NEOSCAPE SEES ARCHITECTURAL VISUALIZATIONS MORE CLEARLY WITH NVIDIA

NEOSCAPE
CASE STUDY

OVERVIEW

Neoscape is a creative agency for the built environment, producing photo-real architectural visualizations and fly-through videos for prominent architects and land developers around the globe for seventeen years. The company's team includes thirty-five artists operating out of offices in Boston and New York, managing up to two dozen different projects at any given time. Their stunning 3D visuals, rendered with remarkable real-world detail and lighting, help Neoscape's clients sell and present building concepts to their prospective targets.

With a high volume of projects flowing through, and a small team of animators, Neoscape is always on the lookout for ways to streamline their creative workflow. Autodesk's 3ds Max is the 3D tool of choice for Neoscape's artists, but with data sets averaging in the millions of polygons with hundreds of lights for any given project, hardware resources are often stretched to their limits. In addition to 3ds Max, Neoscape uses Chaos Group's V-Ray for rendering and Adobe's Photoshop and After Effects for post production refinement of their video and still renders.

CHALLENGE

Projects typically come in to Neoscape as either 2D CAD drawings or simple 3D models of buildings. An immense amount of detail is added to each model, virtual cameras are set up to capture just the right angles, and then the test render process begins. At this point creative decisions are made based on reviews of pre-rendered images, and refinements continue until the desired result is achieved. This iterative review and refinement process has been one of the biggest pain points for Neoscape artists who would often have to wait hours to get renders back from a shared render farm, yet rely on accurate test renders to ensure that their creative concepts are headed down the right path. Moreover, with project files averaging in the tens of millions of polygons with hundreds of lights, manipulating models in 3ds Max was unwieldy on workstations that were running single older generation NVIDIA GPUs.

Image created using Autodesk 3ds Max, V-Ray, and Adobe After Effects.

"We rely heavily on test renders to preview projects and make sure that the choreography of a shot is working, or that we're hitting the right notes aesthetically," explained Matt Richardson, Senior Digital Artist, Neoscape. "To get around slow render farm turnaround times, we would adapt with disciplined scene management where we would strategically turn off geometry and lights in our files. This would make our test render times more manageable, but we would compromise on previewing models that weren't exactly as they would appear in a final render."

For a recent restaurant project, Richardson and his team were modeling and rendering an interior scene made up of 20-million polygons with 500 lights and hundreds of high-resolution textures. They were creating a one-minute fly-through made-up of 20 shots to explore the space. Artists needed to be able to quickly move around and review the entire model from different angles while working in 3ds Max. With their existing workstation setup, they were getting only 15-20 frames per second viewport navigation at best, only when a lot of detail was turned off, and textures were set to low resolution. Also, due to slow turnaround time on test

renders, artists would often revise projects before reviewing accurate preview images.

"Because of the time it took for test renders to complete, often times we just kept working and didn't always wait for them to come back from the render farm to figure out what changes needed to be made. This slow feedback loop would sometimes cause an artist to backtrack on the progress of their project."

Moreover, since all artists at Neoscape are skilled in the many tasks required to complete a project (modeling, compositing, rendering) having the ability to run multiple applications simultaneously would enable dramatic workflow efficiencies. Neoscape has a dedicated render farm that is a shared company resource, and is always working since the existing configuration of artist workstations were not powered to manage for the computational demands of raytracing.

SOLUTION

Neoscape chose to work with a Dell Precision workstation powered by NVIDIA Maximus (NVIDIA Quadro K5000 and Tesla K20 GPUs in a single workstation) to see if they could improve project workflow and the overall creative experience for their artists. Prior to testing a complete Maximus system, they noticed marked improvements with the upgrade to a Quadro Kepler-enabled GPU, NVIDIA's most advanced and efficient GPU architecture.

Image created using Autodesk 3ds Max, V-Ray, and Adobe After Effects.

"Even before we got the full Maximus system, the Quadro Kepler 5000 GPU dramatically improved performance within 3ds Max. We were getting real-time viewport responsiveness and were able to navigate larger scenes without having to turn off geometry or materials," continued Richardson. "We also frequently use the 'Create Animated Sequence File" in 3ds Max here to preview animations and camera moves, and are now able to create those previews very quickly."

With Maximus, Neoscape was also able to start using V-Ray RT for the first time without having it lock up their entire workstation. On the new systems, artists can have raytracing on V-Ray RT running in the background on the Tesla K20 GPUs, while working with full detail in 3ds Max to set up scenes with quick interactivity running on the Quadro K5000.

"The key with Maximus is the uninterrupted workflow," explained Richardson. "The previous start and stop of sending a test render and waiting to review it; your brain would have to switch gears for the time it took to process the test render and move on. But with Maximus the speedy feedback and elimination of lag time is a huge boon to our productivity."

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IMPACT

With Maximus, Neoscape has the best of both worlds. Artists are able to do preview renders on their local machines using V-Ray RT and still have fast interactive performance within 3ds Max. Being able to do more on their respective workstations, artists at Neoscape have eliminated the time spent waiting for cores to free up on the render farm to review iterations of their work. They no longer have to compromise detail when building and setting up scenes in 3ds Max thanks to the accelerated GPU performance on the Quadro K5000.

"We've now streamlined getting from point A to point B. With Maximus we have the Tesla GPUs dedicated only to realtime computation in V-Ray RT and the Quadro card driving the viewport and display in 3ds Max," said Richardson. "We can now focus more of our time on making projects look better rather than focusing on scene management or waiting for test renders to finish."

When asked how switching to Maximus workstations might impact other artists working with large project files, Richardson noted, "They would share similar feelings about the challenges of working with huge, highly detailed models—and will be familiar with the creative limitations imposed by strict scene management, turning off details and geometry so that you can navigate a scene. We're now spending more time focusing on making our final images look better rather than constantly thinking about scene management, and I think everyone agrees it's better to have more time for the creative and artistic side of what we do."

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