



ADVANCING ARCHITECTURAL SIMULATIONS AND REAL-TIME COLLABORATION

Image courtesy of KPF

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—Cobus Bothma, Director of Applied Research at KPF

Kohn Pedersen Fox (KPF) explores the potential of NVIDIA Omniverse to accelerate 3D design workflows and productions.

CHALLENGE

Global architectural firm Kohn Pedersen Fox (KPF) strives to find the most creative, optimal design through using advanced technologies. Collaboration is important in KPF's design process — the team typically has collaborative sessions with clients and stakeholders so they can participate and interact during design reviews. KPF also has more than 700 employees around the world, with teams working on different aspects of a project across multiple locations. The firm continuously looks for additional ways to enhance efficiency, productivity, and collaboration in design workflows. KPF wants the ability to store and access their architectural design models in one place, and is looking to expand their central cloud-based server approach to help their teams better coordinate, collaborate, and visualize projects from any location. Lastly, KPF wants to find a way to stream projects to any device so remote teams and clients can easily see how a project is progressing.

SOLUTION

NVIDIA Omniverse changes how KPF collaborates while maintaining the necessary computational resources to render designs in high resolution. The team uses applications such as Autodesk Revit, Autodesk 3ds Max, McNeel Rhino and Grasshopper with various specialized environmental analysis software. To integrate Omniverse, KPF deployed Omniverse Nucleus, virtualized from the data center in the UK. Omniverse is built on **USD** open-source format, and with Omniverse Nucleus, KPF can synchronize USD from design applications to their private cloud. When the published model data sets in USD are then rendered through Omniverse Create, KPF edits and visualizes the data through a real-time ray-traced and path-traced renderer, Omniverse RTX Renderer. This is all performed using workstations equipped with NVIDIA RTX A5000 and A6000 professional GPUs. “NVIDIA Omniverse Nucleus is the core that makes it so easy,” said Cobus Bothma, director of Applied Research at KPF. “Omniverse has more capability—it allows us to collect all the data from different workflows into a single location.”

IMPACT

Omniverse provides KPF with a shared virtual world that serves as “one source of truth” — the latest model edits and changes can be viewed from one viewport in either Omniverse Create or View, rather than viewing separate data from different teams using different applications. Having the content and designs in one location allows KPF to accelerate production and save time on the overall project as they no longer need to export massive files from each application. Instead, the team can use Omniverse to push only the small changes of geometry sets to a scene, resulting in accelerated workflows. Omniverse also enables KPF to import CAD-accurate, full-fidelity models without model decimation or data preparation which saves valuable time and resources. “In Omniverse, our ability to render ray-traced and path-traced images at high resolution in real time, without any geometry optimization, is game-changing,” said Bothma. “We also managed to include environmental and build analysis data in these real-time renders.” With Omniverse and cloud-based streaming, KPF can further explore delivering higher fidelity images to any device, and make changes to the designs in real time.

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