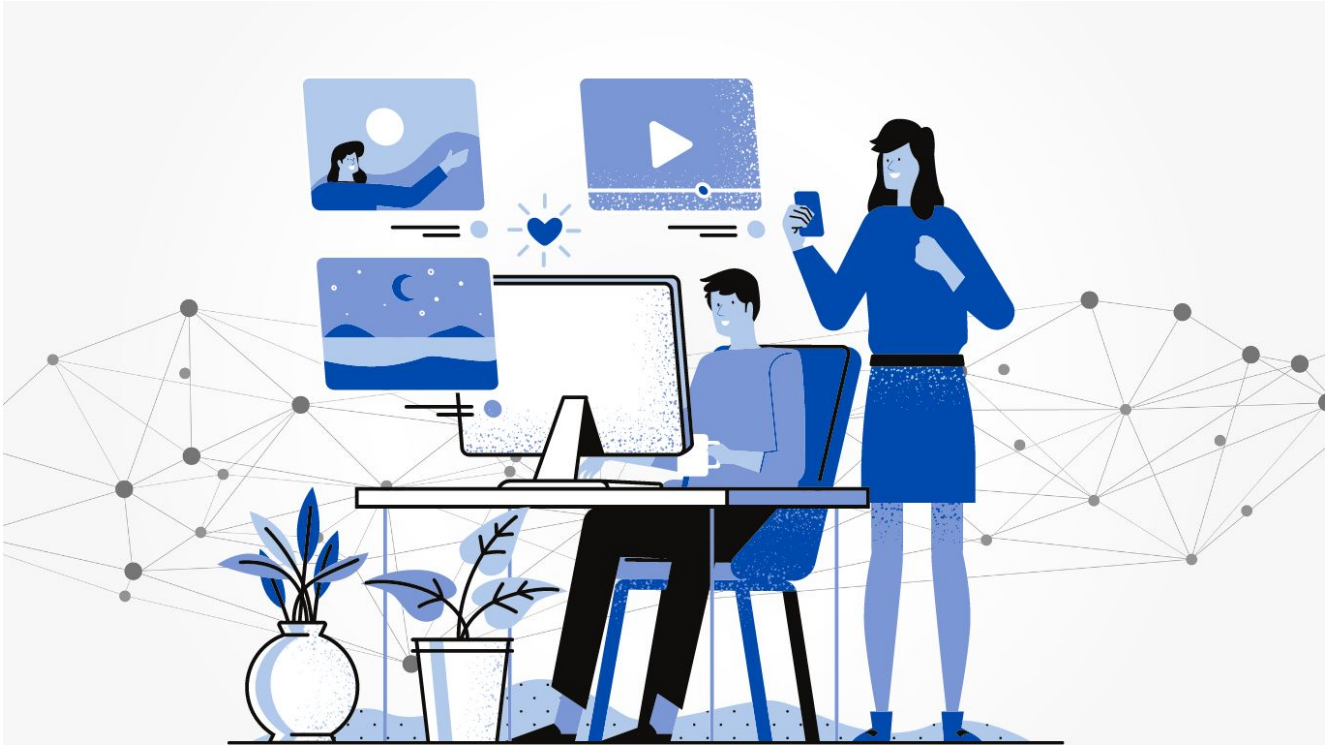
Smart cities tackling tech challenges: cybersecurity, privacy and the digital divide

For smart cities to best serve their citizens, managers need to be fully aware of the risks that may accompany new technologies. The latest book in the Cities in Motion series highlights good practices that take high-tech challenges into account.



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New information and communications technologies (ICTs) — including the internet of things (IoT) and advanced data analytics using artificial intelligence — have become essential tools for many city governments. Smart-city innovations are helping to boost efficiencies, improve infrastructure and confront urgent challenges — such as rapid population growth, social

inequality and climate change.

Yet, along with their well-documented benefits, new technologies are ushering in new risks and unintended consequences. Increasingly, cybersecurity, privacy rights and the gap between those who have access to new technologies and those who don't — aka the digital divide — are receiving greater scrutiny. Getting the risk-reward balance right is key for citizens' wellbeing.

The 2022 book *Cities and Technology: Building Cities in the Age of Information* is the sixth in the "IESE Cities in Motion International Urban Best Practices series". Written by IESE professors Pascual Berrone and Joan Enric Ricart, with Larisa Tatge, this volume examines key trends in the use of technology in urban environments, while also exploring inherent risks. The volume also compiles best practices drawn from New York, Tokyo and many other smart cities around the world.

The digital divide, cybersecurity and privacy

Three areas are given special attention in the book: the digital divide, cybersecurity and privacy, including the use of facial recognition systems with closed circuit televisions (CCTVs).

1. The digital divide. While access to new technologies, particularly smartphones, has grown exponentially over the years, some are getting left behind. In New York City, for instance, the mayor's office reported that 45% of households did not have broadband internet access and 18% (about 1.5 million people) did not even have a mobile internet connection in 2021.

The coronavirus pandemic called greater attention to the need for expanded internet reach: children needed access to remote learning opportunities as schools were shuttered. In response, New York City launched an initiative to shrink the digital divide by accelerating the buildout of 5G networks, targeting 33 neighborhoods deemed most affected by the pandemic.

2. Cybersecurity. As more data-driven infrastructure technologies are introduced, the risk of cyberattacks on municipalities has exploded. In June 2019, for example, the city of Riviera Beach, Florida, revealed it had paid 65 bitcoins, then worth about $600,000, to cyberattackers who had hacked its networks. The city also had to spend nearly $1 million to replace and repair equipment.

As attacks increase in frequency — and some public employees shift to remote working, creating even greater risks — cities will have to ratchet up their cybersecurity efforts.

Cities that rank highly for addressing cybercrime include Tokyo, Singapore and Chicago, according to the Economist's 2019 Safe Cities Index. These cities reported the most robust networks, based on low levels of virus and malware incidents, among other factors.

However, opportunities for cybercriminals to compromise high-tech energy, transportation, water and gas systems will continue to proliferate with the introduction of IoT and AI technologies to crucial urban infrastructure.

3. Data governance and privacy. A key determinant of the long-term success of new technologies is how citizens view privacy trade-offs. While certain smart-city applications may seem invasive to some, these may be openly accepted by others. Frameworks for understanding privacy trade-offs can be helpful for determining the extent to which collected data is considered personal and sensitive, as well as whether it's seen as a useful service or surveillance.

For example, facial recognition systems are increasingly used within cities to provide cost-effective monitoring of public spaces and deter crime. In 2021, Taiyuan, China, ranked as the city with the highest number of cameras, with 117 cameras per 1,000 people. The city of London came in third with 73 cameras per 1,000 people. However, there has been public pushback on privacy and bias concerns. Citizen activist groups, such as the London-based Big Brother Watch, have launched campaigns against the use of facial recognition systems in cities for threatening free speech and other civil liberties.

From one city to another, data-driven technologies require trust from citizens to succeed. Otherwise, they may stir apprehension about their purpose. Good governance practices — which promote participation, accountability, transparency and equity — are essential as cities implement new technologies.

Prioritize citizens' wellbeing

The need to invest in new technologies to improve city services and infrastructure should not be in dispute. However, as cities spend more heavily on ICT, they should keep in mind citizens' concerns about critical issues such as the digital divide, cybersecurity and data governance.

In the long term, technologies that do not prioritize the public's wellbeing will have a negative

impact, eroding trust and social cohesion in communities. That said, by examining best practices, employing good governance tools and gathering input from a wide range of citizens, cities can maximize the benefits of new technologies as they emerge.

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