THE FUTURE OF STORYTELLING STARTS NOW

Advanced Content Creation and Photorealistic Rendering with Award-Winning Graphics Technology

TECHNOLGY ADVANCEMENTS ACCELERATE PRODUCTION AND ENHANCE CREATIVITY

While discerning audiences are expecting higher-quality visual effects and animation, budgets and timelines are not increasing proportionately. Film and television studios are continuously challenged to increase production value under extreme budget constraints—and produce high-quality, original content that stands out from a growing list of competitors.

To create efficiencies, media and entertainment (M&E) professionals are looking for advanced technologies to accelerate time to market, simplify IT management, enhance creativity, and reduce costly errors that appear late in the production process.

REINVENTING GRAPHICS FOR CREATORS

As a trusted technology partner for M&E professionals worldwide, NVIDIA is propelling the future of storytelling with breakthroughs in GPU technology. 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 power the most advanced and visually rich film and video productions ever created. Whether editing in 8K HDR video in real time, creating complex effects and simulations, or animating 3D elements and textures for Emmy-winning TV shows or Academy Award–winning feature films, Quadro RTX accelerates your workflow and expands your creative potential.

> Learn more about NVIDIA Quadro

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 M&E industry.
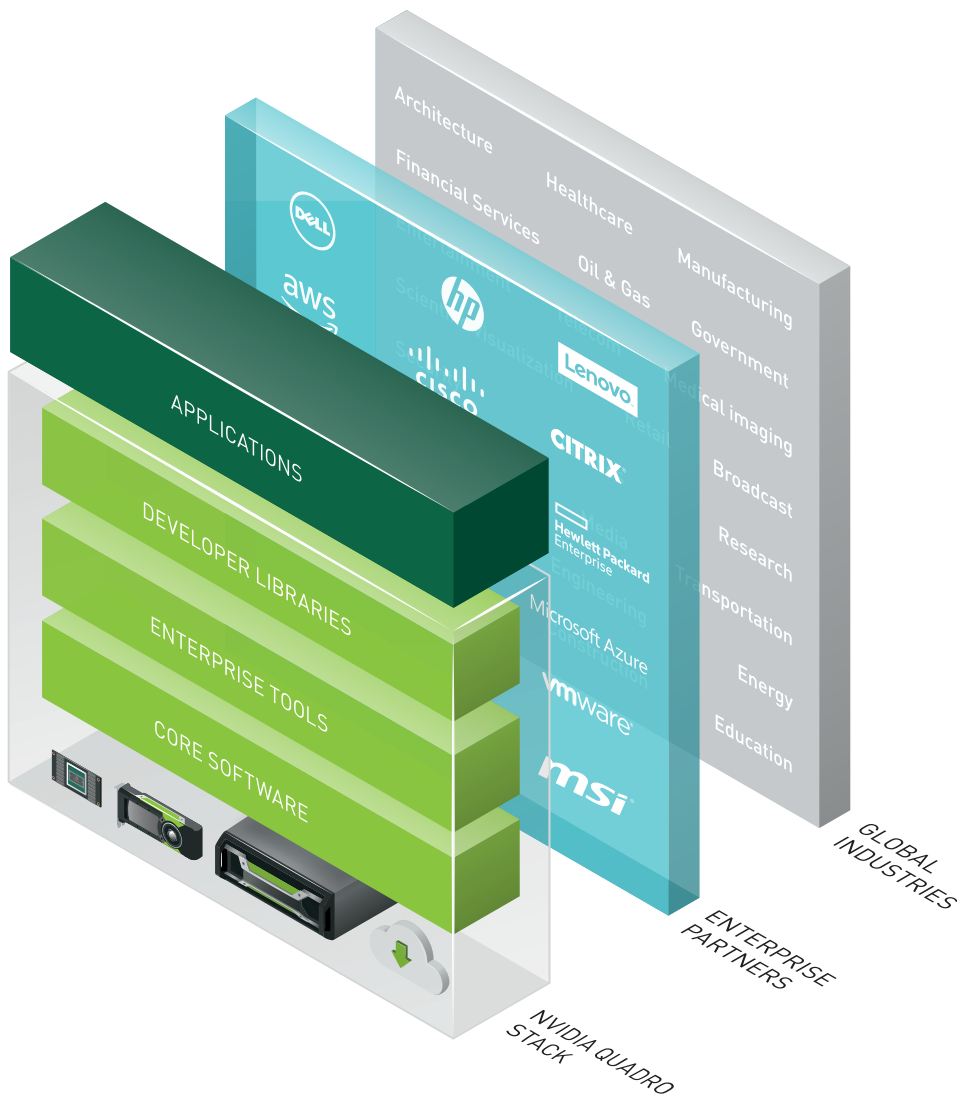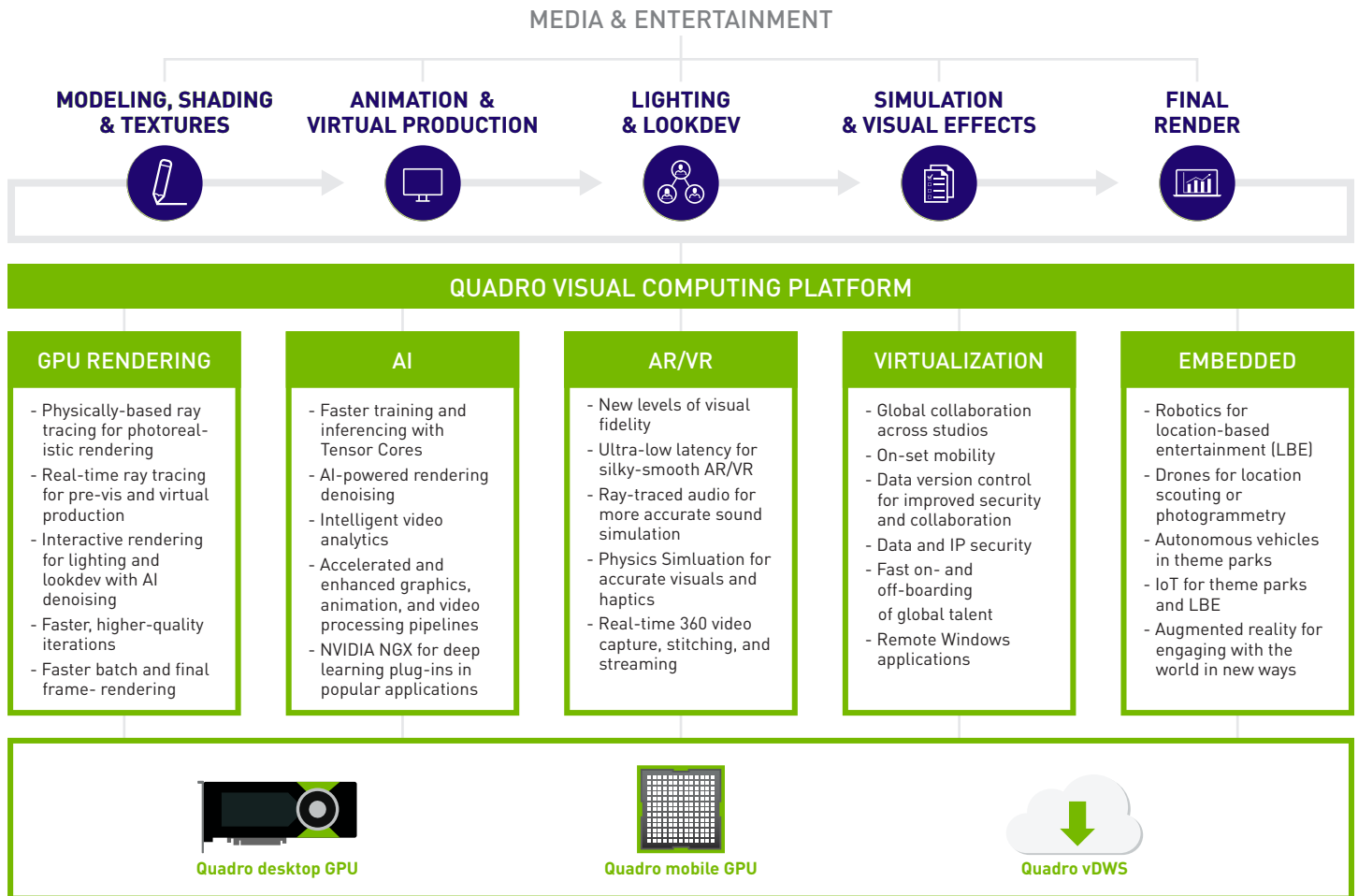

WITH NVIDIA QUADRO RTX-ENABLED WORKFLOWS:

> Artists can work interactively on large 3D datasets and render film-quality scenes. NVIDIA RTX Server can render up to 60X faster than a dual-CPU render node.

> Deep learning can enable new capabilities while reducing repetitive tasks, allowing artists to spend more time on creative work.

> Real-time video production and post-production with ultra-high resolution, high frame rates, and high-dynamic range (HDR) are now possible.

> Encoding and decoding can be accelerated with dedicated silicon on NVIDIA GPU graphics cards and NVENC.

> Studios and broadcasters can benefit from real-time engines for production, from animated television shows to live on-set graphics in the broadcast studio.

POWERFUL WORKFLOWS THAT DELIVER RESULTS

Media and entertainment professionals know they must work smarter to ensure they meet project budgets and deadlines, and that means taking advantage of the latest technology for greater efficiency.

MEDIA & ENTERTAINMENT

MODELING, SHADING & TEXTURES → **ANIMATION & VIRTUAL PRODUCTION** → **LIGHTING & LOOKDEV** → **SIMULATION & VISUAL EFFECTS** → **FINAL RENDER**

QUADRO VISUAL COMPUTING PLATFORM

GPU RENDERING	AI	AR/VR	VIRTUALIZATION	EMBEDDED
- Physically-based ray tracing for photoreal-istic rendering - Real-time ray tracing for pre-vis and virtual production - Interactive rendering for lighting and lookdev with AI denoising - Faster, higher-quality iterations - Faster batch and final frame- rendering	- Faster training and inferencing with Tensor Cores - AI-powered rendering denoising - Intelligent video analytics - Accelerated and enhanced graphics, animation, and video processing pipelines - NVIDIA NGX for deep learning plug-ins in popular applications	- New levels of visual fidelity - Ultra-low latency for silky-smooth AR/VR - Ray-traced audio for more accurate sound simulation - Physics Simluation for accurate visuals and haptics - Real-time 360 video capture, stitching, and streaming	- Global collaboration across studios - On-set mobility - Data version control for improved security and collaboration - Data and IP security - Fast on- and off-boarding of global talent - Remote Windows applications	- Robotics for location-based entertainment (LBE) - Drones for location scouting or photogrammetry - Autonomous vehicles in theme parks - IoT for theme parks and LBE - Augmented reality for engaging with the world in new ways

Quadro desktop GPU　　　**Quadro mobile GPU**　　　**Quadro vDWS**

NVIDIA Quadro solutions can assist in four key areas:

GPU Rendering

With distinct advantages over CPU rendering, from previsualization through to final frames, GPU rendering is poised to become a standard in the industry. NVIDIA RTX Server render nodes can deliver up to 60X the performance of dual-CPU nodes. With GPU rendering, artists can choose to generate more iterations or render much faster than by traditional means. With new RT Cores, photorealistic ray-tracing can now be achieved in real-time, enabling higher fidelity workflows from interactive rendering to virtual production.

Image courtesy of SOLIDWORKS.

AI/Deep Learning for Content Creation

AI is changing the way content is created and managed, and it's being considered for all facets of the production pipeline. Studios are beginning to experiment with AI not only for content creation but also for back-office decisions on whether or not jobs are worth bidding on.

NVIDIA is at the forefront of the AI revolution in graphics, with the goal of reducing the time spent on repetitive tasks so artists can focus on creative iterations. NVIDIA Quadro RTX GPUs now feature Tensor Cores to accelerate deep learning tasks. Deep learning AI dramatically simplifies content creation and animation, expands the possibilities of image and video processing, and makes it effortless to auto-tag and manage stored content so it can be re-purposed for future use.

AI/Deep Learning

Virtual Reality (VR) / Location-Based Entertainment (LBE)

VR is working its way into M&E and will be a major part of content by 2020. LBE companies are using VR and mixed reality to create deeply immersive experiences for guests at theme parks, malls, movie theater lobbies, and family entertainment centers. NVIDIA VR Ready GPUs power many of these experiences, which often incorporate real-world objects, haptics, and motion simulation to enhance participant excitement.

Image courtesy of Autodesk.

GPU Virtualization

Industry consolidation, geographically dispersed productions, and increased security concerns are driving M&E firms away from traditional desktop workstations. With NVIDIA Quadro Virtual Data Center Workstation (Quadro vDWS) or NVIDIA GRID® software and NVIDIA Tesla® GPUs, M&E professionals can keep projects moving forward securely, while scaling compute resources to meet specific project needs.

Virtualized graphics for all users

TESTED AND CERTIFIED FOR ENTERPRISE-CLASS RELIABILITY

NVIDIA GPUs—Quadro for desktop and mobile and Tesla for virtual workstations—ensure that users have a smooth, responsive experience while editing, rendering, and working with high resolution video and massive 3D datasets. 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 ISV Partners

Adobe   AUTODESK   AVID   Blackmagicdesign   CHAOSGROUP

EPIC GAMES   FOUNDRY   isotropix   PIXAR   REDSHIFT   unity

QUADRO-ACCELERATED WORKFLOWS FOR M&E

USERS	Animation and VFX: content creation	Broadcast: On-air graphics	Broadcast: Content understanding
WORKFLOW USE CASES	3D modeling and animation, color grading, visual effects, and rendering VR/LBE Creative decision-making and faster iterations	Publishing real-time graphics live, on-air Making changes in real time Create data-driven graphics	Sentiment analysis, natural language processing, compliance, automatic metadata generation, speech to text, and facial recognition

WHAT OUR CUSTOMERS ARE SAYING ABOUT QUADRO

CINESITE VISUAL EFFECTS

ELASTIC

VALOSSA

weta DIGITAL

"Cinesite was proud to partner with Autodesk and NVIDIA to bring Arnold to the GPU, but we never expected to see results this dramatic. This means we can iterate faster, more frequently, and with higher-quality settings. This will completely change how our artists work."

Michele Sciolette
CTO, Cinesite

"GPU-based rendering and the [NVIDIA Quadro] GP100s allow us to iterate interactively, speeding up our workflow exponentially.... Whatever allows us to make something creative and cool, we're going to jump all over it."

Kirk Shintani
Head of 3D, Elastic

"Broadcasters and other video content companies can extract data from what's happening at every second of playback and correlate it with behavior. They're looking for every possible piece of information that helps them make a bigger impact with their content."

Mika Rautiainen
CEO and Co-founder, Valossa

"Our long-term collaboration with NVIDIA on advanced rendering continues with Turing. The performance improvements change how artists can work with hero assets throughout the pipeline, improving every creative decision along the way. This is not a speedup. It's a step up to a new way of working."

Luca Fascione
Senior head of Technology and Research, Weta Digital

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> Discover more design and visualization customer success stories
> Watch on-demand webinars to hear more about visualization workflows

For more information, visit **www.nvidia.com/media**

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