National Institute of BUILDING SCIENCES™

Making Digital Twins Useful Via Mobile Robotics, AI, and Augmented Reality

January 23, 2025 | Session Overview

Speaker

Igor Starkov, CEO, Teleworker AI

Moderator

Roger Grant, Vice President, Building Technology, National Institute of Building Sciences

Making Digital Twins Useful Via Mobile Robotics, AI, and AR Overview

On January 23, 2025, NIBS hosted this webinar with subject matter expert and Teleworker AI CEO and founder Igor Starkov.

Starkov, has been a pioneer of BIM-based digital twin development, working with leading facility owners and builders, ensuring that new construction delivers BIMs of appropriate quality, and integrating BIMs with other facility information systems to create digital twins. As such, Starkov realized two major hurdles in the way of successful deployment of digital twins: availability of BIM for existing facilities and ability to deploy digital twins with the existing human-driven workflows.

Starkov covered how to set up rules for BIM data and control its quality and how augmented reality (AR) can make the adoption of BIM/digital twin technology easier. He also shared how mobile robots (e.g. robot dogs and wheeled platforms) can utilize digital twins to automate redundant workflows.

Roger Grant, Vice President, Building Technology, National Institute of Building Sciences, served as moderator for the webinar.

Defining a Digital Twin

BIM-based digital twins have been around for more than a decade.

A digital twin is a virtual replica of a physical asset, which means there is a 3D representation of the object's geometry as well as full set of properties defining object's behavior – both simulated and actual performance. To build a digital twin, you need a building information model (BIM), common data environment (CDE), and connections with BMS/IoT systems.

Tools like AI and AR also are increasingly changing the

business: One of the use cases presented by Starkov demonstrated how a new software solution, Modelizer AI, can convert 2D floorplans into 3D BIM using AI/ML and later enhanced by placing 3D objects in AR which helps create field-verified 3D BIM.

"The speed of change in AI algorithms is very impressive, we are dozens of times more productive with algorithms introduced over the past two to three months than just a year ago," he said. "At the same time, AR is becoming a bridge between human decision-making and the robotics domain."

The Future of Work – Market Needs

According to Starkov, Teleworker AI is designed to address many challenges.

These include:

- Lack of qualified personnel at affordable prices
- Project delays. Remote teams can work in the evening and night hours due to time zone differences, thus significantly increasing project completion speed.
- Low quality of field work. AI/ML tools improve analysis of remote site situation, all activities are recorded, providing better reporting. More experienced back-office staff can assist less experienced field staff.

Building Innovation Webinar Series

As part of our mission to continue conference education, NIBS launched a webinar series to reach even more professionals on new technology, trends, groundbreaking tools, best practices, and workforce solutions.

It's our way of extending the Building Innovation annual conference beyond the in-person meeting.

The next webinar – Enhancing Sustainability and Energy Conservation Through Digital Twin Technology – takes place March 11. Learn more about NIBS events.