

## Doubling down: Digital twins in corporate real estate

### Part 2 of a 3-Part Series



With 40% of greenhouse gases attributed to the built environment, sustainability and efficiency are becoming top priorities in the real estate industry. As a result, real estate leaders are increasingly turning to digital twins to address these critical demands. This article will delve into how the technology can drive substantial improvements in energy efficiency, cost savings, and overall property value, setting a new standard for smart and sustainable real estate management.

#### Main applications in the real estate life cycle

As discussed in Part 1, real estate technology has matured to a point where metrics are well-defined and well-documented. The next step requires prediction and prescription. Using digital twins, real estate developers, investors, and occupiers can improve a building's efficiency, sustainability, and cost structure. These improvements can also be applied across multiple assets to optimize an entire portfolio.



At the foundation of digital twins' predictive capabilities are detailed 3D renderings that allow them to capture a physical property's geometry, layout, and structural details. This information will be the basis for visualizations, simulations, and spatial analysis.



Internet-of-things (IoT) devices capture real-time data to provide critical information, such as temperature and occupancy. When integrated with other building systems, such as security devices and energy meters, this data informs the property's real-time performance and condition, allowing facilities managers to proactively adjust settings.



Digital twins also use historical data, including past maintenance records, renovation history, blueprints, permits, and inspection records. They can analyze vast amounts of collected information to provide context on an asset or property's conditions.



When you combine all this, leveraging 3D models, real-time data, and historical analytics, digital twins use these inputs to simulate and predict various scenarios and their impacts on a real estate portfolio. This can include energy efficiency simulations, space utilization analysis, and predictive maintenance models.

Organizations that optimize their use of digital twin technology will find that they get “smarter” and more effective over time.

#### Other applications in the real estate life cycle

In addition to optimizing ongoing operations, digital twin technologies can be deployed in a variety of other settings for real estate developers, investors, and occupiers:

**Optimizing design**—Digital twins can simulate and test different design scenarios, allowing architects and engineers to maximize energy efficiency, daylighting, thermal performance, and material selection during the earliest stages of a building's life cycle.

**Enhancing experience**—Both designers and users can leverage digital twins to explore and interact with environments in a highly detailed and realistic manner.

**Ensuring compliance**—By continuously monitoring building performance metrics, digital twins facilitate data-driven reporting, verification, and compliance with sustainability standards.

## Energy efficiency in real estate

Finally, energy efficiency has become a critical component of real estate management. Organizations are increasingly recognizing that sustainability initiatives not only help reduce their carbon footprint but also offer substantial financial benefits. Taking steps to adopt energy-efficient technologies, water-saving measures, and efficient waste management practices all contribute to lowering a property's variable cost. Moreover, embracing sustainability in real estate can also position properties to command higher rents and sales prices, potentially increasing revenues and property values. This holistic approach to energy efficiency not only supports environmental goals but also drives economic gains, making it a strategic priority for forward-thinking organizations.

With features such as advanced connectivity and data analytics, digital twins can ensure that buildings operate at peak efficiency throughout their life cycle. With these tools, real estate leaders can strategically allocate resources and make informed decisions to reduce costs and carbon footprint. This establishes a foundation for sustainable and cost-effective operations in the long run.

## Digital twins in action

The Edge, Deloitte Netherlands' Amsterdam office, is a model of sustainability and one of the smartest office buildings. The Edge is serviced by more than 28,000 sensors feeding to a "digital twin" in which all building operations are displayed and monitored on a single IP backbone and data platform. The structure uses these sensors to monitor building occupancy, automate energy usage, predict maintenance, and analyze data for reporting.

Although digital twins are powerful technologies that can be harnessed for cost savings and sustainability benefits, successful technology deployment often requires a solid foundation.

### Author

#### Cindy Li

Consulting Manager  
Deloitte Consulting LLP  
cindybli@deloitte.com



This publication contains general information only and Deloitte is not, by means of this publication, rendering accounting, business, financial, investment, legal, tax, or other professional advice or services. This publication is not a substitute for such professional advice or services, nor should it be used as a basis for any decision or action that may affect your business. Before making any decision or taking any action that may affect your business, you should consult a qualified professional advisor.

Deloitte shall not be responsible for any loss sustained by any person who relies on this publication.

### About Deloitte

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee ("DTTL"), its network of member firms, and their related entities. DTTL and each of its member firms are legally separate and independent entities. DTTL (also referred to as "Deloitte Global") does not provide services to clients. In the United States, Deloitte refers to one or more of the US member firms of DTTL, their related entities that operate using the "Deloitte" name in the United States and their respective affiliates. Certain services may not be available to attest clients under the rules and regulations of public accounting. Please see [www.deloitte.com/about](http://www.deloitte.com/about) to learn more about our global network of member firms.