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# Are smart cities safe cities?

**Smart cities series**

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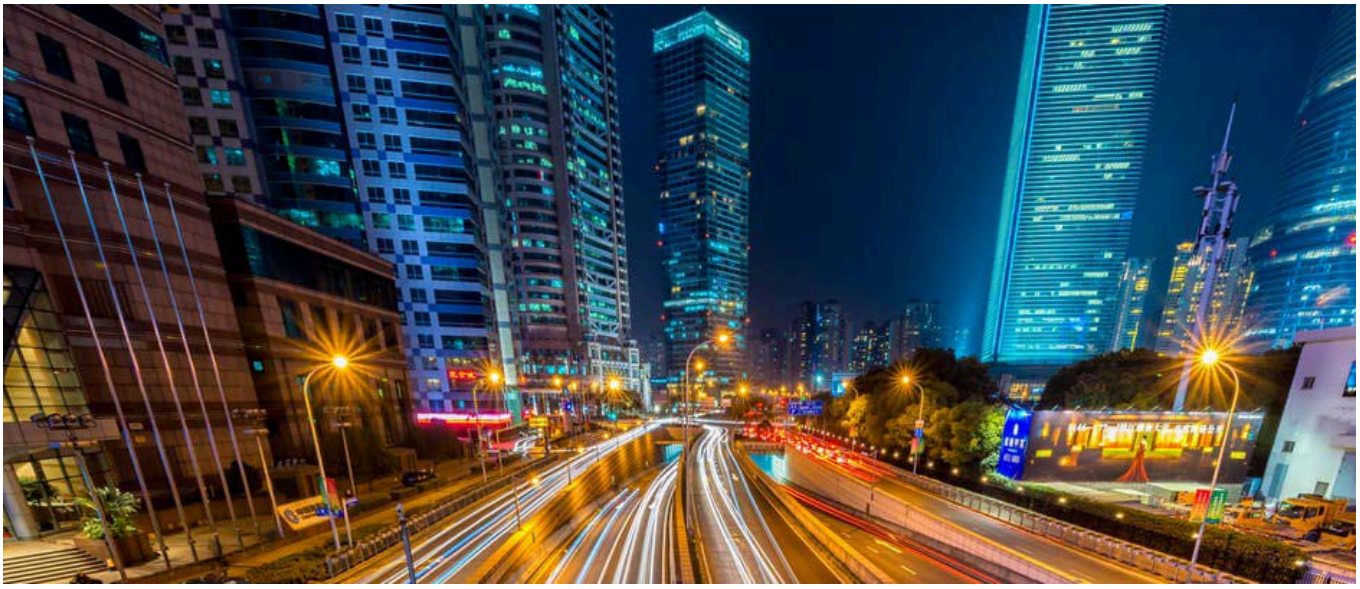
## Executive Summary

The “smart city” label has become extremely popular in discussions about the future of an urbanising world. Essentially, smart cities propose that the **massive use of digital and communications technologies** will help cities solve their social, economic and organisational problems, while **increasing the quality of life of their citizens**. But this **narrative is, at best, incomplete**. In reality, smart city projects are often led by hi-tech firms with a strong emphasis on technological development and scarce attention to the social realities of urban environments.

In this report, we discuss one issue that is often neglected or downplayed in discussions of smart cities: **their relationship with public safety**. Drawing on interviews with experts in smart city management, we identify some of the important gaps and weaknesses in smart city approaches to public safety, and suggest possible improvements from a **more integral, holistic perspective**.



## Introduction

Urban systems host over half the world's population [1] and consume roughly three quarters of its energy resources[2]. For the foreseeable future, the economic and political relevance of cities is expected to continue growing[3], and both the public and private sectors have been looking for ways to improve urban management and organization as a result. Information and communications technologies (ICTs) in particular are often presented as the most promising means for dealing with the challenges posed by increasing urbanisation, and it is in this context that the "smart city" concept was popularised. Over the last decade, it has provided a key framework for developing new visions and expectations about urban futures.

In the shift towards economic globalisation and post-industrial economies, cities are often compelled to develop new strategies for advertising and positioning themselves in the global market as attractive sites for investment. Since the end of the 1990s, there has been a notable proliferation of terms like *virtual city, ecological city*, *intelligent city*, *ubiquitous city* or *entrepreneurial city*, each emphasising a specific dimension of urban life and organisation[4]. Increasingly, it is through labels such as "smart" or "creative" that cities have been able to promote themselves as centres of innovation and economic growth in their efforts to attract global capital.

The main idea behind the smart city concept is to combine infrastructures, new technologies and the use of big data to improve the quality of life of citizens while promoting a sustainable and efficient environment. However, beyond this general idea, the "smart city" concept is an umbrella term covering multiple—and often contradictory—conceptions of urban agglomerations and the role of technology within them. Perhaps for this reason, smart city projects and initiatives are often accompanied by international events, which provide important occasions for exchanging knowledge and information

[1] Source: The United Nations Population Division's World Urbanization Prospects. Available at: https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS
[2] Source: UN-Habitat. Available at: https://unhabitat.org/urban-themes/energy/
[3] Hollands RG (2008) Will the real smart city please stand up? Intelligent, progressive or entrepreneurial? City 12.3: 303–320.
[4] Anthopoulos, LG (2017) Understanding smart cities: A Tool for Smart Government or an Industrial Trick? Public Administration and Information Technology, 22.

about the actual implementation of smart city models. At international conferences and forums, scholars, stakeholders and policy makers meet and share valuable insights on how to deal with key urban development issues. In this sense, international events also provide an opportunity to identify the weaknesses and blind-spots of the smart city narrative.

With this in mind, the Smart City Expo World Congress (SCEWC) asked Eticas Research & Consulting to examine the relationship between smart cities and public safety, and to identify the existing gaps and shortcomings of current smart city narratives in this regard. This report presents the results of this research, contrasting the development of smart city approaches with other notions of tech-driven urban areas oriented towards safety and sustainability.

## The smart city pitch

As mentioned earlier, the common element among differing smart city concepts is the preeminent role they assign to ICTs, which are depicted as an agent of change able to solve the fundamental managerial, economic and social problems that afflict urban areas. Specifically, there are three main approaches to what we might refer to as "smart urbanity".

The first approach considers ICTs to be a fundamental tool for administering and managing cities, focusing primarily on the development and application of technologies for infrastructures and social services, with the goal of making a very broad range of services (public health, education, transport and public services) more intelligent, interconnected and efficient. The second framework focuses on smart city governance. In this approach, technology is presented as a facilitator of citizen participation and collective choice, and thus the key to implementing bottom-up political practices. Finally, the smart city concept has also been applied to so-called human infrastructures, i.e. the development of human abilities as well as social capital and social cohesion. From this perspective, the correct use of technologies would lead to the creation of smart communities and smart citizens, with new behaviours and forms of social representation eventually producing new urban cultures.

However, despite their emphasis on the democratising effects of technologies, these discourses are not immune from criticism. As tech firms seek to sell their products to city governments, an alliance between public and private actors can blur the lines between the two sectors, providing ample room for corruption through clientelist relationships and influence trafficking. Other risks often linked to smart city approaches include the commercialisation of personal data and the threat of widespread social control. Moreover, insofar as they depict digital technologies as being able to solve the wide range of economic and managerial problems that contemporary cities face, smart city discourses embody a technology-led form of urban utopianism [5]. This utopianism ultimately plans and conceives urban development as a top-down process in which the values and interests of corporations and governing bodies are prioritised over those of other social actors. A statement by the Eurocities network is quite eloquent in this regard[6]:

> ***"Too much of the smart city agenda so far has been led by producers, [with] competing corporations offering their own technology to cities as an ostensibly comprehensive solution to every urban 'problem"***

With this in mind, it is useful to consider the rhetorical strategies deployed by tech companies in pitching their products and services to city governments. These will often involve depicting a "sick city" affected by multiple pathologies, such as tightening budgets, financial deficit or pollution. From here, smart city planning is presented in an idealistic way, with technological solutions having a healing, therapeutic effect on these illnesses. But as Ola Söderström notes in an analysis of the "corporate storytelling" involved in IBM's smart city narrative, such *smart mentalities* are actually far from novel. They merely combine two much more established tropes: systems thinking and utopianism[7].

[5] Townsend A (2013) Smart cities: Big Data, Civic Hackers, and the Quest for a New Utopia. New York and London: W. W. Norton & Company.
[6] Hollands RG (2015) Critical interventions into the corporate smart city, Cambridge Journal of Regions, Economy and Society 8(1): 61–77.
[7] Soderstrom O, Paasche T and Klauser F (2014) Smart cities as corporate storytelling. City 18: 307–320.

And, as often happens with utopian thinking, the smart city narrative is often hindered by reductionism, simplifying complex social problems into straightforward technical problems with technological solutions. By shifting the focus to the types of technological solutions that corporate narrators provide, there is a major risk of progressively forgetting or neglecting those stakeholders whose wellbeing were the initial aim of smart cities in favour of the company's interests.

This becomes clear when we examine the indicators used by different types of assessment frameworks to measure a city's performance. A comparative analysis[8] of smart city and urban sustainability assessments shows that, in practice, smart cities lack environmental indicators in their assessments, focusing instead on such categories as *education, culture, science, innovation* and *ITC*. Meanwhile, the assessment frameworks of sustainable cities prioritise factors such as *natural and built environment, water management, waste management* and *transport.* So, even though smart city programmes often present themselves as a means towards achieving sustainability, environmental indicators are significantly underrepresented in how they measure their success.

## Smart cities or safe cities?

While the previous section interrogates the ways in which smart city approaches present themselves, the rest of this report is primarily concerned with a specific topic that is often neglected by the main smart cities narratives: public safety.

When discussing the question of how cities provide safety for their citizens, a preliminary distinction between the ideas of *safety* and *security* must be made. Whereas *safety* refers to the more objective dimension of protecting bodies or properties from a real threat of physical harm, *security* refers to the more subjective dimension of protecting against perceived dangers. The security of a given urban environment thus falls under the more general notion of *public safety*, namely the power and responsibility of local government to protect the property and integrity of its citizens and maintain public order. The new

[8] Ahvenniemi H, Huovila A, Pinto-Seppä I, Airaksinen M (2017), What are the differences between sustainable and smart cities?, Cities 60, 234–245

challenges brought on by an increasingly globalised and interconnected context, such as international terrorism and the protection of critical infrastructure, have further accelerated efforts by public authorities to seek out and develop technological systems and solutions for ensuring public safety.

This has had important implications for smart city frameworks. From a general perspective, the intersection between smart city narratives and public safety has been articulated along two main strands. On the one hand, technological systems and solutions have been designed to increase the security systems of physical infrastructures, cybersecurity strategies and industrial complexes. On the other, security systems have been adopted to protect the privacy of citizens using smart technologies in the domains of transport, energy, water, public services and e-government. Yet, in both cases, the focus is primarily on the security of the smart city's infrastructure. There is far less emphasis on the protection of the citizens themselves against real and perceived threats.

To further examine the relationship between public safety and smart city discourses, Eticas Research & Consulting conducted 17 semi-structured interviews with experts from three different groups: the public sector (mainly Chief Information Officers and Chief Technology Officers), academic experts and members of think tanks and international NGOs. The interviews focused on key terms related to smart cities and public safety, specific security strategies based on the use of technology in urban environments, and an assessment of the presence of this topic at international events about smart cities.

The results provide a fruitful, qualitative perspective on the current state of smart city discourses. First, the respondents considered the technological security systems deployed by smart cities to be of particular importance. Among the main views expressed was the notion that smart cities should incorporate security criteria starting from the design phase. One technological expert defined a smart city as one with "an advanced normative level" characterised by the "integration and interconnection of systems" to the greatest extent possible, depending on the existence of "safe platforms". Another expert pointed out that security requirements such as access control, encryption and software

updates should be thoroughly incorporated in all smart city technology. "In the end," he claimed, "a smart city is one that facilitates the use of services offered by the city to its citizens. So, these services need to be perceived as something which can facilitate the lives of citizens and, in turn, do not affect the privacy of their transactions".

Meanwhile, a respondent from the industrial sector emphasized the importance of having a sensory system allowing specific users to know what is happening everywhere in the city at all times, thus providing a better capability to solve urban problems without compromising data. However, as one respondent from the entrepreneurial world pointed out:

> ***"The smart city technologies currently being developed around the world often include no concept of safety, as the majority of them are designed from a purely technological angle."***

Only few companies, the same respondent added, are going in that direction, but in a way that was described as "cold".

In contrast to this first perspective emphasising technological systems, a second perspective stresses citizen knowledge and awareness about the systems implemented by smart cities. As one respondent summarised it, "This understanding of security is about telling other people, in a very good and polite way, how they should behave in a world of smart cities".

Another expert emphasised the importance of establishing protocols guaranteeing that the channels through which information circulates are secure and informing the public of how that information might be used. In this regard, many of the interviewees working in the public sector mentioned the development of open data systems and the establishment of awareness mechanisms as fundamental tools for achieving a "safe social practice" among smart cities.

Finally, a third line of discourse dealt with the mitigation of risks inherent to smart cities from a general, integrated perspective. Many smart city technologies are in fact wireless and communicate through the air. As a result, people with the right equipment might intercept those communications, creating a broad set of dangers affecting the whole population, such as leaving the city without water or electricity. Meanwhile, the CEO of an American company claimed that the application of new technologies within the smart city framework should never create new risks for citizens and, if it does, these should be well managed and mitigated.

## Conclusions

Overall, while issues of security in smart urban contexts are increasingly present in discussions of smart city technologies, a more comprehensive approach to public safety is still lacking. As one respondent noted, security issues are often dealt with in a reactive manner:

> ***"It is obvious that, currently, security does not play the role it should. It has a reactive role and nothing more. When a new component for smart cities is developed, security models are only applied when a breach is found in that particular component…The logic is 'we will correct the component because there was a problem, not 'we will design it well to avoid problems'.""***

The ubiquity of technology in practically all smart city approaches demands an integrated, holistic framework through which to understand and interpret the implications of smart city programmes for public safety. Ultimately, the most effective security solutions smart cities can provide are those that conceive technological solutions as emerging from the social needs and values that arise in urban contexts, and not the other way around. Currently, this approach struggles to be seen, as most smart city initiatives focus on the effectiveness of technology, often at the expense of citizens' right to the city.

The problem with such technology-driven and top-down frameworks is not only their low level of social acceptability, but also their narrow and self-referential focus. As one respondent put it, there are simply too many technologists talking among themselves about their own technical challenges and not enough discussing the real problems posed by urban environments and the needs of urban populations. Similarly, the Chief Information Officer of a major city pointed out how many talks and investments focus on the technical aspects of security, such as campaigns for working on anti-virus protection, rather than with the more social aspects of security.

In this sense, our research has shown that the predominant discourses regarding smart city approaches to public safety tend to reproduce the paradigm of so-called *technological solutionism*, significantly hindering the development of a more holistic understanding of urban environments and the wellbeing of urban populations. A broader, critical analysis of smart city approaches to public safety is needed. Such an analysis must deal with the complexity of safety and security issues in both their objective and subjective dimensions, as well as the dynamic relationship between technology and society.

Questioning the ability of smart cities to guarantee public safety and the security of its citizens opens up fruitful debates through which to articulate a more socially just, citizen-oriented framework for dealing with urban issues. In this sense, a safe smart city would necessarily consider such issues as ethnic, racial, gender and economic inequalities, sustainability, creativity and the digital divide. Such a reflection would inevitably expand the focus of smart city development beyond the merely digital and physical dimension of smart infrastructures by posing a fundamental question:

***Whose safety does a smart city guarantee?***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