

# HEAVY.AI Delivers Digital Twin for Telco Network Planning and Operations Based on NVIDIA Omniverse

With 5G deployments set to double through 2027, HEAVY.AI's framework built on NVIDIA Omniverse helps optimize wireless site placements to reduce the cost and complexity of network operations and improve the customer experience.

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Telecoms began touting the benefits of 5G networks six years ago. Yet the race to deliver ultrafast wireless internet today resembles a contest between the tortoise and the hare, as some mobile network operators struggle with costly and complex network requirements.

Advanced data analytics company HEAVY.AI today unveiled solutions to put carriers on more even footing. Its initial product, HeavyRF, delivers a next-generation network planning and operations tool based on the NVIDIA Omniverse platform for creating digital twins .

“Building out 5G networks globally will cost trillions of dollars over the next decade, and our telco network customers are rightly worried about how much of that is money not well spent,” said Jon Kondo, CEO of HEAVY.AI. “Using HEAVY advanced analytics and NVIDIA Omniverse-based real-time simulations, they’ll see big savings in time and money.”

HEAVY.AI also announced that Charter Communications is collaborating on incorporating the tool into its modeling and planning operations for its Spectrum telco network, which has 32 million customers in 41 U.S. states. The collaboration extends HEAVY’s relationship with Charter, building on the existing analytics operations to 5G network planning.

“HEAVY.AI’s new digital twin capabilities give us a way to explore and fine-tune our expanding 5G networks in ways that weren’t possible before,” said Jared Ritter, senior director of analytics and automation at Charter Communications.

Without the digital twin approach, telco operators must either: physically place microcell towers in densely populated areas to understand the interaction between radio transmitters, the environment, and humans and devices that are on the move — or use tools that offer less detail about key factors such as tree density or high-rise interference.

Early deployments of 5G needed 300% more base stations for the same level of coverage offered by the previous generation, called Long Term Evolution (LTE), because of higher spectrum bands. A 5G site will consume 300% more power and cost 4x more than an LTE site if they’re deployed in the same way, according to researcher Analysys Mason.

Those sobering figures are prompting the industry to look for efficiencies. Harnessing GPU-accelerated analytics and real-time geophysical mapping, HEAVY.AI’s digital twin solution allows telcos to test radio frequency (RF) propagation scenarios in seconds, powered by the HeavyRF module. This results in significant time and cost savings, because the base stations and microcells can be more accurately placed and tuned at first installation.

The HeavyRF module supports telcos’ goals to plan, build and operate new networks more efficiently by tightly integrating key business information such as mobility and parcels data, as well as customer experience data, within RF planning workflows.

Using an RF-synchronized digital twin would enable planners at Charter Communications to optimize capacity and coverage, plus interactively see how changes in deployment patterns translate into

customer acquisition and retention at the household level.

The goal is to use machine learning and big data pipelines to continuously mirror existing real-world conditions.

The digital twin will use the parallel computing capabilities of modern GPUs for visual simulation, as well as to generate physical simulations of RF signals using real-time RTX ray tracing , powered by NVIDIA Omniverse's RTX Renderer.

For telcos, it's not just about investing in traditional networks. With the rise of AI applications and services, these companies seek to lay the foundation for 5G-enabled devices, autonomous vehicles, appliances, robots and city infrastructure.

Watch the GTC keynote on demand to see all of NVIDIA's latest announcements, and register for the conference — running through Thursday, Sept. 22 — to explore how digital twins are transforming industries .

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