

What Makes a 'Smart City'?

Examples from around the world

Dr. Miriam and Dr. Perry Lev-On

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Percentage of Total Population Living in Cities 1990-2050 (forecast)

- Experts predict that the world's urban population will almost double by 2050.
- As the planet becomes more urban, cities need to get smarter.
- Handling this large-scale urbanization necessitates finding new and smart ways to manage complexity, increase efficiency, reduce expenses and improve quality of life.

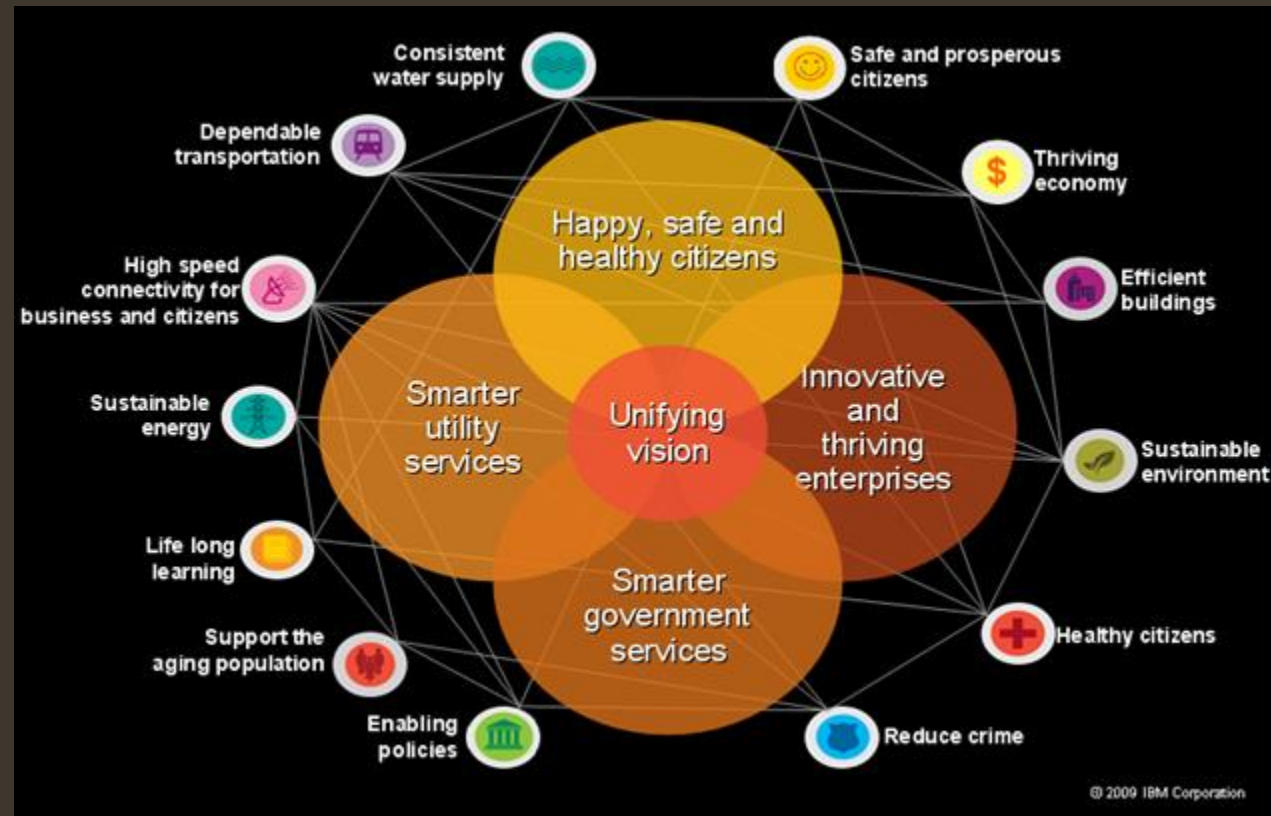
Year	Developed Countries	Developing Countries
1990	73%	35%
2020 Forecast	80%	51%
2050 Forecast	88%	67%

Source: IBM Institute for Business Value analysis of United Nations data

What is a 'Smart City'?

- A narrow view of a 'Smart City' sees it simply as a city that makes better use of Information and Communication Technology (ICT).
- A more inclusive view of a 'Smart City' indicates a broad, integrated approach to improving the efficiency of city operations, the quality of life for its citizens, and growing the local economy.
- Combining these two views defines what makes a 'Smart City':
“Investments in human and social capital and traditional and modern ICT infrastructures fuel sustainable economic development and a high quality of life, with a wise management of natural resources, through participatory action and engagement” (Caragliu et al. 2009).

A Different, Visual Representation of What Makes a 'Smart City'



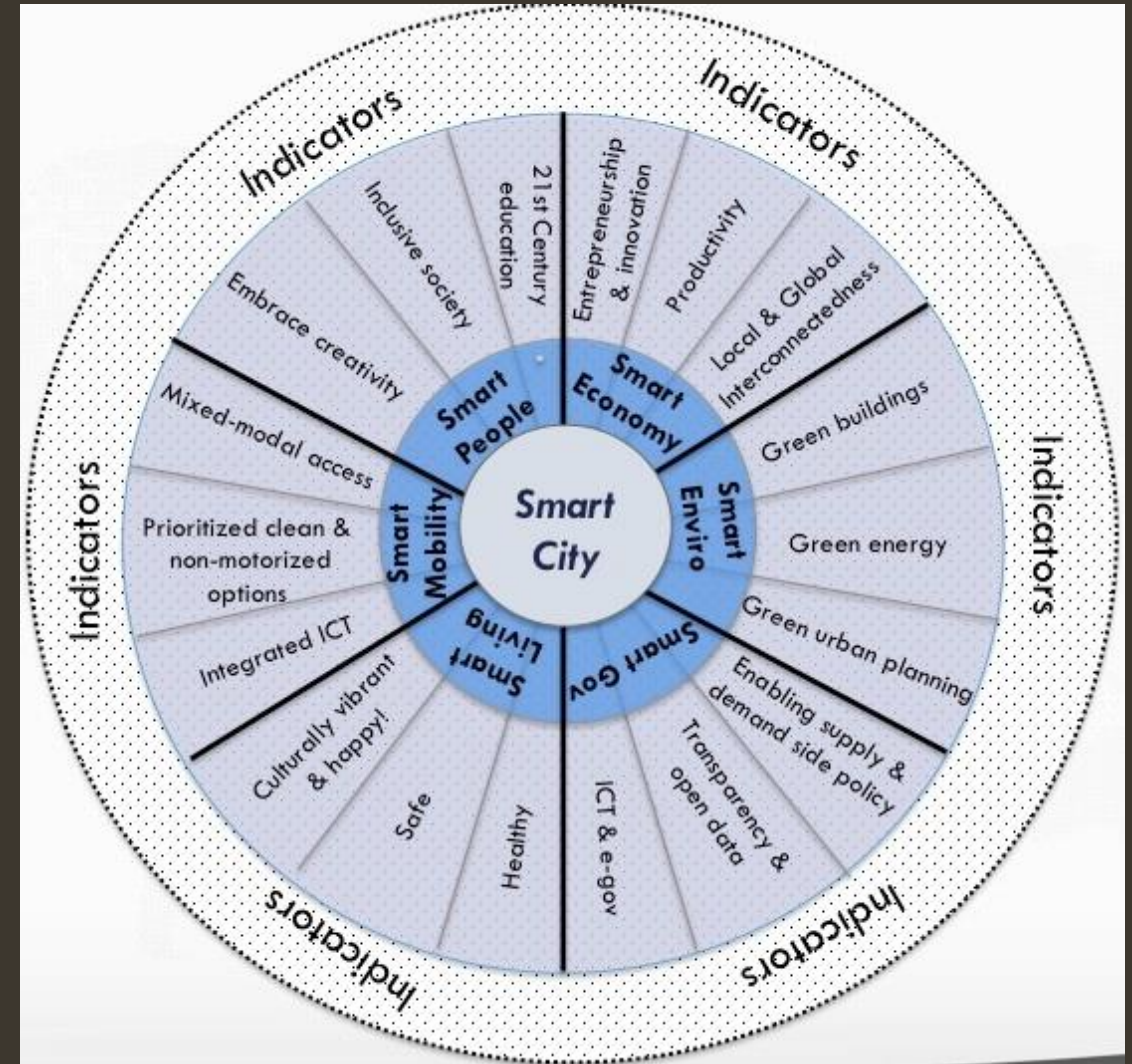
How to Develop and Implement a 'Smart City' Strategy

- **Create a vision for the city with citizen engagement:**
Utilize social media and digital technologies to spark citizen-led public engagement activities such as online discussion forums, public workshops at community centers etc. to set a clear goal for the city to become a “green city” by a future year, say 2020.
- **Develop baselines, set targets, and choose indicators:**
Each city has its own particular needs and challenges based on density, topography, existing infrastructure etc., and while they can learn from each other, cities must develop their own benchmarks and targets around areas of need and opportunity.
- **Go lean:**
Embrace lean startup principles. Once a city has established quantifiable goals and selected the indicators to measure their progress, it needs to snag some early wins while also building plans for longer-term actions.
- **Start with a 'pilot project':**
It makes sense for a city to start with an inexpensive demonstration project as a way of testing the feasibility of its planned program and get feedback from its citizens.
- **Have the city be a major investor in the technologies being built:**
Consider partnerships that, at least temporarily, utilize city owned land, facilities, equipment and data and absorb some of the costs for project implementation.

'Smart Cities Wheel'

Smart Cities are not one size fits all. Yet, all can benefit from using the 'Smart Cities Wheel', developed by Canadian urban and climate strategist Dr. Boyd Cohen, which allow a common language to develop amongst city citizens, city staff, city mayors, and the private sector.

Source: <http://www.fastcompany.com/user/boyd-cohen>)



The Top 10 'Smart Cities' Around the World

(Ranking done by crunching variables about innovation and sustainability by Dr. Boyd Cohen)

1. Vienna, Austria
2. Toronto, Canada
3. Paris, France
4. New York, USA
5. London, UK
6. Tokyo, Japan
7. Berlin, Germany
8. Copenhagen, Denmark
9. Hong Kong, China
10. Barcelona, Spain



Example # 1

Vienna, Austria

Vienna, ranked # 1 overall, placed in the top 10 in every category: innovation city (5), regional green city (4), quality of life (1) and digital governance (8). Vienna is establishing bold smart-city targets and tracking their progress to reach them with programs like the Smart Energy Vision 2050, Roadmap 2020 and others. Vienna planners are incorporating stakeholder consultations processes into building and executing carbon reduction, transportation and land-use planning changes in the hopes of making the city a major European player in smart-city technologies.



Example # 2

Toronto, Canada

The highest rated 'smart city' in North America. Toronto also scores pretty well across the board. Toronto is an active member of the Clinton 40 (C40) megacities, which seek to transition to the low-carbon economy. The private sector in Toronto is collaborating too, creating a 'Smart Commute Toronto' initiative in the hope of increasing transit efficiency in the metro area. Toronto also recently began using natural gas from landfills to power the city's garbage trucks



Example # 3

London, UK

London also scored relatively high across the board. London has been well recognized for some of its sustainability innovations (such as the still controversial ‘congestion tax’) and its robust transit system. The city will soon be home to Smart-Cities research center, housed at Imperial College, which will leverage transport, government, business, academic and consumer data in the hopes of making the city more efficient and innovative. Also, just recently has it been announced that London went into partnership with O2 to launch the largest free Wi-Fi network in Europe.



Example # 4

Tokyo, Japan

Tokyo is the first Asian city on this list, scoring well on the innovation (22) and digital city (15) categories. Last year the city announced plans to create a smart town in the suburbs. In partnership with Panasonic, Accenture, and Tokyo Gas (among others), the eco-burb will contain homes that integrate solar panels, storage batteries, and energy efficient appliances, all connected to a smart grid. Tokyo is also focused on promoting smart mobility solutions.



Example # 5

Copenhagen, Denmark

Copenhagen has been doing a lot right and was rated number one on the green scale in Europe by the Siemens ranking. Copenhagen is taking a real leadership role on sustainable innovation. The city has committed to carbon neutrality by 2025 and 40% of its citizens regularly commute by bicycle. It should also be noted that the city's mayor has recently articulated the role of cities as growth engines and the potential to stimulate the economy through cleantech innovation.



Example # 6

Hong Kong, China

Hong Kong scored quite well in key areas, including the digital governance ranking (3). However, its quality-of-life score (70) dropped the city to ninth in the ranking of 'smart cities'. Hong Kong is experimenting with RFID (Radio-frequency identification) in its airport, as well as throughout the agriculture supply chain. The city has also been a leader in the use and adoption of smart cards which are already being used by millions of residents for services like public transit, library access, building access, shopping, and car parking lots.



Example # 7

Singapore

Singapore, a small island city/nation of about 5 million inhabitants is a unique example of 'smart city' evolution. Vehicle ownership is discouraged via an auction/purchase system and massive taxes on vehicles. This is done to reduce traffic and costly road infrastructure. Singapore also implemented automated tolls which vary depending on the time of day to encourage off-peak travel. To encourage public transportation the city has a robust, reliable and popular metro system. Singapore has a world-class water management program consisting of rain water catchment, waste water recycling, and desalination. The government invests in ICT technology from security cameras to rolling out fiber networks to every neighborhood, to sensors in public housing buildings that sense earthquake tremors in real time and dispatch city engineers to the site.



Example # 8

Rio De Janeiro, Brazil

A virtual Rio is presented on a giant wall of screens displaying, in real time, views of subway stations, major intersections, sophisticated weather programs predicting rainfall rates across the city, the locations of car accidents, power failures and much, much more. This is part of the Operations Center of the City of Rio designed and developed by IBM's 'smarter cities' unit to integrate data from all city agencies under a single roof. Opened at the end of 2010 after a torrential summer storm created havoc in the city, the Rio operations center should become a model for real time city management and response to emergencies.

(Source: The New York Times, March 3, 2012)



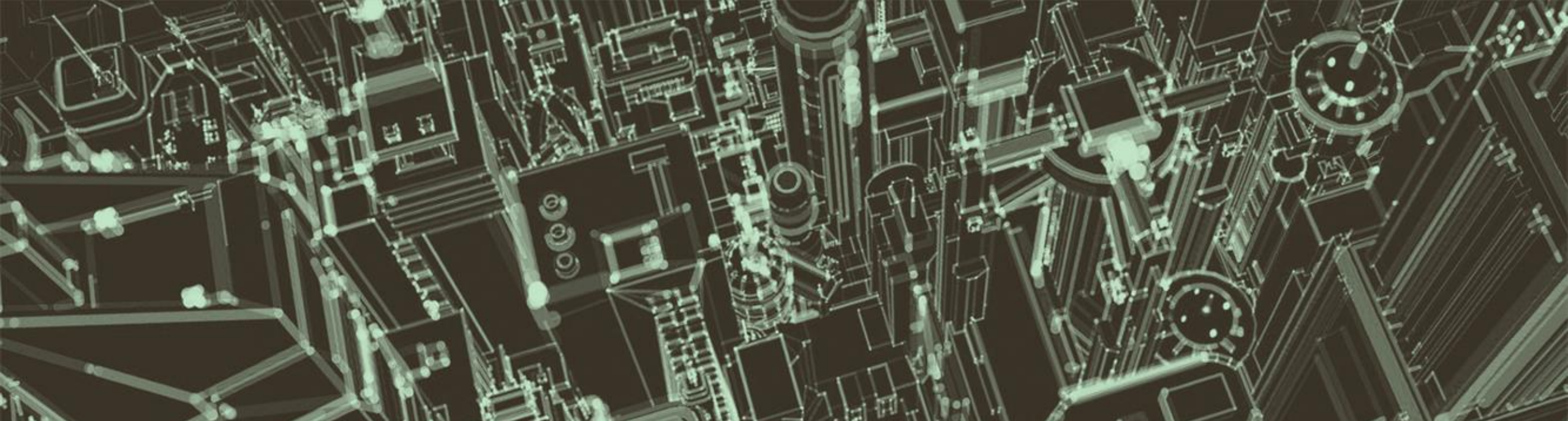
Something to Think About

Around the world hundreds if not thousands of cities are becoming or are planning to become 'smart cities' in which everything from the electricity grid to the sewer pipes to roads, buildings, street lights, cars and more will be connected to the "network" and all will be controlled by automated, 'smart' systems. This should make us pause and think about issues such as:

- Will we lose control of our surroundings?
- Will our lives be directed, manipulated and controlled by 'machines'?
- Who will be monitoring and controlling these systems?
- What if 'bad guys' get control of the systems?
- Are we creating capabilities that can be misused?

There is little doubt that cities have to get smarter – however – we must proceed with caution!





Thank you for your attention

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