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Doubling down: Digital twins in corporate real estate

Part 1 of a 3-Part Series

Buildings have voices. You may not be listening, but they can tell us a lot. They can provide insights into predictive maintenance. They can enhance the occupant experience. They can tell us how to be more efficient by optimizing heating, cooling, and lighting according to the weather outside. They can self-regulate energy consumption to minimize energy waste and maximize cost savings. And they can do even more when talking to each other. That is the power of the digital twin.

What is a digital twin?

In the world of real estate technology, plenty of buzz surrounds smart buildings, sustainability, and generative AI. Similarly, digital twins are often a mainstay in the hype cycle. The truth is that there is real value to be unlocked when a digital twins is included within an enterprise's technology solution set. Let us first understand what a digital twin is—and is not.

A digital twin is a virtual replica of a physical product, process, or system that can be used for simulation and analysis. In real estate, digital twins enable real-time monitoring and control of buildings without physically altering the structure.

Despite their potential, several misconceptions cloud the technology's potential and hinder its adoption. By demystifying digital twins, we can unlock the full benefits they can bring to your real estate portfolio. Next, we'll debunk these myths.

Myth 1: Digital twins can only be used in new design and construction projects.

Contrary to this belief, the reality is that digital twins hold equal, if not greater, value for existing buildings. While digital twins are indeed valuable during the design and construction phase, their application extends well into the operational lifespan of structures. These dynamic, data-driven replicas facilitate real-time monitoring, predictive maintenance, and optimization of existing buildings. By incorporating historical and real-time data, digital twins empower facility managers and stakeholders to make informed decisions by facilitating real-time monitoring, proactively identifying maintenance needs, and optimizing the use of assets to prolong their lifespan.

Myth 2: Digital twins are only applicable to manufacturing processes.

While digital twin technologies are often deployed in manufacturing settings, they are not exclusively tailored for production lines and manufacturing processes. Digital twins are much more expansive and can be applied to a wide variety of industries. Their capacity to simulate and analyze physical products, processes, or systems can be used in diverse domains, including health care, urban planning, energy management, and portfolio management. In all of these realms, digital twins offer valuable insights and capabilities.

Myth 3: Digital twins are a cutting-edge technology that is prohibitively expensive.

This notion often deters organizations from exploring the potential benefits of digital twins, as they fear the financial burden associated with their adoption. Although digital twin technologies are innovative, they are also adaptable and can be cost-effective. In real estate, portfolio and facilities managers can first identify areas where digital twins could have the highest ROI, such as optimizing energy management across an entire real estate portfolio. The technology can be deployed on a smaller scale as a proof of concept, allowing the company to understand the benefits and challenges before implementing it widely. Furthermore, existing infrastructure, such as IoT devices, sensors, and data platforms, can be leveraged, reducing the need for additional tech investments. Lastly, consider using open-source digital twin software, which can be more cost-efficient. Start with essential features and gradually add more to manage costs.

How are digital twins different from smart buildings or 3D models?

Digital twins go beyond static models; to uncover insights and find inefficiencies, they combine data from many sources, including real-time data from IoT devices and sensors, as well as historical financial and occupancy data from new and existing buildings.

Operating in real time, digital twin technology constantly monitors buildings for any changes or anomalies. The dynamic approach to fault detection ensures that the virtual model stays updated with its real-world counterpart, making it highly responsive to changes.

Digital twins use artificial intelligence and machine learning to glean insights from past data. This allows them to improve and better understand their real-world counterparts over time. This intelligent integration enables the virtual counterparts to evolve, learn from past experiences, and refine their understanding of the corresponding physical entities over time. Despite these advanced capabilities, it's important to note that digital twins do not replace human expertise but work alongside it, enhancing the effectiveness of technology and human input.

More than a model

In summary, digital twins are not just a static 3D model—they are dynamic representations of the built environment. Digital twins aggregate data in real time, and as more inputs are added, they adapt and evolve, just like the buildings they mirror. In addition, it's essential to recognize that the application of digital twin technology is not confined to a specific industry, and technological advancements have made their integration more accessible than was presumed.

By unraveling these myths, we can discover how digital twins assist with scenario planning that juggles changing conditions and multiple variables. Unlike traditional scenario planning, which may limit the number of variables one can analyze at once, digital twins enable decision-makers to act in the face of uncertainty, fueling an informed confidence that will lead to quicker and more complete decisions.

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