NVIDIA Omniverse Enterprise for AECO

Revolutionizing Collaborative Architectural Design and Simulation Workflows

> *"This revolutionary platform allows our artists to collaborate on the same scene while working independently on their software of choice. Multiple design changes can be visualized simultaneously in real-time, allowing design options to be reviewed in parallel for faster design cycles. The vast reduction in time previously required for processing models means more time for creative design and visualization. Integration of futuristic technologies such as machine learning will bring more opportunities to assist the creative process in the future."*

— Martha Tsigkari, Partner, Applied R&D, **Foster + Partners**

Challenges in the AECO Industry

Collaboration and communication of design intent rank high among the many challenges teams face when designing buildings. These become even more difficult with remote and geographically dispersed team members. The need to translate and composite data from different software tools, datasets, and other project contributors complicates matters and slows the design process. Today, there's a growing demand for more efficient team collaboration during design, faster iteration on high-fidelity renders, and the expectation of physically accurate, photorealistic simulation. NVIDIA Omniverse Enterprise delivers unique capabilities to address each of these needs.

AECO Use Cases for Omniverse

> **Initial Concept Design** - Architects, engineers, and designers can collaborate and communicate more easily while creating and iterating on initial ideas for building designs. Speedy design reviews keep projects on track and allow the design team to explore more options.

> **Simulation** - Physically accurate simulation enables project teams to evaluate design decisions informed by environmental factors such as radiation and wind analysis to help reduce the likelihood of design flaws.

> **Competition and Proposal Submissions** - Globally dispersed teams can iterate on design ideas swiftly to drive innovation, with the ability to create compelling photorealistic renders faster to meet deadlines and win new projects.

> **Client Presentations** - Clients, owners, and developers can view beautiful, photoreal visualizations from almost any device, allowing teams to convey ideas effectively with stunning realism.

NVIDIA Omniverse™ Enterprise is a transformative virtual platform for 3D design collaboration and real-time true-to-reality simulation. Project teams can reach a new level of full-fidelity visualization for architectural models.

Built For

> Business decision-makers

> Architects/Designers

> ArchViz specialists

> VDC managers

Platform Features

> Built on open standards such as Universal Scene Description for maximum interoperability

> Compatible with top industry design and visualization software

> Scalable, physically accurate multi-GPU rendering and simulation

> Python-based modular development platform for quickly and easily building powerful 3D tools and services

Subscription Includes

> Omniverse Nucleus Workstation and Enterprise Nucleus Server collaboration engine

> Omniverse Create and View end user applications

> Omniverse Kit SDK for building custom 3D extensions, tools, apps in Python

> Enterprise IT scalability, security, and deployment tools

> Full NVIDIA Enterprise Support services

An Open Platform Built for Speed and Collaboration

NVIDIA Omniverse Enterprise is a scalable, end-to-end platform for building and operating metaverse applications.

Based on Universal Scene Description (USD), Omniverse Enterprise unites teams, assets, and software tools, ena bling diverse workgroups to collaboratively iterate on and interactively review photorealistic simulations of design projects.

Design computation teams can easily build Python-based plug-ins for Omniverse Enterprise to tailor to diverse design team requirements. Plus, with real-time interoperability across popular architectural design and visualizati on applications, infinite iterations come at no opportunity cost. Design teams can maximize creative exploration with minimal risk to achieve new heights of quality and innovation with faster time-to-market.

Core Platform Technologies

Nucleus
Lets you store, share, and collaborate on project data and provides the unique ability to collaborate live across multiple applications.

Connect
Lets you connect leading industry tools to the Omniverse platform for live-sync workflows and save USD and MDL content.

Kit
A powerful toolkit for developers to quickly and easily build custom tools and plugins in Python or C++ or custom UIs to accelerate design workflows.

Simulation
Leverage advanced NVIDIA physics technologies for physically accurate simulation, including **PhysX°**, **Flow**, **Blast**, and Rigid Body Dynamics.

RTX Renderer
Visualize your scenes in full fidelity with the advanced, multi-GPU RTX Renderer that supports both real-time ray tracing, interactive path tracing, and accurate NVIDIA Iray rendering.

Accelerating Workflows at Any Scale

Seamless Collaboration
Project teams are unified on a single, interactive platform, even when working with different software applications simultaneously, to rapidly develop architectural models in real time.

Ray-Traced in One Click
Teams can produce beautiful, physically accurate visuals with minimal effort—no data preparation or model data decimation needed.

Faster Time to Approvals
Iterate quickly and explore more designs with the ability to export with RTX ray-traced quality. Teams, clients, and contractors can view the high-fidelity model on any device, anywhere.

Omniverse Platform Apps for Architecture, Engineering, Construction, and Operations

Create

For technical artists, designers, and engineers, Omniverse Create accelerates advanced scene composition and allows users to assemble, light, simulate, and render scenes in Pixar USD in real time.

View

Omniverse View powers seamless collaborative design and immersive visualization of design and simulation projects for reviewers, clients, and project managers.

Connecting to Omniverse Enterprise

There are multiple ways to connect and aggregate full-fidelity 3D and CAD data in Omniverse Enterprise. Connectors provide the highest fidelity connection with live-link workflows between third-party applications. The platform automatically converts popular 3D and CAD file formats into USD to enable collaborative workflows.

Autodesk 3ds Max

Graphisoft Archicad

Esro ArcGIS CityEngine

Reallusion Character Creator

Reallusion iClone

Ipolog

Autodesk Maya

Autodesk Revit

McNeel & Associates Rhino including Grasshopper

Trimble Sketchup

Adobe Substance 3D Painter

Epic Games Unreal Engine

Visual Components

| Export and Import	FBX, GLB, GlTF, OBJ, OpenVDB, USD, USDZ
Import Only	3D PDF, 3DS, 3DXML, 3MF, ACIS, Alembic, CATIA V4, CATIA V5, Collada, DWF, DWG, E57, IFC, IGES, Inventor, JT, LXO, MD5, NX, Parasolid, PRC, PRO/E, ShapeNet, Solid Edge, SOLIDWORKS, STL, STP, U3D, URDF, VDA-FS, VRML, X3D

Scalable Deployment

Deploy NVIDIA Omniverse Enterprise across organizations of any scale, from small local workgroups to globally distributed teams accessing the data center using various devices. Omniverse Enterprise is designed, tested, and optimized to run on NVIDIA RTX™ and **NVIDIA-Certified Systems™**.
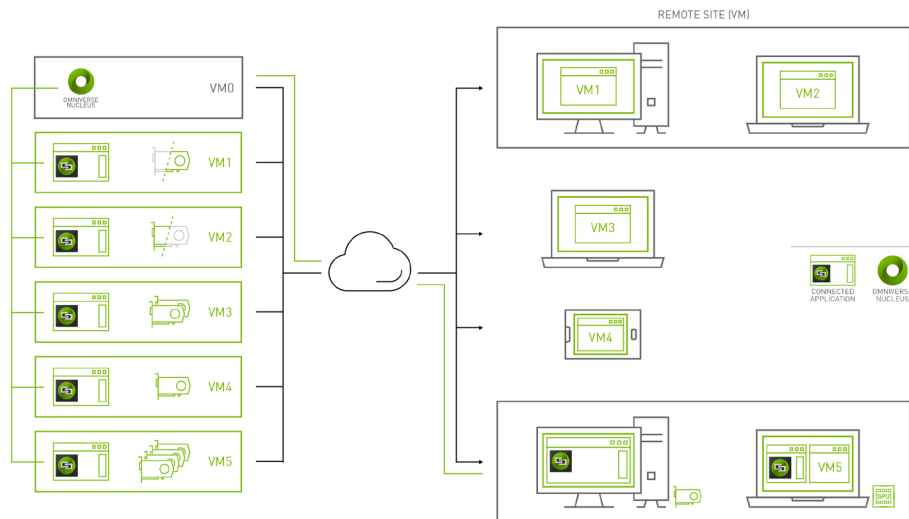
Small Workgroups

Deploy Omniverse Nucleus Workstation across a small workgroup on a local network with NVIDIA RTX professional workstations and laptops.

DESKSIDE WORKER / USER

MOBILE WORKER / USER

MOBILE WORKER / USER

OMNIVERSE NUCLEUS

DESKSIDE WORKER / USER
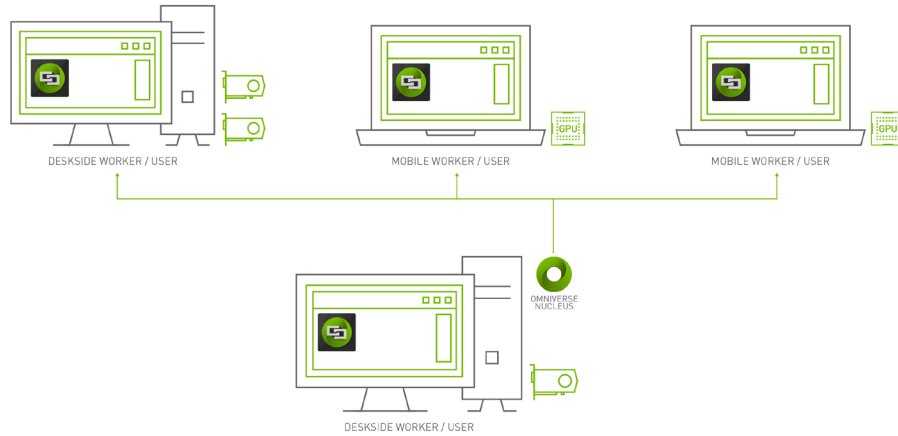
Large Enterprise

Deploy Omniverse Enterprise Nucleus Server in the data center to connect teams to the same Omniverse environment,virtualized with NVIDIA RTX Virtual Workstation software (RTX vWS), or locally using NVIDIA RTX professional workstations or laptops.

REMOTE SITE (VM)

OMNIVERSE NUCLEUS

VM0

VM1

VM2

VM3

VM4

VM5

VM1

VM2

VM3

VM4

CONNECTED APPLICATION

OMNIVERSE NUCLEUS

VM5

VM5

Ready to Get Started?

Find out more about NVIDIA Omniverse Enterprise for Architecture, Engineering, Construction, and Operations at **nvidia.com/ov-aec**

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