

LEADING-EDGE SOLUTIONS FOR AEC WORKFLOWS

New Technologies Improve Collaboration,
Accelerate Design, and Facilitate Design Reviews



Image courtesy of KPF



nVIDIA

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CREATING NEW OPPORTUNITIES WITH ADVANCED TECHNOLOGY

The architecture, engineering, and construction (AEC) industry is undergoing a transformation. Teams are expanding and becoming more globally dispersed, complicating 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 downloading massive datasets from the cloud stalls, productivity and employee morale falter.

These are compounded by the rapid progress of technology, which creates new capabilities but also more challenges. With HD computer monitors being replaced by 4K displays, more graphics power is needed to view 3D models, and immersive virtual reality (VR) in CAVEs and using HMDs requires extremely high graphics performance. And while 3D models deliver a crisper sense of scale and reality over 2D drawings, digitally altering them can be cumbersome without sufficient graphics power.

A new, streamlined way of tackling these challenges is needed to boost productivity, team collaboration, design review efficiency, and customer engagement.

NVIDIA QUADRO POWERS BUILDING DESIGN

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

Powered by the greatest leap in graphics computing since the invention of NVIDIA CUDA GPU in 2006, Quadro RTX with NVIDIA Turing™ architecture, fuses AI, real-time ray tracing, and programmable shading to fundamentally transform the building design process. As part of an advanced ecosystem of hardware, software, and tools, Quadro accelerates new design workflows—such as graphics virtualization, VR, interactive physically based rendering, and AI-enabled applications—and improves how teams collaborate by creating effective work-from-anywhere capabilities. These 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.

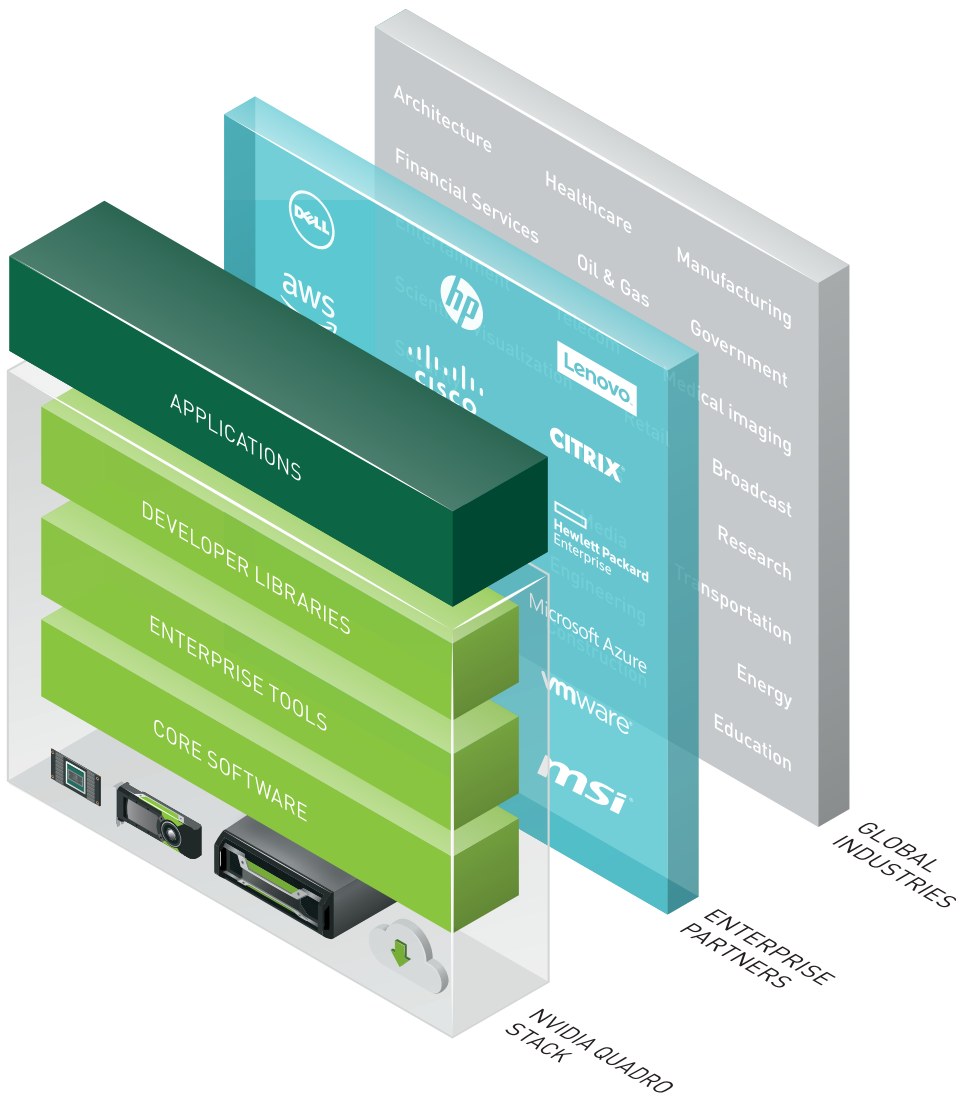
[> Learn more about NVIDIA Quadro](#)



Image courtesy of Woods Bagot.

NVIDIA QUADRO VISUAL COMPUTING PLATFORM

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

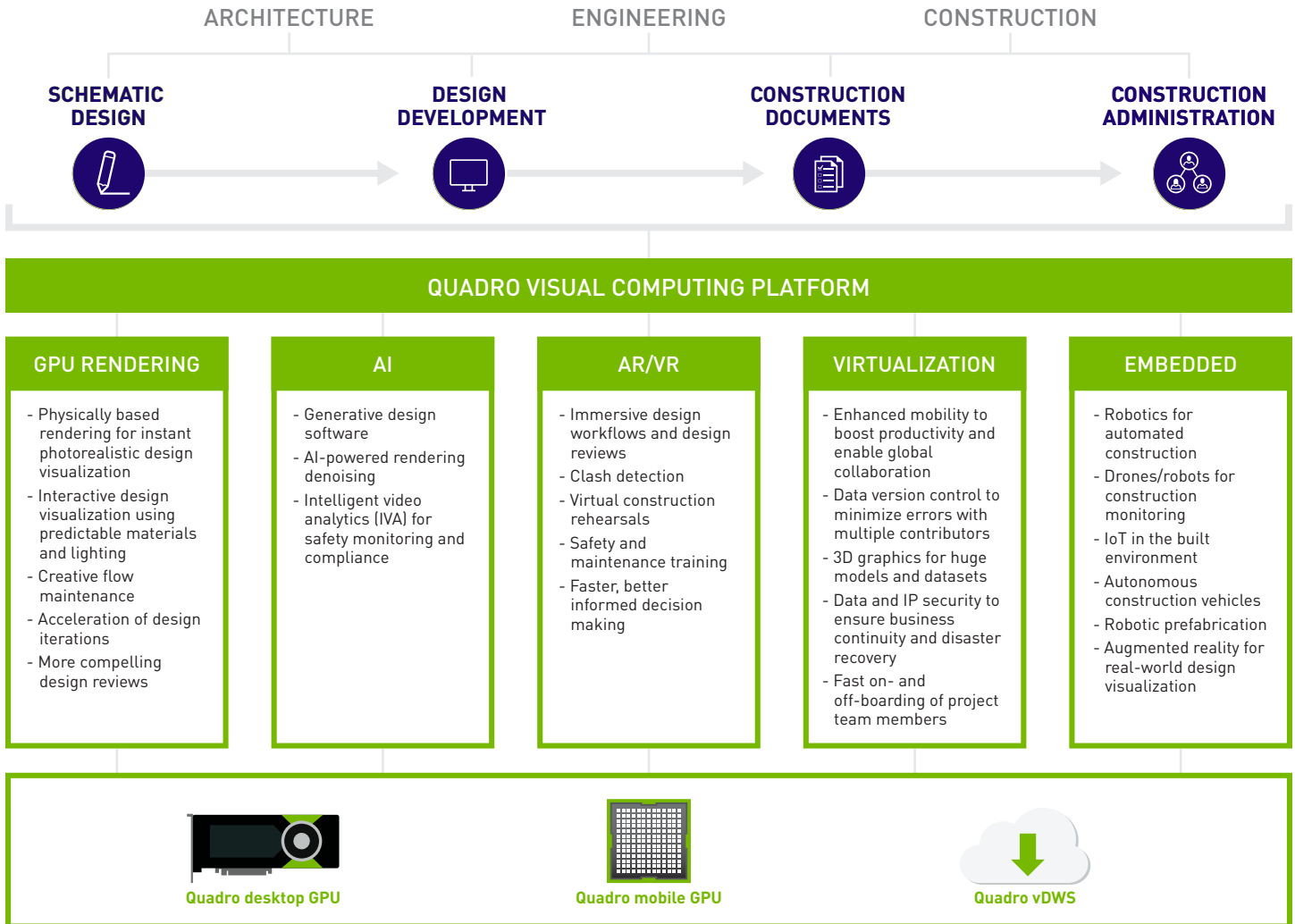


NVIDIA QUADRO ADVANTAGES FOR AEC FIRMS

- > 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
- > Immersive VR 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 on-boarding new project stakeholders
- > Faster creation of photorealistic marketing and sales collateral

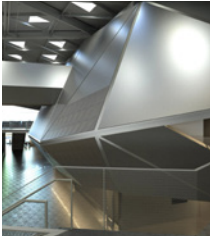
POWERFUL NEW WORKFLOWS DELIVER RESULTS

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



NVIDIA Quadro solutions can assist in five key areas:

GPU-Accelerated, Interactive Physically Based Rendering



Interactive physically based rendering for viewing predictable models.

Combining Quadro 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 Quadro RTX GPUs powered by NVIDIA Turing™, AEC 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-Enabled Applications



AI/Deep Learning is already impacting design workflows.

Deep learning-enabled generative design software trained on NVIDIA GPUs offers architects a powerful new aid to drive productivity and innovation. AI-powered rendering denoising running on Quadro GPUs or Quadro Virtual Data Center Workstation (vDWS) software speeds up noiseless visualization of photoreal renders. And Quadro RTX is built to accelerate AI inferencing to power the next generation of visual computing.

> [Learn more about AI for content creation](#)

Virtual Reality

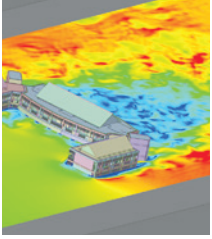


Enhancing building design workflows with VR.

Quadro VR Ready GPUs drive immersive VR experiences with a true sense of scale that cannot be matched with drawings and 3D models on a computer display. VR-enabled walkthroughs allow instant feedback on designs, colors, textures, and features, reducing costly rework once construction has begun. They can also be used to run virtual construction rehearsals and more effective maintenance and safety training sessions.

> [Learn more about Quadro VR](#)

Real-Time Simulation for AEC



Real-time simulation.

GPU-accelerated ANSYS Discovery Live empowers architects, designers, and engineers to easily 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 not only helps save time and money but can result in a more optimally designed built environment.

> [Learn more about GPU-accelerated simulation](#)

GPU-Accelerated Virtual Workstations



Virtualized 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 Quadro vDWS or NVIDIA GRID® software and NVIDIA GPUs enable more productive collaboration to help teams meet demanding deadlines. They also help protect intellectual property, simplify IT management, and facilitate creativity whenever inspiration strikes.

> [Learn more about Quadro vDWS](#)

TESTED AND CERTIFIED FOR ENTERPRISE-CLASS RELIABILITY

To ensure the best possible experience for your IT investment, Quadro professional graphics solutions are tested and certified by leading workstation and server OEMs. They've also received independent software vendor (ISV) certifications for more than 100 professional applications.

Key OEM Partners



Key ISV Partners



3ds Max, AutoCAD, Revit

MicroStation, AECOsim
Building Designer

V-Ray



ArcGIS Pro

Rhino

Allplan, ArchiCAD, Cinema 4D,
Vectorworks

SketchUp

QUADRO-ACCELERATED WORKFLOWS FOR AEC

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 Virtualized graphics for more effective remote team collaboration Deep learning for generative design 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 OUR CUSTOMERS ARE SAYING ABOUT QUADRO



“For the first time in nearly 30-years of hospitality design, our clients were able to stand in an existing environment, fully understand our proposed design in context, and collaborate with us to modify and enhance the solution.”

Ron Swidler
Principal, The Gettys Group



“Our four pillars are people, processes, partnerships, and technologies. Using NVIDIA Quadro GPUs goes a long way to improving our work in all four areas.”

Drew Rebman
Lead VDC Engineer,
Hensel Phelps



“The management and monitoring features we can access with NVIDIA Quadro vDWS 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

QUADRO SOLUTIONS IN ACTION

- > Discover AEC customer success stories in design and visualization
- > Check out our on-demand webinars to learn more about AEC workflows

For more information, visit www.nvidia.com/AEC

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