NVIDIA RTX
ARCHITECTURE, ENGINEERING & CONSTRUCTION

INDUSTRY OVERVIEW

- Breakthroughs in artificial intelligence (AI), virtual reality (VR), interactive photoreal rendering, real-time engineering simulation, and 3D graphics virtualization are transforming building and infrastructure design workflows, enabling architecture, engineering, and construction (AEC) firms to reimagine cities of the future.

- Technological innovations, such as VR, real-time physically based ray tracing, and 4K displays, require greater amounts of graphics power.

- AEC teams are expanding and becoming more globally dispersed, complicating workflows, communication, collaboration, version control, and security.

- Tighter project deadlines demand faster design workflows, so more design iterations can be accomplished in less time.

- To identify flaws and make changes earlier in the design process, AEC firms are using technology to give clients and other stakeholders a more detailed understanding of interior and exterior construction and design elements.

THE SOLUTION

Industry-leading NVIDIA® RTX™ enterprise GPUs deliver unmatched performance with complex BIM models to speed AEC workflows. The NVIDIA EGX Server, based on the latest Ampere generation GPU architecture, offers the ultimate

TYPICAL CUSTOMERS
Architecture, engineering, and construction firms
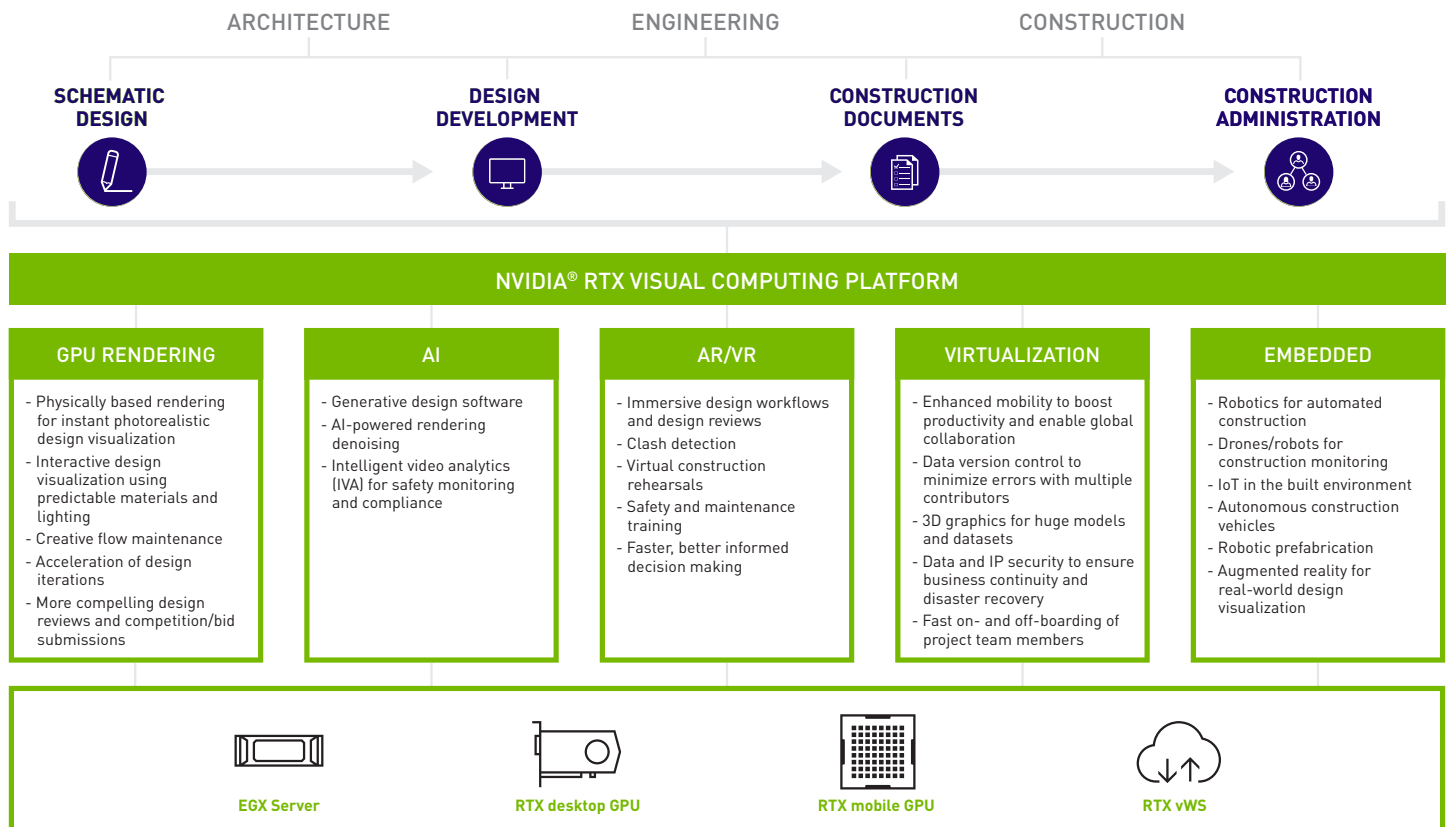
COMMON APPLICATIONS
Adobe: CreativeCloud; **Autodesk:** 3ds Max, AutoCAD, Revit; **Bentley:** MicroStation, ContextCapture, LumenRT, OpenBuildings Designer, SYNCHRO; **Chaos Group:** V-Ray, Vantage; **Epic Games:** Unreal Engine, Twinmotion; **Enscape**; **Esri:** ArcGIS Pro; **Lumion**; **McNeel:** Grasshopper, Rhino; **Nemetschek Group:** Allplan, Archicad, Cinema 4D, Vectorworks; **Trimble:** SketchUp; **Unity**

WHO TO CALL ON
Decision Makers — CIO/CTO, VP/Director of Engineering, Construction LOB VPs, IT Management

Key Influencers — Architects, Engineers, Designers, Marketing Executives, Accounting/Finance Professionals

in graphics and compute power needed for a variety of AEC workloads. Groundbreaking NVIDIA RTX Virtual Workstation software brings all the benefits of VDI together with smooth 3D graphics performance to empower AEC firms worldwide. Our latest innovation, NVIDIA Omniverse™ for AEC, a real-time graphics and simulation platform, fundamentally transforms the collaboration process for building design among remotely located project teams.
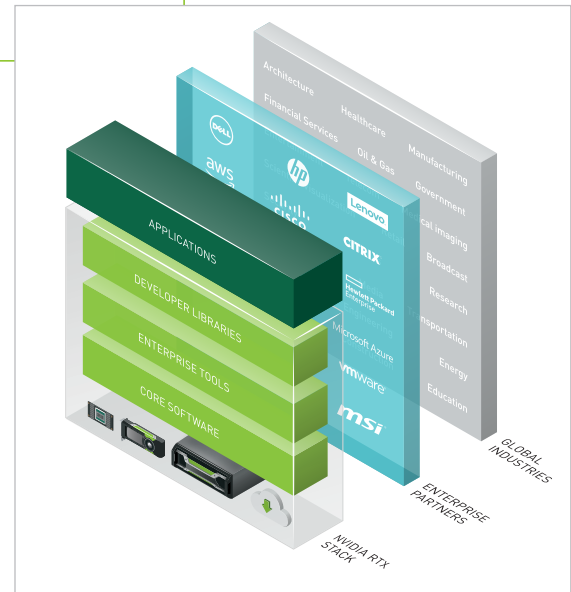
ARCHITECTURE	ENGINEERING	CONSTRUCTION

SCHEMATIC DESIGN	DESIGN DEVELOPMENT	CONSTRUCTION DOCUMENTS	CONSTRUCTION ADMINISTRATION

NVIDIA® RTX VISUAL COMPUTING PLATFORM

GPU RENDERING	AI	AR/VR	VIRTUALIZATION	EMBEDDED
- Physically based rendering for instant photorealistic design visualization - Interactive design visualization using predictable materials and lighting - Creative flow maintenance - Acceleration of design iterations - More compelling design reviews and competition/bid submissions	- Generative design software - AI-powered rendering denoising - Intelligent video analytics (IVA) for safety monitoring and compliance	- Immersive design workflows and design reviews - Clash detection - Virtual construction rehearsals - Safety and maintenance training - Faster, better informed decision making	- Enhanced mobility to boost productivity and enable global collaboration - Data version control to minimize errors with multiple contributors - 3D graphics for huge models and datasets - Data and IP security to ensure business continuity and disaster recovery - Fast on- and off-boarding of project team members	- Robotics for automated construction - Drones/robots for construction monitoring - IoT in the built environment - Autonomous construction vehicles - Robotic prefabrication - Augmented reality for real-world design visualization

EGX Server	RTX desktop GPU	RTX mobile GPU	RTX vWS

RTX ACCELERATED WORKFLOWS FOR AEC

	ARCHITECTURE	ENGINEERING	CONSTRUCTION
CATEGORY	• Schematic design • Design development	• Design development • Construction documents	• Construction administration
USE CASES	• Photorealistic visualization • VR for design and design reviews • Omniverse 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

THE NVIDIA RTX VISUAL COMPUTING PLATFORM

AEC professionals rely on NVIDIA RTX Desktop GPUs, RTX Mobile GPUs, EGX Servers, and the RTX Virtual Workstation (RTX vWS) software to streamline workflows and power technologies like VR and 4K displays. NVIDIA RTX enterprise GPUs are specifically developed for AEC firms that need to accelerate projects, optimize design reviews, and improve collaboration among crossfunctional, geographically dispersed teams.

CUSTOMER WINS

KPF **HKS** **WOODS BAGOT** **BROWNING DAY MULLINS DIERDORF** LEADERSHIP + DESIGN®

HP HENSEL PHELPS Plan. Build. Manage.

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

NEXT STEPS: KEY QUESTIONS TO ASK

Design, Engineering, and Visualization

• Which CAD, CAE and/or visualization software tools does your company use today?

• How large are your typical CAD models and datasets?

• Which graphics cards are you currently using in your workstations?

• Do users work on dual displays and/or 4K displays?

• Do users ever complain that their machine crashed while working on a critical design?

• Does your company need fast creation of photorealistic renders?

• Is efficient collaboration among project teams a challenge?

• Are any of your users working with virtual reality?

• How frequently does your company replace workstations?

• Do you have architects, engineers, designers, and other CAD users employing apps for remotely viewing and editing very large 3D models and images?

• Are you looking for a way to enable mobility for users, while keeping your drawings and datasets securely in the data center?

• Did you know that Windows 10 is the most graphically intensive OS to date, and that modern productivity apps require graphics acceleration to function properly?

LEARN MORE

NVIDIA RTX for AEC »

   GPU Rendering »

   AI and Deep Learning-Enabled Applications »

   NVIDIA RTX VR »

   Real-Time Simulation »

NVIDIA RTX Virtual Workstation Software »

NVIDIA vPC/vApps »

NVIDIA Data Center GPUs »

NVIDIA Certified Servers »

NVIDIA Virtual GPU Certified Servers »

NVIDIA Omniverse for AEC »

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