

# Leading-Edge Solutions for AECO Workflows

New technologies boost innovation and productivity.



## Creating New Opportunities with Advanced Technology

The architecture, engineering, construction, and operations (AECO) industry is undergoing a transformation. Projects are becoming more complex, and team members are increasingly working remotely, which complicates workflows, communication, and collaboration. Enabling efficient and cost-effective work in teams across regions is vital to a firm's success. But when, for example, remote team members need to work together on a single BIM model and version control is lost, or when the downloading of massive datasets from the cloud is stalled, productivity and employee morale can falter.

Although rapid progress of technology brings huge benefits, it can also come with challenges. Advanced visualization technologies such as real-time, ray traced rendering and immersive virtual reality (VR) deliver extraordinary improvements to AECO workflows, but they also demand powerful graphics and compute performance. While 3D models offer extensive advantages over 2D drawings, working with them requires additional graphics power, especially when using dual or 4K displays.

A new, streamlined way of tackling these challenges is needed to improve productivity, team collaboration, innovation, and customer engagement.

## NVIDIA RTX Powers Building Design

As a trusted technology partner for AECO professionals worldwide, NVIDIA is continually enhancing solutions to tackle these complexities and streamline workflows.

The latest NVIDIA RTX™ professional GPUs — based on industry-leading NVIDIA GPU architecture — fuse AI, real-time ray-tracing, and programmable shading to speed up and optimize the building design process. As part of an advanced ecosystem of hardware, software, and tools, RTX accelerates new design workflows — such as 3D graphics virtualization, reality capture, extended reality (XR), interactive physically based rendering, and AI-enabled applications — and improves how teams collaborate by creating effective work-from-anywhere capabilities. GPU-accelerated virtual solutions also put NVIDIA at the operational forefront, helping to protect intellectual property and enabling geographically dispersed teams to collaborate on a single master data file. NVIDIA Omniverse Enterprise is a multi-GPU-enabled, extensible platform built on open standard Universal Scene Description (USD). It enables the building of custom 3D pipelines and the simulation of large-scale, physically accurate virtual worlds — providing AECO companies with a groundbreaking new tool to drive innovation and productivity and help meet project deadlines.

**>Learn more about NVIDIA RTX**



Image courtesy of KPF.

## NVIDIA RTX Visual Computing Platform

The world's most widely used hardware and software companies partner with NVIDIA to bring the power of RTX to the AECO industry.

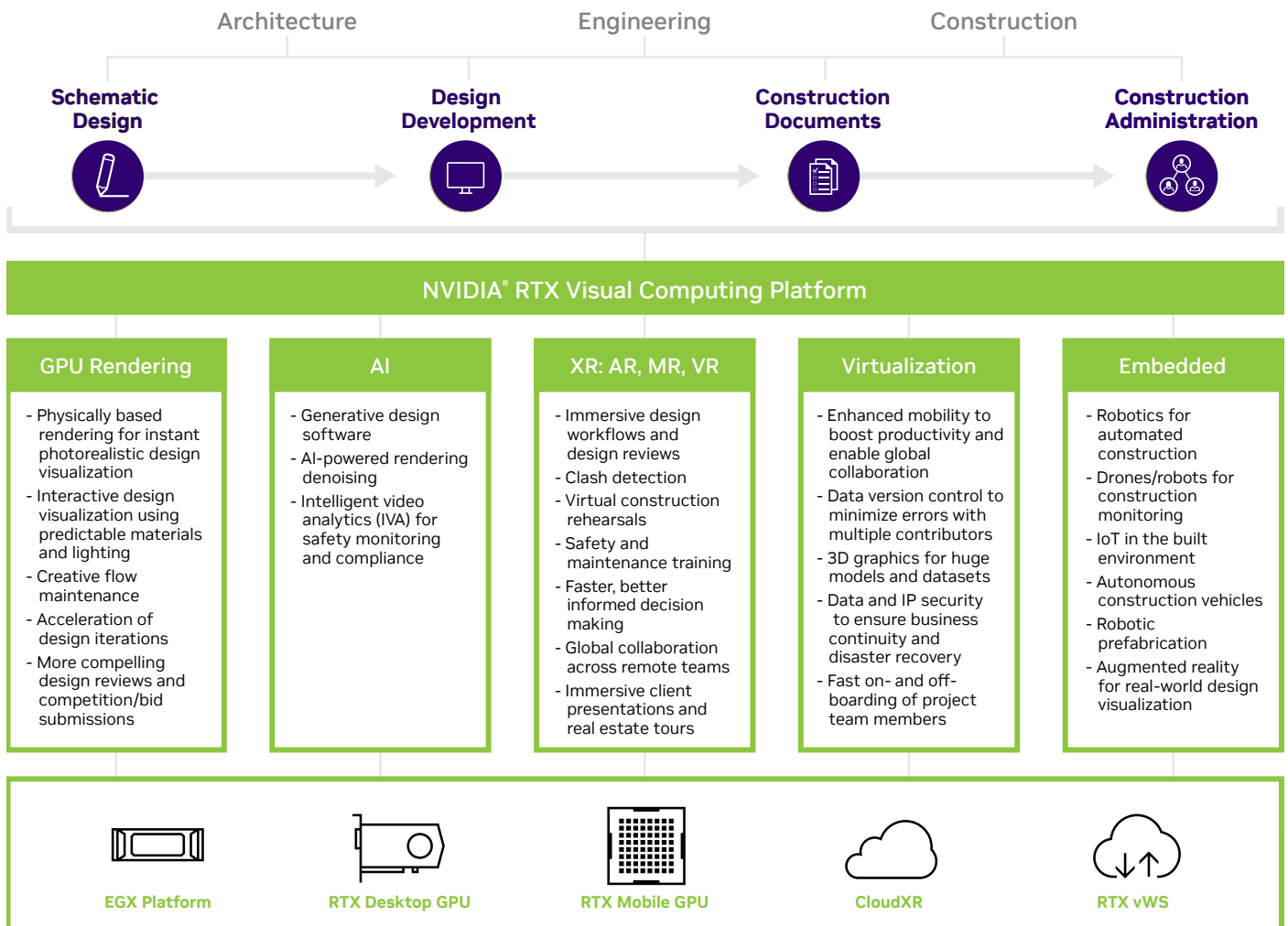


### NVIDIA RTX Advantages for AECO Firms

- > Improved collaboration among remote teams of designers, architects, and engineers
- > Rapid design iteration resulting in more innovative designs
- > Faster, better customer decision making while streamlining design reviews
- > Collaborative, immersive XR experiences to enhance design, design reviews, construction rehearsals, safety and maintenance training, and property marketing
- > AI-enabled functionality through generative design software and interactive, physically based rendering
- > Smooth design workflows with massive BIM models for detailed, accurate designs while meeting project milestones
- > Optimized data management, version control, mobility, and security while rapidly onboarding new project stakeholders
- > Faster creation of photorealistic marketing and sales collateral

## Powerful New Workflows Deliver Results

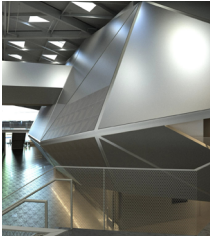
AECO professionals know they must take advantage of the latest technology to achieve greater efficiency and meet project budgets and deadlines.





## NVIDIA RTX solutions can assist in six key categories:

### GPU-Accelerated, Interactive, Physically Based Rendering



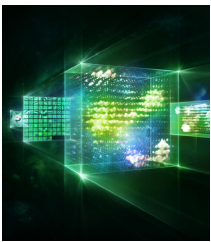
Real-time ray-traced rendering for viewing predictable models.

Combining NVIDIA RTX GPUs with GPU-accelerated rendering software delivers an interactive visualization experience. Architects can view design changes in real time, and stakeholders can visualize realistic models to make faster decisions with greater confidence.

And with NVIDIA RTX GPUs powered by the latest NVIDIA GPU architectures, AECO professionals can instantly create cinematic quality renders, even when working with the most complex BIM models.

[> Learn More About GPU Rendering](#)

### AI and Deep Learning are Already Impacting Design Workflows



AI/Deep Learning is already impacting design workflows.

Deep learning-enabled generative design software — which draws on NVIDIA GPUs for training and inference — offers architects a powerful new aid to reduce time spent on mundane repetitive tasks while driving productivity and innovation. AI-powered rendering denoising running on RTX GPUs or RTX Virtual Workstation (RTX vWS) software speeds up noiseless visualization of photoreal renders. And NVIDIA RTX is built to accelerate AI inferencing to power the next generation of visual computing.

[> Learn More About AI for Content Creation](#)

### Extended Reality

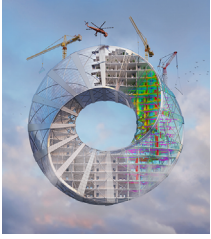


Enhancing building design workflows with VR.

NVIDIA RTX VR Ready GPUs drive immersive VR experiences with a true sense of scale that cannot be matched by drawings and 3D models on a computer display. VR-enabled walkthroughs allow instant feedback on designs, colors, textures, and features, which reduces the need for costly rework once construction has begun. They can also be used to run virtual construction rehearsals and more effective maintenance and safety training sessions. With **NVIDIA CloudXR**, users can now stream wireless virtual and augmented reality across high-performance networks from powerful NVIDIA RTX GPUs.

[> Learn More About XR](#)

## Full-Fidelity Visualization and Simulation With Omniverse



Transforming remote team collaboration with Omniverse.

NVIDIA RTX professional GPUs deliver the performance needed to take full advantage of NVIDIA Omniverse Enterprise, which transforms how project teams collaborate and carry out real-time, true-to-life simulation. Desktop and mobile RTX GPUs enable individual users to harness the RTX Renderer in Omniverse, and NVIDIA RTX vWS software and the NVIDIA EGX™ platform offers the ultimate visual computing power for AECO teams.

**> Learn More About NVIDIA Omniverse for AECO**

## GPU-Accelerated Virtual Workstations

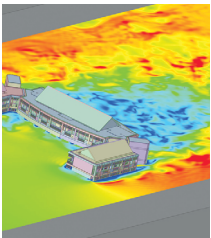


Virtualized 3D graphics for all users.

Global firms often have widely dispersed teams that touch all parts of a project cycle, from design to construction. Virtualized solutions powered by NVIDIA RTX vWS or NVIDIA vApp/vPC software and the NVIDIA EGX platform enable more productive workflows to help teams meet demanding deadlines. In addition to simplifying IT management and helping protect intellectual property by maintaining data in the data center, NVIDIA vGPU solutions can facilitate designers' creativity by allowing access to visual computing power anytime, anywhere — whenever inspiration strikes.

**> Learn More About RTX vWS**

## Real-Time Simulation for AECO



Real-time simulation.

Recent developments with CUDA-based, GPU-accelerated simulation software empower architects, designers, and engineers to quickly perform engineering simulation while iterating on designs. Teams can visualize modifications in real time, so they can evaluate thermal, gas, and fluid studies before submitting designs for validation. Introducing real-time simulation early helps save time and money and can result in a more optimally designed built environment.

**> Learn more about GPU-Accelerated Simulation**

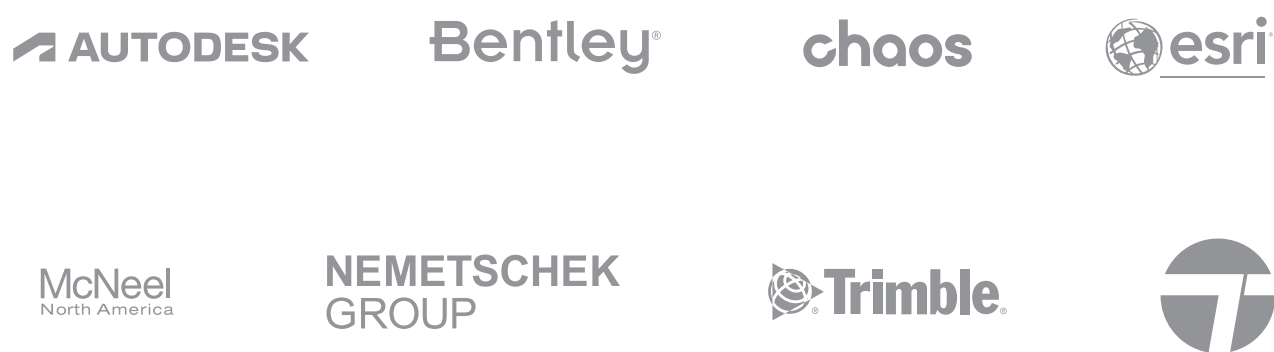
## Tested and Certified for Enterprise-Class Reliability

To ensure the best possible experience for IT investments, NVIDIA RTX professional graphics solutions are tested and certified by leading workstation and server manufacturers. They’ve also received independent software vendor certifications for more than 100 professional applications.

### Key OEM Partners



### Key ISV Partners



## RTX-Accelerated Workflows for AECO

Workflow Phase	Architecture	Engineering	Construction
	Schematic design Design development	Design development Construction documents	Construction administration
Workflow Use Cases	Photorealistic visualization VR for design and design reviews Omniverse for more effective visualization and simulation of 3D models Deep learning for generative design Generative AI Massive BIM datasets Mobility Data security	Photorealistic visualization AR/VR for design, collaboration, and construction rehearsals Massive BIM datasets Mobility Data security	AR/VR for safety, maintenance training and construction rehearsals Reality capture/point clouds Mobility Data security

## What Customers Are Saying About RTX



“Introducing RT Cores into the NVIDIA RTX A2000 has resulted in impressive rendering speedups for photorealistic visualization compared to the previous generation GPUs.”

**Steven Blevins**  
Director of Design Technology,  
C&P



“We work with massive, complex models with multiple tall buildings in cityscapes, which have at times been difficult to visualize at the level of detail that we’d truly like. Visualizing these huge models at the highest resolutions with the RTX A6000 is super impressive.”

**Paul Renner**  
Visualization Manager, KPF



“The management and monitoring features we can access with NVIDIA [RTX vWS] software are a great value. Without them, we might have to run a subpar user experience without knowing. A good user experience leads to better productivity, happy users, translating to fewer help-desk tickets. Having data to make user experience quantifiable is invaluable.”

**Jeremy Stroebel**  
IT Director, BDMD

## RTX Solutions in Action

- > Discover how NVIDIA technologies are transforming AECO from concept to construction
- > Explore AECO customer success stories, webinars and more

[Learn more](#)

For more information, visit [www.nvidia.com/AECO](https://www.nvidia.com/AECO)

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