The Human Side of Smart Cities

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A Smart City can mean different things to different people. It depends on what aspects of the city we are referring to. Broadly speaking, when considering how a city is "being smart", to a large extent, we can associated it with (a) having access to better information to make more informed decisions, (b) enabling cities to enhance the life of its citizens through improved delivery of public services, and (c) providing solutions to urban growth challenges.

Normally, a Smart City is expected to have an active set of criteria including, Smart Governance, Smart Infrastructure, Smart Energy, Smart Building, Smart Healthcare, and Smart Mobility, at the minimum.

Around the globe, smart city technology spending reached $80 billion in 2016, and is expected to grow to $135 billion, almost doubled by 2021, according to a report from the International Data Corporation (IDC).

In another white paper, in the following year, co-sponsored by the United Parcel Service and the Consumer Technology Association, it has been concluded that by 2050, 70 percent of the world's population will be living in cities, increasing the need to make urban areas more liveable. That same white paper noted that while smart city projects had increased by 38 percent between 2013 and 2016, most of those were in Asia, notably Japan, Singapore and Hong Kong.

Globally, the number of smart city projects have risen sharply over the past five years, and the value of that market is escalating too, naturally, at a compound annual growth rate of more than 20 percent. As a matter of fact, citizen involvement is a crucial factor, with the world that is getting smarter. We have smart cars, smart watches and smartphones. Smart cities use data and communications technology to improve quality of life for people and increase the efficiency of services in the city. **Smart cities don't just adopt new technology, they must make it work for people.**

Envisioning a society that promotes not only solutions for industrial growth and economic efficiency, but also addresses social issues as well as the comfortable and vital ways of life, will have to place greater emphasis on the human aspects of the smart city concept.

Technology must be harnessed to augment human potential and improve our quality of life. In some aspects, we must be able to narrow the capability divide to increase capacity as well.

Cities are built for people, and hence human factors must be considered in the smart city project planning process. A well-oiled efficient infrastructure will not be able to attain the expected level of ROI when the citizens are not ready for it, rendering such services irrelevant, or when the humans do not need it, hence adopting technology for the sake of technology.

There are several human factors that must be considered in developing the smart city, including population demographics, level of user maturity in adopting technology, living patterns and lifestyles, scientific education, and community cohesion and sustainability.

At the confluence of the CoVID-19 pandemic, planning for Smart Cities must pivot towards emphasizing more on the human factors. In a **Human Smart City**, people rather than technology are the true actors of the urban "smartness". The creation of a participatory innovation ecosystem in which citizens and communities interact with public authorities and knowledge developers is key. Decision making from the leadership should also lean towards the emphasis on anticipatory governance,

Below are some considerations to measure the quality index of a Human Smart City

- **Livability:** Cities that provide clean, healthy living conditions without pollution and congestion, with a digital infrastructure that makes city services instantly and conveniently available anytime, anywhere.

- **Workability:** Cities that provide the enabling infrastructure, such as energy, connectivity, computing, essential services, to compete globally for high-quality jobs.

- **Sustainability:** Cities that provide services without stealing from future generations.

- **Learnability:** Cities that necessitate equitable access to quality learning opportunities across a coordinated ecosystem from birth through careers, where citizens are future ready, not just career-ready or job-ready.

On the demand side, people are moving to cities to look for jobs and a better quality of life. More than half of the world's population now lives in urban areas and this is projected to rise to two thirds by the middle of this century. Rapid urbanization led to big problems like pollution, traffic and crime. These create the demand for smart cities solutions.

On the supply side, access to low cost devices and broadband has connected more than half of the world's population. By including sensors and cameras, and other edge devices, there are probably billions of devices sharing data - internet of things.

Connected communities and inexpensive storage paved the way for the revolution of viable platforms for us to work, learn, and play that get better as they connect to a larger network effect. Big data and cheap computing have also enabled the explosion of artificial intelligence (AI), code that learns, in software applications supporting every aspect of life. Add enabling tools like robotics, drones, and autonomous vehicles, and we can ready to create a human-centric society.

Technological progress will continue to accelerate resulting in very powerful hardware (machines), hybrid of virtual and physical worlds, human longevity (for some), and fine-tuned emotional and motivational controls. Technology will begin to emphasize qualities in human-machine interfaces bringing together a tighter sense of coexistence and collaboration.

The technology can identify patterns or anomalies within the data sets, subjected to AI bias, which then can be employed for tasks that allow machines to mimic what humans might consider being intelligent. Using the power of AI, smart city systems can create municipal systems and services that not only operate more efficiently but also provide significant benefits to residents and visitors. These benefits can come in many forms, including enhanced community eco-systems, cleaner environment, more orderly traffic flow and more efficient essential services.

Globally, this trend will create opportunities to improve the quality of life for everyone by leveraging appropriate technology, thereby alleviating the worsening problems. Performance indicators will be expected to shift from one of measuring efficiency and effectiveness to that of human experiences.

Reference Notes:

We can thus look to AI and other emerging technologies to introduce the human side of smart cities and society.

Here are 10 big tough issues, from industry watchers, heading towards cities fast:

1. ***Unemployment.*** *We may be near "full employment now" but it doesn't feel that way. "Workers who have steadily lost access to the economy as digital processes replace them have a sense of things falling apart, and a quiet anger about immigration, inequality, and arrogant elites," said Brian Arthur, an external professor at the Santa Fe Institute. Things get worse from here. Automation will shrink the middle of the jobs market. New jobs will be created but that is even harder to predict than displacement which will vary by sector and geography.*

2. ***Income inequality.*** *If you think people are ticked about income inequality last year, just wait. The folks that develop, finance, and own the robots are winning in the automation economy. Income inequality will accelerate and, combined with job dislocation, require broader income protection.*

3. ***Privacy.*** *There will be 50 billion devices connected by 2020 including a billion cameras–all feeding data to artificial intelligence platforms. Perhaps you've noticed the marked improvement in facial recognition on Facebook this year. Police in Shenzhen are already ticketing jaywalkers using facial recognition. We are approaching radical transparency where every search, every move, every test informs a merchant, authority, or insurer. Want to preserve any privacy? That will take some new policies.*

4. ***Algorithmic bias.*** *AI gets smarter the more data you feed it. But it quickly learns our biases and those embedded in our society. For example, cameras missed the mark on racial sensitivity and software used to predict future criminals showed bias against black people. Increasingly, AI determines who gets a loan, who is insured, and who gets hired. Bias prevention will require creativity and diligence.*

5. ***Access.*** *The most powerful tools the world has ever known have been created–and they are getting smarter every day. But who will have access to AI tools? Google open sources TensorFlow and last month Microsoft open sourced some tools but both require technical sophistication to use. OpenAI is a non-profit AI research company created by Elon Musk, Sam Altman and others to develop open source AI beneficial to humanity. All good news, but access to tools and the chops to use them will be an endless challenge.*

6. ***Machine ethics.*** *John Giannandrea AI chief at Google is concerned that bias is being built-in to many of the machine-learning algorithms by which the robot makes decisions, "The real safety question, if you want to call it that, is that if we give these systems biased data, and they will be biased." Take autonomous vehicle (AV) policies as an example. AVs are on the road today and municipalities are scrambling to figure out if and how to regulate them. They surface moral dilemmas (e.g., kill the driver or the pedestrians?) and allow debate, but do we want 10,000 municipalities trying to figure this out on their own and building a patchwork of unique laws?*

7. ***Weaponization.*** *Former President Obama kicked drone strikes into high gear–an opening salvo in modern mechanized warfare. Autonomous killer robots aren't far behind the drones–and a global AI-powered arms race is inevitable. While the US walks away from global trade and climate treaties, do you see a new Geneva Convention for robo-war?*

8. ***Humanity.*** *How do machines affect our behavior and interaction? AI bots are becoming better and better at modelling human conversation and relationships. This paired with better calibration and gamification are making video and mobile games more addictive. Will tech addiction be next addiction wave after opioids? If not an addiction crisis, will AI simply build alienation and resentment, will it threaten human dignity? The answers will be a mixture of practice and policy.*

9. ***Genome editing.*** *Machines are learning to recognize tumors and edit genomes. This is good news if you think cancer sucks but it raises a bunch of tough questions about who can edit genes for what purpose. And which of the soon to be 8 billion people on earth will have access to precision medicine?*

10. ***Bad AI.*** *Elon Musk thinks AI is more worrisome than North Korea. His start-up Neuralink is building a brain interface so that we're smart enough to keep up with super AI–what Nick Bostrom thinks may be the last invention humans ever need to make.*