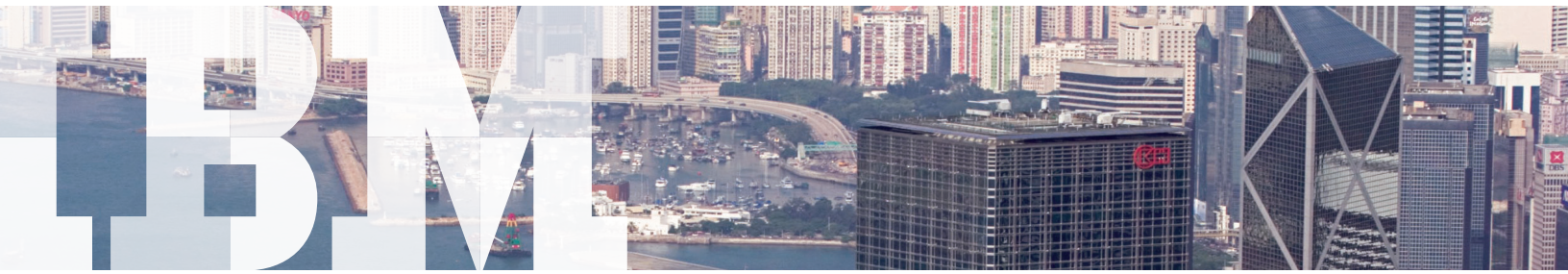
An urbanizing world means cities are gaining greater control over their development, economically and politically. Cities are also being empowered technologically, as the core systems on which they are based become instrumented and interconnected, enabling new levels of intelligence. In parallel, cities face a range of challenges and threats to their sustainability across all their core systems that they need to address holistically. To seize opportunities and build sustainable prosperity, cities need to become "smarter."

For the first time in human history, the majority of the world's people now live in cities.[1] Cities have a central role in this urbanized world of the twenty-first century. Economically, they are becoming the hubs of a globally integrated, services-based society. Politically, they are in the midst of a realignment of power – with greater influence, but also greater responsibility. Technological advances are underway that can provide cities with better understanding and control of their operations and development.

Today's challenges

Cities are based on a number of core systems related to their key functions: city services, citizens, business, transport, communication, water and energy. A city services system constitutes the operational activities and coordination of service delivery provided by the city authority, while the citizens system covers public safety, health and education. A city's business system refers to the environment that businesses face in terms of policy and regulation. Cities offer citizens and businesses the ability to move things around through their transport systems and to share ideas and information through their communication systems. Cities also offer two core utilities necessary for all economic and social activity – water and energy.

These systems are not discrete. Rather, they interconnect in a synergistic fashion and are, in effect, a "system of systems." Each element of this "system of systems" faces significant sustainability challenges and threats. For example, inefficient transportation systems continue to



drive up costs in cities. Water resources fall victim to leakage, theft and poor quality, and current energy systems are often insecure and inefficient.

Smart cities transform systems

"Smart" cities know how to transform their systems and optimize the use of largely finite resources. To help drive efficiency and increase effectiveness, they leverage technology to make systems instrumented, interconnected and intelligent:

- *Instrumentation*, or digitization, of a city's system means that the workings of that system are turned into data points and the system is made measurable.
- *Interconnection* means that different parts of a core system can be joined and "speak" to each other, turning data into information.
- *Intelligence* refers to the ability to use the information created, model patterns of behavior or likely outcomes and translate them into real knowledge, allowing informed actions.

Becoming "smart" is a journey…

As cities strive to overcome the substantial and interrelated challenges they face, it becomes clear that the status quo – business as usual – is no longer a viable option. Success requires a shift in thinking and a break from the past. As this will be a journey, not an overnight transformation, cities need to put in place a plan for transforming into a smarter city:

- ***Assemble the team:*** No city is an island. To deliver the goals a city has set, city administrations will need to work seamlessly across their own organizational boundaries and partner effectively with other levels of government, as well as with the private and non-profit sectors.[2]
- ***Think revolution, not evolution:*** Rising to the challenges and threats to sustainability requires a city to be more than just focused or efficient; it will require the next generation of city to emerge – one based on smarter systems. These systems are interconnected – people and objects can interact in entirely new ways. These systems are instrumented – the exact condition of the system's different parts can be measured. These systems are intelligent – cities can respond to changes quickly and accurately, and get better results by predicting and optimizing for future events.
- ***Don't forget the big picture:*** The interrelationships between the various systems mean that while cities obviously must prioritize, just "solving one" is not a viable long-term option. The challenges and threats to sustainability come from all angles and require a holistic strategy that addresses all factors and feedback mechanisms.

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Across all systems on which cities are based, they are facing significant challenges and threats to their sustainability. Cities must act now to seize the opportunities presented by smarter cities to deliver sustainable prosperity for their citizens. They must utilize their new power and embrace new technologies to transform their systems into smarter systems that optimize the use of finite resources.

How can IBM help?

- ***Business Consulting and Delivery Services:*** IBM helps clients in the public sector formulate, implement and operationalize citizen-centric programs, including business models, organizational structures and practices and performance models.
- ***Business Analytics and Optimization:*** IBM provides new intelligence services through deep, information-centric and mathematics-enabled business analytics capabilities.
- ***IBM Global Location Strategies – Smarter City Assessment Tool:*** This tool measures a city's performance for each city system, allows benchmarking of a city's overall capabilities against peer locations and best practice, and identifies where improvements can be made.

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Refereneces

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2 "Government 2020 and the perpetual collaboration mandate: Six worldwide drivers demand customized strategies." IBM Institute for Business Value. 2008. http:// www-03. ibm.com/industries/government/us/detail/landing/ G153005R79354P19. html?re=gihome67gov

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