



# Brookings: Artificial Intelligence In America's Digital City

This report smacks of Technocracy, where cities are little more than concentrated and convenient labor camps for big business. It contends that "technology is essential to make cities work." □ TN Editor

Cities are an engine for human prosperity. By putting people and businesses in close proximity, cities serve as the vital hubs to exchange goods, services, and even ideas. Each year, more and more people move to cities and their surrounding metropolitan areas to take advantage of the opportunities available in these denser spaces.

Technology is essential to make cities work. While putting people in close proximity has certain advantages, there are also costs associated with fitting so many people and related activities into the same place. Whether it's multistory buildings, aqueducts and water pipes, or lattice-like road networks, cities inspire people to develop new technologies

that respond to the urban challenges of their day.

Today, we can see the responses made possible by the advances of the second industrial revolution, namely steel and electricity. Multistory buildings and skyscrapers responded to our demand for proximity to do business in the same locations. Electrified and subterranean railways offered faster travel for more people in tight, urban quarters. The elevator, escalator, and advanced construction equipment allowed our buildings to grow taller and our subways to burrow deeper. Electric lighting turned our cities, suburbs, and even small towns into 24-hour activity centers. Air conditioning greatly improved livability in warmer locations, unlocking a population boom. Radios and television extended how far we can communicate and the fidelity of the messages we sent.

We are now in the midst of a new industrial era: the digital age. And like the industrial revolutions to precede it, the digital age doesn't represent a single set of new products. Instead, the digital age represents an entirely new platform on top of which many everyday activities operate. Making all this possible are rapid advances in the power, portability, and price of computing and the emergence of reliable, high-volume digital telecommunications.

Some of the most important developments are taking place in the area of artificial intelligence (AI). At its most essential level, AI is a collection of programmed algorithms to mimic human decisionmaking. Definitions can vary widely on exactly what constitutes AI, what its applications will look like in the real world, the solutions AI applications will provide, and the new challenges those same applications will introduce. What is not in question is the heightened curiosity and eagerness to better understand AI to maximize its value to humanity and our planet.

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How AI will function in the built environment certainly fits into that category—and for good reason. Even though AI is still in its infant

stages, we already encounter it on a daily basis. When your video conference shifts the microphone to pick up the speaker's voice, when your smartphone automatically reroutes you around traffic, when your thermostat automatically lowers the air conditioning on a cool day—that's all AI in action.

This brief explores how AI and related applications can address some of the most pressing challenges facing cities and metropolitan areas. Like every form of technology to proceed it, society must be intentional with the exact challenges we want AI to solve and be considerate of the social groups and industries who stand to benefit from the applications we deliver. While AI is just in its early development, now is the ideal time to bring that intentionality to urban applications.

## **Defining artificial intelligence in an urban context**

Data has always been central to how practitioners plan, construct, and operate built environment systems. At its core, constructing those physical systems requires extensive knowledge of various engineering, geographic, and design principles, all of which are powered by mathematics. Quantitative information and mathematical principles are essential to successfully bring large-scale projects from their blueprints to physical reality, and that was as true in the ancient world as it is today.

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