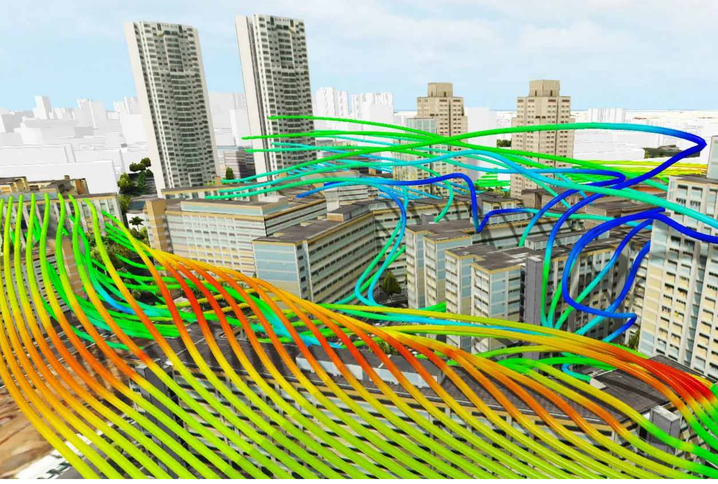


# The Twinning of Cities

Digital twins are becoming an important urban planning tool.

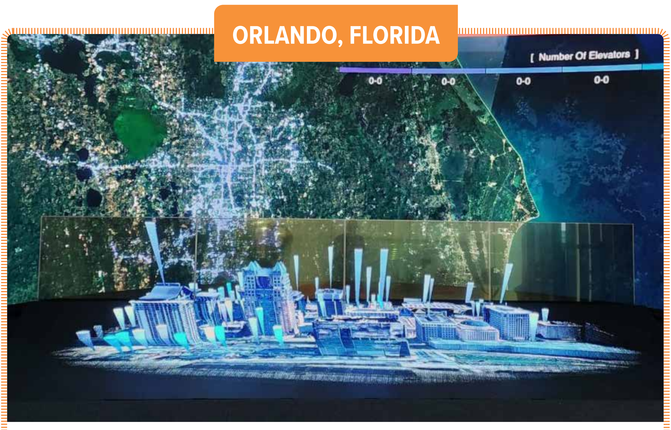
**BY JOHN KOSOWATZ**

Manufacturing may be the first industry where digital twins made an impact, but the technology is moving quickly into other industries. Where it may have a long-lasting impact is in urban planning, where regional and municipal governments are using the new technology to go beyond creating virtual models, simulating the impact new buildings, infrastructure, and policies will have on the region as a whole, or individual neighborhoods, blocks, or roads.

Orlando, Fla., is following other U.S. cities that are building digital twins, but it differs in that the digital model covers 800 square miles of the region, including 40 square miles in high fidelity. The Orlando Economic Partnership, a public-private organization, worked with gaming developer Unity Technologies to build the twin on its open-source platform. The work is similar to that of Singapore, where officials developed a digital model of the entire city-state, initially for land management and flood avoidance, but also for the nation's various agencies to study their own development plans.

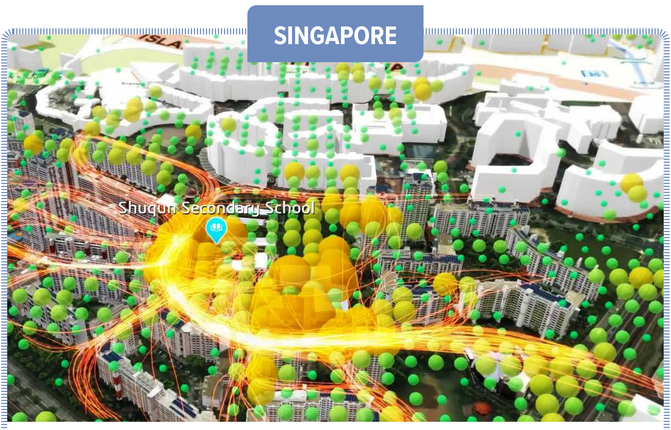
Here is a fast look at the two models.

## ORLANDO, FLORIDA




Orlando used Unity's open-source platform that allows individual companies to load their own plans and data into the model to create simulations on how they could impact the entire region or a part of it. High-resolution graphics, photogrammetry, and images provide an immersive view of the landscape, cityscape, and geography. It uses holographic images to spotlight areas deemed a high priority for economic development. The model highlights five geographic areas and, for now, can be viewed and interacted with computers, tablets, and virtual reality headsets. In the future, it will be stored in the cloud and include artificial intelligence and scenario mapping to allow simulation of the impact of transportation or climate mitigation projects.

## SINGAPORE




The tiny city-state of Singapore is farther along in its use of a digital twin. The Singapore Land Authority mapped the entire region using aerial LIDAR and ground-based laser scanning to differentiate buildings from trees and landscape. Laser scanning was used within buildings to give datasets on some state buildings. The aim is to give agencies a tool to simulate various planning scenarios, such as how a proposed building design would impact existing structures, or, using historic weather data, where a development could be better sited to avoid or limit flooding. Already the city has used it to plan placement of solar panels to better optimize efficiency. In the future, it will be used to manage navigation of autonomous vehicles, 5G deployment, and other uses.