



URBAN TRANSFORMATION

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The Smart City Dialectic: Challenging Assumptions of Inclusivity



Proponents of smart urbanism often assume a seamless convergence of physical and digital realms for empowering citizenry to actively engage with the intricacies of city-living and governing.

Image: Getty Images

With the advent of data and technology-driven initiatives, many cities across the globe have embarked on projects capitalising on the power of technology to improve urban living conditions and overcome existing limitations. The "smart city" strategy is neither confined to top tier cities nor to cities in the developed world, as the Association of Southeast Asian Nations (ASEAN) Smart Cities Network exemplifies.



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A city's "smartness" is indexed to its ability to effectively utilise information and communication technologies to plan, manage and respond to feedback loops provided by various data streams and trends. Thus, smart technologies are often broadly positioned as solutions to a wide spectrum of urban maladies. They are harnessed to resolve traffic congestion and pollution, improve logistical efficiency, boost productivity and economic competitiveness, promote more equitable access to services, empower citizens, encourage more transparent and participatory forms of governance, realise more sustainable environmental

practices, and more. In the last two decades in particular, the vision of inclusive and human-centred smart cities has gained momentum.

A technologically sophisticated urban metropolis premised on "smartness" is often presented as a utopia of sorts, with sustainable and socially inclusive agendas attuned to the disparate and evolving needs of a city's environment and population. How realistically achievable is such a vision?

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The Premise of Smart Urbanism—Ideals and Aspirations

This premise of smart urbanism, as the panacea for challenges arising from or wrought within urban environments, is founded on various fundamental assumptions.

First, the concept of the Fourthspace, which represents the convergence of physical and digital realms. This is seen as a unique platform to facilitate participatory governance and empower citizens to actively engage in decision-making processes.

Second, the integration of data and technology within urban infrastructures can build or enhance partnerships between corporate and social institutions, and in so doing, create impactful solutions for urgent challenges.

Third, an inclusive smart city is one which gives every segment of the population the capacity to influence urban strategies and political outcomes through active participation. Alongside this is the assumption that smart citizenship—civic engagement facilitated via technology—allows co-design and co-creation to take place in an inclusive and transparent manner.

The Promise of Inclusivity—Unearthing the Chasms

Despite the lofty ideals of smart urbanism, significant disparities and challenges persist, which hinder the realisation of genuine inclusivity.

Disparities in digital connectivity create a digital divide, where marginalised communities are excluded from the benefits of smart city initiatives. For instance, there may be segments of the population who cannot afford to purchase a smart home console or a smart phone, or may have only intermittent, unreliable access to digital connectivity.

Exclusions can be further perpetuated by paternalistic power structures that limit the influence and participation of certain groups. Discourse and action are often rooted in the rational and functional, and most likely market-driven in terms of interests. Serious consideration and accommodation of social rights and the common good are at best secondary, if not peripheral to these conversations.

Additionally, language barriers and unmet expectations exacerbate challenges faced in achieving inclusivity. Some city inhabitants may be less open to adopting new habits, unlearning established ways of being or learning new digital skills. Contrary to assumptions underpinning policies and technological solutions, digital non-natives (such as the elderly) do not seamlessly transform into tech-savvy citizens who take technological disruptions in their stride. For some groups, even the term "technology" may have negative connotations, causing confusion or discomfort.

The Path Towards Human-Centered Smart Cities: Reclaiming the Fourthspace

To overcome divisions and achieve human-centered outcomes in smart cities, the following baseline enablers need to be put in place.

1. Developing Testbeds for Smart Solutions

Creating dedicated spaces for experimentation allows for piloting and refinement of innovative solutions. Testbeds provide platforms for collaboration between stakeholders to foster a culture of experimentation and learning. Such designated spaces can potentially generate innovative solutions that address specific needs within the community.

For example, Singapore's Jurong Lake District serves

as a living lab for sustainable urban solutions. Through initiatives such as smart energy management systems and intelligent transportation networks, the district explores ways to enhance energy efficiency, reduce carbon emissions, and improve transportation accessibility, that ultimately benefit the entire community.

2. Nurturing a Culture of Experimentation and Sustainable Innovation

Promoting a culture of experimentation encourages continuous learning and adaptation. By supporting innovative ideas and approaches, cities can evolve and respond

effectively to the needs of their citizens.

Singapore's Smart Nation initiatives exemplify this approach, with the Smart Nation Sensor Platform enabling deployment of various sensors across the city for collecting real-time data on environmental conditions, traffic patterns, and public safety.

3. Enhancing Computational Capabilities

Enhancing the computational capabilities of the general population through digital literacy programs can empower individual participation in the digital sphere.



Singapore has set its sights on becoming a world-class, tech-driven city-state to transform the way its people live. Its vision of a Smart Nation is built on the three pillars of Digital Society, Digital Economy and Digital Government.
Image: Lee Aik Soon / Unsplash



BioLit is a non-profit citizen science project that engages people in a monitoring and alert system along France's coastlines, helping scientists better understand coastal biodiversity and how it is changing.
 Image: G. Mannaerts / wikimedia

Creating a viable Fourthspace means implementing citizen-focused agendas that tend to the perspectives and experiences of vulnerable stakeholders and groups who may have been outpaced by technological (r)evolution.

For instance, Barcelona's Citizen Science programme encourages people to actively participate in data collection and analysis. Training programmes enable citizens to pick up skills to leverage technology and contribute to smart city initiatives. An ongoing project, Cities-Health, involves residents of five European cities, including Barcelona, in designing and conducting experiments that explore how pollution in their environment is affecting their health. Participants define what and how to investigate, and outline follow up actions.

The benefits of smart city technologies are democratised when citizens are active stakeholders in decision-making processes.

4. Public-Private and Public-Public Collaborations

Collaborations between stakeholders, such as global technology firms, local universities, and government bodies, play a pivotal role in driving innovation and addressing social inequalities.

One such example is the partnership between the City of Hamburg and Philips Lighting, which led to the development of an intelligent lighting system that provides energy-efficient lighting and integrates sensors to monitor air quality, noise levels, and pedestrian traffic.

In Singapore, Changi General Hospital (CGH) is home to the Centre of Healthcare Assistive



Robotics can be a critical enabler for enhancing inclusivity in smart cities. Targeted public-private collaborations offer immense potential to improve the quality of life for all.

Image: Possessed Photography / Unsplash

Citizen Focused Agendas

and Robotics Technology (CHART). CHART and therapists from CGH have worked with Japanese robotics company Reif Co. Ltd to develop a portable gait assessment robot which captures metrics, such as stride length and stride width of patients, that are not easily detected by humans. The data obtained can also be used for patient education.

These collaborations illustrate how academia, industry, and research institutions can work together to produce synergistic solutions that address urban challenges and improve the quality of life for different target groups.

In addition to these enablers, it is important not to overlook or simplify the divide between active and inactive citizens when envisioning and building inclusive smart cities.

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1. Working With Vulnerable Stakeholders

Engaging with vulnerable communities and enabling their active participation is paramount for inclusive smart city development.

In 2015, India launched its Smart Cities Mission by selecting 100 cities for redevelopment. Under this initiative, the Kalyan-Dombivli smart city project in Mumbai sought to transform informal settlements into sustainable, resilient neighborhoods.

An E-governance programme facilitated government-to-citizen interaction through websites providing information, and citizen-to-government interaction through grievance redressal systems via internet and mobile phone channels. This paved the way for extensive community engagement, empowering residents to co-create solutions and address their specific needs.

Smart governance must go beyond simply utilising technology and data.

By involving vulnerable stakeholders, the project aimed to build trust, address concerns, and ensure that the benefits of smart city initiatives reached all segments of society.

2. **Managing Varying Comfort Levels Toward Technology**

Implementing smart city solutions may encounter resistance from certain groups or individuals who have concerns about privacy, data security, or the impact on their daily lives. It is vital to address these concerns through transparent communication, robust data protection measures, and active public engagement.

In Amsterdam, the CitySDK project engaged citizens in the development of smart city applications, providing them

with control over their personal data and a choice in their level of participation that aligned with their comfort levels.

3. **Overcoming Language Barriers and Addressing Expectations**

In multilingual societies, it is essential to provide smart city initiative platforms with different language support, translated resources, and culturally sensitive engagement strategies to ensure that language does not become a barrier to participation.

In Singapore, a study on smart homes to enhance eldercare highlighted two important lessons. Firstly, communicating the objectives for new programmes clearly, such as how installing motion sensors at home can mitigate elderly fall risks, help foster a sense of buy-in amongst target audiences. Secondly, providing clear explanations about potential limitations, such as the response time for support when a panic button is activated, is key to managing participant expectations and preventing disillusionment or apathy.

4. **Aiming for Incremental Changes**

For smart cities to uphold fundamental principles of equity and justice, pre-existing urban infrastructures must accommodate digital solutions. It will be counter-productive to simply impose new (digital) solutions onto what is old (or material).

Innovations like interactive bus timetables and smart traffic lights should not be

substitutes for addressing more fundamental infrastructure needs, such as wider roads or fewer potholes. Instead, a holistic approach where technological advancements are implemented alongside improvements to basic amenities should be adopted. By focusing on incremental enhancements where investment in the material is augmented with the digital, cities can achieve more equitable and sustainable development in the long run, while addressing the immediate needs of their residents.

5. **Designing for Different Social and Economic Contexts**

The economic and social contexts of different urban environments must be considered when implementing smart solutions. What is successful in one city may cause adverse effects in others, especially if predefined rules cause significant disruptions to citizen's daily lives.

In Myanmar, the initiative to fit GPS trackers in garbage trucks to optimise routes did not recognise its impact on the livelihoods of truck drivers who needed flexibility to carry out other informal economic activities. As a result, some resisted this overt surveillance by tampering with the GPS systems. Urban planners and policymakers must recognise the importance of context-specific approaches and empower communities to actively participate in the decision-making process.



The success of smart cities should be contingent on the extent to which it facilitates marginal groups and the marginalised to equitably access opportunities for growth and fulfilment.

Image: Getty Images

Conclusion

Often, instead of being veritable Fourthsplaces, some smart cities paradoxically perpetuate urban inequalities. If steps are not taken to mitigate the risks of facelessness and anonymity, entire communities may be alienated.

Smart governance must go beyond simply utilising technology and data. It entails governments enhancing their capacity to bridge divisions within and across communities.

Against the backdrop of economic growth and efficiency, it is crucial to evaluate the success of any smart city based on its ability to foster equality and create a liveable environment for all, including the marginal and marginalised. Only by prioritising the well-being of its myriad of residents can a smart city truly fulfill its transformative potential. 🔗